BAYERO UNIVERSITY, KANO

SUSTAINABLE TRANSFORMATION OF PUBLIC AND CORPORATE MANAGEMENT IN DIGITAL AGE: PERSPECTIVES, CHALLENGES & PROSPECTS

BOOK OF PROCEEDINGS

3rd International Conference, Faculty of Management Sciences, Bayero University, Kano-Nigeria

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Volume 1

FACULTY OF MANAGEMENT SCIENCES
BAYERO UNIVERSITY, KANO-NIGERIA
10th – 12th January, 2023

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Acknowledgements

The success of the 3rd International Conference on the theme *Sustainable Transformation of Public & Corporate Management in the Digital Age: Pesrpectives, Challenges & Prospects,* held from 10th to 12th January, 2023 at Bayero University, Kano, Nigeria was attributed to Allahs's immense blessings in all ramifications. The remarkable support and encouragement received from financial institutions, public sector organizations, professional bodies, academic institutions, organized private sector, practitioners and individuals have helped in no small measure to the unprecedent success recorded at the Conference. It is in view of this therefore, that it is expedient that such support be duly acknowledged and appreciated by the Faculty.

First and foremost, the Faculty remains deeply grateful to the Vice Chancellor, Bayero University, Kano, Professor Sagir Adamu Abbas, *FMAN*, for his immense support towards the successful organization and conduct of the Conference. We would also like to acknowledge the immense support received from the Management, staff and students of the Faculty, Dangote Business School (DBS), Centre for Dryland Agriculture, Deans, Directors, Heads of Department and Unit of the University, alumni, colleagues and associates. We greatly cherished the uncommon enthusiasm, commitment, determination and selfless sacrifices they all made towards the success of the Conference.

The Faculty also likes to place on record its deep sense of gratitude and appreciations to the Management of Bayero University (BUK), the Federal Inland Revenue Service (FIRS), the Nigeria Deposit Insurance Corporation (NDIC), the Nigerian Communications Commission (NCC), the Association of National Accountants of Nigeria (ANAN), Jaiz Bank Plc, and Dala Foods Nigeria Limited for their invaluable support towards the successful organization and conduct of the Conference.

We are also deeply grateful to the Chairman of the opening ceremony of the Conference, Arc. Yusuf Zubair Kazaure, Chairman, Nigerian Communications Satellite Limited (NIGCOMSAT). We also highly appreciate the Lead Paper Presenter, Professor Omar Hassan Kasule (the Secretary General, International Institute for Islamic Thought (IIIT), United States of America), and the Keynote Speaker, Amb. Shuaibu Adamu Ahmed (Wazirin Ningi), FCA, FCCA, (Executive Secretary/CEO, Financial Reporting Council (FRC) of Nigeria). We also wish to acknowledge the presence and active participation of the Guest of Honour, Prof. Muhammed Bello Abubakar (MD/CEO Galaxy Backbone Ltd.), ably represented by Dr. Nasir Shinkafi (Chief, Information Security and Business Continuity Officer, Galaxy Backbone Ltd.).

Finally, we wish to acknowledge the unparalleled commitment of the members of the Conference Organizing Committee, Chairmen, Lead Discussants and Rapporteurs of paper sessions, colleagues from various units of the University, registration team, paper presenters, other conference participants, members of the press, support staff and students from the various units of the University, staff of the Faculty, students, and all those who have, in one way or the other, contributed to the successful organization and conduct of the Conference.

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Welcome Address by the Dean Faculty of Management Sciences

Prof. Kabir Tahir Hamid

Protocol

All praise be to Allah, the Most Beneficent, the Most Merciful, Who Has made this Conference not only a reality, but a remarkable success.

It is my honour and pleasure to warmly welcome you all to this 3rd International Conference & Doctoral Colloquium, organized by our Faculty with the theme *Sustainable Transformation of Public & Corporate Management in the Digital Age: Pesrpectives, Challenges & Prospects.* I am delighted, on behalf of the entire staff and students of the Faculty, to welcome you all to Bayero University, Kano.

I am pleased to welcome the Chairman of today's opening ceremony, *Arc. Yusuf Zubair Kazaure*, Chairman, Nigerian Communications Satellite Limited (NIGCOMSAT) and our Lead Paper Presenter, *Professor Omar Hassan Kasule* (the Secretary General, International Institute for Islamic Thought (IIIT), United States of America). I am also pleased to welcome our Keynote Speaker, *Mr. Bello Hassan*, MD/CE Nigeria Deposit Insurance Corporation (ably represented by *Mr. Mustapha M. Ibrahim*, Executive Director Operations), *Engr. Mansur Ahmed* (Group Executive Director, Strategy & Government Relations, Dangote Group) and *Amb. Shuaibu Adamu Ahmed*, Wazirin Ningi (Executive Secretary/CEO, Financial Reporting Council (FRC) of Nigeria). Equally deserving a special welcome is our Guest of Honour, *Prof. Muhammed Bello Abubakar* (MD/CEO Galaxy Backbone Ltd.), ably represented by *Dr. Nasir Shinkafi* (Chief, Information Security and Business Continuity Officer, Galaxy Backbone Ltd.).

This Conference brings together academics and practitioners in the field of Management Sciences, Digital Technology and beyond, to strategically address issues pertaining to transformation of Public and Corporate Management in the digital age and to chart a course on how to use emerging perspectives and paradigms to improve performance, efficiency, effectiveness, organizational sustainability and all-inclusive sustainable economic growth and development.

It is worthy to mention that the theme of this Conference has stirred high interest among both academics and practitioners, resulting in receive of about two hundred (200) papers for both technical sessions and Doctoral Colloquium. It is important to mention that the opening ceremony of the Conference would be followed by break-out parallel paper sessions. The physical sessions will be held here, a the Dangote Business School, while the virtual sessions are to be held at the Centre for Dryland Agriculture (a World Bank Centre of Excellence), here in the new campus. While, the Doctoral Colloquium already took place yesterday.

I would also like to place on record our deep sense of gratitude and appreciations to the Management of Bayero University Kano (BUK), the Federal Inland Revenue Service (FIRS), Nigeria Deposit Insurance Corporation (NDIC), the Nigerian Communications Commission (NCC), the Association of National Accountants of Nigeria (ANAN), Jaiz Bank Plc, and Dala Foods Nigeria Limited for their invaluable support to the Conference.

Similarly, I would also like to acknowledge the immense support received from the Management, staff and students of the Faculty, the Conference Organizing Committee, the Dangote Business School (DBS), the Centre for Dryland Agriculture, other units of the University, alumni, colleagues and associates. We greatly cherished the uncommon enthusiasm, commitment, determination and selfless sacrifice they have made and were still making towards ensuring the success of the Conference.

I sincerely hope that we will have a very fruitful, remarkably successful and indelibly memorable Conference. I wish us all a peaceful and pleasant stay in the University, fruitful deliberations at the various sessions of the Conference and journey mercy back to our respective destinations at the end of the Conference.

Thank you and God bless us all.

Opening Remarks by the Vice Chancellor, Bayero University Kano

Prof. Sagir Adamu Abbas, FMAN

Protocol.
It gives me a great pleasure to warmly welcome you all to the University for the 3rd International Conference & Doctoral Colloquium Organized by the Faculty of Management Sciences, of this University. It is commendable that the Faculty has been able to sustain the bi-annual conference; and their doggedness to organize this 3rd Conference despite many issues arising from the long closure of public universities in Nigeria. It is indeed worthy to note that the theme of this Conference *"Sustainable Transformation of Public & Corporate Management in the Digital Age: Perspectives, Challenges & Prospects"* is apt and quite relevant to our present reality.

The present era of 4th Industrial Revolution brought about digital transformation through "digitalization" of processes, tasks and activities, leading to faster processing and enhancing easy access to data, allowing for greater analysis, faster information sharing and informed decisions. Digital transformation of public and corporate management is crucial in achieving sustainable development. Sustainable development is seen as a concept that requires meeting "the needs of the present generation without compromising the ability of future generations to meet their own needs". It is concerned with maintaining a balance between environmental, social and economic considerations – the three pillars of sustainability.

Sequel to the above, sustainable development continued to assume increasing recognition across the globe among policy makers, researchers, development agencies and supra national organizations including the United Nations (UN) which came up with 17 Sustainable Development Goals (SDGs) to guide the pursuit of development in various aspects of life. This is in view of its enormous potentials for achieving sustainable economic development particularly in the areas of poverty reduction, employment generation, wealth creation, pollution control, mitigating climate change, enhancing performance and improving welfare and general standard of living.

Both public entities and corporate organizations need to integrate *sustainability* strategies across multiple dimensions of their *digital transformation* roadmaps. Thus, corporate executives across the globe are digitally transforming three key areas of their enterprises, namely customer experience, operational processes and business models. Similarly, combining innovative digital technologies with human understanding can enable public sector organizations to transform and streamline their services, driving better value from public funds and providing improved public services.

I am pleased to note that this Conference has generated remarkable interest and exceptionally high reception from both academics and practitioners not only from management sciences and digital technology, but from different walks of life. As a result of this, the Faculty has received close to two hundred (200) submissions for both technical paper sessions and Doctoral Colloquium from both within and outside the country.

Ladies and gentlemen, I am confident that with the quality of papers to be presented at the Conference, there would be value adding discussions which would result in new paradigms and perspectives for attaining sustainability in Nigeria. It is my sincere hope that all the participants will engage fully in the discussions and generously share their wealth of experience and knowledge. It is also hoped that the participants will at the end of the Conference chart a new course for a sustainable digital transformation of public and corporate management in Nigeria for the attainment of sustainable economic growth and development in the country.

It is my honour and privilege to declare this 3rd International Conference and Doctoral Colloquium with the theme *"Sustainable Transformation of Public & Corporate Management in the Digital Age: Perspectives, Challenges & Prospects"* open.

I wish you a pleasant and peaceful stay in the University. As you enjoy your stay in the University, I am happy to inform you that Bayero University, Kano, was ranked the overall best University in Nigeria in terms of international outlook in 2023 by Times Higher Education UK. I hope you will feel free to move around the historic city of Kano. I wish you journey mercies back to your respective destinations at the end of the Conference.

Thank you.

Remarks of the Chairman of the Opening Ceremony

Arc. Yusuf Zubair Kazaure, FNIA, FCIPMN, FIMC
Chairman, NIGCOMSAT Ltd.

Protocol
It is a pleasure for me to be part of this International Conference. The theme of the Conference is pertinent to our current reality and will provide an avenue to discuss the pressing issues around business and governance in the age of rapid technological change we are currently in. The digital age has brought about significant changes in the way we live and work. From the proliferation of the internet and social media, to the development of new technologies such as artificial intelligence, Big Data, Industry 4.0 and the Internet of Things. The digital revolution has had a profound impact on every aspect of lives.

In the realm of public and corporate management, the digital age has brought both opportunities and challenges. On one hand, digital technologies have the potential to improve efficiency, reduce costs, and increase transparency in government and business. On the other hand, they also present a number of challenges, including the need to adapt to new technologies, the risk of cyber-attacks, and the potential for job displacement.

In this international conference, I expect that we will explore the perspectives, challenges and prospects for sustainable transformation of public and corporate management in the digital age. We will examine the ways in which digital technologies are being used to improve management practices, as well as the challenges that need to be overcome in order to fully realize their potential. In the interim, I will set the tone by providing my perspectives on some of the key issues.

Sustainable transformation of public and corporate management refers to the process of making changes to the way that public and corporate organizations are managed in a way that is environmentally and socially responsible, and that promotes long-term suitability. It involve a wide range of actions, such as implementing policies and practices that reduce the organization's environmental impact, improving transparency and accountability, and investing in suitable technologies and practices. It can also involve making changes to the way that organizations are structured and managed, in order to better align with suitable principles and goals. The goal of sustainable transformation is to ensure that public and corporate organizations are able to continue to operate in a way that meets the needs of current and future generations, by a variety of factors, including changes in market conditions, shifts in customers demand, advances in technology, and shifts in societal values and expectations.

There are many contemporary issues that businesses may face when transforming, including:

- **Digital Transformation:** With the increasing reliance on technology, businesses need to ensure that they are able to adapt and incorporate digital tools and processes into their operations.
- **Agile Methodology:** Many businesses are adopting agile methodologies in order to be more flexible and responsive to changing market conditions.
- **Sustainability**: As consumers become more aware of environmental and social issues, businesses are under pressure to implement sustainable practices.

- **Talent Management:** Attracting and retaining top talent is a key concern for businesses undergoing transformation, this especially pertinent with the rise of the population of millennial in the workforce.
- **Customer Experience:** In a highly competitive market, businesses need to focus on delivering a high-quality customer experience in order to differentiate themselves form their competitors.
- **Data Privacy and Security:** As businesses collect and process more data, they need to ensure that they are protecting the privacy and security of their customers.
- **Globalization:** Many business are operating on a global scale, which requires them to navigate cultural differences and adapt to different market conditions.

One key perspective on the suitable transformation of public and corporate management in the digital age is the potential for increased efficiency and cost savings. With the use of digital technologies, governments and businesses can streamline processes, automate tasks, and improve decision-making. This can lead to significant cost savings and increased productivity. However, the adoption of digital technologies also presents a number of challenges. One major challenge is the need for employees to adapt to new technologies and learn new skills. This can be particularly difficult for older workers or those with limited digital literacy. Additionally, there is the risk of cyber-attacks and the need to ensure the security of sensitive data.

Cyber threats and data breaches can have serious consequences for business, including financial losses, damage to reputation, and loss of customer trust. In today's digital age, it is essential for business to protect their data and systems from cyber-attacks. This includes implementing strong password, regularly updating software and security protocols, and educating employees about cyber security best practices.

Cyber security is becoming a top agenda item in the Boards of Companies. It is important for the board of directors to be involved in cyber security. The board is responsible for overseeing the overall direction and performance of the organization, and this includes ensuring that appropriate measures are in place to protect the company's assets and data. The board should be aware of the risks and vulnerabilities facing the organization, as well as the steps that are being taken to mitigate those risks. In addition, the boards should be involved in setting cyber security policies and procedures, and ensuring that these are being followed by all employees. It is also important for the board to be informed of any cyber security incidents or breaches, so that they can take appropriate action to address the issue and protect the company's interests.

Another key challenge in the sustainable transformation of public and corporate management in the digital age is the potential for job displacement. As more task become automated, there is a risk that some jobs may become obsolete. This raises important questions about the future of work and the need to ensure that all workers have the skills and training necessary to successes in the digital economy. The 'Japa' phenomenon business are facing in the country further compounds this issue. In addition, as I mentioned earlier, with millennial becoming a large proportion of the workforce, business have to transform to accommodate them.

Millennial, also known as Generation Y, are those born between the early 1980s and the mid-19990s. They are poised to become the largest generation in the workforce. Millennial have had a significant impact on the way work is conducted and the expectations that employees have on their jobs. Some of the key ways in which millennial have impacted the workforce include:

- **Technology Use:** Millennial grew up with technology and are comfortable using it in their work. They expect to have access to the latest tools and technologies and may be more likely to embrace new technologies than older generation.
- **Work-life Balance:** Millennial place a higher value on work-life balance than previous generations and many prioritize this over salary or other traditional measures of job satisfaction.
- **Diversity and Inclusion:** Millennials are more likely to value diversity and inclusion in the workplace and may push for policies and practices that promote these values.
- **Collaboration and teamwork:** Millennials tend to prefer collaboration and teamwork over more traditional hierarchical structures. This has led to the adoption of more flexible and agile work models in some organizations.
- **Entrepreneurship:** Many Millennials are drawn to entrepreneurship and are more likely to start their own businesses or work as freelancers or contractors.

Despite these challenges, there are also significant prospects for the sustainable transformation of public and corporate management in the digital age. With the right policies and strategies in place, digital technologies can be used to create a more transparent, accountable, and sustainable system of governance and business.

In conclusion, the digital age presents both opportunities and challenges for the sustainable transformation of public and corporate management. By addressing the challenges and fully realizing the potential of digital technologies, we can create a more efficient, cost-effective and sustainable system of governance and business.

Thank you.

Keynote Address

Amb. Shuaibu Adamu Ahmed (Wazirin Ningi), *FCA, FCCA*
Executive Secretary/CEO Financial Reporting Council (FRC) of Nigeria

Protocol

Opening Statement

It gives me a great pleasure to be invited to present this keynote address today at the International Conference & Doctoral Colloquium of the Faculty of Management Sciences, Bayero University, Kano. I am also delighted that the University has decided to beam its searchlight on the most topical issues in the world today – *Sustainability, Transformation and Digitalization.* I must therefore commend the Faculty for the choice of this year's conference theme: *Sustainable Transformation of Public and Corporate Management in the Digital Age: Perspectives, Challenges and Prospects.*

Our work is really changing rapidly and the task of ensuring a sustainable economy the world over hinges on effective management of resources. The center of this change or transformation is Information and Communication Technology (ICT). Every aspect of the economy is now being driven by ICT. That "Digital" is now the focus of most countries cannot be overemphasized. To properly juxtapose some basic concepts in the theme of this conference for effective discussion, I have purposely identified: "Sustainable", "Transformation", "Digital Age" for close examination.

"**Sustainable**", according to Oxford Dictionary means "able to be maintained at a certain rate or level" or "to be upheld or defended". "**Transformation**" refers to "a marked change in form, nature, or appearance" or "a process by which one figure, expression, or function is converted into another one of similar value". While "**Digital Age**", according to Cambridge Dictionary, means "the present time, in which many things are done by computer and large amount of information are available, because of computer technology". These basic definitions have brought out some fundamental issues for discussion.

Human Development

As a practitioner not academician, I hope to not bother you much with definitions and theories, but to make attempt in highlighting the various aspects this digital age has had impact, and challenges thereabout. This I believe will provide the background to further your discussions at this Conference and challenge your doctoral students to conduct more research on sustainability, economic transformation, digitalization and digital economy among others, and how they can collectively impact positively on our lives in Nigeria, in particular.

We live in a momentous time as this generation is witnessing the contemporary "march of civilization" in which society and its elements – peoples and institutions – and environment are undergoing inexorable transformation. History shows that the world glided from the Stone Age to the Industrial Age, taking millennium during which almost the entire humanity lived prosaic lives concerned with the satisfaction of basic necessities. However, today, we are watching the sophisticated world hurting into the transformation or knowledge age riding a wildcat-ship that seems to have no captain.

Progress & Development

Let us take a moment to recall our history, the transformation from the 1st Industrial Revolution to the current 4th Industrial Revolution that we are witnessing today.

Industrial Revolution

Recall: Last Century ushered in tremendous global economic growth and development fuelled by the 3rd and 4th Industrial Revolutions:

- 1st Industrial Revolution – 1784 – Steam Engine, Mechanical Production Equipment;
- 2nd Industrial Revolution – 1870 – Division of Labor, Electric Power, Mass Production;
- 3rd Industrial Revolution – 1960s – Computers, Electronics, Internet, Automated Production;
- 4th Industrial Revolution – Recent – Artificial Intelligence, Cloud Computing, Big Data, Machine Learning, etc.

This 4th Industrial Revolution that we are witnessing today is about smart, connected machines and systems, gene sequencing, nano-technology, renewable energy and quantum computing. It is the fusion of these technologies and their interactions across the physical, digital and biological domains that make the 4th Industrial Revolution fundamentally different from the previous revolutions. The 4th Industrial Revolution is characterized by a much more ubiquitous and mobile internet, by smaller and more power sensors, Artificial Intelligence and Machine Learning.

The 4th Industrial Revolution Technologies include among others:

i. **Artificial Intelligence**: Computers that can think like humans. They can recognize complex patterns, process information, draw conclusions, and make recommendations. All focuses on 3 cognitive skills, namely learning processes, reasoning processes and self correction processes.
ii. **Block-chain**: system of recording information in a way that makes it difficult or impossible to change, hack or cheat the system. A block-chain is essentially a digital ledger of transactions that is duplicated and distributed across the entire network of computer systems on the block-chain. Each block in the chain contains a number of participants, and every time a new transaction occurs on the block-chain, a record of that transaction is added to every participant's ledger. The decentralized database managed by multiple participants is known as Distributed Ledger Technology (DLT).
iii. **Biotechnology**: Harnessing cellular and biomolecular processes to develop new technologies and products for a range of uses e.g. new energy sources, new pharmaceutical materials, and more efficient industrial manufacturing processes.
iv. **Robotics**: The design, manufacture, and use of robots for personal and commercial use. They are used in fields as wide-ranging as manufacturing, health and safety, etc.
v. **Internet-of-Things**: Everyday items, from medical wearable that monitors user's physical conditions, to cars and tracking devices inserted into parcel's connected to the internet and identifiable by other devices. It has many industrial applications e.g. farmer's putting IoT sensors into fields to monitor soil attributes and inform decisions such as when to fertilize.
vi. **3D-Printing**: Allows manufacturing businesses to print their own parts, with less tooling, at a lower cost, and faster than via traditional processes. Plus designs can be customized to ensure a perfect fit.

The Digital Age is transforming the way we do things by:

i. Empowering decisions that are not only faster, but more accurate, E.g. Google search predictions, e-mail spam filtering, Ali Baba Taobao, and Netfix's recommendation system etc;
ii. Improving at an accelerating rate (in terms of cost and performance) and supporting rapidly increasing productivity. E.g. Uber's use of mobile and GPS, JIO's transition from oil to mobile; Instagram's use of personal cameras, and 3-D printing etc.;
iii. Are coordinating transactions among users. This allows faster growth with less capital and fewer employees e.g. e-Mail, Baidu, and Bitcoin/blockchain etc.

Without doubt, the 4th Industrial Revolution Digital Age is transforming lives, societies and the global economy, and is changing the fundamental nature of work. These unprecedented transformations occasioned by these Digital Technologies have however come with tremendous pitfalls and shortcomings, which without doubt will affect sustainability, which raises concern for Sustainable Development. Sustainability questions in Nigeria, include poverty, insecurity, corruption and education, among others.

As I begin to end this Keynote Address, Mr. Chairman, let me pose these questions to participants here to further the discussions at this conference. How do we use the power of Digital technologies in a just way to improve, to better the lives of teeming Nigerians? How do we use Digital Technology to solve the pressing issues and challenges confronting Nigeria? Can we use or apply Digital technology to solve the new intractable **Insecurity** challenges that is gradually scuttling the freedom and liberty of Nigerians – Right to life; Right to free movement.

How do we use Digital Technology to tame **Corruption** in our country? Prosecution of corrupt offenders has literally failed. Can we use Digital technology to put Controls that would prevent fraud and corrupt practices from happening rather than waiting for until after the act? How do we bring **Basic Education** to the nearly 20 million Out-of-School Children in our country, majority of whom are in BUK's catchment area? How can we use Digital Technology to address the emerging problem of the hitherto unnoticed Climate Change (flooding, desertification) that is beginning to have a devastating effect on lives and livelihoods in our country?

All the 5 Challenges I posed above are differing evils; but they are all the common works of man. They reflect the imperfections of human justice, the inadequacy of human compassion, the defectiveness of our sensibility toward the sufferings of our fellows; they mark the limit of our ability to use knowledge for the well-being of our fellow human beings in this country. And this is the challenge I want to throw to you today as Academicians in this University and in this auditorium – to call upon your common qualities of conscience and indignation, a shared determination to wipe away the unnecessary sufferings of our fellow human beings in this country.

You must do this, not because it is economically advantageous, although it is; not because the laws of God command it, although they do; and not because people in other countries wish it so. We must do it for the single and fundamental reason that it is the right thing to do. And if you take up these challenges, it would be a world that you would be proud to have helped build.

Digital Technology in Financial Reporting & Application in the Public Sector
Mr. Chairman, I cannot end this keynote address without saying a few words on digitalization from the perspective of my core mandate – financial reporting and public sector which I believe have been greatly affected in this digital age by digital technology.

Accounting performs a critical function in any economy. The information it generates serves society to allowing for increases in the efficiency of resource allocation among competing interests. This function is performed in market-oriented economies, as well as in centrally planned economies. Accounting has played a significant role in the economic development of nations. The lack of well-developed accounting information will in most cases result in the misallocation and sub-optimization of available resources. The complexity of the economy may place greater or lower emphasis on different facets of accounting, but in no case is the need for information eliminated.

Therefore, one of the core qualitative characteristics of financial statements, timeliness, proves to be the foundation of digital economy. Information is relevant and much useful close to the time of the event and digital age brings such at a very good speed. Obviously, accounting information drawn up in compliance with the required standards which cover the entire economic fields and published timely can reach the entire world same day and therefore capable of driving the world economy.

The second aspect of the effect of the Digital Age on financial reporting is in relation to **Audit.** Those of us in the accounting profession will recall that in the recent past, audit used to take years with lots of documents to be verified and of course, many man hours involved resulting in delay in publishing financial statements. However, in this digital age, unbelievably, some entries with trillion-naira balance sheets are already publishing their year 2022 financial statements just second week after the end of the financial year. This is amazing transformation, which has not only been sustained, but in some cases been surpassed.

Forensic Audit too is also basically ICT driven. **Projections and Estimates** are also more accurately and efficiently done due to digital technology. **For Sustainability Reporting and Disclosure**, a year after the establishment of ISSB at COP 26, work is already at an advanced stage to establish a digital-ready global baseline for sustainability-related financial disclosures.

Digital Technology application has also gradually craved into Public Sector Management. In the Public Sector in Nigeria, the following after some of the Digital and e-Government Initiatives:-

i. GIFMIS (Government Integrated Financial Management Information System) IT based system for budget management and accounting being adopted. It is meant to improve the public expenditure management process and enhance accountability and transparency across MDA's. It helps government to planned the use of its financial resources more effectively and efficiency.
ii. IPPIS (Integrated Payroll & Personnel Information System): For payments of salaries and wages directly to Government employee's bank account with appropriate deductions and remittances of 3rd party payments, e.g. FIRS, BIRs, NHIS, PFAs, Union dues etc.
iii. FIRS Taxpayer e-services: Taxpro-max; ETCC
iv. CAC e-Portal

Conclusion

In concluding this keynote address, Mr. Chairman, I want to say that these are unprecedented times – there are perhaps no parallels in Nigeria's history. What can Bayero University, Kano do as an Institution, to get us out of this fix? In reply, many amongst you could easily say that there are no immediate solutions in sight, and even if there, it would be a waste of time as the politicians in places of authority would be unwilling to implement. For me, this is a defeatist attitude that I do not agree with. Looking at past antecedents of this great university, unlike the old, long established universities which are set in their ways, Bayero University, Kano is flexible enough to find radically new ways to meet the challenges of our time.

The most pressing need is for inter-disciplinary research and teaching that specifically focuses on sustainable and just ways of living. Universities such as the Bayero University, Kano are unique. There are few institutions in this country that have such a huge range of expertise on the same campus. Universities, such as this great institution, are very special in having the potential (currently greatly under-utilized) to harness together expert managers across diverse fields to converse productively, put their brains together, and cooperate for the survival and common good of humanity. Make no mistake about it. Our hope as Nigerians is with you, to make or to mar. Mr. Dean and all the Participants in this conference, it's up to you!!!

I wish you very fruitful and successful conference and doctoral colloquium. Thank you so much.

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Goodwill Message

Prof. Muhammad Bello Abubakar, MD/CEO Galaxy Backbone Limited

Protocol

2. Let me begin by congratulating the Leadership of the Faculty of Management Sciences and indeed the Management of Bayero University Kano, for hosting this 3rd International Conference and Doctoral Colloquium. There is no better time to deliberate on an important theme: **Sustainable Transformation of Public and Corporate Management in the Digital Age: Perspectives, Challenges and Prospects"** than now.

3. Digital Age symbolises the 4th Industrial Revolution where Digital innovation strives by way of embracing state-of-the-art digital technology to solve business problems, improve business practices and deliver on customer expectation.

4. Today, Artificial Intelligence, Augmented & Virtual Reality, Block Chain, IoT, Big Data, Cloud, etc, are changing the way we work by creating a new modern workplace through scaling and speeding up human capabilities, substituting labour with machines, and enabling new ways to access and supply labour.

5. The modern workplace now features countless innovative products and systems, designed to boost efficiency, increase workplace, enhance productivity and cooperative collaboration, provide safety and security, improve cost management and increase communication.

6. However, owing to the proliferation of digital innovation, intensive societal and ethical debates are raised around business models based on data surveillance and negative externalization, data sovereignty and privacy intrusion, quality of work and jobs, and market dominance versus regulation.

7. For sustainability, 4 x Ps + 1 x T + 3 x Helix (People, Planet, Process, Profit and Technology) with the Triple Helix Collaboration Model (Academia, Industry and Government) are embraced.

8. Consequent upon this, the FGN, through the FMoCDE, under the leadership of Professor Isa Ali Ibrahim Pantami, has been championing flagship projects, developing regulations, skilling and up skilling Nigerians as part of effort towards enabling DX for inclusive growth. The goal is to reduce poverty and empower millions of Nigerians, enhance the way government delivers services to the citizens, guaranty efficiency and effectiveness in government operations, provide ease in supplying critical assistance to the general public, provide safety, privacy and protection of all Nigerians and makes access to good and decent physiological needs feasible. The 20.32% contribution of ICT sector to the GDP in Q3, 2022 is again unprecedented.

9. FGN leverages the 8 x Pillars of National Digital Economy Policy and Strategy (NDEPS) 2020-2030 to achieve this feat:

i. Developmental Regulation – Start-up Act 2022, NDPR 2019, etc.
ii. Digital Literacy and Skills – Over 5m Nigerians will benefit from Digital Literacy training by Tech Giants (Microsoft, Cousera, CISCO, etc).

iii. Solid Infrastructure – Datacentre, Fibre Infrastructure 60,000km, 4G sites 37,000, Broadband coverage 78%, 5G rollout from 3 MNOs.
iv. Service Infrastructure – Digital Platforms (Cloud services).
v. Digital Services Development and Promotion – Fintech Proliferation.
vi. Soft Infrastructure – Awareness Creation on Data protection & Cyber Security.
vii. Digital Society and Emerging Technologies – National Centre for Artificial Intelligence and Robotics (NCAIR).
viii. Indigenous Content Development and Adoption – A Nigerian start-up (ShapShap) won the challenge of Mobility & Smart Innovation at GITEX GLOBAL 2022!

10. The FMoCDE is today well positioned to support, facilitate, and enable ease of acquisition, adoption and implementation of digital innovation by the public and private organizations, institution and small and medium enterprise so that the future of work will be one where the environment supports a healthy community and workforce, the resources are safe and secured, and the business earns enough revenue to remain functionally viable.

11. Thank you for listening and on behalf of all of us at Galaxy Backbone Limited, I wish you successful and productive deliberation in this conference and doctoral colloquium as we look forward to the communiqué and to collaborating with you in the implementation of the recommendations.

12. Congratulations and best wishes.

Lead Paper
Integration of Knowledge and the 4th Industrial Revolution

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1. Introduction

Greek and Roman knowledge decayed in the European Middle Ages when the church opposed science. The European crusaders who invaded the Near East interacted with Muslims and led to European discovery of the advanced Muslim civilization which triggered the European intellectual renaissance. The renaissance was followed by religious and thought reform. The empirical methodology learned from Muslims triggered the scientific revolution. This was followed by the agricultural revolution that led to increased food production and population increase.

2. The Industrial Revolution

2.1 The First Industrial Revolution 1760-1850: Manual to Machine Production

There was a transition in manufacturing from manual work to using machine in the UK, US, and Europe. There was an increase in production of iron and textiles. Steam power and water power were harnessed. Use of machine tools and the factory systems (bring workers and raw material in one place) led to increase of manufactured goods. Increase in population and global trade led to more prosperity. Standards of living rose for the owners of the factories but fell for the poorly-paid workers who moved from rural areas to urban slums. A middle class of professionals also emerged in the process.

2.2 The Second Industrial Revolution 1870-1914: Technology

This period witnessed increase in steel production, mass production (assembly lines), electric power, and advanced machinery. Communication and globalization were facilitated by the telegraph, railroads, roads, canals, bigger and faster ships. The Internal combustion engine was discovered and use of petroleum increased. Cities set up water supply and sewage systems. The capitalist system evolved fully making some very rich and others destitute. Unemployment increased because machines did all the unskilled work.

2.3 The Third Industrial Revolution (Digital Revolution/Information Revolution) 1950-2014

This period saw the transition from mechanical and analog technology to digital technology. Industrialization slowed down as the information/knowledge economy evolved. Data and communication technologies evolved very rapidly: computers, microprocessors, integrated circuit chips, cellular phones, internet, home computers, and supercomputers. Informational technology enabled growth of the electronic government, electronic business, smart phones, social media and social networking. Concerns grew about privacy, manipulation of information, and cyber- attacks. A new pre-history emerged because digital content is easy to create, change or delete but difficult to store over a long time because the machines and software keep changing and updating is not easy for the ordinary person.

2.4 The Fourth Industrial Revolution (Interconnectivity and Automation) 2015-Date

This era is seeing the emergence of many new developments that can be described as IoT (internet of things): artificial intelligence and cyber-physical systems, 3D printing, automation of production without human involvement (smart factory), and machine to machine communication (M2M). Metaverse and augmented social reality became a phenomenon. Advanced robots became wide-spread. The knowledge economy relying on intellectual capabilities replaced the traditional economy that relied on physical inputs and natural resources. New social problems arose: loss of privacy, easy discrimination, loss of jobs, and social media addiction.

3. Roles of IOK in 4IR: Restore the Natural State Using Qur'anic Concepts

The technological part of 4IR does not require input from transmitted knowledge ('*ilm naqli)* it is purely rational knowledge ('*ilm 'aqli)*. The contribution of '*ilm naqli* is in underlying guiding concepts and ethics that will guide the technology and stop it from causing grievous harm. We shall now review some of these concepts and there are many others we will not mention for lack of time. Muslims have the responsibility to disseminate these concepts to the rest of humanity in order to push back against harm to human civilization.

3.1 Purposiveness (غائية)

Each discovery leads to another automatically and every new innovation is accepted without questioning; nobody wants to be left behind. There is no overall vision of where we are going. Technology has become an automaton that cannot be stopped as long as it generates revenue for the investors. The Qur'anic term '*abath*' which signifies lack of purpose and mere play applies here. The Quran warned about '*abath*' (Surat Al Shuara: 128 and Surat Al Muminuun: 115).

3.2 Blind Following Taqliid (تقليد)

The social media and the commercial advertisements induce people to buy the latest gadgets and the latest applications without first asking the necessary question whether they need them, they just follow the crowd. The Qur'an condemned blind following (Surat Baqara: 170-171), blind obedience of the elites (Surat Ahzab: 67). It also warned that that the followed after seeing the punishment of the last day will deny the followers (Surat Baqara: 166-167).

3.3 The Lowly Concrete vs The Higher Conceptual Thinking

Enhanced imagery will encourage concrete thinking and discourage abstract thinking which is an essential part of *tafakkur/tadabbur al Qur'an*. Believers are supposed to think about Allah's creation (Surat Al Imran 190-191). Itikaaf and qiyam al layl have their impact because they decrease environmental sensory input to allow the mind to think of higher things. Concern with the concrete and imagery is reaching extremes in the 4th industrial revolution because people prefer virtual reality to the beauty of Allah's creation in humans, animals, plants and the earth.

3.4 Virtual vs Concrete Reality

Many spend time in virtual reality and ignore the concrete reality that is before their eyes. Non-believers asked for virtual evidence instead of concrete evidence of Allah's majesty before their eyes (Surat Baqara: 166-167). Banu Israil asked Musa to show them Allah before they could believe (Surat BaqaraL: 55). Non-believers challenged the prophet to bring angels coming down as a tribe (Surat al Isra: 92). The Prophet did not respond with miracles because Allah's creation in front of their eyes was enough as a miracle. The Prophet was but a human messenger (Surat al Isra: 93).

3.5 Pastime (لهو) vs Seriousness

Robots and other forms of technology perform jobs that humans used to perform creating a lot of free leisure time. This time should be spent in *ibadat* but is otherwise misused. The current culture emphasizes fun and pastime to waste time: games and all sorts of entertainment. The lowly life on earth is play and pastime but real life is that of the hereafter (Surat Ankabut:64).

3.6 Loss of Balance (توازن)

Humans these days are so engrossed in virtual reality that they have lost the natural balance that Allah enjoined for their life as individuals or as families. Balance is needed in dealing with wealth (Surat al Furqan:68). Balance is needed regarding the rights of the body and the family as is told in the story of Salman and Abudardau (Bukhari 1968). Emotional balance is needed. Artificial emotions of happiness and anger can be caused by the virtual reality with anxiety and depression being more common than elation and happiness.

3.7 Loss of Equilibrium (اعتدال)

We live a culture of extremes with loss of equilibrium. We are supposed to be a community of the middle (moderation) according (Surat Baqara: 143). We must seek the equilibrium of moderation between the earth and the hereafter, do good and do not do evil (Surat Qisas: 77).

3.8 Loss of Push Back or Action-reaction (تدافع)

Voices of protest against the current culture do not find a medium. The social and other media are so powerful and so over-whelming. There is no corrective mechanism of reaction/pushback against evil to save civilization (Surat Baqara: 25).

Conference Communiqué

Preamble

The Faculty of Management Sciences, Bayero University, Kano, Nigeria, organized the 3rd International Conference from 10 -12 January, 2023. The theme of the Conference is *Sustainable Transformation of Public & Corporate Management in the Digital Age: Pesrpectives, Challenges & Prospects.*

The opening ceremony was chaired by Arc. Yusuf Zubair Kazaure (Chairman, Nigerian Communications Satellite Limited (NIGCOMSAT)). The Chief Host, the Vice Chancellor Bayero University, Kano, Prof. Sagir Adamu Abbas, FMAN (ably represented by Professor Tijjani Hassan Darma, Provost, College of Natural and Pharmaceutical Sciences, BUK) delivered the Welcome Address. The Keynote Address was delivered by Amb. Shuaibu Adamu Ahmed (wazirin Ningi), FCA, FCCA (Executive Secretary/CEO, Financial Reporting Council (FRC) of Nigeria). Prof. Muhammed Bello Abubakar (MD/CEO Galaxy Backbone Ltd.), ably represented by Dr. Nasir Shinkafi (Chief, Information Security and Business Continuity Officer, Galaxy Backbone Ltd.) served as the Guest of Honour.

The lead paper was presented by Professor Omar Hassan Kasule (the Secretary General, International Institute for Islamic Thought (IIIT), United States of America). In attendance at the opening ceremony were Bayero University Senate members, Deans and Directors, as well as other members of the University community. Also in attendance were local and international scholars from various parts of the world. Others were the representatives of Jaiz Bank PLC, ANAN, ICAN and CIBN, among others. About 200 papers on various aspects of public and private sector management were presented at 28 parallel sessions. After thorough deliberations, the following observations and recommendations were drawn:

Observations

1. The present era of 4th Industrial Revolution brought about digital transformation through "digitalization" of processes, tasks and activities, leading to faster processing and enhancing easy access to data, allowing for greater analysis, faster information sharing and better informed decisions.
2. The digital age has brought about significant changes in the way we live and work. From the proliferation of the internet and social media, to the development of new technologies such as artificial intelligence, Big Data, Industry 4.0 and the Internet of Things, the digital revolution has had a profound impact on every aspect of lives.
3. In the realm of public and corporate management, the digital age has brought both opportunities and challenges. On one hand, digital technologies have the potential to improve efficiency, reduce costs, and increase transparency in government and business. On the other hand, they also present a number of challenges, including the need to adapt to new technologies, the risk of cyber-attacks, and the risks for job displacement.
4. Digital transformation of public and corporate management is crucial in achieving sustainable development, particularly in the areas of poverty reduction, employment generation, wealth creation, pollution control, mitigating climate change, enhanced performance and improving welfare and general standard of living.
5. As more task become automated, there is a risk that some jobs may become obsolete. This raises important questions about the future of work and the need to ensure that all workers have the skills

and training necessary to successes in the digital economy. The 'Japa' phenomenon business are facing in the country further compounds this issue.

6. Sustainable development continued to assume increasing recognition across the globe among policy makers, researchers, development agencies and supra national organizations including the United Nations (UN) which came up with 17 Sustainable Development Goals (SDGs) to guide the pursuit of development in various aspects of life.
7. The digital age presents both opportunities and challenges for the sustainable transformation of public and corporate management. By addressing the challenges and fully realizing the potential of digital technologies, we can create a more efficient, cost-effective and sustainable system of governance and business.
8. With the use of digital technologies, governments and businesses can streamline processes, automate tasks, and improve decision-making, which can lead to significant cost savings and increased productivity and performance.
9. With the right policies and strategies in place, digital technologies can be used to create a more transparent, accountable, and sustainable system of governance and business, solve business problems, improve business practices and deliver on customer expectation.
10. Artificial Intelligence, Augmented & Virtual Reality, Block Chain, IoT, Big Data, Cloud, etc, are changing the way we work by creating a new modern workplace through scaling and speeding up human capabilities, substituting labour with machines, and enabling new ways to access and supply labour.
11. The Millennial, otherwise known as Generation Y, born between the early 1980s and the mid-19990s, who are poised to become the largest generation in the workforce, place a higher value on work-life balance than previous generations and many prioritize this (including diversity and inclusion, collaboration and teamwork and entrepreneurship) over salary or other traditional measures of job satisfaction.
12. Achieving sustainability requires focus on People, Planet, Process, Profit and Technology, as well as effective collaboration between the Academia, Industry and Government.

Recommendations

1. Public entities and corporate organizations need to integrate *sustainability* strategies across multiple dimensions of their *digital transformation* roadmaps, including customer experience, operational processes and business models, to achieve higher productivity and better performance.
2. Public sector organizations can transform and streamline their services, drive better value from public funds and provide improved public services, by combining innovative digital technologies with effective resource management.
3. Sustainable transformation of public and corporate management requires making changes to the way that public and corporate organizations are managed in a way that is environmentally and socially responsible, and that promotes long-term growth and survival of the organization.
4. Public and corporate governance should adopt sustainable transformation to ensure that they are able to continue to operate in a way that meets the needs of current and future generations, by a variety of factors, including changes in market conditions, shifts in customers demand, advances in technology, and shifts in societal values and expectations.
5. Attracting and retaining top talent, delivering a high-quality customer experience, protecting the privacy and security customers' information, and navigating cultural differences should be the key concern for businesses undergoing transformation, which is especially pertinent with the rise of the

population of millennial in the workforce. As the millennial are becoming a large proportion of the workforce, business have to transform to accommodate them.

6. Public and private entities need to put the right policies and strategies in place, and use digital technologies to create a more transparent, accountable, and sustainable system of governance and business, that would promote sustainable development.
7. Business entities and public organization need to protect their data and systems from cyber-attacks though implementing strong password, regularly updating software and security protocols, and educating employees about cyber security best practices. This is with a view to forestall cyber threats and data breaches which can have serious consequences for business, including financial losses, damage to reputation, and loss of customer trust.
8. The board is responsible for overseeing the overall direction and performance of the organization, and this includes ensuring that appropriate measures are in place to protect the company's assets and data. The board should be aware of the risks and vulnerabilities facing the organization, as well as the steps that are being taken to mitigate those risks.
9. Public and private organizations should ensure implementation of policies and practices that reduce their organization's environmental impact, improving transparency and accountability, making changes to the way that organizations are structured and managed, adapt and incorporate digital tools and processes into their operations, for sustainable economic growth and development.
10. The public sector need to understand how to deploy digital technology to checkmate insecurity, corruption, efficient resource utilization, and provision of basic education to the teaming 20 million out of school children in the country.
11. Public and private sector organizations need to ensure the creation of modern workplace environment, designed to boost efficiency, increase conduciveness, enhance productivity, cooperative collaboration, provide safety and security, improve cost management and increase communication.
12. Public sector entities need to embrace digital transformation to reduce poverty and empower millions of Nigerians, enhance the way government delivers services to the citizens, guaranty efficiency and effectiveness in government operations, provide ease in supplying critical assistance to the general public, provide safety, privacy and protection of all Nigerians and makes access to good and decent physiological needs feasible.

Conclusion

The Conference acknowledges the contributions of all participants whose support have made it a huge success. The Conference is particularly grateful to the Vice Chancellor, Bayero University, Kano, Federal Inland Revenue Service (FIRS), the Nigeria Deposit Insurance Corporation (NDIC), the Nigerian Communications Commission (NCC), the Association of National Accountants of Nigeria (ANAN), Jaiz Bank Plc, Dala Foods Nigeria Limited, lead paper presenter, keynote speaker, guests of honour, chairmen of paper sessions, discussants, rapporteurs, paper presenters, alumni, colleagues, associates, members of the press, the Dean, Dangote Business School (DBS) and the Director, Centre for Dryland Agriculture (CDA) who provided the facilities for the plenary and paper sessions.

SECTION ONE

ROLE OF ACCOUNTING IN SUSTAINABLE DIGITAL TRANSFORMATION

Anomaly in the Pricing of Earnings, Accrual and Cash-flow Persistence: Evidence from Nigerian Stock Exchange

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Abstract
This study investigates the persistence of accounting earnings, cash flow and accruals, as well as the pricing of the respective persistence of these numbers by the NSE participants. The study observed the lack of evidence from Nigeria in this line of research, as well as the controversy that still exist in the ongoing debate. Data was sourced from Thompson Reuter's database for nine years (2010-2018) periods using all available NSE listing as population. Varying samples were obtained from the database based on certain criteria necessitated by the study. A final sub-sample of fifty firms from non-financial, non-mining or construction firms was used in estimation of a non-linear system equation. Further technique of equality of coefficient test was applied in testing the (mis)pricing of earnings and its components. Of the six hypotheses raised by the study, the study rejected four. We conclude that indeed, earnings, cash flow and accruals have significant persistence and that NSE participants correctly price earnings and cash flow but misprice accruals. Thus the study contributed in documenting evidence of earnings fixation hypothesis in Nigeria. We recommend for investors to be gauging the proportion of cash flow in relation to accruals in earnings figures and then taking long position on high cash flow stocks and short position on high accrual firms, when making investment decisions.

Key words: *Earnings, Cash flow, Accruals, Persistence, Mispricing.*

1.0 Introduction

In this paper we present a modest effort in contributing to the debate on the pricing of the differential persistence of earnings, cash flow and accruals, thereby documenting the first ever evidence from Nigeria to the best of our knowledge. As forwarded in the ground breaking study of Sloan (1996), due to its non-permanence nature, the persistence of accruals tend to be less than the persistence of cash flow. It follows therefore that, focusing on the lump-sum earnings figure when pricing it by the market, tend to result in the mispricing of the earning figures. Sloan (1996) investigated this – the differential persistence of cash flow and accruals in relation to market pricing of the two. He discovered that, relative to their respective values in terms of quality (i.e. persistence), indeed the market correctly prices earnings but misprice cash flow and accruals. This tendency is hence continued to be viewed as anomalous and it occurs due to what the literature called "Earnings Fixation". This is to say, investors focus on the lump-sum earning figures when pricing it, and ignore the differential persistence of its components.

Debate on whether accrual/cash flow components of earnings is mispriced is almost conclusive, with a large body of evidence pouring from across different capital markets of the world having differently perceived levels of development. After its discovery by Sloan (1996) from North American continent, confirmatory evidence was documented from continents of Europe (example: Kaserer & Klinger, 2008, in Germany; and Chan, et al 2006 in United Kingdom; Australia: Clinch, et al 2012; Asia: Sehgal, et al 2012, from India and Wu, et al 2019, in China; Middle-east: Kaya, 2022, in Istanbul, Arabzadeh, et al., 2018 from Iran; and others).

Despite the wide confirmation (with little contradiction such as in the work of Koerniadi & Tourani-Rad, 2005, from New-Zealand), none of the evidence came from any of the African countries to the best of our knowledge. Nigerian Capital market participants would apparently need distinct research outputs to serve as input applicable to its domain, as sovereign entity having distinct fiscal and monetary policies and market regulations. Anything short of that will increase the chance of error in decisions and in turns, undesirable outcomes. While following the normal methodological design of first confirming whether differential persistence into the future earnings exist between cash flow and accrual components of current earnings, we further seek answers to the questions of whether earnings, accruals and cash flow are actually mispriced in Nigeria.

It is pertinent to note here that since efficient market hypothesis requires that abnormal returns (returns above market average returns) cannot be obtained in semi-strong market by trading on fundamental information, it is therefore expected that the accrual as fundamental information is correctly priced (not mispriced), if the market is indeed efficient, semi-strong wise. Any evidence of incorrect pricing will infer that arbitrage opportunity exist. Using our findings, when continuously applied, is expected to take the Nigerian Stock Market (NSE) on a learning course and consequently improve its efficiency with which it digest cash flow and accrual information. This therefore greatly motivate the conduct of this study.
As reported in Ang et al. (2011), market efficiency tends to improve with application of knowledge in trading. Also, Green, et al (2011) reported that sophisticated investors in United States, were observed to be applying the output of researches on accrual mispricing in their trading and this has contributed to perceived decay of the mispricing - arbitraged away gradually in United States. The remaining paper is subdivided into the literature as the second section (covering a review of related studies) and the third section titled methodology, which presents the study's designs methods and techniques. Before concluding in section 5, results are presented and discussed, in section 4.

2.0 Literature

One way by which the extant literature gauge the quality of accounting earnings is through its persistence – i.e. the extent to which current earnings persist into the future earnings. A highly persistent earning figures is regarded as of high quality, and vice versa. Literature further discovered the differential persistence of the earnings components – the cash flow and accruals. Studies on the persistence of earnings, accruals and cash flow are still as topical as they are consistent, to a large extent. Among the recent ones for instance, is the study of Pimentel (2022) using data from Brazil in which the study concludes that current accounting earning has a positive and significant persistence into the future earnings and that both cash flow and accruals significantly persist into the future earnings in positive manner, for all the study's subsamples. In addition, the study also documented that the persistence of cash flow is significantly different than the persistence of accruals, with the cash flow having more persistence. Furthermore, the explanatory power of earnings on future unexpected returns, is positive and significant.

Similar such studies exist. Example include the studies of Lewellen and Resutek (2019); Ebaid (2011) who documented that the Earnings' persistence of Egyptian firms is influenced more by cash flow than accruals; Francis and Smith (2005) who pointed at the inclusion of non-current period transaction lower accrual persistence over cash flow as the cause of bias in accrual measurement; the seminal work of Sloan (1996) where it all started; and host of others.

These studies not only documented the significance in the persistence of the individual components of earnings but also the significance in the differential persistence of these component (with cash flow being more persistent than accruals), The findings are almost consistent - except for few contrary findings such as the findings of Kimouche (2021), in which he documented that though earnings and its components have significant persistence – with cash flow having higher response coefficient, the differential persistence between cash flow and accrual is not significant. Other studies that factored in other variables and certain segregations too found conflicting findings. For instance, the study of Tapia and Fernández (2011) on the persistence of earnings and its components using European data, revealed that the behavioural pattern of persistence in private firms tend to be different from firms that are publicly quoted.

With the generally symmetrical tandem in theory, logic and evidence regarding the differential persistence of cash flow and accruals as earnings' components; their respective pricing by the market therefore ought to take cue therefrom, by pricing the cash flow and accruals in accordance with their respective values – as reflected in their respective extent of persistence. This is to say, since cash flow is documented to be of higher quality (of more persistence) than accruals, the market therefore ought to place higher value in pricing earnings that is comprised of higher cash flow component and lower accrual component, than earnings figure which is majorly comprised of accrual and lesser proportion of cash flow.

This argument is as old as empiricism in accounting. As documented far back by Ball and Brown (1968), accounting numbers have connection with the market. Subsequent theoretical explanations forwarded in valuation theory and efficient market hypothesis, also corroborated this notion. As advocated in Fama (1970, p 383):"a market in which prices at any time "fully reflect" available information is called "efficient." It follows therefore, at all times, stock prices/returns must reflect all available information (including the magnitude of accruals and cash flows) contained in the earnings. For a semi-strong market thus, accrual and cash flow are publicly available information and they ought to be weighted differently while pricing earnings figures.

In contrast to this notion of efficient market hypothesis, evidence of incorrect pricing of accruals and cash flow were documented from all over the globe. Starting with Sloan (1996) using data from United States of America, he probed whether stock prices are a reflection of information about future earnings contained in the accrual and cash flow components of current earnings. He started by investigating whether the persistence of current earnings into the future earnings depends on the proportion of cash flow and accruals contained in the current earning – i.e. whether the persistence of cash flow into the future earnings is stronger than the persistence of accruals.

Having discovered that accrual has lower persistence (quicker mean reversion) than cash flow, Sloan (1996) reasoned that current earnings that is mainly comprising of more cash than accruals should be priced higher than earnings with more accruals and lesser cash flow components. Instead however, Sloan (1996) discovered that market participant erroneously overestimated the intrinsic value of the accruals component of annual earnings and underestimated the value of the cash flow components. On that note, Sloan (1996) derived the famous “Earnings Fixation” hypothesis by concluding that ‘stock prices act as if investors "fixate" on earnings, failing to mind the composition of accruals and cash flow contained in the earnings.’ This means that the market fails to properly price the accruals and cash flow components of earnings, thereby. Based on the rational pricing hypothesis, this is anomalous. Subsequent studies that confirmed the findings of Sloan (1996) include: Collins and Hribar (2000), who documented that indeed the mispricing is real and totally distinct from post-earnings drift anomaly; Vargus (2002); Desai, et al (2004); Cheng and Thomas (2006); Gu and Jain (2006); Livnat and Lopez-Espinosa (2008); Khan (2008); Hirshleifer, et al (2012); Park, et al (2018); and of recent is the study of Simlai (2021) whose findings also support the findings of Sloan (1996), that accrual is indeed mispriced.

The foregoing studies all came from United States. Other studies from other regions too exist. From korea, Ma and Yo (2021) concluded from the perspective of sustainable management activities that security market participants in Korea tend to correctly price the persistence of earnings. Koerniadi and Tourani-Rad (2005) documented the first ever New-Zealand's evidence. The German’s body of evidence were documented by Adamek and Kaserer (2006) as well as Kaserer and Klinger (2008). Adamek and Kaserer (2006) and also Kaserer and Klinger (2008) on the other hand concluded that accrual mispricing exists in Germany. As forwarded in Muresan (2014), the findings of Adamek and Kaserer (2006) seems contestably controversial since Pincus, et al (2007) conclusion that accruals anomaly occurs only in common law countries and German is a code law country. Not all evidence confirmed the existence of accrual mispricing. Koerniadi and Tourani-Rad (2005) documented using data from New Zealand stock market for the period of 1987 to 2003, that there is insignificant evidence of accrual mispricing in New-Zealand. They however discovered evidence of cash flow mispricing.

The finding of Chan, et al (2006), confirming the existence of accrual mispricing in the United Kingdom (UK), strengthened the U.S.A’s evidence. This is obviously so because aside the fact that London Stock Exchange (LSE) is the second largest capital market, the behaviors of analysts and investors in the UK’s exchange resembles that of the US. The findings from Chan, et al (2006) would hence cast out any doubt on the body of evidence on accrual mispricing documented in the US. Using data from India, Sehgal, et al (2012) documented that while correctly pricing earnings, Indian investors misprice both accruals and cash flow. Surprisingly however, the findings came in reverse order – investors tend to underprice accruals and over price cash flow. Another recent study from outside U.S. was conducted by Kaya (2022) using data from Turkey. The study applied Fama and French five factor model and a Mishkin test. While discovering that accounting earnings is highly persistent, the study also documented that the Turkish market does not correctly price the persistence of cash flow and accrual.

In view of the foregoing, it can be evident how topical is the issue of cash flow and accrual pricing. The lacuna in extant literature as regards to Nigerian evidence, is also observable. This is aside the controversy that the review illuminated, pertinent to lack of consistency in the body of evidence as to whether cash flow and accrual is actually generally mispriced – as the New Zealand evidence portrayed. Resulting from the review, this study raised the following hypotheses:

H01: Current accounting earning does not significantly persist into the future accounting earning
H02: NSE participants do not significantly misprice reported earnings
H03: Current cash flow does not significantly persist into the future cash flow
H04: NSE participants do not significantly misprice cash flow component of the reported earnings
H05: Current accrual does not significantly persist into the future accrual
H06: NSE participants do not significantly misprice accrual component of the reported earnings

3.0 Methodology

This study adopts a correlational research design as applied within the ambit of descriptive researches. The design seems appropriate inasmuch as the study aimed at investigating the extent to which future earning is affected by current earnings and its components, as well as further investigating whether the market pricing/valuation of these extents (i.e. the persistence) are appropriately commensurate. The population of the study consist of all active listing of NSE at any given year over the study period. This means that the population varies year in year out, depending on the total listing. Based on the nature of the study's design, we require a main sample and a sub-sample. To maximise observations, we adopted all active listed firms having requisite observations for market capitalisation and returns to form part of the main sample.

As for the sub-sample, the study's methodological approaches dictates which entity forms part of it. It is important for the sub-sample membership to be from the main sample owing to the need to use the main sample in forming size-adjusted reference portfolio returns based on quartiles. Data consistency also played a role since some of the measurements are forward or backward looking, requiring futuristic or lagged data for current measure. The accrual generation process for certain kinds of firms, especially the financial service industry differs from majority of the firms operating in the market. The study thus excluded such minority firms as financial services, oil and gas, and construction and mining. This criteria lead us to arrive at 50 firms as the final sub-sample for applying the study's main technique of hypotheses testing. The study used 2010 to 2018 as the main sampling period. Owing to the forward/backward looking measurement approaches of some of the study's variables as explained above, the subsample period coverage is from 2011 to 2018. A summary of population, sampling and periods' coverage are depicted in Table 1:

Table 1: Population/Sample/Sub-Sample/Period

Year	2010	2011	2012	2013	2014	2015	2016	2017	2018
Population	179	181	181	183	186	192	196	199	200
Main Sample		102	107	108	106	107	105	105	101
Sub-sample	50	50	50	50	50	50	50	50	50

Source: Analysis of Thompson Reuters Database by the authors

3.1 Technique of Data Analyses

A non-linear system equation was applied in testing the pricing of earnings, cash flow and accruals. The technique was adapted by Sloan (1996) from a test of market rationality framework propounded by Mishkin (1983), using intrinsic values of accounting variables as matches for capital market values. Hinging on capital market efficiency, the test starts with the basic rationale that abnormal returns at any given time subject to the publicly available information, are expected to be zero:

$$\mathbf{E(R_{t+1} - r_{t+1}|\Phi_t) = 0} \quad (1)$$

Where:

$\mathbf{\Phi_t}$ = a given set of information available to the market at the end of time t,
$\mathbf{E(..|\Phi_t)}$ = the objective expectation conditional on information at time t
$\mathbf{R_{t+1}}$ = the actual return to holding a security during time t+l, and
$\mathbf{r_{t+1}}$ = the market's subjective expectation of the normal return (i.e. expected returns) for time t+l

The above model simply implies that the difference between expected stock returns for the future, based on objective assessment of publicly available information at current period and the actual returns at future period, should be zero, if the market is efficient. In other words, investors cannot earn abnormal returns at a given future period using a given set of publicly available information at present period. The set of publicly available information in the case of this study are the accounting earnings, cash flows and accruals.

The model in (1) above therefore represents an efficient market condition. The rational expectations of returns (subject to available information) here should be the actual return. Only changes in the said available information can hence be correlated with changes in the returns. To rationally price the future returns therefore, a future forecast of relevant pricing variable should to be made using current information on the relevant pricing variable. This is depicted by Sloan (1996) in the following rational pricing equation:

$$\mathbf{E(R_{t+1} - r_{t+1}|\Phi_t) = \beta(X_{t+1} - X^e_{t+1}) - \varepsilon_{t+1}} \quad \mathbf{(2)}$$

where

$\boldsymbol{\varepsilon_{t+1}}$ = a disturbance with the property that $E(\varepsilon_{t+1}|\Phi_t) = 0$
$\mathbf{X_{t+1}}$ = an informationally relevant variable for the pricing of the security during period t,
$\mathbf{X^e_{t+1}}$ = the rational forecast of X_{t+1} at time t {the forecasted value of X_{t+1} at period t given the available information during the forecast period - i.e. $E(X_{t+1}|\Phi_t)$}
$\boldsymbol{\beta}$ = a coefficient serving as valuation multiplier

As further demonstrated by Sloan (1996), given the rational pricing equation above, since the value of X_{t+1} is expected from the forecast (i.e. from X^e_{t+1}), then, only an unexpected change in the X_{t+1} can be correlated with $(R_{t+1} - r_{t+1}|\Phi_t)$. In other words, the correctly anticipated forecast of X as a value relevant variable for pricing the returns, the forecasted X should give correct value (price/returns) to the security. If a portion of the value of X turns out to be unexpected, then a portion of returns too should be unexpected (abnormal). In this study, the X here as a value relevant variable is represented by earnings and β is the coefficient measuring the explanatory effect of earnings to the stock returns. Several prior studies such as Sloan (1996), Cupertino, et al (2012) and Moienadin and Tabatabaenasab (2014), have documented the usefulness of current earnings in forecasting future earnings- current earnings persist into future earnings. Also, as far back as 1968, Ball and Brown documented the efficacy of earnings, as a value relevant information, in the pricing. Since earnings is a value relevant variable in projecting stock returns, and current earnings is useful in forecasting future earnings, It is cogent to expect that the difference between future earnings on one hand and the portion of the current earnings that explain the future earning plus any forecast error of the future earnings by the current earning on the other hand, to be zero. This is expressed as:

$$\mathbf{E_{t+1} - \alpha_0 - \alpha_1 E_t + \varepsilon_{t+1} = 0} \quad (3)$$

Where E = Earnings. The rest are as defined earlier.

In other words, rationally expected earnings equals to actual earnings. This is to say:

$$\mathbf{E_{t+1} = \alpha_0 + \alpha_1 E_t + \varepsilon_{t+1}} \quad (4)$$

Recall the rational expectation hypothesis as depicted in equation (1) and (2). Substituting X with E (earnings) in equation (2), i.e. inserting equation (3) in (2), we have the following:

$$\mathbf{E(R_{t+1} - r_{t+1}|\Phi_t) = \beta(E_{t+1} - \alpha_0 - \alpha_1^* E_t) + \varepsilon_{t+1}} \quad (5)$$

$\alpha_1^* E_t$ = estimated coefficient of earnings t in equation (4), multiplied by earnings at the current period t. That is the portion of current earnings that explains future earnings.

The above model is regarded as the rational pricing model (valuation model) since it prices earnings based on rational expectation of future earnings given the current earnings, as well as the rational expectation of future returns given the rationally expected future earnings. In testing the market rationality (correct pricing of earnings), a non-linear system equations is to be estimated, using the combination of forecasting equation (equation 4) and the rational expectation equation. This is presented in equation (6) below:

$$\mathbf{E_{t+1} = \alpha_0 + \alpha_1 E_t + \varepsilon_{t+1}} \quad (6a)$$

$$\mathbf{(R_{t+1} - r_{t+1}|\Phi_t) = \beta(E_{t+1} - \alpha_0 - \alpha_1^* E_t) + \varepsilon_{t+1}} \quad (6b)$$

Where: $\mathbf{(R_{t+1} - r_{t+1}|\Phi_t)}$ = Abnormal returns subject to available information (which in this case is the reported earnings).

The above equations (6a and 6b) was used in testing hypothesis H01 using the coefficient of earning persistence (in forecasting equation - 6a), and H02 by comparing the magnitude of the coefficient of earnings (α_1) in the forecasting equation with the coefficient of earnings (α_1^*) in the rational pricing equation. If the market prices earnings correctly, then the two coefficients must be statistically equal.
Breaking the earnings into its two broad components of cash earnings and accrued earnings, we have the same non-linear system equations expanded as follows:

$$\mathbf{E_{t+1} = \alpha_0 + \alpha_1 CFO_t + \alpha_2 TAcc_t + \varepsilon_{t+1}} \quad (7a)$$

$$\mathbf{(R_{t+1} - r_{t+1}|\Phi_t) = \beta(E_{t+1} - \alpha_0 - \alpha_1^* CFO_t - \alpha_2^* Tacc_t) + \varepsilon_{t+1}} \quad (7b)$$

Where:

CFO = Cash component of earnings, and

Tacc = Accrual component of earnings.

α_1^* and α_2^* = Factor loadings of cash flow and accruals in equation (7a)

In equations (7a) and (7b) above, the market efficiency imposes dual constraints for coefficient of cash flow and the coefficient of accruals from the forecasting equation to be equal to the coefficient of cash flow and that of accruals from the valuation equation (rational pricing equation) to be equal- i.e. $\alpha_1 = \alpha_1^*$ and $\alpha_2 = \alpha_2^*$. Using the output of the equation to test the coefficients' equality, hypothesis H04 and H06 were tested. Hypotheses H03 and H05 were tested using the cash flow persistence and accrual persistence coefficient from the forecasting equation –i.e. (7a)

3.2 Variable Measurements

Table 2: Variables Measurements

S/No	Variable/Acronym/Source	Measurement
1	Earnings = E (Sloan, 1996)	E = Earnings before interest, tax and extra-ordinary items
2	Accruals = Tacc Dechow et al (1995).	$Tacc_t = (\Delta CA_t - \Delta CL_t - \Delta Cash_t + \Delta STD_t - Dep_t)/(TA_{t-1})$ Where: ACCR = Total accruals; ΔCA = Change in current assets; ΔCL = Change in current liabilities; ΔCash = Change in cash and cash equivalents; ΔSTD = Change in debt included in current liabilities; Dep = Depreciation and amortization expense; and TA = Total Assets.
3	Cash flow = CFO (Sloan, 1996)	CFO = Earnings – Accruals
4	Stock Returns = RI, measured as continuous rate of returns, extracted directly from Thompson Reuters database. Harvey (1994) argues that the continuous rate of returns is better measure of returns.	Where: = return index on day t; = return index on previous day; = price index on day t; = price index on previous day; = dividend yield % on day t; N = number of working days in the year (taken to be 260)
5	Abnormal Returns { $E(R_{t+1} - r_{t+1} \vert \Phi_t)$} Kothari and Warner (2000)	$E(R_{t+1} - r_{t+1} \vert \Phi_t) = BHR_{it} - BHR_{pi}$ Where: $E(R_{t+1} - r_{t+1} \vert \Phi_t)$ = Annual Buy-and-hold abnormal returns for study firm I; $BHR_{i,t}$ = Return of study firm i at year t BHR_{pi} = Return on a matched reference portfolio in which firm i belong to in year t

Source: Authors' Literature survey

3.2 The Buy-and-Hold Abnormal Returns (BHAR)

Using this approach, a reference portfolio based on any given characteristics are usually formulated and study firms are then identified with a given reference portfolio returns as their expected returns (Brooks, 2013). In this study, size-adjusted- i.e. size-matched returns were formulated at the beginning of a given calendar year, to avoid what Barber, et al (1999) tagged as new listing bias, using all available firms participating in the market. These firms were divided into quartiles based on their sizes (market capitalisation) - resulting to 4 groups. This means that portfolio membership was determined at the beginning of each calendar year.

Annual buy-and-hold portfolio returns (BHR) from these reference portfolios were computed as the average of the buy and hold returns of all the firms in a given portfolio (1 to 4). Each of the sample firms was first identified with a given reference portfolio based on its size. The annual BHR of such reference portfolio is then used as the expected returns of the firm. The firm's actual annual BHR minus the size-matched reference portfolio's annual BHR gives the firm's annual buy and hold abnormal returns –the BHAR (Sloan, 1996; Kothari and Warner, 2000; Mehdi, 2014 and others).

4.0 Results

This section presents the results of data analysed by the study. Descriptive statistics are presented and analysed first. Following it is the hypotheses test results.

4.1 Descriptive statistics

Table 3: Descriptive Statistics (Sub-Sample)

	E_t	**CFO_t**	**Taccr_t**	**R**	**BHAR**
Mean	0.090	0.133	-0.024	1.840	0.379
Std. Deviation	0.139	0.217	0.171	2.228	1.868
Minimum	-0.432	-0.703	-0.420	0.050	-2.610
Maximum	0.793	0.756	0.712	20.990	15.456

Portfolio Statistics

Portfolio		**1**	**2**	**3**	**4**	**Total**
Mean	Return	0.845	1.101	1.619	2.604	1.54
	Mkt Cap. (000)	1,179,806	3,560,884	18,878,884	333,994,850	89,918,694
Std Deviation	Return	0.699	0.823	1.670	2.670	1.79
	Mkt Cap.	568626	1144367	12660006	562841874	315652391
Minimum	Return	0.0497	0.0586	0.0711	0.104	0.0497
	Mkt Cap.	17,554	1680000	4364902	27792408	17554
Maximum	Return	3.94	4.54	11.1	21	21
	Mkt Cap.	2,369,046	6691369	58163652	3731700810	3731700810
Observation		**214**	**209**	**207**	**212**	**842**

Source: Author's computation using STATA-13

Except for returns (ret) and abnormal returns (F_AR) every other variable is scaled by lagged total assets. From the statistics in Table 3, the average earnings (E_t) of the 367 firm year observations stands at 9% of the firms' lagged total assets. This ranges between -43.2% and 79.3%. In other words, both losses and positive earnings were reported for some firms' years' observations. At least one firm year observation reported a loss of 43.2% of its lagged total assets and at least another firm year reported positive earnings of 79.3% of its lagged total assets, over the 8 years period.

The average cash flow (CFO) for the firms over the study period, standing at 13.3% of lagged total assets surpasses the average E_t for the same period. This is not surprising considering the staggering amount of fixed assets (averaged at 50.8% of the firms' previous year's total assets), suggestive of high amount of depreciation figures. Depreciation is normally added back in cash flow computations, whereas it is subtracted in the earnings computation. In addition, the differences existing in cash accounting (for CFO) and accrual accounting (for E_t), could also be a possible reason for the huge differences. The minimum (-77.3%) values of CFO is also extremely lower than its corresponding earnings statistics. The study firms however recorded a lower maximum value of CFO (75.6%) compared to the E_t (79.3%).

Over the period, the firms under study recorded a negative value of accrued earnings (Accr_t), amounting to 2.4% of the lagged total assets. This could be a precursor to the possibility of negative earnings management using accruals. The minimum and maximum values of Accr_t are -42.0% and 71.2% respectively. On a general note, all the study firms have generated positive returns over the 8 year study period, assuming buy-and-hold strategy. This is true to both the actual returns (ret averaged at 184.0% of the amount invested) and the returns above portfolio returns (BHAR averaged at 37.90% of the amount invested). The reflected indices of share performance of the study firms however is not the case for most firms, as the figures are evidently accompanied by wide dispersion between the minimum values (5% and -261%) and the maximum values (2099%0 and 1546%), of both the R and the BHAR. Further, the disparity is confirmed by the serious noises inherent in the two distributions, through standard deviations of 2.228and 1.868, respectively for both R and BHAR. Generally, the standard deviation figures for all the variables are not zero or close to zero, relative to the measurement scale (which is decimal fractions). The respective mean values seem to be biased by "outliers or the presence of extreme observations.

Although there is the perception that applying parametric tools such as regression, often produce results that could be spurious, when data used for the analysis are not normally distributed, Lumley, Diehr, Emerson and Chen (2002) emphasized that, normality of variables are not conditions for regression tools. Gujarati (2004: 67) also pointed on the classical linear regression assumption of normality to be referring to the normality of the error term. The study still took precaution by transforming the data sets before estimating the required models. This is owing to the fact that the study is dealing with different subjects (firms) of different sizes and as it is, heteroskedasticity issue is a data issue. Where serious parity exist in a data set, serious heteroskedasticity is to be expected in the error term.
The last part of Table 3 contains the descriptive statistics of the main sample of the study. This comprised of a total of 842 firms years observations, subdivided into 4 different portfolios based on sizes. Statistics for these quartile portfolios mainly cover two variables - market capitalization (which was used as proxy for size) and return (which was applied in computing portfolio returns). Ranked progressively based on size (1, 2, 3, 4), portfolio 4 which is the biggest, having average market capitalisation of 89.918694 billion, reported the biggest average returns of 260% while portfolio 1 which comprised of firms with smallest sizes (the bottom quartile) with average market capitalization of 1.179806 billion, reported the smallest average returns (84%). Portfolio 3 the second largest and portfolio 2 the third largest respectively, bear average market capitalisation standing at 18.878884 billion and 3.560884 billion, with reported average returns of 110% and 162%.

Point of note on the statistic of the main sample comprising of 842 firms years observations span through 8 years, covering about 105 firms each year, is that it seems that size anomaly does not exist in Nigerian Capital Market. As it can be evident from what was obtained, the larger the portfolio size, the more the returns. Large firms have consistently overtaken smaller firms in terms of share performance. Another point of note is that, the total number of the firms in the 4 portfolios together in any given year is at least 101 firms and at most 108 firms (refer to appendix section for additional statistics on the portfolios). This is more than half of the total listing of 194 (as at 2018). Thus, any inference from the main sample could be a close reflection of the market. With a total average returns of 154% from the 842 firms years, it will therefore not going to be far from the truth to qualify NSE market as generally profitable.

4.2 Persistence and Pricing of Earnings

Table4 presents the result of non-linear system equation estimated using equations (6a) and (6b). The table also presents the result of Wald test of equality of coefficients estimated immediately after estimating the two non-linear system equations (6a and 6b) to test the pricing of earnings. Following the table is the interpretation of the results.

Table 4: The Persistence and Pricing of Earnings

$$\mathbf{E_{t+1} = \alpha_0 + \alpha_1 E_t + \varepsilon_{t+1}} \quad \textbf{(6a)}$$
$$\mathbf{(R_{t+1} - r_{t+1}|\Phi_t) = \beta(E_{t+1} - \alpha_0 - \alpha_1^* E_t) + \varepsilon_{t+1}} \quad \textbf{(6b)}$$

	Forecasting Model	**Valuation Model**
	Future Earnings (E_{t+1})	Future Abnormal Returns ($R_{t+1} - r_{t+1}\vert\Phi_t$)
Variable	**Coefficient (Z-score)Sig**	**Coefficient (Z-score)Sig**
Earnings (E_t)	0.2544 (7.20)***	
Earnings$\alpha_1^* \mathbf{E_t}$		1.6735 (1.82)*
R-Square	0.1146	0.0484
WALD TEST		
Test		Result (Chi2/Significance)
Pricing of Earnings ($/\alpha_1$=$/\alpha_1^* E_t$)		2.39

Source: Authors' computation using STATA-13. ***, ** & * = probability sig. at 1%, 5% &10% respectively.

From Table 4, the forecasting equation is the equation (6a), as it used current earnings (E_t) to forecast future earnings (E_{t+1}). The valuation equation (6b) used future abnormal returns subject to available information ($R_{t+1} - r_{t+1}|\Phi_t$), in valuing the portion of future earnings which the forecast equation was able to predict($E_{t+1} - \alpha_0 - \alpha_1^* E_t$).
From the table, the coefficient of earnings (E_t) in the forecast equation is approximately 0.254. This indicate that current earnings has a positive effect on future earnings. In other words, current earnings persist into the future earnings at the rate of 0.254. That is to say, a unit increase in current earnings, future earnings increases by 0.254 and this is significant even at 1%. We therefore reject hypothesis H01 and conclude that current earning has a positive and significant persistence into the future earnings.

Looking at the valuation equation side of the result from Table 4.4, the coefficient of current earnings from equation (6a) multiplied by the current earnings ($\alpha_1^* E_t$), shows a positive coefficient, standing at approximately 1.673. This is the market valuation of the earnings that persisted in to the future earnings. A unit change in the value of $\alpha_1^* E_t$ brings about a change in future abnormal returns by 1.673. This is significant at only at 10%. Earnings and future abnormal returns have different initial scaling. While earnings was scaled by lagged total assets, returns was initially computed from the quotient of price by its lagged price. Perhaps that is why the coefficient of earnings ($\alpha_1^* E_t$) in the valuation equation produce a different coefficient (exceeding the value of 1).

In a nutshell from the two equations, current earning earnings has positive significant effect on both future earnings and future abnormal returns. The question that remains is whether the valuation of current earnings tallies with its ability to forecast future earnings. In other words, does the market correctly prices current earnings? This was answered by the result of the Wald test of quality of coefficients. The null hypothesis of the test is that both the two coefficients are equal. In other words, it is a test of statistical equality of effect of current earnings on future earnings and effect of current earnings' coefficients on future abnormal returns.

The rest of this test can be located in the lower part of Table 4. From the result, the Chi2 of 2.39 is accompanied by an insignificant p-value. This means that there is no significant difference between the effect of current earnings on future earnings on one hand, and the effect of the current earnings (explanatory coefficient of current earning on future earnings) on future abnormal returns. This suggest that the two coefficients (α_1 and $\alpha_1^* E_t$) are equal. We therefore fail to reject hypothesis H02 and hence conclude that, the market correctly prices earnings. The above outcome is in line with the findings of Kimouche (2021), Fernández (2011) and of course Sloan (1996).

4.3 The Persistence and Pricing of Cash flow Accruals

The results of equation (7a) and (7b) are presented in Table 4.5. The two equations were estimated together using a non-linear system equation to, in the end, enable the test of coefficients estimates (especially accruals- Tacc) resulting from both equation.

Table 5: The Persistence and Pricing of Cash Flow Accruals

$$\mathbf{E_{t+1} = \alpha_0 + \alpha_1 CFO_t + \alpha_2 Tacc_t + \varepsilon_{t+1}} \quad \textbf{(7a)}$$

$$\mathbf{(R_{t+1} - r_{t+1}|\Phi_t) = \beta(E_{t+1} - \alpha_0 - \alpha_1^* CFO_t - \alpha_2^* Tacc_t) + \varepsilon_{t+1}} \quad \textbf{(7b)}$$

	Forecasting Model (7a) Future Earnings ($\mathbf{E_{t+1}}$)	**Rational Pricing Model (7b) Future Abnormal Returns ($\mathbf{R_{t+1} - r_{t+1}\vert\Phi_t}$)**
Variable	**Coefficient (Z-score)Sig**	**Coefficient (Z-score)Sig**
Cash-flow (CFO_t)	0. 0744 (8.01)***	
Cash-flow ($\alpha_1^* CFO_t$)		0.0637 (2.03)*
Accruals ($Tacc_t$)	0. 0522 (2.50)***	
Accruals ($\alpha_2^* Tacc_t$)		-0.2285 (-1.83)***
R-Square	0.1458	0.0620

WALD TEST	
Test	Result (Chi2/Significance)
Pricing of Cash flow (/CFO_t=/$\alpha_2^* CFO_t$)	1.08
Pricing of Accruals (/$Tacc_t$=/$\alpha_2^* Tacc_t$)	4.92**

Source: Authors' computation using STATA-13 ***, ** & * = probability sig. at 1%, 5% &10% respectively.

From Table 5, the coefficient of cash flow (CFO_t) and the coefficient of accruals ($Tacc_t$) in the forecasting equations are positive and significant. This shows that both cash flow and accruals are significant determinants of future earnings (E_{t+1}). In other words, both cash flow and accrual components of earnings tend to significantly persist into the future earnings, in a positive manner. This means, that both earnings that materialized as cash, as well as the earnings that is accrued for a given current year, tend to contribute in generating more earnings in subsequent year(s). Based on this, we can hence reject hypotheses H03 and H05 and conclude that both current cash flow and current accruals significantly persist into future earnings.

However, coefficient of CFO_t (0.0744) is greater than the coefficient of $Tacc_t$ (0.0522). This means that the persistence of cash flow into the future earnings is greater than the persistence of accruals. This is the general expectation, since accrual earnings tend to sometimes reverse (not persist into future earnings). Its non-permanency emanates from the fact that it is a risky earnings metric with certain level of uncertainty surrounding its materialization into cash. Revenue generated from sales on credit may sometimes not be paid by debtors. As such, to will become bad debt. Also, unlike cash that is already earned and at hand, discretion in accrual measurement using different approaches from year to year may also affect the accrued earnings positively or negatively. The findings here, are in support of the evidence documented by Pimentel (2022) , Sloan (1996) and slightly contradict that of Kimouche (2021) in which he alluded that there is no differences in persistence of cash flow and accruals.

Looking at the results of the valuation equation, it can observed that while the coefficient of cash flow ($\alpha_1^* \mathrm{CFO_t}$) is positive (0.0637), the coefficient of accruals ($\alpha_2^* \mathrm{Tacc_t}$) is negative (-0.2285). This implies that for every 1 unit increase in $\alpha_1^* \mathrm{CFO}$, future abnormal returns ($\mathrm{R_{t+1}} - \mathrm{r_{t+1}} | \Phi_t$) increase by 0.0192 and for every one unit increase in $\alpha_2^* \mathrm{Tacc_t}$, future abnormal returns decrease by -3.3708. This finding is significant at 5%. This goes to show that while accrual earnings attract negative future abnormal returns, the cash flow earnings positively influence future abnormal returns.

The second part of Table 5 presents the Wald test result which test the market pricing of cash flow and accruals. From the test result of $/\mathrm{CFO_t} = /\alpha_2^* \mathrm{CFO_t}$, the Chi-square of 1.08 is reported with no asterisk. This means that the equality test between the cash flow predicting coefficient and the cash flow valuation coefficient, has failed to reject the null hypothesis of equality. That is to say, there no significant difference between the ability of current cash flow to predict future earnings and its corresponding ability to predict future returns. In other words, Nigerian capital market participants do not significantly misprice cash flow.

From the test result of $/\mathrm{Tacc_t} = /\alpha_2^* \mathrm{Tacc_t}$, the Chi-square of 4.92 is significant at 5%. This is saying that the extent to which accrual predict future earnings is clearly not the same with the extent to which it predicts future returns. Rejecting the null hypothesis that $/\mathrm{Tacc_t} = /\alpha_2^* \mathrm{Tacc_t}$ means that, unlike cash flow, accrual is indeed mispriced by the participants of Nigerian capital market. On this note, the study therefore rejects only hypothesis H06 and fail to reject H04. The findings in respect of cash flow and accrual pricing, while confirming the findings of Simlai (2021), Park, et al (2018) and Sloan (1996); it contradict the findings of Koerniadi and Tourani-Rad (2005) from New Zealand stock market, in which they concluded that there is insignificant evidence of accrual mispricing in New-Zealand. It also contradicts part of Kaya (2022), where they concluded that the Turkish market does not correctly price the persistence of cash flow.

5.0 Conclusion

The results of this study has consistently indicated that Persistence hypothesis as forwarded by literature such as Sloan (1996) applies to Nigerian listed firms. Cash flow has demonstrated superior persistence over other components of earnings. Its coefficients in the forecasting model remained greater than other components all through. In addition, the results show that the non permanence nature of the accruals dictate the extent of accrual persistence. This study found that the NSE market correctly prices earnings and cash flow numbers but misprices accruals. The findings are consistent with the findings of Sloan (1996), Collins et al (1999) Desai et al (2004) and Arabzadeh et al (2018), where they empirically documented that accruals has a negative correlation with one-year ahead abnormal stock returns. The findings also contradict the finding of Kaya (2022) and also that of Koerniadi and Tourani-Rad (2005), where they documented that there is insignificant evidence of accruals anomaly in New Zealand. The implication of our findings here is that NSE market participants majorly fixate on earnings since the market correctly prices earnings but misprices accruals. The explanation for this is that the NSE market like some other markets across the world, fail to distinguish the different weight in the components of earning.

We reemphasize the fact that market efficiency is said to be improved by the degree of operational efficiency and also by application of knowledge and information in trading (Fama, 1970; Ang, et al 2011). The more the application of certain kind of information for trading the more the market perfect the digestion of such information as it arises, and consequently, the more the market becomes more efficient on that kind of information. In other words, using cash flow and accrual numbers in trading in the market over a considerable period of time, will not enable the market arbitrage any chance of profiting using the accounting accrual information. Hence the market's efficiency can be improved. In contrast, our result show that NSE is still not efficient in digesting accrual information as contained in the reported earnings.

This study hence observe that since it is obvious that earning numbers mask the intrinsically present values of its future cash flows (earnings and returns), it is therefore not reliable for accurate forecast. We therefore recommend that investors should use earnings components not earnings numbers in their forecasts, if they are after the true intrinsic values of their future earnings and returns. In addition, for investment decisions relating to listed equities, we recommend that investors should sell off any stocks they are holding which carries high accrual earnings, in the year of earnings release. This will shield them from losses that may occur in the years ahead when the reversal sets in.

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Moderating Effects of CEO Tenure on the Impact of Firms' Financial Performance on Corporate Social Responsibility

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Abstract
This paper examines the moderating effects of CEO tenure on the impact of firms' financial performance on Corporate Social Responsibility (CSR) of listed companies in Nigeria. A 10 year (2011 to 2020) panel data from 111 companies listed on the Nigerian Exchange Group were used. Regression analysis was used to estimate the impact of financial performance variables on CSR variables. CSR was measured using disclosed social and environmental information in the companies' annual account and reports through disclosure index The regression result shows that profitability, firm size and firm age have significant impact on CSR while CEO tenure has significant negative impact on CSR, the longer CEO stays in a company reduces the engagement of companies with higher financial performance in CSR/ The study recommends that firms in Nigeria should play more role in the community and sponsor projects for the betterment of society and the less privilage. This would help build local capacity, enhance confidence, build social capital and stimulate growth of the local economy.

***Keyword**: Corporate Social Responsibility, Firms' Financial Performance, CEO tenure.*

1.0. Introduction

Companies operate with the aim of maximizing shareholders wealth. As a result of this, a number of companies' activities and operations may cause nuisance and damages to the societal and environmental condition of the host communities in which they operate. Companies should make effort to safeguard societal and environmental conditions of the communities since by operating in the communities, companies make financial gains. Communities evaluate firms in line with the information on social and environmental responsibilities disclose by the firms (Wachira, 2017 and Tufail, Kamran, Ahmad & Anwar, 2017).

Many corporations that assist in countries growth and developments are also been accused of contributing to the societies social problems for example issues on the rights and status of employees, pollution, infrastructural depletion, not employing the people of host communities and issues on product quality and safety. People awareness and interest on social and environmental concerns increase in mass media urging the corporation to be responsible to their stakeholders not only the interest of shareholders and creditors (Revert, 2009 and Akanfe, Michael & Bose 2017).

Stakeholders' theory states that corporations revealed environmental and social information in financial statements to achieve organizational goals and influencing the attitudes of external stakeholders strategically (Guthrie & Matheaw, 1985). The theory also argues that the interests of the corporation should not be the only financial matters relevant to shareholders' but should also consider the interests of the community at large, like suppliers, environment, employees, and customers (Rashid 2015).

Advocates of legitimacy theory arg ue that a company's legitimate itself in the eyes of the people through disclosure of information on its environmental and social activities voluntarily (Vourvachis, Woodward, Woodward, & Patten 2016). Legitimacy encourage management to report on their operation and activities that have environmental and social impacts through disclosures in annual reports, to build legitimacy with the society and perceptions that the corporation has operated within the environmental, economic and social anticipations of the society (Nurhayati, Taylor, Rusmin, Tower and Chatterjee, 2016).

In addition, Section 385 (5) Part III of the Fourth Schedule of the companies and allied matters act 1990 (CAMA 2020 as amended) and part B 2.2, part D 28(1,2&3) and part G 34(4 j&k) of the 2011 Nigeria code of corporate governance (CCG 20 11 and 2014 as amended) and the Financial Reporting Council of Nigeria (FRCN) NCCG 2018 require companies board to report annually the nature and extent of its social, ethical, safety, health and environmental policies and practice and general matter of CSR and the report should include report on the employment, training and advancement of disabled persons, and welfare at work of the employees of the company and the involvement of employees in the affairs, policy and performance of the company. Therefore, the issue of CSR and it is disclosure is an area of concern by the government, society and the management of the companies. Companies need to maintain amicable contacts with the host communities and the nation at large and this will be through communicating CSR activities to the stakeholders as stated by Du, Bhattacharya & Sen (2010) that a responsible firm needs to involve and inform its stakeholders about CSR activities and its impact.

Many existing empirical literature have identified firm financial performance which is a measurement of how well a firm use its assets to generate revenue such as firm size, and profitability as major factors affecting CSR and it is disclosure in an organisations and the results are mixed (Li & Zhang 2010; Arora & Dharwadkar 2011; Kock, Santalo & Diestre, 2011; Uwuigbe & Egbide 2012; Giannarakis 2014; Zheng, Balsara AA& Huang 2014; Li, Song & Wu 2015; Ahsan & Butt 2015; Ling & Sultana 2015; Muttakin & Subramaniam 2015; Mcguinness, Vieito & Wang 2016 and Akanfe , et al., 2017). According to Gao, Heravi & Xiao (2005), bigger companies are hoping to disclose more information, which makes them engage and disclose more CSR as they tend to have high public inquiries (Muttakin & Subramaniam 2015).

The Chief Executive Officer (CEO) is the head of the management team who is answerable to the board and responsible to act as the company's leading representative in its dealings with its stakeholders (NCCG 2011). The CEO exercises a significant role in CSR as a leader that involve in strategic decision making and resource allocation (Slater & Dixon-Fowle 2009 and Oh Chang & Cheng 2014). The impact of CEO specifics characteristics on CSR receive attention in the literature (Post, Rahman & Rubow 2011: Oh, Chang & Cheng 2014 and DiGiuli & Kostovetsky 2014). Past studies documented that the CEO of a company have impact on CSR, the CEO's characteristics can explain differences in CSR engagement and reporting among companies Ghardallou (2022).

This study introduces CEO tenure to moderate the relationship between firm financial performance and CSR. CEO as a leader has a key role in strategic decision making and allocation of resources (Mintzberg 1978). It is expected that CEO has a significant impact in making decisions on CSR strategies, spending, and disclosure (Slater & Dixon-Fowler 2009). Therefore, the chief executive's personal qualities, the tenure of service and experiences can influence their way of thinking, perception, choice, and vision on CSR decisions. Empirical evidence showed that various CEO attributes have an influence on CSR of companies (Huang 2012; Chiu & Sharfman 2016 and DiGiuli & Kostovetsky 2014). Studies have shown (Graham, Harvey & Rajgopal. 2005) that managers can signal their type by committing to voluntary disclosure. Lys, Naughton & Wang (2015) further suggest that committing to a higher level of voluntary CSR reporting can be an important mechanism to reveal inside information, such as future financial prospects of the firm. CEO tenure is finds to have impact on CSR of firms (Chen, Liao & Tsng 2017).

The paper is aimed to find out the moderating effect of CEO tenure on the impact of firms' financial performance on corporate social responsibility. The remaining part of the paper is structured as follows: literature review in section two, methodology is section three, result and discussion is presented in section four, and section five presents the conclusions and recommendations.

2.0. Literature Review and Hypothesis Development

Larger companies can be expected to engage in CSR and disclose more CSR information to show their corporate citizenship, thereby legitimising their existence. In addition, larger companies usually undertake more activities and make greater impact on society. Evidence from previous studies supports the existence of a positive significant relationship between profitabliy, size and CSR (Ducassy & Montandrau 2015, Ballesteroset Ariza, & Sa´nchez 2015, Giannarakis 2014, Jo & Harjoto 2012, Khan 2010, Mohd Ghazali 2007, Ho & Taylor 2007, Haniffa and Cooke 2005, McGuire et al., 2003 and Johnson & Greening 1999). In contrast other studies document a negative relationship for example (Isa 2014, Melo 2012 and Wang & Wing 2010). Uadiale, and Fagbemi (2012 found that CSR has a significant positive relationship with corporate financial performance. Furthermore, they find that firms' CSR engagement with the community, environment, diversity and employees plays a significantly positive role in enhancing corporate financial performance and in turn encourage firms engagement of CSR. Haniffa & Cooke, (2005) and Said Yuserrie, and Hasnah, (2009) used size and profitability as control variables represented by total asset and ROA respectively. Regression was used in their analysis; found that size and profitability were positive and significantly related to corporate social responsibility disclosure in Malaysian non-financial companies. Similarly Ducassy & Montandrau (2015), Giannarakis (2014) and Ho and Taylor (2007) find that firm size and profitability have positive and significant relationship with CSR.

Other studies like that of Williams (1999) finds that CSR is more associated with ‘‘public’’ rather than ‘‘economic’’ pressure. A contradictory finding was reported by Patten (1991), Hackston and Milne (1996); Ghazali (2007); and Richardson and Welker, (2001) find that profitability was not a significant variable affecting CSR disclosure. And Abdul Hamid (2004) also did not find profitability to be a significant variable influencing CSR disclosure. Others indicate insignificant positive relationship (Ballesteros, Ariza & Sanchez 2015, Zhang 2012, Esa & Ghazali 2012, Wang & Ming 2010 and McGuire, Dow & Argheyd 2003). In contrast other studies document a negative relationship (Isa 2014, McGuire, Dow and Ibrahim 2012).

Therefore, on basis of the mixed findings, this study introduces CEO tenure to moderate the relationship. There cannot be socially responsible corporations without socially responsible managers who are occasionally willing to sacrifice corporate objectives, interests and the needs of the firm in favour of socially responsible actions (Wood, Chonko & Hunt 1986 and Diez, Gago & Campillo, 2011). Indeed, it is the top managers who spread interest in ethics and social responsibility throughout the firm and decide on how to integrate these through a process of strategic management (Singhapakdi, Gopinath, & Carter 2008). Therefore, it can be assumed that CEOs are closer to more importance to ethics and social responsibility, and hence, they will promote a higher level of CSR practices in their firms (Diez, Gago & Campillo, 2011).

Moreover, CEO is a key decision maker in CSR related decisions. As Waldman, Siegel, and Javidan (2006) point out, CEOs are charged with the responsibility of formulating corporate strategy and are often deeply involved in promoting the image of their firms through social responsibility. Researches suggests that CEOs' attributes such as experiences, values, and personalities (age, tenure and education) will affect their field of vision, selective perception, interpretation and strategic choices such as that of CSR (Slater & Dixon Fowler, 2009) especially tenure which carry his experience in a firm. As a result, organizations become, at least in fact, a reflection of their CEO (Finkelstein & Hambrick, 1996).

Stakeholder theory implies that the extent to which managers attend to stakeholder interests is largely dependent upon the values and moral guidelines of managers (Huang 2013). It is also suggested that the demographic composition of executives leads to different strategic choices (Cannella, Park & Lea 2008). CSR is a strategic choice.

Studies shows that tenure is one of the major attributes of CEOs that has an impact on a firm's strategic decisions (Al-Duais et al, 2021). The new managers want to prove their performance to all stakeholders during their early years of services for better compensation and bonuses in future years. On the other hand, longer tenure CEOs is expected to look for safe retirement (Diamond, 1989). Lys, et al., (2015) argue that voluntary disclosure is a necessary element of signalling. Specifically, they find a positive relation between commitment to a higher level of CSR reporting in the current period and firms' future financial performance, after controlling for other ways in which firms may signal their future prospects (e.g., changes in dividend payments, issuance of management forecasts, and direction of management forecast surprises). As such, their finding suggests that CSR reporting may serve as an important mechanism in signalling firms' future financial performance. This finding is consistent with previous studies' conclusion that CSR reporting is a valuable way for CEOs to signal their trustworthiness and communicate private information about firms' future prospects to investors, which in turn may bring benefits to both firms and their CEOs (Deng, Kang, & Low 2013; Chen, Srinidhi, Tsang, & Yu 2016). Based on the potentially positive role of CSR reporting in achieving such goals, Chen, Liao and Tsang (2017) posit that to the extent that CEOs with shorter tenure have a higher incentive to build their reputation and signal their ability, shorter-tenured CEOs are more likely to commit to a higher level of CSR reporting.

However, a corporate image of social responsibility can bring various benefits to firms and CEOs through direct and indirect channels (Lys et al. 2015). Consistent with this view, Peloza (2006) argues that CSR could act as a form of reputation insurance. Therefore, committing to better CSR disclosure practices may be a rational and cost-effective strategy to reduce CEOs' future career concern.

Therefore, **the study expect a negative moderating effect of CEO tenure on the impact of financial performance on CSR.**

3.0. Methodology

The population of the study consists of all listed companies in Nigeria. There are 156 companies listed as at 31 December, 2021 on the Nigerian Exchange Group market. Good sample involve the use of all members of the population as each component in the population is been represented to sampling error and guarantee the absence of systematic variance Asika (1991). Data availability leads the researcher to utilize 111 companies as the sample size because they are the companies with full information on all the variables of the study. For the purpose of this study, secondary method of data collection through annual reports and accounts of the sampled companies of ten (10) years covering from 2011-2020 was utilized. The period is chosen because the NSEC in 2011 come with Nigerian code of corporate governance that required the disclosure of the extent and nature of CSR activities of listed Nigeria companies.

The panel data analysis is employed in this study as it has advantage over others on reducing the collinearity among independent variables and increasing the degree of freedom (Baltagi, 2008). CSR was measured using a dichotomous of 1 for item disclosed and 0 otherwise for a checklist of items on environment, community, employee and product information. Using content analysis for Sustainability Disclosure Checklist Based on GRI G4 Standards (Giannarakis, (2014), Ducassy & Montandrau, (2015), Habbash, (2016) and Sunday & Adedeji (2017). To account for firm's financial performance profitability and firm size were used as independent variable, one control variables firm size while CEO tenure was used as the moderating variable which measured by 1 if CEO spend three years and above and 0 otherwise. Firm's size is proxied by the log of total assets (Holder-Webb et al, 2009; Udayasankar, 2008), profitability is proxied by the ratio of Return on Assets (Esa & Ghazali, 2012) and firm age proxy by year of incorporation of the companies ((Ujunwa, 2012 and Amer et al., 2014).

$$\text{CSRI}= \text{CSRI}_{\text{it}} = \beta_0 + \beta_1\text{PT}_{\text{it}} + \beta_2\text{CEOT} * \text{PT}_{\text{it}} + \beta_3\text{CEOT}_{\text{it}} + \beta_4\text{FS}_{\text{it}} + \beta_5\text{CEOT} * \text{FS}_{\text{it}} + \beta_6\text{FA}_{\text{it}} + +\varepsilon_{\text{it}}$$

Where: CSRI = Corporate Social Responsibility index;

PT_{it} = Profitability for all Entities over the Time period measured by ROA

FS_{it} = Firm Size for every Entity over the Time period measured with log of total asset

$\text{FA}_{\text{it}} =$ Firm age for every Entity over the time period measured with year of incorporation

CEOT = CEO tenure

$\mathcal{E}_{\text{it}}$ = Error Term for all Companies over time period

β1- β4 = partial derivatives or the gradient of the independent variable

i = Firm t = time

4.0. Results and Discussion

Table I presents result of regression analysis of the variables of the study. The results of the analysis and the discussions of the results are presented in conjunction with Multicollinearity test using Variance Inflation Factor(VIF). In a circumstance whereby the (VIF) is more than 10, it means that the variables are highly interrelated which incite a multicollinearity problem (Greene, 2008). Along these lines, the multicollinearity test using (VIF) as displayed in table I shows the non-existence of multicollinearity problem because mean (VIF) is less than the threshold value of 10. Accordingly, the study concludes that there is no multicollinearity among the independent variables. Therefore, each variable is proved to be independent in explaining the dependent variable.

Table I: Regression Result

CSRI	Coef.	P>|t|
PT	.001207	0.012
FS	.0000741	0.000
CEOT	-.038654	0.001
PTCEOT	.0014602	0.032
FSCEOT	.0000168	0.149
FA	.0010153	0.006
_cons	.3453669	0.000
Prob > F	0.0000	
R-squared	0.2362	
Adj R	0.2321	
Mean VIF	2.19	

Source: Stata 2022

Table I shows the OLS regression result of the study where CSR is proxies with CSR disclosure index and the explanatory variables (profitability, firm size, CEO tenure, and interaction between profitability and CEO tenure, firm size and CEO tenure; and firm age).

The OLS results reveal the R^2 0.2362 which is the multiple coefficient of determination gives the proportion or percentage of the total variation in the dependent variable explained by the explanatory variables jointly. This signifies that profitability; profitability, firm size, CEO tenure, and interaction between profitability and CEO tenure, firm size and CEO tenure; and firm age jointly explain 23.622% variations in CSR of listed Nigerian companies, while the remaining of the total variation in the CSR was caused by factors not explained by the model.

The regression results as shown in table I indicate that profitability and firm size are positive and significantly related to CSR. The implication of this is that an increase in profit and firm size other independent variables remaining constant increases the level of CSR in Nigerian companies. This finding is consistent with the findings of Ducassy & Montandrau (2015), Ballesteroset Ariza, & Sa´nchez (2015), Giannarakis 2014, Jo & Harjoto 2012, Khan 2010, Mohd Ghazali (2007), Ho & Taylor 2007, Haniffa and Cooke (2005), McGuire et al., 2003 and Johnson & Greening (1999). CEO tenure is negative and significantly related to CSR. Therefore, an increase in the number of years CEO stays in a company leads to a significant decrease in the level of CSR of listed companies in Nigeria. This finding is inconsistent with the findings of Deng, et al., (2013); Chen et al., 2(016) and Chen et al., (2017).

After moderating of profitability with CEO tenure, the result for OLS estimation shows a positive and significant impact on the CSR, while that with firm size is also positive but insignificant. This implies that the longer CEO stays in a company influences companies with higher financial performance to engage more in CSR. The regression results as shown in table I indicate that the control variable firm age has positive and significant impact on CSR.

5.0. Conclusions and Recommendations

Corporate social responsibility continues to be an area of growing importance. This study examines the moderating effects of CEO tenure on the impact of firms' financial performance on Corporate Social Responsibility (CSR) of listed companies in Nigeria. The regression result shows that firms financial performance have significant positive impact on CSR. While CEO tenure has significant negative impact on CSR and the longer CEO stays in a company reduces the engagement of companies with higher financial performance in CSR.

The study recommends that firms should invest more in CSR activities in all its ramifications in order to boost their reputation thereby increasing their returns. Conserving the environment is a vital aspect of the well-being of a company in the long run. They should also play an active role in the community and sponsor projects for the betterment of society and the less privilage. This would help build local capacity, enhance confidence, build social capital and stimulate growth of the local economy.

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Protocol: Systematic Review on Strategic Management Accounting and Organizational Sustainable Performance

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Abstract
Strategic management accounting has continued to receive attention both from academics and practitioners. The relationship between strategy, management accounting-based control systems and performance has commanded significant attention in the accounting and management research domains. Thus, the important role that strategic management accounting plays in driving organisational performance has been reiterated in the literature. In line with that importance, the call for more effort to enhance knowledge on strategic management accounting has increased over the years. The purpose of this systematic review is to determine the effectiveness of strategic management accounting and organization performance-related outcomes in Nigerian context.

Keywords: *Systematic review, Strategic management accounting, sustainable development, Organizational performance, Nigeria.*

1.0 Introduction

The concept of strategic management accounting is related to the provisions and use of accounting information by people in the organization such as the management and the managers, for the purpose of making business decisions that would allow them to have competitive advantage and able to effectively control the firm's activities (Uyar, 2010). According to Adeniran and Obembe, (2020) strategic management accounting concept is not new in most fields like accounting, marketing management, business management, etc. Hence, it has come across many fields of human endeavour. Strategic management accounting is considered both financial and non-financial in dynamic and it is often used for the purpose such as making decisions, execution of decisions and controlling decisions to ensure it does not go beyond the boundary of such decision. Strategic management accounting in particular is more popular among large firms. However, lately the popularity has been extended to both public and private organizations (Alvarez, Sensini, Bello & Vazquez, 2021). In other words, the role of strategic management accounting cannot be underestimated (Uyar, 2010). It stands as a foundation for making business decisions that would improve or positively affect the performance of firms. It helps firms to have better competitive advantage over competitors.

Generally, the concept of strategic management accounting is no longer new in most fields like accounting, marketing management and business management (Adeniran & Obembe, 2020). Hence; it has come across many fields of human endeavour. Strategic management accounting is considered both financial and non-financial in nature and it is often used for the purpose such as making of decisions, execution of decisions and controlling of decisions to ensure it does not go beyond the boundary of such decision. Specifically, the accounting unit or department is responsible to provide management accounting information that is necessary and required by the management.

Trkman (2009) noted that performance measure is indispensable for all organizations because it helps them to ascertain the success or failure of the firm and also acts as an indicator to achieve sustainable improvement in entrepreneurial and business activities. In the same vein Murphy, Trailer and Hill,

(1996) argued that accurate perfor mance measurement is critical to understanding organizational success and/or their failure. This implies that one cannot rule out the issue of performance in the discussion of organization since their success and/or failure is hinged on performance measurement.

The purpose of this systematic review is to determine the effectiveness of strategic management accounting on organizational sustainable performance in Nigerian organizations. Our specific research questions are as follows:

i. What is the impact of strategic management accounting on organizational sustainable performance?
ii. What are the components of effective strategic management accounting?
iii. Are there differences in impact depending on organizational characteristics? For example, age, (year of establishment) and category (public or private).

2.0 Literature Review

This section covers the concept and procedures for Systematic review on strategic management accounting and organizational sustainable performance.

2.1 Methods and Design

To achieve this objective, we have chosen a systematic review approach, which according to the Cochrane Collaboration defines as a research method which ‘summarizes the results of available carefully designed studies (Higgins & Green, 2008). Our interdisciplinary team is composed of experts in entrepreneurship (AMA), accounting and finance (ISA), strategic management (AAP), business administration (MAA) and human resources management (SSS) is well positioned to execute this review.

2.2 Study Design

This systematic review is guided by the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) statement (Moher et al 2015), and the PRISMA-P guidelines were used to structure this protocol. This systematic review will be registered in the COMPBELL database. As advised in the PRISMA statement, we would use the PICOH technique (Schardt et al, 2007) to systematically address our research question and plan our search strategy**.**

2.3 Search Methods

The procedure to be followed for the conduct of this review is shown in figure 1. The initial step for successful commencement of systematic review of this nature entails searching of databases for articles related to strategic management accounting and organizational sustainable performance in Nigeria. Automatic search will be conducted in specific popular databases that included Emerald, JSTOR, Science Direct, Wiley Online Library, Taylor and Francis, Google Scholar and Springer. Articles’ titles, Abstracts, Keywords and full texts would be searched using different combinations of keywords - “Strategic Management Accounting Factors” AND “Organizational Performance in Nigeria”, “Strategic Management Accounting Functions” AND “Institutional Performance in Nigeria”, “Strategic Management Accounting Roles” AND “Sustainable Organizational Performance in Nigeria”.

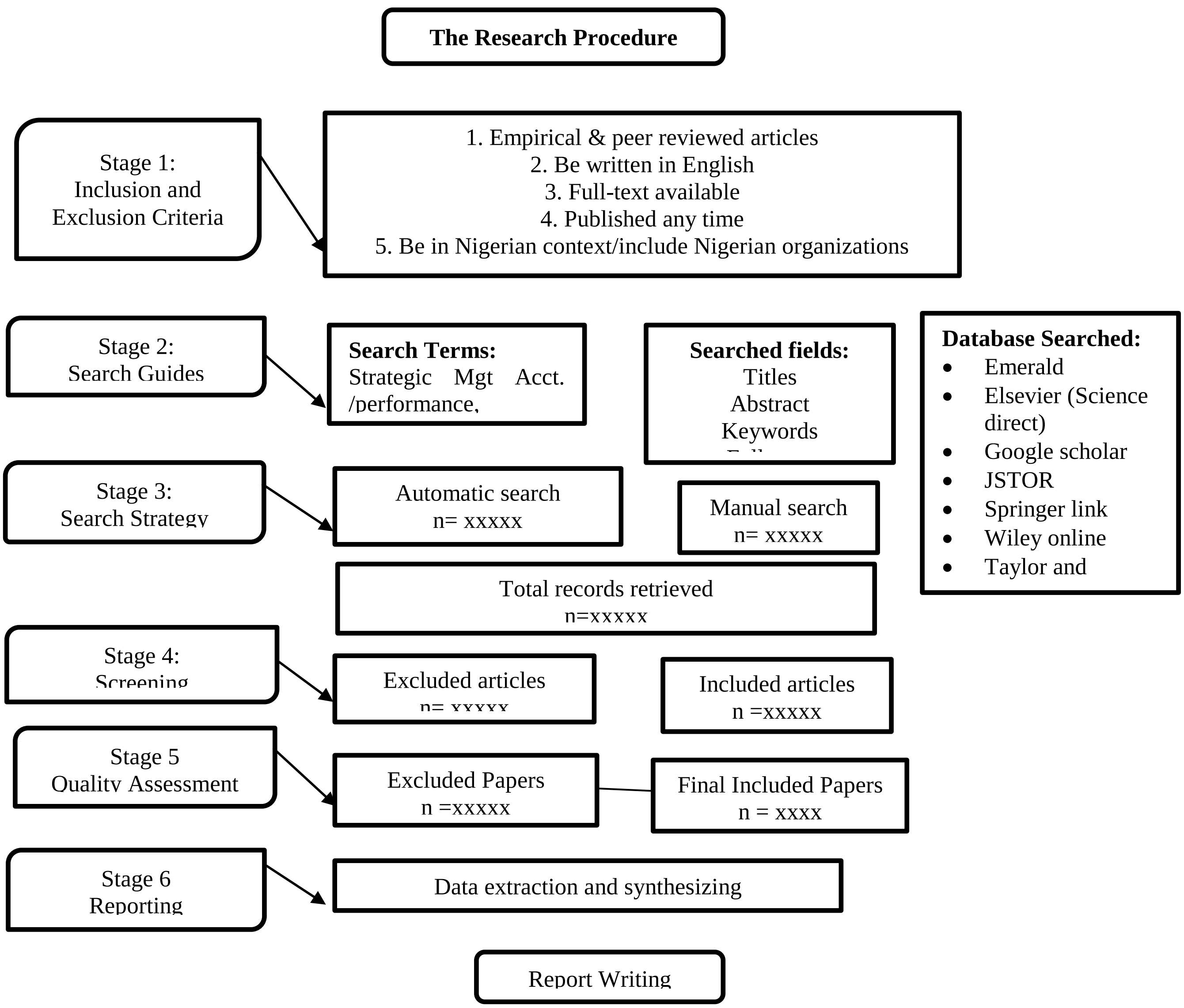
2.4 Inclusion Criteria

Studies which do not specifically written or exterminate the effects of strategic management accounting on organizational performance will be excluded. Conference abstracts will be excluded if all the necessary data is not available or cannot be obtained from the author. Search filters where no corresponding development and/or evaluation study can be found will also be excluded from the review. However, these search strategies will be included in a comprehensive list of filters for future reference.

2.5 Selection Process

All references identified will be downloaded and imported from databases and journals or entered manually into Endnote and duplicates removed. To assist in managing screening, quality assessment and data extraction across continents; unique references will then be transferred into MS word excel sheet. One reviewer will exclude articles clearly irrelevant from the title. Titles and abstracts of the remaining articles will be independently assessed by two reviewers against the eligibility criteria, and articles will be excluded by agreement. Disagreements will be resolved by discussion or referral to a third reviewer. If it is unclear as to whether the publication is relevant or not, it will be included for the next step. Full-text copies of all the remaining articles will be obtained and assessed against the eligibility criteria by two independent reviewers in the same way as the abstract screening, with a third reviewer resolving any disagreements, if necessary. The reasons for excluding each paper at the full-text stage will be recorded.

Figure 1: The systematic Review Procedure



3.0 Systematic Research Procedure

Two reviewers will independently extract data using a pre-designed data extraction form, which will be piloted and refined in advance of full data e xtraction. The following data will be extracted: Article characteristics e.g. authors, publication year,

a. study ID;
b. Type of paper (i.e. conceptual or empirical);
c. Filter study characteristics e.g. search dates, databases used;
d. Authors characteristics e.g. gender, affiliation, state etc,
f. Presence of internal and external validity testing;
g. Study limitations;
h. Assessment of whether the study methodology is described in sufficient detail to be reproduced

Also, in conformity with Tonhäuser and Büker (2016) the study restricted itself to empirical papers emanated from doubled blind review process only. More so, we equally carried out Quality Assessment (QA) on the targeted articles. The QA will be guided by the checklist proposed by this study in line with Bandara, Miskon and Fielt (2011). The QA questions are:
QAI: Does the article title relate to organizational sustainable performance?
QA2: Does the article methodology of the study clearly explained?
QA3: Was the context of the study conducted clearly reported?
QA4. Does the paper report at least one strategic management accounting factor?

The PRISMA statement guidelines will be followed when reporting the findings of this systematic review. The strategic management accounting factors found to influence organizational, sustainable performance will be summarized and their characteristics reported. Factors will be grouped by the database and organizations from which they were obtained. These groups will facilitate comparison of the specific factors used. We will tabulate sustainable performance measures reported in the studies, i.e. objective, subjective etc. This will allow comparisons between the performances types reported. If a specific metric is not reported, it will be deduced from the available information, where possible. For each of the three types of measures found in the study, they will now be assessed and based on their closeness to sustainable performance.

4.0 Discussion

To date, there has been no systematic review that has specifically assessed the influence of strategic management accounting on organizational sustainable performance. This systematic review aims to address this omission and to assess the applicability and performance of identified on sustainability**.** This systematic review will expand the knowledge base of strategic management accounting and how it affects organizational performance in Nigeria. For any meaning and sustainable organizational performance, the mixture of organizational strategy and proper accounting process (strategic management accounting) should be ensured. This study will inform future studies on strategic management accounting by identifying gaps and strengths and how it affects organizational performance.

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COVID-19 ERA: Assessment of Economic Factors Affecing SMES Tax Noncompliance in Plateau State

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Abstract
The issue of taxpayer noncompliance with tax laws is as old as the concept of taxation. Most tax authorities around the world are currently researching the factors that influence tax noncompliance to reduce their impact. The purpose of this paper is to examine the economic factors that influence SMEs' tax non-compliance during the Covid 19 era. The study was conducted using a descriptive survey research design. The population of the study is made up of 360 SMEs registered with the Plateau State Ministry of Commerce and Industry. Using Krejcie and Morgan's (1970) table for sample determination, a sample size of 186 SMEs was statistically obtained from the population. A structured questionnaire was given to all of the selected respondents to elicit their responses, and one hundred and seventy-four (174) questionnaires were filled out and returned for computation. Multiple regression statistics were used to analyze the collected data, which were run using SPSS version 23. The study's findings revealed that SMEs' income level is the only economic factor that has a significant impact on tax noncompliance, whereas tax rates, fines, and penalties are insignificant economic factors that have no impact on SMEs' tax noncompliance in Plateau State. As a result, the study recommended that the Plateau State Internal Revenue Service (PSIRS) review some of its tax rates to align them with the current economic realities that most taxpayers/SMEs face. In Plateau State, this will improve tax compliance and reduce tax evasion.

Keywords*: Economic factors, tax rate, income level, Covid 19, fines and penalties, tax evasion.*

1.0 Introduction

The COVID-19 pandemic triggered a global health crisis and a sharp drop in economic activity that had never been seen before in recent history. The COVID-19 pandemic went from a health crisis to a global economic crisis in a matter of months, causing a much larger drop in global GDP than the global financial crisis of 2008. In terms of the scale of the global economic recession triggered by the pandemic, the economic situation observed between April and June 2020 shows an increasingly negative outlook. The economic outlook predicts a 6% drop in global GDP by July 2020, with double-digit declines in some of the hardest-hit countries, followed by a modest 2.8 percent recovery in 2021.

The first case of Covid-19 was discovered in Lagos State on February 28, 2020, prompting the Federal Government of Nigeria to order a complete lockdown of Lagos and Abuja, the country's economic and political capitals, for 28 days to prevent the virus from spreading. While the lockdown in Nigeria was necessary for disease containment, it had an impact on the country's economic and social structures, causing demand and supply disruptions. Some businesses faced going concern issues and had to take a variety of cost-cutting measures to stay afloat. The government and businesses now expect the economy to contract further this year after recently recovering from a 2016 recession (UNDP, 2020).

To confirm the virus's devastating effect on Nigeria's economy, Ozili's (2020) study found that Covid-19 has disrupted the Nigerian economy, resulting in a sharp drop in oil prices, a drop in revenue, inability to service loans, disruption of the global supply chain, and investor withdrawal from the Nigerian stock market. All of the aforementioned factors have had a devastating impact on both large and small businesses in Nigeria, as well as the rest of the world. Unfortunately, because of their higher levels of vulnerability and lower resilience with their size, the impac t of the covid-19 was particularly severe on SMEs. Larger firms, according to Verbano and Venturi (2013), have a greater ability to withstand sudden shocks than SMEs because larger firms have significantly more financial resources than SMEs. More so, because most of them operate on a low capital base and maintain low stock levels, it was all too easy for them to bear the brunt of the covid-19, as most of their business networks and supply chains, which were previously connected to larger businesses, were disrupted.

In the plateau state, the situation is more concerning because the majority of SMEs operating in Jos metropolis are not ICT compliant, causing the covid 19 to have a significant impact on their performance. Some SMEs have been forced to close as a result of this, and those operating in the Covid 19 era are severely hampered in meeting some of their financial obligations, such as tax compliance. The fact that the coronavirus outbreak makes it very difficult to comply with periodic tax filing obligations if one is to stay alive can be supported by a very rational and logical argument. After all, when a taxpayer is alive, he is only one (Thomas & Akindele, 2021). According to a study conducted by Dalyop and Abraham (2020), most SMEs in Plateau State are strategizing how to survive the devastating effects of Covid 19, while tax compliance is viewed as a secondary responsibility, even though tax payment is a legal requirement. In addition, the Plateau State chapter of the Chartered Institute of Taxation of Nigeria (CITN) observed a decline in tax compliance rate in their fourth-quarter report for 2020 and suggested that The federal and state governments should make a concerted effort to ensure that palliative schemes for SMEs are measurable to boost their performance and make them financially strong and viable (CITN, site). Similarly, revenue collected by the Plateau State Inland Revenue Service (PSIRS) from 2017 to 2020 shows that revenue collected in 2017 was N10,788,343,576.45, and revenue collected in 2018 was N12,726,479,548.41. Revenue increased to N19, 122,375,801.59 in 2019 and decreased to N16, 473,660, 383.22 in 2020 (PSIRS, 2021 report). The trend in revenue collection shows that there is tax non-compliance during the Covid 19 era, as some SMEs do not follow tax laws and/or report incorrect income, claim incorrect deductions, relief, and rebates, and/or pay the wrong amount of tax beyond the stipulated amount.

This explains why Plateau State's tax collection decreased during the Covid 19 era, which is a problem for the Plateau State Inland Revenue Service (PSIRS). Although some scholars, such as Kirchler, (2007), KIpkoech, and Joel (2016), have claimed that economic factors such as tax rates, income levels, and tax fines and penalties influence tax noncompliance by individuals, In contrast to their findings, scholars in various countries (Hasnul, 2015, Arano & Jocobson, 2011, Musa, Saad & Ibrahim, 2016) discovered that economic factors such as tax rates, income level, and fines and penalties have no impact on tax noncompliance. Given the realities confronting SMEs in the twenty-first century, an investigation is required to assess the impact of economic factors such as tax rates, income levels, and fines and penalties. As a result, the primary goal of this research is to determine the impact of economic factors on tax noncompliance by SMEs in Plateau State during the twentieth century. To achieve the main objective of the study, the following null hypotheses have been formulated to guide the study.

(i) Tax rate does not significantly affect SMEs tax noncompliance in plateau state.
(ii) Level of income does not significantly affect SMEs' tax noncompliance in plateau state.
(iii)Fines and penalties do not significa ntly affect SMEs' tax noncompliance in plateau state.

This study is very important as the problem of tax non-compliance among taxpayers is still existing and affecting the overall revenue-generating agencies in Nigeria. Although there is similar research done in the past, with different variables examined, this study focuses on economic factors having proxies of the Tax rate, level of income, fines, and penalties. In addition, this study is specifically to address the issue during the COVID-19 period.

2.0 Literature review

2.1Concept of Tax Non-compliance

The inability of a taxpayer to comply with tax law is known as tax non-compliance. Tax non-compliance is defined by KIpkoech and Joel (2016) as failing to comply with tax laws and/or reporting incorrect income, claiming incorrect deductions, relief, and rebates, and/or paying the incorrect amount of tax beyond the stipulated time frame. Noncompliance is also defined as a taxpayer's (SMEs) failure to report (correctly) actual income, claim deductions and rebates, and timely remit the actual amount of tax due to the tax authority. Kirchler (2007, Kirchler, Kirchler, Kirchler, Kirchler, Kirchler In terms of the opportunities for overstating expenses and understating incomes, taxpayers vary (Chau & Leung 2009). Self-employment and income sources that are not subject to withholding taxes provide more opportunities for tax noncompliance.

2.2 Tax Non-compliance and SMEs

Tax evasion has long been regarded as a complicated legal problem (Marti, 2010). In simple terms, tax non-compliance is the failure to fulfill tax obligations as prescribed by law in a timely and complete manner. It is simply referred to as tax evasion, which is defined as a deliberate attempt to avoid paying taxes by providing false information and records or omitting any material details that should have been disclosed. This must be distinguished from tax evasion, which entails using legal means to reduce one's tax liability. It has been discovered that small and medium taxpayer enterprises bear an excessive amount of regulatory burden (Pope & Abdul-Jabbar, 2008). Because of the nature and size of small and medium businesses, tax non-compliance is a major concern (Atawodi & Ojeka, 2012). Especially now that the Covid 19 has wreaked havoc on their operations, leaving most SMEs with insufficient resources and expertise to comply with a plethora of complex regulations. Marti (2010) also believes that high compliance costs can lead to tax noncompliance in the form of tax avoidance, tax fraud, and investment inhibition by lowering the country's competitiveness in terms of taxation attractiveness.

Noncompliance with tax laws can take many forms, including failure to file a tax return within the required time frame or total non-filing of tax returns, understatement of income, overstatement of deductions, and failure to pay assessed taxes by the due date. Noncompliance with tax laws can sometimes imply a complete failure to pay levied taxes. Furthermore, studies have revealed that tax evasion is a widespread issue in developing countries (Kirchler, 2007).

2.3 Tax Rates and Tax Non-compliance

The actual amount of tax computed for a taxpayer to pay is known as the tax rate. Depending on the taxpayer's operation, the tax rate could be high or low. Tax rates can influence a taxpayer's decision to comply or not comply with tax payment. According to Clotfelter (1983), lowering tax rates is not the only policy that can deter tax evasion, but the tax rate is also a significant factor in determining tax compliance behavior, though the exact impact is still unknown and debatable (Kirchler et al, 2007). The impact of tax rates on tax compliance is mixed (Allingham & Sandom, 2015).

2.4 Level of Actual Income and Tax Noncompliance

Actual income is the amount of money earned b y a taxpayer or a small business. The amount of income generated by a taxpayer/SME is largely determined by its business activity. The standard economic model's predictions on the effects of income on tax compliance and noncompliance are ambiguous. Though some higher-income taxpayers/SMEs are more likely to evade taxes because absolute risk aversion decreases with income, it is unclear whether the severity of evasion is a rising or falling function of income (Kirchler et al., 2017). The degree of underreporting depends on the relative risk aversion of taxpayers/SMEs who have decided to evade taxes. Because the relationship between income and relative risk aversion isn't unique, Allingham and Sandom (2015) conclude that "when actual income varies, the fraction of declared income increases, stays constant, or decreases accordingly, as relative risk aversion is an increasing, constant, or decreasing function of income." As a result, there is a strong indication that the level of income of taxpayers/SMEs can have a positive or negative impact on tax noncompliance.

2.5 Fines and Penalties and Tax Noncompliance

Fines and penalties are two types of penalties that are imposed on taxpayers and small businesses who break any tax rule or procedure (Kirchler et al 2007). Higher fines and penalties simply make tax evasion more dangerous for taxpayers and SMEs and should deter them from doing so. The deterrent effect of fines and penalties could not always be proven empirically. The observed effects were weaker than expected, and some studies even suggest that increasing fines and penalties may have an unfavorable effect, leading to increased tax avoidance (Kirchler et al, 2010). (2007).

The effect of tax fines and penalties for non-compliance on taxpayer compliance behavior is an interesting variable to investigate. Tax penalties have been identified as a key factor in modifying tax compliance behavior by acting as a deterrent, motivator, and corrective measure for improper behavior (Wenzel, 2004; OECD, 2010; Poppelwell, 2012). Tax penalties, on the other hand, have been discovered by researchers to be ineffective as a standalone mechanism for promoting desired tax behaviors and must be used in conjunction with other factors (Tyler, 2006; OECD, 2010). As a result, enforcing tax penalties on SMEs must be done with caution, as most owner-managed SMEs cannot accurately meet all tax requirements and obligations (Evans, Carlon & Massey, 2005; Engstom & Holmlund, 2006).

2.6 Underpinning Theory

Researchers have used two broad approaches to explain taxpayer compliance or noncompliance behavior, namely Fiscal Psychology Models and Economic Deterrence Models, to explain non-compliance behavior. Because this study focuses on the impact of economic factors on tax noncompliance, the underpinning theory will be economic-based theories that emphasize incentives (Trivedi & Shehata, 2005). Deterrence theory is a term used to describe economic theories of tax compliance. According to Trivedi and Shehata (2005), economic theories suggest that taxpayers "play the audit lottery," in which they calculate the economic consequences of various compliant options, such as whether or not to evade tax, the probability of detection, and the consequences of detection, and choose the option that maximizes their after-tax return/profit expectation (possibly after adjustment for the desired level of risk). Economic theories emphasize increased audits and penalties as a solution to compliance problems, implying that taxpayers maximize utility.

Economic motives such as profit maximization and probability of detection (Trivedi & Shehata, 2005), underreporting (Erard & Ho, 2002; Cobham, 2005), and business income taxpayers operating in the informal economy (Etchberry, 1992), among others, are said to influence taxpayers' behavior. Tax compliance theories assume that psychological factors such as moral and ethical concerns are also important to taxpayers and that they will comply even if the risk of being audited is low. Trivedi and Shehata (2005) concluded that some taxpayers'/SMEs' behavior may be influenced by economic theories that suggest that economic factors such as tax rate, taxpayer/SME income level, and fines and penalties drive tax compliance or noncompliance.

2.7 Empirical Studies

Fagbemi, Uadile, and Noah (2010) have reported that noncompliance of tax is prevalent in developing countries and it hinders development thereby leading to economic stagnation and other social and economic problems. The research is based on a survey of 102 managers/executive officers of selected SMEs in Ghana's Ga West Municipality, which is part of the Greater Accra region. The survey was conducted using a questionnaire and an interview with the respondents who were chosen. The descriptive analysis method, as well as correlation and regression analysis, were used to examine the data. According to the findings, the majority of respondents perceive the negative impact of a high tax rate, which has resulted in evading tax compliance by any means possible.

In contrast to the findings of the previous study, Korir, Adoyo, and Isaac (2015) investigated the factors that influence tax noncompliance among small taxpayers. The study's main goal was to look into the factors that influence tax compliance in Kakamega and Kisumu, both in Western Kenya. The study's target population consisted of 5,000 taxpayers who had registered with the Kenya Revenue Authority (KRA) for VAT payment. A total of 370 people were sampled using simple random sampling. Questionnaires were used to collect data for the study. Data were analyzed using descriptive statistics and multiple regression analysis. Only tax burden ($B=.608$, $p=.040$) and equity ($B=-1.055$, $p=.005$) were significant predictors of tax noncompliance among SMEs in Western Kenya, according to the findings. The other predictors of tax noncompliance by SMEs were not significant: complexity ($B=-.180$, $p=.098$), fairness ($B=-.032$, $p=.780$), tax rate ($B=.435$, $p=.138$), and fines and penalties ($B=.017$, $p=.927$). In a recent study by Vincent (2021) aimed at assessing SMEs' tax non-compliance behavior in Sub-Saharan Africa (SSA), the following was found: Nigerian perspective.

The study was based on behavioural economics theory and used paper-and-pencil survey instruments to collect data from 392 participants in Nigeria's South-West geopolitical zone. The findings of the study show that the complexity of the tax system, tax fines and penalties, income level, tax information, and tax attitude and perception are all important determinants of tax non-compliance behaviour. While tax rate and tax compliance cost may not necessarily exert significant influence. The overall conclusion from the study reveals that certain economic and behavioural factors are effective in either encouraging or discouraging tax noncompliance.

Similarly, Le, Tuyet, Hanh, and Do (2020) published a paper titled Factors influencing tax noncompliance among small and medium-sized enterprises: evidence from Vietnam. The study's goal is to look into the factors that influence tax noncompliance among small and medium-sized businesses (SMEs) in Vietnam. A researcher-administered questionnaire survey method was used to collect data from 376 SMEs who are business taxpayers. Six groups of factors have a significant impact on tax compliance among Vietnamese SMEs, according to the findings. These groups include business characteristics (BC), level of organizational income (OI), Awareness of tax obligations (TO), Tax policy (TP), View on tax compliance (TC), Existing fines and penalties (FP). Multivariate analysis was adopted; Cronbach's alpha coefficients were calculated, then, Exploratory Factor Analysis (EFA) was used. The findings show that, among these six factors, the most influential on tax noncompliance is Characteristics of accounting practices (AP).

In addition, Amanamah (2016) looked into tax evasion among small and medium-sized businesses in Ghana's Kumasi Metropolis. The study's goal was to identify the most important factors that influence SMEs' tax compliance. The study's sample size was 70 SMEs, who were chosen for questionnaire administration using convenient sampling. With the help of SPSS, data collected in the field was analyzed using descriptive statistics. Income tax, a Kumasi Municipal Assembly (KMA) levy, VAT, and property tax were among the taxes paid by respondents, according to the findings. In general, 91.4 percent of respondents said they are aware that tax compliance is required, and 92.9 percent said they are aware that non-compliance is illegal. 90% of those polled said they had received no tax education. Taxes paid were ranked high by 82.9 percent of respondents, and 85.7 percent said it was their biggest constraint. A reduction in the taxable amount, the use of tax collected for developmental projects, the enforcement of fines and penalties for tax noncompliance, as well as educating SMEs about their tax obligations were all cited as ways to discourage tax noncompliance by respondents.

In general, 91.4 percent of respondents said they understand that tax compliance is required, and 92.9 percent said they understand that non-compliance is illegal. 90% of those polled said they had never been taught about taxes. Taxes paid were ranked high by 82.9 percent of respondents, and it was their biggest constraint by 85.7 percent of respondents. A reduction in the taxable amount, the use of tax collected for developmental projects, the enforcement of fines and penalties for tax noncompliance, as well as educating SMEs about their tax obligations, according to respondents, would all help to discourage tax noncompliance. Knowledge of tax rights and responsibilities, knowledge of employment income, and awareness of sanctions were found to have a positive and significant relationship with tax compliance, according to the study's findings. The only factor statistically linked to tax noncompliance was knowledge of business income.

To the best of the researchers' knowledge and based on the literature reviewed by the researchers, no study has been conducted in Plateau State to assess the factors that influence tax noncompliance among taxpayers particularly SMEs. Moreso, now that Plateau State has passed through the first and second wave of the covid 19 pandemic, data from the PSIRS annual report shows a decrease in taxes collected between 2019 and 2020 as follows; ₦19, 122,375,801.59 and ₦16, 473,660, 383.22 respectively. Hence, this study will close the gap by providing empirical evidence of economic factors that influences tax noncompliance in plateau state particularly during the covid 19 era.

3.0 Methodology

This study was carried out among SMEs operating within Jos North Metropolis, where the capital of the state is cited. The study employed descriptive and survey research, both the quantitative and qualitative method for data collection was exploited. A list of registered SMEs operating in Plateau State was obtained from the Plateau State Ministry of Commerce and Industry. Out of 1,312 SMEs found in the register, 360 are cited in Jos North. Apart from having a higher number of SMEs registered, most of the SMEs owners are well educated on tax matters and also the willingness of research assistants to collect data of SMEs within the state capital for fear of insecurity; this justifies the choice of selecting Jos North for the study.

The total sample size of 186 SMEs were drawn from seven (7) major group of SMEs; Medical services, Services, Fashion and Design, Manufacturing, Educational services, Artisan, and Agro-business.

The sample size distribution of the major group of SMEs is shown in table 3.1 below

Table 3.1 **Population Distribution of SMEs in Jos North Metropolis**

S/N	Types of SMEs	Number of SMEs	Percentage
1	Med Services (Chemist, Pharmacist, Med. lab)	27	15
2	Services (Hotel, Restaurant, Laundry, transport etc)	31	17
3	Fashion and Design	25	13
4	Manufacturing	20	11
5	Educational Service	30	16
6	Artisan (Mechanics, Vulcanizer, welders, Mason,)	25	13
7	Agricultural (Farming, Processing, Agro-vet, etc)	28	15
	Total	**186**	**100**

Source: Plateau State Ministry of Commerce and Industry**.**

The sample size of 186 SMEs was chosen for the study. Krejcie and Morgan's (1970) table for determining sample size was adopted to statistically select 186 respondents to serve as the sample size. The sample elements were subsequently selected from the study's population using a stratified sampling method. The instrument employed for data collection was a questionnaire. The questionnaire administered was made of two sections. Section 'A' of the questionnaire was on the demographic characteristics of the respondents, Section 'B' contained both the independent and dependent variables.

The dependent variable (tax noncompliance) was measured using 4 items developed by McBarnett, (2003). While for the independent variables: tax rate, income level of taxpayer/SME, fines, and penalties were adapted from the study of KIpkoech and Joel (2016). All responses were measured using a five-Likert scale rating ranging from 'strongly disagree' (1) 'strongly agreed (5). The use of a 5-point Likert scale is necessary because Krosnic and Fabrigar (1997) posit that a scale of 5 to 7 points is more reliable and valid than a shorter or longer scale. It is also an interval scale that enables a researcher to analyse questionnaire responses using parametric tools. To determine the finding of the study, multiple regression analysis was used to analyse the data collected from the respondents with the aid of SPSS version 23.

4.0 Results and Discussion of Findings

Table 4.1: Model Summary of the Predictors and Criterion

Model	R	R. Square	Adjusted R-Square	Standard error of the estimate
1	.652	.425	.413	1.382

Source: SPSS Output, 2021

The regression coefficient denoted by 'R' in table 4.1 above indicates that there is a 0.652 or 65 percent relationship between the independent variables (economic factors) and the dependent variable (tax noncompliance). The coefficient determination is also represented by 'R2,' which is 0.425, indicating that the independent variables can predict 42.5 percent of the changes in tax noncompliance. While other factors outside the model account for the remaining 57.5 percent of changes in tax noncompliance.

Table 4.2 ANOVA of the Predictors and Criterion

Model		Sum of Square	Df	Mean Square	F	Sig
1	Regression	69.064	6	17.266	9.502	0.012
	Residual	354.331	175	1.817		
	Total	423.395	180			

Source: SPSS Output, 2021

The regression equation is represented by a set of regression coefficients that are statistically significant from zero, as shown in table 4.2, with an 'F cal' of 9.502 and a significance value of 0.012 (or p.05), indicating the model's fitness. This indicates that the overall regression model is statistically significant, valid, and suitable for any type of prediction. The independent variables, therefore, have a strong predictive influence on tax noncompliance among SMEs in Plateau State

Table 4.3: Coefficient of the Predictors Variables

Hypotheses	Standard Beta	Standard Error	T- Stat	P-Value	Decision
H1: Tax rate	.555	.016	2.255	.283	Accepted
H2: Income level of SMEs	.076	.101	.403	.002	Rejected
H3: Fines and penalties	.346	.152	1.264	.171	Accepted

Source: SPSS Output, 2021

4.1 Test of Hypotheses

4.1.1 Test of Hypothesis One

H_{01}: Tax rate does not significantly affect SMEs tax noncompliance in plateau state.

In Table 4.3 the result shows the contribution of the tax rate on SMEs tax noncompliance in Plateau State during covid 19 era. The beta weight of the tax rate is .555 with a negative P-value of 0.283

(p>.05) which suggests that tax rate is not a factor that influences SMEs tax non-compliance during the covid 19 era in Plateau State. Thus, the null hypothesis which stated that tax rate does not significantly affect SMEs tax noncompliance in plateau state is accepted.

4.1.2 Test of Hypothesis Two

H_{02}: Income level of SMEs does not significantly affect SMEs' tax noncompliance in plateau state. As shown in table 4.3 income level of SMEs with a beta weight of .076 and a significant P-value of 0.002 ($p<.05$) has a strong positive relationship with SMEs tax noncompliance. It applies that, income level of SMEs during the covid 19 era influences tax noncompliance of SMEs in Plateau State. Therefore we reject the null hypothesis, which states that level of income does not have a significant effect on SMEs tax noncompliance in Plateau State.

4.1.3 Test of Hypothesis Three

H_{03}: Fines and penalties do not significantly affect SMEs' tax noncompliance in plateau state.
Also, in the regression result in table 4.3, fines and penalties have a beta weight of .346 with a P-value of 0.171 ($p>.05$) shows a negative and insignificant relationship with SMEs tax noncompliance. The result, therefore, provides evidence for rejecting hypothesis three which states that fines and penalties do not significantly affect SMEs' tax noncompliance in Plateau State.

4.2 Discussion of Findings

The main objective of this study is to examine those economic factors that affect SMEs' tax noncompliance in Plateau State at the covid 19 era. The importance of this study is to reveal to the plateau state government, other states governments, federal government, SMEs, and other revenue collecting agencies those factors that are responsible for the reduction of taxes collected during the covid 19 era. Three hypotheses were developed and tested, the result is discussed as follows.

The first hypothesis states that the tax rate does not significantly affect SMEs' tax noncompliance in plateau state. Based on the results of the analysis from the test of the hypothesis, the study uncovered that tax rate has an insignificant effect on SMEs tax noncompliance in Plateau State at the covid 19 era. To achieve the second objective of the study, the second hypothesis which states that, income level of SMEs does not significantly affect SMEs' tax noncompliance in plateau state was tested. The study found income level of SMEs has a positive and significant association with SMEs tax noncompliance in plateau state at this covid 19 era.

Finally, to achieve the last objective, the last hypothesis stated that fines and penalties do not significantly affect SMEs' tax noncompliance in plateau state. The result discovered that fines and penalties do not have a significant effect on SMEs' tax noncompliance in plateau state at this covid 19 era. From the outcome of this study, empirical evidence has shown that the income level of SMEs is the only economic factor that affects SMEs' tax noncompliance in plateau state. While, tax rate, fines, and penalties were found not to be economic factors that affect SMEs tax noncompliance in Plateau State at covid 19 era.

5.0 Conclusion and Recommendations

In conclusion, the present study has provided additional evidence to the growing body of knowledge concerning possible economic factors that influences tax noncompliance behaviour by taxpayers. The study has successfully provided theoretical and empirical evidence that shows that the income level of

SMEs in plateau state has affected tax noncompliance during this covid 19 era. Furthermore, the study concluded that tax rates, fines, and penalties do not affect SMEs' tax noncompliance at this covid 19 era.

Based on findings from this study and conclusion, the following recommendations on how to discourage tax evasion and tax noncompliance among SMEs in Plateau State are presented below.

i. The Plateau State Internal Revenue Service (PSIRS) should review some of their tax rates to fall in line with current economic realities confronting most taxpayers/SMEs. This will enhance tax compliance and reduce tax noncompliance in Plateau State.
ii. Since most SMEs have been severely affected by the covid 19 pandemic, the Plateau State government should deliberately provide palliative measures such as a low-interest loan that is easily assessable for SMEs. This will stimulate their performance and boost their income level.
iii. PSIRS should take a look at some fines and penalties administered to tax defaulters in plateau state, there is a need for fines and penalties to be reviewed in line with present economic realities. This will help in discouraging tax noncompliance in Plateau State.

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Governance Sustainability Disclosure and Value of Nigerian Listed Manufacturing Firms: The Moderating Effect of Ownership Structure

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Abstract
Governance sustainability information is the collection of impacts the board of directors has on the day-to-day operations of firms. Based on the agency arrangement, information asymmetry may compel ownership to exercise some monitoring on the board to ensure improved governance sustainability performance. This is due the fact that its disclosure has become a constituent of business sustainability communication and part of value-creation process, as it ensures firms are governance-sensitive. Therefore, this paper examines the moderating effect of ownership structure on the relationship between governance sustainability disclosure and value of Nigerian listed manufacturing firms. It obtains data from annual reports and accounts of sampled firms and daily price listings of the Nigerian Exchange Group from 2013 to 2020, which is analyzed via descriptive statistics, correlation, panel corrected standard error and hierarchical regression techniques. The study finds, among others, that governance sustainability disclosure has a significant and positive effect on the value of listed manufacturing firms in Nigeria, and that ownership structure significantly moderates the relationship. As a result, the study recommends, among others, that firms should prioritize disclosure of governance sustainability performance via the establishment of dedicated sustainability committees, charged with the responsibility of enforcing continued compliance with sustainability provisions/standards and disclosure of same in all ramifications; concentrated ownership should intensify monitoring attention on the board in order to enhance governance sustainability information disclosure in order to communicate the governance-sensitivity of the firms, favorably induce investors' decisions and maximize value.

Key words: *Governance sustainability, Ownership structure, Firm value, Nigerian manufacturing sector.*

1.0 Introduction

Firm value reflects decisions made by stakeholders in the areas of investment, finance, and asset management. The concern is whether a company is undervalued, appropriately valued, or overvalued. In determining value, governance performance, sustainable growth (Riasi and Pourmiri, 2016), social factors of industrial establishments such as human resources, environmental performance, among others, play a major role (Sucuahi and Cambarihan, 2016). It implies that in a perfect stock market, the value of a firm's stock reflects all relevant financial and non- or extra-financial issues, which affect value. This gives both existing and potential investors the basis for investment decisions. On this basis, the global community has developed interest in sustainable socio-economic development that respects people (social), profits (economic), and the planet (environment) (Elkington, 1997). Furthermore, the Global Reporting Initiative (GRI) has classified dimensions of sustainability reporting to encompass profits (economic), planet (environment), people (social) and the general information reporting within which governance performance reporting is predominantly featured (GRI, 2013). Consequently, corporate information on how a firm is governed plays an importance role in guiding informed decisions by investor and other stakeholders. Hence, it constitutes one of the pointers to how sustainable a firm would be in the foreseeable future.

As part of the value creation process, firms are expected to engage in and adequately disclose sustainability performance, demonstrating they are accountable for their profits, people, planet as well as been sensitive to governance issues (Horn et al., 2018). By disclosing governance sustainability information, firms gain competitive advantage and ensure the sustainability of their investments. Thus, the main objective of this study is to investigate the moderating effect of ownership structure on the relationship between sustainable governance disclosure and value of listed manufacturing firms in Nigeria. Specific objectives of the study include to: (i) Examine the effect of sustainable governance disclosure on the value of listed manufacturing firms in Nigeria; and (ii) Investigate the moderating effect of influential ownership structure on the relationship between sustainable governance disclosure and the value of listed manufacturing firms in Nigeria.

2.0 Literature Review

In this section, the paper presents the theoretical, conceptual and empirical frameworks for the study. It reviews the stakeholder theory, the need for good corporate governance, governance sustainability disclosure and its relationship with firm value as well as ownership structure.

2.1 The Stakeholder Theory

This paper in anchored on the stakeholder theory (Freeman, 1984). The theory is concerned with the relationship between the firm and its environment and holds that value creation in a firm should be attributable to all stakeholders rather than only shareholders. Consequently, the disclosure of environmental, social and governance (ESG) sustainability performance provides data that showcase a firm’s behaviour to influence stakeholders’ perception about its operations, which impacts value (Ortas et al., 2015). Thus, directors owe every stakeholder the duty of making comprehensive information available for decision-making purposes, and not only to shareholders (Eccles et al., 2011). Therefore, adequate communication with a firm’s stakeholder ecosystem via expanded accountability (including non- or extra-financial reporting) facilitates value creation for all stakeholders and ensures corporate survival and continuity.

2.2 The Need for Corporate Governance

Corporate governance (CG) refers to the manner in which the board of directors manage and supervise the affairs of a firm and make decisions that affect shareholders’ investments (Fatma & Chouaibi, 2021). It is the systemic approach adopted by the board to ensure that the firm’s properties are adequately managed and supervised in order to create a positive impact on the sustainability, profitability and valuation (Fitriana & Muslim, 2023). Theoretically, CG is concerned with the 4 Ps of people, performance (competencies), processes and policies. It is an essential tool in the management of firms and will continue to be of relevance as stakeholders continually demand for transparency in the affairs of firms. Effective CG facilitates the cultivation of a firm's culture of integrity, resulting to greater financial management and supervision, minimization of agency conflicts, internal corruption and financial leakages, increased investors' confidence, mitigation of risks, compliance with internal and external rules and regulations, promotion of social responsibility and accountability. Thus, the aim of firms' investment in CG is not limited to profitability, but includes the sustainability of shareholders' investments.

2.3 Governance Sustainability Disclosure and Firm Value

Based on the GRI fourth-generation (G4) index, the disclosure of governance sustainability is classified as one of the general information specific disclosures alongside firm strategy and analysis, organizational profile, identified material aspects and boundaries, stakeholder engagement, report profile as well as ethics and integrity (GRI, 2013). In extant literature, emphasis has been laid on governance disclosure, probably due to the strategic position governance occupies in the firm, been entrusted with all the resources of the firm such that poor management of same is detrimental to the sustainable growth of the firm's investments. Therefore, firms are expected to adequately disclose issues revolving around governance in order to boost the confidence of stakeholders in the system, which is a factor for attaining the objective of shareholders' value maximization.

Empirically, Han et al. (2016) find that governance information disclosure has a significant effect on the market-based financial performance of listed firms in Korea from 2008 to 2014. Similarly, Li et al. (2018) also find a significant and positive association between governance disclosure and value of U.K. firms from 2004 to 2013. In the same vein, Emeka-Nwokeji, and Osisioma (2019) find that governance sustainability disclosure has a significant positive effect on the value of listed non-financial firms in Nigeria. Furthermore, the study by Abdi et al. (2020) reveal that governance sustainability disclosure has a significant positive relationship with market value of air transport firms across the globe from 2013 to 2019. However, the study by Hossain et al. (2015) find that governance disclosure has an insignificant effect on the market-based performance of listed firms in Bangladesh in the study conducted covering the period from 2008 to 2012. In this regard, the paper has formulated null hypothesis one hereunder to determine whether the case of listed manufacturing firms in Nigeria from 2013 to 2020 would be consistent with Hossain et al. (2015) on one hand or Han et al. (2016), Li et al. (2018), Emeka-Nwokeji and Osisioma (2019) and Abdi et al. (2020):

Ho_1: Governance sustainability disclosure has no significant effect on the value of listed manufacturing firms in Nigeria.

2.4 Ownership Structure

Sequel to the mixed findings of the reviewed empirical studies, this paper introduces ownership structure as moderator variable to ascertain its capability to moderate the governance sustainability disclosure and firm value relationship. According to Jensen and Meckling (1976), ownership structure refers to the distribution of equity concerning votes and capital, including the identity of the equity owners. It is the fraction of shares, which are owned by a firm's shareholders (Suk, 2008; Phan & Tran, 2019). Similarly, Holderness, Kroszner, and Sheehan (1999) consider ownership structure to be the proportions of units of ownership and voting rights held by different individuals or groups of individuals in a firm, based on amounts of capital contribution. It is the distribution manner of the equity of a firm in terms of votes and degree of capital concentration. Thus, the nature of the property and the identity of controlling shareholders is significant to influencing the overall firm's sustainable growth as a result of the dependence on strategic positioning about the alignment of interests between the parties (Qui, 2013).

According to Thomsen and Conyon (2012), one of two approaches that address issues of ownership structure is ownership concentration. Ownership concentration means a situation where a firm is owned by one or a few large owners (concentrated) or by multiple smaller owners (dispersed/diffused). Ownership concentration is defined by Adenikinju and Ayorinde (2001) as the portion of shares held by the top ten investors. Among firms, there are differences both in terms of ownership mix and also in terms of ownership concentration. It means that the distribution of ownership among different groups in a firm can impact on managerial opportunism, which subsequently has implications for managerial behaviour and corporate performance. In this regard, Atmaja (2008) conclude that when the quantum of ownership concentration is large, it has positive effect on performance; because such shareholders with significant stake in the firm have strong incentives to closely monitor and change the management whenever necessary. Therefore, hypothesis two is formulated in the null form, to analyze the moderating effect of influential ownership structure on the relationship between governance sustainability disclosure and firm value:

Ho_2: Ownership structure does not significantly moderate the relationship between governance sustainability disclosure and the value of listed manufacturing firms in Nigeria.

3.0 Methodology

The study adopts descriptive-correlational research design in order to determine whether the direction of relationship between the dependent and independent variables is either direct, inverse or there is no correlation. The study obtains data from annual report and accounts of the sampled firms as well as daily price listings of the NGX from 2013 to 2020, which it analyses using descriptive statistics, correlation, and multiple regression techniques. The scope from 2013 is justified by the fact that the GRI G4 sustainability reporting guideline, which is the basis of determining environmental performance disclosure was introduced in May, 2013.

The study population is made up of the fifty-six (56) manufacturing firms listed on by the Nigerian Exchange Group (NGX), comprising 4 agriculture firms, 3 conglomerates, 20 consumer goods firms, 8 healthcare firms, 11 industrial goods firms, 3 natural resources firms and 7 oil and gas firms (see Appendix A). However, delisting and technical suspension by the stock exchange are applied as filters, eliminating ten (10) firms from the population: Anino International Plc, Cement Company of Northern Nigeria Plc, Dangote Flour Mills Plc, Evans Medical Plc, First Aluminium Nigeria Plc, Golden Guinea Breweries Plc and Nigeria German Chemicals Plc (on the basis of delisting) as well as Multi-Trex Integrated Foods Plc, Oando Plc and Union Dicon Salt Plc (on the basis of suspension by the NSE), resulting to a sample frame of 46 firms, which also serve as the sample of the study (see Appendix B).

The dependent variable of the study is firm value, proxied by Tobin's Q (TQ), which is expressed as the ratio of the sum of the book value of debt and the market value of equity divided by the value of total assets (Kurniawan et al., 2018). Moreover, sustainable governance disclosure is the independent variable, measured in terms of governance sustainability disclosure index (GSDI) and expressed as the number of governance sustainability issues disclosed divide by the total number of issues disclosable (Emeka-Nwokeji & Osisioma, 2019). The governance sustainability disclosure index is presented in Table 1.

Table 1: Governance Sustainability Disclosure Index

S/N	Governance Items Disclosable
1.	Roles and functions of the board
2.	Chairman's roles in the board
3.	CEO's roles in the board
4.	Non-executive/independent director's roles
5.	Board of directors' biographic information
6.	Age of board members
7.	Board meetings with records of attendance
8.	Board members' appointment dates
9.	Board change/re-election or resignation information
10.	Board education and training process
11.	Board performance review process
12.	Board members' third-party transactions
13.	Board shareholding
14.	Major shareholders
15.	Shareholders' engagement process/policy
16.	Audit committee activities
17.	Risk committee presence
18.	Remuneration committee presence
19.	Nomination committee presence
20.	Compliance to corporate governance standards
21.	Internal control systems
22.	Board ethics, anti-corruption and code of conduct process/policy
23.	Whistle blowing process/policy
24.	CEO's compensation

Source: Extracts from the GRI G4 Index.

Moreover, the study introduces industry dummy to estimate the contribution of each industry in explaining firm value based on the disclosure of sustainable governance issues. The dummy of "1" is assigned if a firm belongs to a particular industry, while "0" is assigned if a firm does not belong to an industry. Thus, dummy variable (D1 – D7) is calculated as the number of firms in a particular industry divide by the total number of firms that constitute the sample of the study (Crisostomo et al., 2011), where D1=Agriculture, D2=Conglomerate, D3=Consumer Goods, D4=Healthcare, D5=Industrial Goods, D6=Natural Resources and D7=Oil and Gas.

In addition, the moderating variable of the study, ownership structure (OS), is considered from the viewpoint that shareholders with sizeable units of ownership may exercise some control and influence disclosure. It is estimated in terms of managerial ownership (MGER), institutional ownership (INST), and block-holder ownership (BLCK). MGER is expressed as the product of total units of shares held by members of the board of directors and nominal price per share divide by the product of total units of outstanding shares and nominal price per share in the firm; INST is calculated as the product of total units of shares held by institutions and nominal price per share divide by the product of total units of outstanding shares and nominal price per share in the firm; and BLCK is determined as the product of total units of shares held by shareholders with 5% or more units and nominal price per share divide by the product of total units of outstanding shares and nominal price per share in the firm (Kim et al., 2018). For the purpose of analysis, an ownership structure index (OSI) is developed, which combines the individual moderating effect of MGER, INST and BLCK. Furthermore, the study introduces the size of total assets (FSIZ) of the sampled listed manufacturing firms in Nigeria, measured by the logarithm of total assets (Emeka-Nwokeji & Osisioma, 2019) as contro l variable. The statistical model of the study is presented in Figure 1:

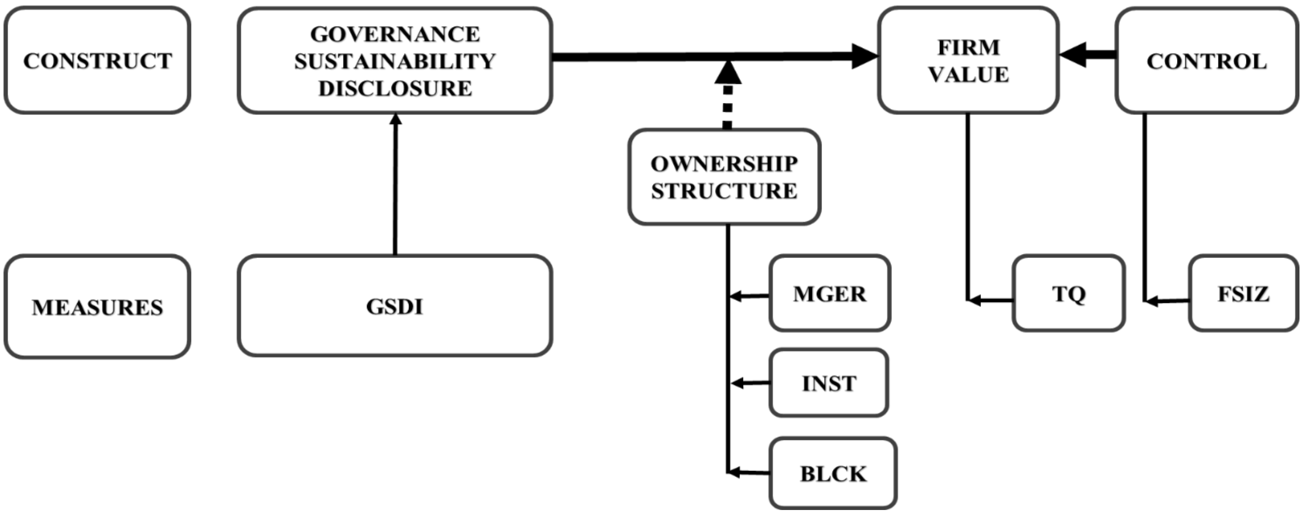

Figure 1: Statistical Model of the Study.

The study adapts the (Feltham & Ohlson, 1995) linear information model, which is mostly used in firm value related studies in existing literature such as Berthelot et al. (2012) and Loh et al. (2017). The model is stated as follows:

$$FV_{i,t} = \beta_0 + \beta_1 BE_{i,t} + \beta_2 AE_{i,t} + \beta_3 TE_{i,t} + \varepsilon_{i,t} \quad \ldots\ldots(1)$$

Where $FV_{i,t}$ = Value of firm i for time period t; $BE_{i,t}$ = Opening book value of equity of firm i for time period t; $AE_{i,t}$ = Abnormal earning (net income less 12% cost of equity) of firm i for time period t; and $TE_{i,t}$ = Transitory earning of firm i for time period t. According to the model, transitory earning is any other non-financial or extra-financial variable that may affect the value of a firm directly or indirectly (Feltham & Ohlson, 1995). Therefore, Model-2 expresses the relationship between firm value and independent as well as control variables as presented, thus:

$$TQ_{i,t} = \beta_0 + \beta_1 BE_{i,t} + \beta_2 AE_{i,t} + \beta_3 GSDI_{i,t} + \beta_4 FSIZ_{i,t} + \beta_5 D1 + \beta_6 D2 + \beta_7 D3 + \beta_8 D4 + \beta_9 D5 + \beta_{10} D6 + \beta_{11} D7 + \varepsilon_{i,t} \quad \ldots\ldots(2)$$

Moreover, the introduction of the moderating variable, OSI results to Model-3, which shows the relationship between proxies of firm value and independent, control and moderating variables, thus:

$$TQ_{i,t} = \beta_0 + \beta_1 BE_{i,t} + \beta_2 AE_{i,t} + \beta_3 GSDI_{i,t} + \beta_4 FSIZ_{i,t} + \beta_5 D1 + \beta_6 D2 + \beta_7 D3 + \beta_8 D4 + \beta_9 D5 + \beta_{10} D6 + \beta_{11} D7 + \beta_{12} OSI_{i,t} + \varepsilon_{i,t} \quad \ldots\ldots(3)$$

Furthermore, Model-4 introduces the interaction between independent and moderating variables. It is used to determine the moderating effect or otherwise of ownership structure on the relationship between sustainable governance disclosure and firm value and stated as:

$$TQ_{i,t} = \beta_0 + \beta_1 BE_{i,t} + \beta_2 AE_{i,t} + \beta_3 GSDI_{i,t} + \beta_4 FSIZ_{i,t} + \beta_5 D1 + \beta_6 D2 + \beta_7 D3 + \beta_8 D4 + \beta_9 D5 + \beta_{10} D6 + \beta_{11} D7 + \beta_{12} OSI_{i,t} + \beta_{13} GSDI{*}OSI_{i,t} + \varepsilon_{i,t} \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots(4)$$

4.0 Results and Discussions

This section presents the results of data analysis. It contains descriptive statistics, post-estimation diagnostic tests, panel corrected standard errors (PCSE) regression and hierarchical regression.

4.1 Descriptive Statistics

This section presents the descriptive statistics of time-variant variables of the study. It includes number of observations, mean, standard deviation, minimum value as well maximum values. The result is presented in Table 2.

Table 2: Descriptive Analysis of Time-Variant Variables

Variable	Obs	Mean	Std. Dev.	Iin.	Max.
Dependent Variables					
Tobin's Q (TQ)	321	1.422	1.293	0	8.993
Independent Variables					
Book Value of Equity (BE)	366	16.219	21.265	.12	110.045
Abnormal Earnings (AE)	368	2.503	6.665	.442	50.714
Governance Sustainability Disclosure Index (GSDI)	367	0.442	0.186	0	0.833
Moderating Variables					
Institutional Ownership (INST)	368	0.567	0.226	0	0.91
Block-holder Ownership (BLCK)	368	0.502	0.216	0	0.91
Managerial Ownership (MGER)	368	0.171	0.263	0	0.992
Control Variables					
Firm Size (FSIZ)	367	7.222	0.891	5.239	9.306

Source: STATA 13.0 Output, 2021. [Obs. = Observations; Std. Dev. = Standard Deviation; Min. = Minimum; Max. = Maximum.]

Table 2 contains the mean, standard deviation, minimum and maximum values of the data variables. It shows that the proxy for firm value (TQ) has a mean of 1.422 with a standard deviation of 1.293, which implies that the data for TQ of sampled firms is not widely dispersed from the mean as supported by the minimum and maximum values of 0 and 8.993 respectively. On the part of explanatory variables, data for BE, which is expressed on per share basis, reveal an average value of 16.22 and deviation from this mean value stands at 21.27. This implies a wide dispersion evidenced by a negative minimum value of 5.12 and maximum value of 110.05. Similarly, the negative minimum value of 6.44 and maximum value of 50.71 in respect of data for AE supports the considerable spread of the data from the mean value of 2.50 and the standard deviation of 6.67. Similarly, the data for GSDI has a mean value of 0.442 and a standard deviation of 0.186, which implies that the data for GSDI is not widely dispersed from it mean value. It means that at least one of the sampled manufacturing firms in Nigeria disclose 0.0% of governance sustainability information in any of the study years (minimum value of 0) up to as high as 83.3% (maximum value of 0.833).

Furthermore, Table 2 shows that, on average, about 56.7% of units of ownership among the sampled manufacturing firms is owned by institutions (INST). The standard deviation of 0.226 in this case indicates that the firms have normal variations in the proportion of their equity shares held by institutions. This is evidenced in the fact that at least one of the firms appear to have no institutional ownership in a given time period (minimum value of 0), while at least one firm has as high as 91% of its shares held by institutions (maximum value of 0.91). Similarly, BLCK measured as the proportion of shares of the sampled firms held in blocks of 5% an above, results to a mean value 50.2% with a standard deviation of 0.216, which indicate there is a normal disp ersion of data for BLCK from it mean. The minimum and maximum values of BLCK is 0 and 0.91 respectively, implies that the block-holder ownership do not significantly vary among sampled manufacturing firms in Nigeria. In the same vein, MGER data of the sampled firms has the mean value of 0.171, which means that about 17.1% of units of ownership among the sampled firms are held by the board of directors, on average. The standard deviation of 0.263 indicates there is mild difference among proportions of ownership by the board among the sampled firms. In addition, Table 1 reports that FSIZ has a mean value of 7.22 and standard deviation of 0.89. This shows the dispersion of the data for FSIZ is not widely dispersed from it mean as supported by the minimum and maximum FSIZ values of 5.25 and 9.31 respectively.

4.2 Diagnostic Tests

The industry dummies introduced in the study are time-invariant variables. Thus, the fixed effect (FE) model is not feasible since it makes the drawing of inferences from time-invariant effects impossible. Hence, the paper adopts the random effect (RE) model. Consequently, the residuals from the RE regressions are used to conduct tests for normality (Skewness/Kurtosis and Shapiro-Wilk), multicollinearity, Breusch and Pagan Lagrange Multiplier (LM), contemporaneous correlation, panel serial correlation, unit root (Fisher-Type) and group-wise heteroscedasticity. The summary of results of these tests is presented in Table 3.

Table 3: Results of Diagnostic Tests

Test	Statistic	P-value	Interpretation
Normality Test:			
Skewness/Kurtosis (Adj. Chi^2)	>1.96	<0.05	Skewed
Shapiro-Wilk (Z-value)	>1.96	<0.05	Abnormally Distributed
Multicollinearity	Mean VIF = 2.08		Absent
Breusch-Pagan LM:			
TQ	227.73	0.000	Random Effect
Contemporaneous Correlation	5.011	0.000	Present
Panel Serial Correlation	6.372	0.015	Present
Fisher-Type Unit Root	-2.819	0.002	Absent
Group-wise Heteroscedasticity	18130.63	0.000	Present

Source: STATA 13.0 Output, 2021.

Table 3 reports that the data for the study is skewed and it is not normally distributed based on the skewness/kurtosis alpha values for each joint adjusted Chi^2 and z-scores less than 0.05. The alpha of 0.000 for Breusch and Pagan langrage multiplier Chi^2 in respect of fitted values of TQ indicate that the RE model is suitable for the study. In addition, the results show absence of multicollinearity and unit root within the panels as a result of the mean VIF of 2.08 and the z- value of the Fisher-type test significant at less 1%. However, there is presence of group-wise heteroscedasticity, contemporaneous correlation and panel serial correlation, which justify the adoption of Panel Corrected Standard Errors (PCSE) and hierarchical regression for the study.

4.3 Regression of Sustainability Governance Disclosure and Firm Value

The results of Prais and Winsten PCSE regression between TQ and time-variant as well as time-invariant explanatory variables BE, AE, SGDI, FSIZ, D1, D2, D3, D4, D5, D6 and D7) is presented in Table 4.

Table 4: Regression of Governance Sustainability Disclosure and Firm Value

Variable	TQ (Model-2)	Variable	TQ (Model-2)
BE	-1.91*	D4	-2.34**
	(0.005)		(0.082)
AE	4.26***	D5	4.13***
	(0.026)		(0.098)
GSDI	5.36***	D6	5.28***
	(0.291)		(0.552)
FSIZ	-2.80***	D7	-2.41***
	(0.1)		(0.225)
D1	0.63		
	(0.165)		
D2	0.00		
	(0.162)		
D3	5.41***		
	(0.115)		
R^2			0.3643
Wald Chi^2			14940.74
Wald Chi^2-Sig.			0.000

Source: STATA 13.0 Output, 2021. [Z-scores are not in parenthesis; PCSE-values are in parenthesis *** Significant @ 1%; ** Significant @ 5%; and * Significant @ 10%.]

Table 4 shows that the PCSE result for Model-2 returns the R^2 of 36.4% as against the RE overall R^2 of 16.6%, which indicates a notable improvement by 19.8%. The table further reveals that out of the 36.4% of variations in TQ explained by the joint effect of the independent and control variables, D3 (consumer goods sector), D5 (industrial goods sector) and D6 (natural resources sector) positively and significantly contribute 0.62, 0.4 and 2.92 units respectively, while D4 (healthcare sector) and D7 (oil and gas sector) appear to have a significant but adverse contribution to fitted values of TQ by -0.192 and -0.54 units respectively. However, the influence of the D1 (agriculture sector) and D2 (conglomerate firms) is positive but insignificant, contributing 0.104 and 0.001 units in that order. In spite of the insignificant influence of Agricultural and Conglomerate firms, Table 4 presents the Wald Chi^2 of 14940.7 with a significant p-value of 0.000, indicating that the model is fit for the data and the joint contribution of firms from all sectors significantly explain variations in TQ.

Furthermore, Table 4 reports that BE, one of the two constant elements of the Ohlson model, negatively affect TQ significantly at the p-value less than 0.1, which is consistent with Burnett et al. (2011) as well as Loh et al. (2017) who also find a significant relationship between BE and firm value among global Fortune 500 firms and in Singapore respectively and contradicts Narullia and Subroto (2018) who find insignificant relationship between BE and firm value among firms in Indonesia. However, the second constant element AE significantly and positively affects TQ at p-value less than 0.01. These findings agree with the position of Schadewitz and Niskala (2010) among firms in Finland and Loh et al. (2017) in Singapore.

The effect of GSDI on TQ is significant and positive at the p-value less than 0.01 and it is consistent with Abdi et al. (2020). In addition, the control variable FSIZ exhibit a negative but significant effect (p-value < 0.01) on TQ in collaborates with Emeka-Nwokeji and Osisioma (2019), who also find a significant effect between size and value of firms. Thus, the results in Model-2 imply that a rise in sustainable governance disclosure directly influences firm value.

4.4 Moderation of Ownership Structure on Governance Sustainability Disclosure and Firm Value

The regression results of the moderating effect of OSI on the relationship between GSDI and TQ is hereunder discussed. Table 5 presents the summary of results of the moderation in three stages.

Table 5: Moderation of Ownership Structure on Governance Sustainability and Firm Value

Variable	TQ (Models 2, 3 & 4)			Variable	TQ (Models 2, 3 & 4)		
	IV	MV	IV(MV)		IV	MV	IV(MV)
BE	-1.91*	-1.84*	-1.86*	D4	-2.34***	-1.32	-1.20
	(0.056)	(0.065)	(0.064)		(0.019)	(0.188)	(0.231)
AE	4.26***	4.23***	4.31***	D5	4.13***	4.94***	3.65***
	(0.000)	(0.000)	(0.000)		(0.000)	(0.000)	(0.000)
GSDI	5.36***	5.32***	2.92***	D6	5.28***	5.07***	1.59
	(0.000)	(0.000)	(0.004)		(0.000)	(0.000)	(0.111)
FSIZ	-2.80***	-3.15***	-3.53***	D7	-2.41**	-2.03*	-1.82*
	(0.005)	(0.002)	(0.000)		(0.016)	(0.042)	(0.068)
D1	0.63	1.02	0.71	OSI		3.59***	5.14***
	(0.528)	(0.308)	(0.479)			(0.000)	(0.000)
D2	0.00	0.52	0.09	GSDI*OSI			-1.76*
	(0.997)	(0.601)	(0.928)				(0.078)
D3	5.41***	6.04***	6.33***				
	(0.000)	(0.000)	(0.000)				
R^2					0.3643	0.3748	0.3936
R^2 Change						0.011**	0.019**
F-Value					13.53	13.1	11.57
F-Sig.					0.000	0.000	0.000

Source: STATA 13.0 Output, 2021. [P-values are in parenthesis; *** P-value < 0.01; ** P-value < 0.05; * P-value < 0.1; IV = Independent Variables; MV = Moderating Variable.]

In Table 5, the first stage of moderation in respect of TQ (Model-2) returns an R^2 of 36.4%, which is jointly explained by BE, AE, GSDI, FSIZ and industry dummies D1, D2, D3, D4, D5, D6 and D7. The F-value of the model is 13.53, which is significant at p-value less than 0.01. Upon the introduction of the moderator (OSI) in Model-3, the R^2 then changed significantly by 1.1% ($\Delta R^2 = 0.011$) to 37.5% at p-value < 0.05. This result implies that OSI significantly contributes in explaining TQ. Moreover, the R^2 further changed to 39.4% when the interaction variable (GSDI_OSI) is included as in Model-4. That is a change of 1.9% ($\Delta R^2 = 0.019$), which is significant at p-value < 0.05. Model-3 and Model-4 are both significant, given the reported F-value of 13.10 and 11.57 (p-value < 0.01) respectively. This result shows that ownership structure moderates the relationship between governance sustainability disclosure and firm value as traced to the z-score of GSDI_OSI (-1.76), which is significant at 10%.

5.0 Conclusion and Recommendations

The fact that governance sustainability disclosure has positive and significant relationship with the value of listed manufacturing firms in Nigeria, it has the capacity to directly improve value creation. Therefore, the study concludes that the disclosure of governance performance gives firms an edge to compete favorably and achieve value maximization. In addition, since the interaction of ownership structure with governance sustainability disclosure significantly contributes to variations in firm value, the paper concludes that ownership structure significantly moderates the relationship between governance sustainability disclosure and value of Nigerian listed manufacturing firms. Furthermore, the fact that the dummy for consumer goods, industrial goods and natural resources display a significant and positive contributions to variations in firm value, the study concludes that consumer goods, industrial goods and natural resources firms within the manufacturing sector predominantly influence variations in firm value as a result of the quantum of governance sustainability issues disclosed. Based on the major findings and conclusions reached, the study makes the following recommendations:

i. The management of manufacturing firms in Nigeria should prioritize the disclosure of governance sustainability issues via the establishment of dedicated sustainability committees, charged with the responsibility of enforcing continued compliance with governance provisions/standards and disclosure of same in all ramifications. By so doing, the governance-sensitivity of the firms will be exposed, which enhance the value maximization objective;
ii. Influential ownership should intensify monitoring of the board in the area of governance sustainability disclosure in order to improve the value of listed manufacturing firms in Nigeria; and
iii. Regulatory agencies should collaborate with the GRI, localize and encourage adoption of industry-based sustainability disclosure guidelines to eliminate the selective or non-adoption of the GRI G4 sustainability guideline on grounds of generality.

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APPENDIX A
Population of the Study

S/N	FIRM	INDUSTRY	YEAR OF LISTING
1	11 Plc (Mobil Oil Nigeria Plc)	Oil & Gas	1978
2	Aluminium Extrusion Industries Plc	Natural Resources	1986
3	Anino International Plc	Oil & Gas	1989
4	B.O.C. Gases Nigeria Plc	Natural Resources	1979
5	Berger Paints Nigeria Plc	Industrial Goods	1974
6	Beta Glass Plc	Industrial Goods	1986
7	Cadbury Nigeria Plc	Consumer Goods	1976
8	Cement Company of Northern Nig. Plc	Industrial Goods	1993
9	Champion Breweries Plc	Consumer Goods	1983
10	Chellarams Plc	Conglomerates	1974
11	Conoil Plc	Oil & Gas	1989
12	Cutix Plc	Industrial Goods	1987
13	Dangote Cement Plc	Industrial Goods	2010
14	Dangote Flour Mill Plc	Consumer Goods	2008
15	Dangote Sugar Refinery Plc	Consumer Goods	2007
16	Eterna Plc	Oil & Gas	1998
17	Evans Medical Plc	Healthcare	1979
18	Fidson Healthcare Plc	Consumer Goods	2008
19	First Aluminium Nigeria Plc	Industrial Goods	1992
20	Flour Mills of Nigeria Plc	Consumer Goods	1979
21	FTN Cocoa Processors Plc	Agriculture	2008
22	GlaxoSmithline Consumer Nigeria Plc	Healthcare	1977
23	Golden Guinea Breweries Plc	Consumer Goods	1978
24	Greif Nigeria Plc	Industrial Goods	1969
25	Guinness Nigeria Plc	Consumer Goods	1965
26	Honeywell Flour Mills Plc	Consumer Goods	2009
27	International Breweries Plc	Consumer Goods	1995
28	Lafarge Africa Plc	Industrial Goods	1979
29	Livestock Feeds Plc	Agriculture	1978
30	May & Baker Nigeria Plc	Healthcare	1994
31	McNichols Consolidated Plc	Consumer Goods	2009
32	Meyer Plc	Industrial Goods	1979
33	Morison Industries Plc	Healthcare	1978
34	MRS Oil Nigeria Plc	Oil & Gas	1978
35	Multi-Trex Integrated Foods Plc	Consumer Goods	2010
36	NASCON Allied Industries Plc	Consumer Goods	1992
37	Neimeth International Pharmaceuticals Plc	Healthcare	1979
38	Nestle Nigeria Plc	Consumer Goods	1979

39	Nigerian Breweries Plc	Consumer Goods	1973
40	Nigerian Enamelware Plc	Consumer Goods	1979
41	Nigerian German Chemicals Plc	Healthcare	1979
42	Northern Nigeria Flour Mills Plc	Consumer Goods	1978
43	Oando Plc	Oil & Gas	1992
44	Okomu Oil Palm Company Plc	Agriculture	1991
45	Pharma-Deko Plc	Healthcare	1979
46	Portland Paints and Products Nigeria Plc	Industrial Goods	2009
47	Premier Paints Plc	Industrial Goods	1995
48	Presco Plc	Agriculture	2002
49	PZ Cussons Nigeria Plc	Consumer Goods	1974
50	SCOA Nigeria Plc	Conglomerates	1977
51	Thomas Wyatt Nigeria Plc	Natural Resources	1978
52	Total Nigeria Plc	Oil & Gas	1979
53	UAC Nigeria Plc	Conglomerates	1974
54	Unilever Nigeria Plc	Consumer Goods	1973
55	Union Dicon Salt Plc	Consumer Goods	1993
56	Vitafoam Nigeria Plc	Consumer Goods	1978

Source: NGX Website (www.nse.com.ng/issuers/listed-securities/listed-companies), 2020.

APPENDIX B
Sample of the Study

S/N	FIRM	SECTOR/INDUSTRY	YEAR OF LISTING
1	11 Plc (Mobil Oil Nigeria Plc)	Oil & Gas	1978
2	Aluminium Extrusion Industries Plc	Natural Resources	1986
3	B.O.C. Gases Nigeria Plc	Natural Resources	1979
4	Berger Paints Nigeria Plc	Industrial Goods	1974
5	Beta Glass Plc	Industrial Goods	1986
6	Cadbury Nigeria Plc	Consumer Goods	1976
7	Champion Breweries Plc	Consumer Goods	1983
8	Chellarams Plc	Conglomerates	1974
9	Conoil Plc	Oil & Gas	1989
10	Cutix Plc	Industrial Goods	1987
11	Dangote Cement Plc	Industrial Goods	2010
12	Dangote Sugar Refinery Plc	Consumer Goods	2007
13	Eterna Plc	Oil & Gas	1998
14	Fidson Healthcare Plc	Healthcare	2008
15	Flour Mills of Nigeria Plc	Consumer Goods	1979
16	FTN Cocoa Processors Plc	Agriculture	2008
17	GlaxoSmithkline Consumer Nigeria Plc	Healthcare	1977
18	Greif Nigeria Plc	Industrial Goods	1969
19	Guinness Nigeria Plc	Consumer Goods	1965
20	Honeywell Flour Mills Plc	Consumer Goods	2009
21	International Breweries Plc	Consumer Goods	1995
22	Lafarge Africa Plc	Industrial Goods	1979

23	Livestock Feeds Plc	Agriculture	1978
24	May & Baker Nigeria Plc	Healthcare	1994
25	McNichols Consolidated Plc	Consumer Goods	2009
26	Meyer Plc	Industrial Goods	1979
27	Morison Industries Plc	Healthcare	1978
28	MRS Oil Nigeria Plc	Oil & Gas	1978
29	NASCON Allied Industries Plc	Consumer Goods	1992
30	Neimeth International Pharmaceuticals Plc	Healthcare	1979
31	Nestle Nigeria Plc	Consumer Goods	1979
32	Nigerian Breweries Plc	Consumer Goods	1973
33	Nigerian Enamelware Plc	Consumer Goods	1979
34	Northern Nigeria Flour Mills Plc	Consumer Goods	1978
35	Okomu Oil Palm Company Plc	Agriculture	1991
36	Pharma-Deko Plc	Healthcare	1979
37	Portland Paints and Products Nigeria Plc	Industrial Goods	2009
38	Premier Paints Plc	Industrial Goods	1995
39	Presco Plc	Agriculture	2002
40	PZ Cussons Nigeria Plc	Consumer Goods	1974
41	SCOA Nigeria Plc	Conglomerates	1977
42	Thomas Wyatt Nigeria Plc	Natural Resources	1978
43	Total Nigeria Plc	Oil & Gas	1979
44	UAC Nigeria Plc	Conglomerates	1974
45	Unilever Nigeria Plc	Consumer Goods	1973
46	Vitafoam Nigeria Plc	Consumer Goods	1978

Source: Generated from Appendix A.

Treasury Single Account: A Panacea for Over Dependence on Federal Allocation by State Governments

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Abstract
Nigeria is a country endowed with natural resources ranging from liquid to industrial raw materials in the 36 States and FCT. Indeed, if these resources are properly harness, manage, produced/manufacture and commercialize with the revenue generated, transparently accounted for, through the instrumentality of Treasury Single Account (TSA) by Ministries, Departments and Agencies saddled with such responsibilities will go a long way to helping States Government carry out developmental projects that will impact the wellbeing of average citizen in the states and drastically reduce the rate at which States Government depend solely on monthly Allocation. The study examines the benefits of TSA scheme as a panacea for over dependent on federal allocation by some States Government in Nigeria. The study adopted descriptive cross-sectional survey design; population for the study consisted 200 Heads of finance drown from Ministries, Department and Agencies in Cross River State. Taro Yamane's formula was used to determine sample size of 133. The study equally used purposive sampling technique to select the 133 respondents. Data obtain from self-structure questionnaire administered were analysed using descriptive statistics and t-test statistics. The finding reveals that effective exploitation of mineral deposits in the States and TSA adoption and full implementation by States Government has the potential to enhance revenue generation and plugging revenue leakages as shown in the weighted mean's scores of 4.20 and t_{-cal} of 24.87. The study recommended among others that States Government should look beyond crude oil to other resources, adopt and fully implement TSA scheme in Ministries, Departments and Agencies to curb revenue leakage.

Keywords*: Treasury Single Account, Natural Resources, Revenue Generation, Revenue Leakage, Corruption.*

1.0 Introduction

Nigeria being the giant of Africa in terms of Population and land map is no doubt among the Africa countries with a wide variety of different natural resources in all the State and FCT. Natural resources are materials and substances that occur naturally and can be used for economic gain. Nigeria is richly endowed with numerous natural resources ranging from liquid and industrial metals to various precious stones such as Barites, Gypsum, Kaolin, Marble, etc. It's saddened that most of these minerals are yet to be exploited by various States that are bless with these resources or even used for the enrichment and development of States and her citizens/non-citizens inhabiting in the states. The country depend majorly on Crude oil with the States depending solely on monthly Federal allocation at the expense of their potentials and natural endowment that if harness and properly managed will contribute to the execution of meaningful and lives touching projects, sadly these God given revenue generated resources are abundant or treated with levity. Resulting from the international fall in oil price and treat to lives by both internal and external factors, there is a clarion call on States to think outside the box by diversifying their sources of revenue and shifts their main base to agriculture and properly harness, manage, produced/manufacture other resources in their States, commercialize the output and manage the revenue generated through Treasury Single Account (TSA). Treasury single account (TSA) was introduced by President Buhari's administration as a measure to curb corruption, ensure accountability, transparency and efficiency in public organization's revenue. TSA here refers to public account system which uses a single account or a set of linked account by ministries, departments or agencies of government to ensure that all revenue receipts and payments are done through a Consolidated Revenues Account (CRA) domiciled at Central Bank of Nigeria (Udo, 2016; Agba, et.al 2014; Ushie, et.al 2010). One of the major objectives of establishing Treasury Single Account (TSA) scheme is anchored on the fact that; it will wipe out corruption that is prevalent at the MDAs, reduces revenue leakage; instill accountability and internal control which is necessary for effective conduct of the monetary and fiscal policy surfeit.

However, this objective has not been fully realized due to some States Government's inability to adopt or fully implement TSA in their MDA, consequently corruption has become cancerous worm that has eaten deep into the fabric of the States Treasury and cannot be wipe out by a single policy, thereby making the States to perpetual dependent on monthly Federal Allocation. We cannot deny the fact that TSA has to some extent reduces revenue leakage, ameliorates corruption and enhances revenue generation in the public establishments that have adopted and fully implement TSA. State Governments are encourage to harness, manage, produced/manufacture and commercialize their endowed natural resources and ensure proper accountability, transparency and efficient management of the revenue generated, through the instrumentality of Treasury Single Account (TSA) by People, Ministries, Departments and Agencies saddled with such responsibilities to avoid over dependant on monthly Federal Allocation.

Nigeria is blessed with numerous human and natural resources in all the States so much that regarding it as the giant of Africa is not abnormal, but it is one of the poorest and less-developed nations in the world today as a result of over concentration on only crude oil as the major source of revenue at the expense of other sources, making States to be lazy, unwilling to harness their potentials and manage other sources of revenue for their growth and development, rather sacrifice the God given revenue sources at the altar of laziness and corruption, with the limited revenue generated leaking into private pocket or as a settlement to area Boys that were instrumental to their selection into offices. The directive from the federal Government that all government revenues must be paid into the Treasury Single Account (TSA), was in a bid to curtail the prevalent corruption in the country (Eme et al., 2015). All governments revenues are normally paid into the States revenue coffer, with most relevant idle funds not capture, that if properly accounted for through TSA, would increase the revenue base of the States, but reverse is the case, which created room for corruption and forced some States government to depend solely on Federal Allocation or borrowing to finance its budget deficits when its huge amount of money is diverted into various banks and private pockets. Researchers have prescribed TSA as a requirement for public financial management, for its effectiveness in oversight control of government's cash resources, improving quality of financial information and reducing over dependent on Federal Allocation. Yet some States have not seen any need for adoption and full implementation of TSA to properly account for, and manage other sources of revenue. This paper sorts to advocate, for the adoption and full implementation of TSA; as a Panacea for over dependent on monthly Federal Allocation by States Government.

The main objective of this study is to advocate the adoption and full implementation of TSA as a panacea for over dependent on Federal Allocation by States Government, Specifically; The study attempts:

i. To examine the impact of TSA adoption on revenue generation by States Government.
ii. To determine TSA scheme effectiveness to plugged revenue leakages in State public sector.
iii. To examine the wiliness of States to exploit natural resources available in their States.

Research Questions

i. To what extent can the adoption of TSA impact on revenue generation in the State?
ii. Can TSA scheme, effectively plugged revenue leakages in the State public sector?
iii. Are States willing to exploit natural resources available in their States?

Research Hypothesis

H_O1: TSA does not have any significant influence on revenue generation in the State.
H_O2: TSA scheme cannot effectively plugged revenue leakages in the State public service
H_O3: States are not willing to exploit other natural resources available in their states

Practically, the finding of this study is anticipated to be of use for right decisions as it shed new light to government, investors, business professional, and policy makers on diversification of their sources of revenue. The study would also contribute the literature on TSA and natural resources available in all the states in Nigeria and serve as an empirical ground for further researches. The study focuses on TSA adoption and Natural Resources in Nigeria as additional sources of revenue to monthly Federal Allocation.

2.0 Literature review

2.1 Treasury Single Account

Treasury Single Account is a unified structure of government bank accounts enabling consolidation and optimum utilization of government cash resources**.** It separates transaction level control from overall cash management. In other words, a TSA is a bank account or a set of linked bank accounts through which the government transacts all its receipts and payments and gets a consolidated view of its cash position at the end of each day (Pattanayak and Fainboim, 2011).

Government banking arrangements are an important factor in managing and controlling government's cash resources. They are critical for ensuring that (i) all tax and non-tax revenues are collected and payments are made correctly in a timely manner; and (ii) government cash balances are optimally managed to reduce borrowing costs (or to maximize returns on surplus cash). This is achieved by establishing a unified structure of government bank accounts via a treasury single account (TSA) system. A TSA is a prerequisite for modern cash management and is an effective tool for the ministry of finance/treasury to establish oversight and centralized control over government's cashresources. It provides a number of other benefits and thereby enhances the overall effective- ness of a public financial management (PFM) system. The establishment of a TSA should, therefore, receive priority in any PFM reform agenda (Pattanayak and Fainboim, 2011).

A government lacking effective control over its cash resources can pay for its institutionaldeficiencies in multiple ways. First, idle cash balances in bank accounts often fail to earn market-related remuneration. Second, the government, being unaware of these resources, incurs unnecessary borrowing costs on raising funds to cover a perceived cash shortage. Third, idle government cash balances in the commercial banking sector are not idle for the banks themselves, and can be used to extend credit.

Draining this extra liquidity through open market operations also imposes costs on the central bank. Establishing a unified structure of government bank accounts via a treasury single account (TSA) will solve these problems, improving cash management and control. A TSA also facilitates better fiscal and monetary policy coordination as well as better reconciliation of fiscal and banking data, which in turn improves the quality of fiscal information. Finally, the establishment of an effective TSA significantly reduces the debt servicing costs (Pattanayak and Fainboim, 2010).

2.1.1 Advantages of Treasury Single Account

According to Pattanyak in Adebisi, and Okike (2016) TSA have the following benefits to the Government:

i. Ensures complete, real-time information on government cash resource. The government at any time can ascertain what it has on its coffers. The TSA being electronically powered provides the government with actual and comprehensive account standing at any point in time they required such information.
ii. Helps preparation of accurate and reliable cash flow forecasts. With TSA in place governments account are reliably maintain with high level of accuracy and on timely basis. The availability of accurate and reliable cash flow statements of the government makes it easy for the government and the revenue office to prepare a substantive cash flow projection upon which the governments rely to make short and long term plans.
iii. Optimizes the cost of government operations. The TSA will ensure that there are no idle funds. Before the introduction of the TSA the cost of governance was high because there some government expenditure heads that had to borrow to meet their immediate financial needs where as there are some other MDAs that keep their surplus or funds which are not immediately needed in an account with the commercial banks. This same money is borrowed to those government MDAs with immediate financial needs attracting interest there by increasing the cost of governance.
iv. Facilitates efficient payment mechanism. It is necessary to minimize the interval between the time when cash is received and the time it is available for carrying out expenditure programs. The e-payments system that is employed to ensure efficient TSA operation will facilitate prompt payments. There will be no avenue for corrupt government official to keep salaries and other forms of payment in fixed deposits for their selfish interest. Since the e-payment platform will provide detail of all payments and to whom it is made. Thus, payments will be promptly made to the right beneficiaries.
v. Improved operational and appropriation control during budget execution. The adoption of Treasury Singe Account will lead to improved control on budget appropriation and execution by the government. TSA will help the government monitor and ensure efficient budget implementation. Hence, there will be proper accountability for money spent by the government MDAs on the execution of budgets which will translate to expedient budget implementation.
vi. Enhances efficiency and timeliness of bank reconciliation. The bank reconciliation statements will be timely since the payments are electronically designed. The government at any point in time know what went out of or came into it coffer and the balance in connection it its cash book.

2.2 Natural Resources

Nigeria being the giant of Africa in terms of Population and land map, is no doubt among the Africa countries with a wide variety of different natural resources. Natural resources are materials and substances that occur naturally and can be used for economic gain. Nigeria is richly endowed with numerous natural resources ranging from industrial metals to various precious stones such as Barites, Gypsum, Kaolin, Marble, etc. It’s saddened that most of these minerals are yet to be exploited or even used for the enrichment and development of Nigeria and her citizens.

According to Statistics, the level of exploitation of natural minerals is very low in relation to the extent of deposit found in the country. From the objectives of the new National Policy on solid minerals is to ensure the orderly development of the mineral resources of the Nigeria. Nigeria depends majorly on Crude oil and sadly it has cost us a lot. Although due to the international fall in oil price, there is a clarion call on “Diversification of Economy”, to shift our main base to the agricultural resources in Nigeria and investments in the solid mineral sector of the Nigerian economy such as the Steel deposit in Ajaokuta etc. In Nigeria, the Federal Ministry of Solid Minerals Development grant prospecting licenses to investors (local and foreign), to enable them participate in the exploitation of the vast mineral resources in Nigeria.

According to (Okwe, et.al, 2015:58) in (Eme, Chukwurah and Iheanacho. 2015) Earnings from natural resources are supposed to be meant for capital expenditure. Taxation should be used to run government; it is the system in South Africa, Kenya, The United Kingdom (UK) and Germany. Tax earnings, including excise tax and import duties, are used to pay salaries and run government; pay members of the National Assembly. Earnings from natural resources are supposed to be used for building roads, hospitals, parks, expanding schools, and other infrastructural development. These are called reproducible resources that should enhance the capacity of the people such that the ordinary farmer has access to good road, water and electricity. We are not even able to implement budgets faithfully because an aspect of our earnings are pilfered away and going down to such depths that it can hardly run the recurrent expenditure.

Table 1: **Nigerian States and their Natural Resources.**

S/N	STATES	NATURAL RESOURCES
1	Abia	Gold, Lead/Zinc, Limestone, Oil/Gas&Salt
2	Abuja	Cassiterite, Clay, Dolomite, Gold, Lead/Zinc, Marble & Tantalite
3	Adamawa	Bontonite, Gypsium, Kaolin & Magnesite
4	Akwa Ibom	Clay, Lead/Zinc, Lignite, Limestone, Oil/Gas, Salt & Uranium
5	Anambra	Clay, Glass-Sand, Gypsium, Iron-Ore, Lead/Zinc, Lignite, Limestone, Phosphate & Salt
6	Bauchi	Gold, Cassiterite (tine ore), Columbite, Gypsium, Wolfram, Coal. Limestone, Lignite, Iron-Ore & Clay
7	Bayelsa	Clay, Gypsium, Lead/Zinc, Lignite, Limestone, Maganese, Oil/Gas, & Salt
8	Benue	Barite, Clay, Coal, Gemstone, Gypsium, Iron-Ore, Lead/Zinc, Limestone, Marble & Salt
9	Borno	Bentonite, Clay, Diatonite, Gypsium, Hydro-Carbon, Kaolin & Limestone
10	Cross River	Barite, Lead/Zinc, Lignite, Limestone, Manganese, Oil/Gas, Salt & Uranium
11	Delta	Clay, Glass-Sand, Gypsium, Iron-Ore, Kaolin, Lignite, Marble, & Oil/Gas
12	Ebonyi	Gold, Lead/Zinc & Salt
13	Edo	Bitumen, Clay, Dolomite, Gypsium, Phosphate, Glass-Sand, Gold, Iron-Ore, Lignite, Limestone, Marble & Oil/Gas
14	Ekiti	Feldspar, Granite, Kaolin, Syenite & Tatium
15	Enugu	Coal, Lead/Zinc & Limestone

16	Gombe	Gemstone & Gypsium
17	Imo	Gypsium, Lead/Zinc, Lignite, Limestone, Marcasite, Oil/Gas, Phosphate & Salt
18	Jigawa	Butyles
19	Kaduna	Amethyst, Aqua Marine, Asbestos, Clay, Flosper, Gemstone, Gold, Graphite, Kaolin, Hyanite, Mica, Rock Crystal, Ruby, Sihnite, Superntinite, Tentalime, Topaz & Tourmaline
20	Kano	Gassiterite, Copper, Gemstone, Glass-Sand, Lead/Zinc, Pyrochinre & Tantalite
21	Kastina	Kaolin, Marble & Salt
22	Kebbi	Gold
23	Kogi	Cole, Dolomite, Feldspar, Gypsium, Iron-Ore, Kaolin, Marble, Talc & Tantalite
24	Kwara	Cassiterite, Columbite, Feldspar, Gold, Iron-Ore, Kaolin, Marble, Mica & Tantalite
25	Lagos	Bitumen, Clay & Glass-Sand
26	Nasarawa	Amethyst (Topaz Garmet), Barytex, Barite, Cassiterite, Chalcopyrite, Clay, Columbite, Coking, Coal, Dolomite/Marble, Feldspar, Galena, Iron-ore, Limestone, Mica, Salt, Sapphire, Talc, Tantalite, Tourmaline Quartz & Zireon
27	Niger	Gold, Lead/Zinc & Talc
28	Ogun	Bitumen, Clay, Feldspar, Gemstone, Kaolin, Limestone & Phosphate
29	Ondo	Bitumen, Clay, Coal, Dimension Stones, Feldspar, Gemstone, Glass-Sand, Granite, Gypsium, Kaolin, Limestone &Oil/Gas
30	Osun	Columbite, Gold, Granite, Talc, Tantalite & Tourmaline
31	Oyo	Aqua Marine, Cassiterite, Clay, Dolomite, Gemstone, Coal, Kaolin, Marble, Silimonite, Talc & Tantalite
32	Pleteau	Barite, Buaxite, Betonite, Bismuth, Cassiterite, Clay, Coal, Emeral, Fluoride, Gemstone, Granite, Iron-Ore, Kaolin, Lead/Zinc, Marble, Molybdenite, Phrochlore, Salt, Tantalite/Columbite, Tin & Wolfram
33	Rivers	Clay, Glass-Sand, Lignite, Marble & Oil/Gas
34	Sokoto	Clay, Flakes, Gold, Granite, Gypsium, Kaolin, Laterite, Limestone, Phosphate, Potash, Silica Sand, & Salt
35	Taraba	Lead/Zinc, Kaolin
36	Yobe	Soda Ash & Kaolin
37	Zamfara	Coal, Cotton & Gold

Source: https//nigeriainfopedia.com.ng

From the list on Table 1, one will notice that, no state in Nigeria that is not blessed with natural resources. The challenge is the will to properly harness, manage, produced/manufacture and commercialize with the revenue generated, transparently accounted for.

2.3 Revenue Generation

Section 162 (10) of Nigeria 1999 Constitution defines Revenue as" any income or return accruing to or derived by the Government of the Federation from any source. It therefore, includes any receipt, however described, arising from the operation of any law, any return, however described arising from or in respect of any property held by the Government of the Federation or any return by way of interest on loans and dividend in respect of shares or interest held by the Government of the Federation in any Company or Statutory body" (Constitution, 2004 p.103). This means establishments that are owned wholly or partly by the government. They manage government revenue with primary consideration of the citizens, stakeholders of government revenue, in turn, demonstrates their positive approaches and behaviors towards their civic duties, making the use of the stakeholders" energy to execute the government's aims. (Oluyinka. et al (2020)

2.3.1 Revenue Leakage

In recent times, public expenditures of government have suffered a setback due to revenue leakages. In fact, re- current expenditures like payment of salaries and wages has become extremely difficult for government to settle. Very meager fund is now being appropriated for capital expenditures despite the pool of cash resources generated on daily basis by the States Government tax and non-tax revenue through the MDAs which runs to billions of Naira. Unfortunately, a chunk proportion of the fund is diverted to private accounts and pockets dueto lack of strong cash control system by government. Also, States Government budget execution process has being marred by several fraudulent and corrupt practices which caused its little implementation.

Udoma (2016) in Ajayi, (2019) opined that maintenance of TSA will encourage funding of government budget rather than depending on Federal allocations. The paper further stressed that in any country where budget is fully funded internally; there will be improvement in the economy growth and rapid social and political development. One of the major causes of these revenue leakages in the States public service is the control and management power of revenue resources. However, full adoption and implementation of TSA scheme were all revenue and expenditures of the MDAs are centralized will help to abate revenue leakage.

2.4 Corruption

Nye (2000), in Olanipekun. et al (2015) defines corruption as a deviation from formal duties of public role because of private gain regarding (personal, close family, private clique) pecuniary exercise of certain types of private regarding influence. This includes such behavior as bribery (use of reward to pervert the judgment of a person in position of trust); nepotism (appointment by reason of inscriptive relationship rather than merit); and misappropriation (illegal appropriation of public resources for private uses). Oxford Advanced Learners Dictionary sees corruption as dishonest or illegal behavior especially of people in authority.

Oxford Dictionary of Current English defines corruption as an act of dishonesty especially using bribery or immoral or wicked act.

World Bank (2005) defines it as abuse of office for private gain. Public office is abused for private gain when an official accepts, solicits or extorts a bribe. Otite (1986) defines corruption as the perversion of integrity or state of affairs through bribery, favor or moral depravity. Encyclopedia of Social Science defines corruption as the misuse of power for private profit. Transparency international has chosen a clear and focused definition as the abuse of entrusted power for private gain. The Corrupt Practices and Other Related Offences Act (2000) define corruption to include bribery, fraud and other related offences like gratification. The Act gave a very wide definition of gratification to mean among other things the offer or promise or receipt or demand of money, donation, gift, loan, fee, reward, valuable security, property or interest in property with the intent to influence such a person in the performance or nonperformance of his/her duties.

United Nations Global Programme against Corruption (2012) defines corruption as abuse of power for private gain. Corruption remains a single major factor that obstructs development in Nigeria (Agba, et.al 2008). Treasury single account (TSA) was introduced by President Buhari's administration as a measure to curb corruption, ensure accountability, transparency and efficiency in public organisations. Even with the establishment of the anti-graft commissions, corruption has continued to escalate like widefire.

2.5 Theoretical Framework

A number of different theories of socioeconomic accounting were borrowed to form sound foundation to substantiate Treasury Single Account adoption, implementation and sustainability as a panacea for over dependent on Federal Allocation. Thse are:

2.5.1 Public Finance Management Theory: this theory according to Grubber (2005) provides that mobilization and expenditure of financial resources need to be well managed by the government for the main benefit of the citizens. The people elect the government to work for them; therefore, government must be responsive to their needs in all aspect. And for this to be achieved, government must be in total control of the nation resources, mobilize it appropriately, prioritize its programme, budget process and manage efficiently cash resources which is the key function of TSA. This will go a long way to help government in good governance, efficient resources management, transparency.

2.5.2 Stewardship Theory: Stewardship theory; propounded by Theodore Roosevelt "holds that managers are not motivated by individual goals, but rather are stewards whose motivations are aligned with the objectives of their principals, Van Slyke, (2006). Using stewardship theories, Van Slyke (2006) examines how public administrators manage contractual relationships with nonprofit organizations found that the use of trust, reputation, and monitoring as well as other factors influence the manner in which contractual relationships are managed in public sector.

2.5.3 Modern Money Theory (MMT), by Mosler (1970s), theorized how monetarily sovereign governments operate and their impacts on the economy. It shows that it is relevant to aggregate the central bank and the treasury into a government sector that finances itself through monetary creation such that financial position of the treasury and the central bank are so intertwined that both of them are constantly in contact in order to make fiscal and monetary policy run smoothly.

2.6 Empirical Review

Yusuf and Muhammed, (2016) investigated on treasury single account (TSA) as an effective instrument of financial prudence and management in Nigeria. The study hypothesized that proper implementation of TSA has significant effect on the financial management in Nigeria. The study made use of survey design which involves gathering of data about the effect of treasury single account on the procedure of finance management in Nigeria. Data used in the study were obtained from primary source, and sixty questionnaires were administered to relevant accounting departments and agencies in Damaturu. Result showed that proper implementation of TSA by all stakeholders will help tremendously in reducing corruption, mismanagement of public fund, block leakages and other financial irregularities in states and the country at large.

Lodikero, Fagbayimu, and Olateru (2018) studied Treasury Single Account: A Tool for Accountability and Transparency in Ondo State, Nigeria**.** The study examined the implication of Treasury Single Account on the accountability and transparency of Nigeria Public Sector in order to ensure a responsible governance system. Survey research design was adopted for the study. The population of the study consisted of 150 Ministries, Department and Agencies (MDAs) operating in Ondo State as at 2017. Purposive sampling technique was used to select the respondents. The data obtained from the questionnaire administration were analyzed using the descriptive and inferential statistical tools. The finding revealed that Treasury Single Account is an effective tool in combating financial leakages in Nigeria public sector. The study recommended that government should engage in massive public enlightenment about the importance of the policy and the need for legislation to mandate all the states and local government to implement this policy.

Ekubiat and Edet (2016) carried out a study on the "Adoption of Treasury Single Account by State Governments of Nigeria: Benefit, Challenges, and Prospects". Both primary and secondary data were employedfor the study. Descriptive cross-sectional survey design was employed for the study. The study population consisted of 200 Professional Accountants in Akwa Ibom State. Sample size of 133 respondents was selected using Taro Yamane's statistical formula and Purposive sampling technique. The data collected were analyzed using descriptive statistics and t-test statistics. The study revealed that TSA adoption and complete execution by the state governments would be of maximum benefit. However, some challenges will be in the short-run, but the benefits at a long run will unquestionably supersede the challenges.

Solanke (2018) investigated 'Opinion and Perception of Treasury Single Account Implementation: Implications for Revenue Generation and Utilization in Nigeria'. Primary data was used in the study. A total sample size of 200 was purposively selected. Data were analyzed using frequency and percentages, as well as analytic weighted mean. The result showed variation in acceptability attitude towards TSA implementation in Nigeria.

Oti, Igbeng, Obim, and Ndifon (2016) did Appraisal of Policy Impact of Treasury Single Account in Nigeria**.** The paper observed that Treasury Single Account (TSA) is one of the several measures adopted by the Federal Government of Nigeria to address the issue of lack of accountability and corruption in fiscal operations in the Public Sector. The objective of the paper was to appraise the policy impact of TSA with a view to proffering solution to the identified gaps. Questionnaires were administered to gather views of individuals and institutions. Secondly, data were equally gathered and analyzed using survey and exploratory research design. The study revealed various sheds of opinion: while bankers decry the distortion of their liquidity management plan, the federal government on the other hand claims a huge success because it can now comment on its aggregate cash holding without the drudgery hitherto associated with getting to all commercial banks or MDAs with multiple accounts. The civil society agrees with government that the policy has brought about transparency in fiscal management. Findings from the paper reveals that deposit money banks would be adversely affected in the aspect of their lending capacity which would ultimately result in lower profits and companies‟ income tax to the federal government. The paper concluded by drawing attention to the shock being experienced by the deposit money banks, which has led to downsizing of its personnel. The paper recommended that the federal government should engage in sensitivity analysis to avoid unanticipated drop in GDP resulting from folding up of companies, which are not able to withstand the sudden financial jolt.

Nwaorgu, Ezenwaka and Onuorah (2017) wrote on Treasury Single Accounting (TSA) and Public Sector Accountability in Nigeria. The study tried to ascertain the effect of treasury single account and accountability in the Nigeria Public Sector. Two specific objectives guided the study, while two research questions and two hypotheses were formulated in line with the specific objectives and tested at 0.05 level of significance. A descriptive survey research design was used. The population of the study consisted of 600 staff of the four federal health tertiary institutions drawn from Account Departments while a sample size of 250 Account Department staff were selected using the proportionate random sampling technique. A structured 25-item validated questionnaire was used for data collection. The reliability of the instrument was ensured using pilot test technique, which was analyzed using Cronbach alpha method and yielded an overall reliability co-efficient of 0.85 with the aid of statistical package for social science (SPSS) 20.0. Data were analyzed using descriptive statistics and one regression models for the research questions and for test of hypotheses at 0.05 level of significance. Findings of the study showed that adaptation of a treasury single account and accountability (TSA) in the Nigeria Public Sector is capable of plugging financial loopholes, promoting transparency and accountability in Federal Health Tertiary Institutions in South-East Nigeria. The study concluded that TSA policy would go a long way in blocking the identified financial leakages in revenue generation and promote transparency and accountability in the public sectors financial system if it is fully implemented. The study therefore recommended among others, that government should engage in massive public enlightenment about the importance of the TSA policy.

3.0 Methodology

Descriptive cross-sectional survey design was adopted. This design was considered most appropriate as it allowed asking for the views of knowledgeable individuals on certain aspects of Treasury Single Account (TSA) and Internally Generated Revenue (IGR) which provide generalized opinions/statistics from the number of individual cases. Population for the study consisted 200 Heads; of finance drown from Ministries, Departments and Agencies in Cross River State, who served in different sectors of the economy. Taro Yamane's statistical formula was used to select sample size of 133 out of 200. Thus

$$n = \frac{N}{1 + N(e)^2}$$

Where: n = Sample size

N = Population of the study

e = level of significance/error estimate of 5%

I = Constant

Where: n = 200

$$: - \quad \frac{200}{1+200(0.05)^2}$$

$$= \frac{200}{1+200(0.0025)}$$

$$= \frac{200}{1+1.5}$$

$$= \frac{200}{1.5} = 133$$

Purposive sampling technique was used to select the 133 respondents. This sampling technique was adopted based on the ease with which the data can be collected as well as, those well versed with the knowledge of the subject matter. Data were obtained specifically from the respondents using a self-structured questionnaire tagged "Treasury Single Account (TSA); a Panacea for over Dependent on Federal Allocation by states government". This instrument was validated by experts and authorities in the field of government accounting. The data obtained was analyzed using descriptive statistics and t-test statistics.

4.0 Data Analysis and Findings

4.1 Descriptive and T-test Statistics

Data in Table I: show that the descriptive analysis of the perception of the benefits of TSA and its ability to generate more revenue for states government. Result obtained shows that the respondents strongly agree that TSA ensure accountability of government revenue, enhance transparency of public funds. The result also reveals that the respondents agree on the other benefits of TSA as indicated in Table 1. In overall, the weight means score of 4.20 was obtained which is above the cut-off point of 3.0 for five points rating scale. This implies that TSA was perceived to be beneficial and capable of generating more revenue. Table 1 also shows that accountability of government revenue, transparency of public funds was also most rated perceive benefits of full adoption and implementation of TSA by the state government.

Table II: shows result of the analysis of the wiliness to exploit other natural resource by state government. As shown in Table II, States are not willing to exploit natural resources in their States because of Federal Allocation and some revenue resources are used to settle political thugs.

Test of Hypotheses

Ho: there is no significant benefit of adoption and full implementation of TSA by the state governments.

Table I Descriptive Statistics Showing Rating of the Benefits of TSA adoption and full implementation by the States Government in Nigeria.

s/n	Items	N	$\bar{X}$	SD	Rank	Remarks
1	TSA will generate more revenue for States Government	133	4.64	0.48	1	SA
2	Ensuring accountability and control of government revenue and enhance transparency	133	4.41	0.72	2	A
3	It will block revenue leakages	133	4.11	0.99	5	A
4	TSA promote proper planning and monitoring of revenue for government to meet financial obligation of the citizens	133	3.82	1.09	8	A
5	It gives a consolidated view of government revenue at any time	133	4.06	1.03	6	A
6	Enable government know how much is accruing to it on daily basis, thus reduce corruption	133	4.39	0.65	3	A
7	TSA exposes financial loopholes in MDAs	133	4.38	0.65	4	A
8	Revenue are usually diverted to private pockets	133	3.95	1.24	4	A
	Over all	133	4.20	0.85		A

A = Agree, SA = Strongly Agree Source: Field Survey 2022

Table II Descriptive Statistics of the Wiliness to Exploit other Natural Resources by States Government

s/n	Items	n	$\bar{X}$	SD	Rank	Remarks
1	States are not willing to exploit natural resources in their States because of Federal Allocation	133	4.28	0.68	1	A
2	Exploitation of natural resources will generate revenue for State government	133	3.74	1.12	3	A
3	Constitutional bottleneck is a contributive factor	133	3.80	1.10	2	A

4	Some revenue resources are used to settle political thugs.	133	3.64	1.10	4	A
	Over all	133	3.87	1.00		-

A = Agree Source: Field Survey 2021

Table III Result of test of Hypothesis on the benefits of TSA adoption and full Implementation and ability to generate more revenue for State Government

Variable	N	$\bar{X}$	SD	Hypothesized Mean	t_{cal}	Remarks
TSA	133	4.20	0.55	3.00	24.87	*

df = 132* = significant at 0.05 (p>0.05), t.critical =1.98

Result in Table III shows that the calculated t (24.87) is greater than the critical value of t at 0.05 level of significance. Therefore, the null hypothesis is rejected. Hence, there is significant benefits of adoption and full implementation of TSA by state governments in Nigeria. This result supports the studies of (Pattanayak and Fainboim, 2011) and In summary, the result shows that 121 respondents representing 91 percent of the respondents opined that state governments in Nigeria should fully adopt and implement TSA.

5.0 Conclusion and Recommendations

Treasury Single Account (TSA); A Panacea for over dependent on Federal Allocation by State Governments of Nigeria: was examined in this study. The finding reveals that, TSA adoption and full implementation by the state governments will be of great benefits and capable of generating more revenue as showed in the weighted means scores of 4.20 and t_{cal} of 24.87; It is the conclusion in this study that State Governments in Nigeria should adopt and fully implement TSA for successful control and accountability of public funds so as to avoid over dependent on monthly Federal Allocation.

The following recommendations are made:

i. State governments should enlighten all stakeholders on the benefits of TSA adoption and the ability to generate more revenue for states.

ii. There should be an integrated financial management information system (IFMIS) for all the players in the TSA system at the state levels.

iii. Professional, Knowledgeable officers/staff and regulatory bodies should help in designing, conceptualizing and road-mapping of TSA at the state level.

iv. The state government accounting system should be designed to record all transactions and capture relevant information independently of the cash flows in specific bank accounts.

v. States Government should think outside the box about other sources of revenue.

vi. States Government should exploit other natural resources in their states to generate additional revenue.

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Tax Planning and Financial Performance: Evidence from Listed Consumer Goods Firms in Nigeria

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Abstract
This study investigated the extent to which corporate tax planning influences financial performance of listed consumer goods firms in Nigeria. A sample of ten consumer goods firms listed on the Nigeria Exchange Group were studied for the period 2010 to 2019. Secondary data used was gathered from published financial reports. The descriptive and correlational research designs were employed in the study. The study adopted panel regression analysis. The results revealed that effective tax rate, cash effective tax rate and marginal tax rate have no significant effect on return on assets (ROA) while tax expenses rate has significant effect on ROA of listed consumer goods firms in Nigeria. The study recommended that the management of listed consumer good firms should engage the service of tax experts to improve on their tax planning and should acquaint themselves with tax laws (such as 2020 Finance Act) to identify and explore more available tax reliefs and incentives for effective and efficient tax planning.

Key words*: Effective Tax Rate; Marginal Tax Rate; Return on Assets; Tax Expense; Tax Planning; Tax Relief.*

1.0 Introduction

Companies exist for numerous purposes including surviving, profit making, meeting stakeholders' interest among others. In an attempt to maximize profit, sustain growth and continuity, management of firms usually adopt several tactics and decisions towards meeting set objectives. Some of the strategies and decisions employed include tax planning and management, dividend, financing, investment and capital structure decisions among others. This is in the quest for meeting various interest of stakeholders. One major stakeholder of a firm that management usually seek to minimize its interest on firms is the government (in terms of tax payment). The government as one of the external stakeholders has interest in providing enabling environment for business to survive and grow. Successive governments in Nigeria, at various times, have employed the instrument of tax policy to encourage industrial and corporate growth (Nwaobia, 2013). In return, government is expecting adequate and effective tax payment to meet its interest in firms operating in Nigeria, both as a civic responsibility as well as statutory obligation. Corporate taxation is a genuine source of government revenue worldwide. In Sub-Saharan Africa, it is expected of corporate bodies to pay Company Income Tax on their assessable profit in line with the prevailing tax laws in the various countries (Offioug, 2013). The management of the firm on the hand, in process of maximizing interest of other internal and external stakeholders, take it as a responsibility to control and reduce inevitable cost (tax liability) of the firm.

Taxation is the largest expense of most businesses after considering cost of goods sold (Choi & Meek, 2011). Companies in Nigeria experience marginal federal tax rate schedule and numerous tax provisions. Chukwudi et al., (2020) identified high corporate tax rates and multiples of other taxes that lead to high effective tax rates far above the statutory company income tax rate as the major challenge of corporate entities. In a quest for improving tax administration, Nigeria government introduced various tax law reforms such as Federal Board of Inland Revenue Services (FIRS) Establishment Act 2007, National Tax Policy of 2017. Others include recent Income Tax (Common Reporting Standard) Regulations, 2019 (CRS Regulations) and the Income Tax (Common Reporting Standard) Implementation and Compliance Guidelines, 2019 (CRS Guidelines) to address the issue of multiple taxation, lack of accountability for tax revenue and expenditure, use of aggressive and unorthodox method for tax collection. The CRS Regulations require all Reporting Financial Institutions (RFIs) to obtain information from their account holders and report, on a yearly basis, certain information to the FIRS in an electronic format. CRS is an information standard which provides a set of rules for the automatic exchange of financial account information relating to customers of Reporting Financial Institutions (RFIs) between tax authorities across the world. The CRS Regulations also stipulates three (3) major compliance obligations required to be met by RFIs - due-diligence, reporting and record keeping (Adedoyin & Agu, 2021). By implication, tax authority (FIRS) has access to financial records in relation to tax assessments of corporate companies and other taxpayers who are customers of RFIs from two sources – taxpayers' records and records from RFIs on behalf of taxpayers. The purpose of the standard is to improve transparency, thereby making information of persons (i.e., individuals and entities) holding various investments across the world visible and available to tax authorities of relevant jurisdictions, with the ultimate aim of combating tax evasion (Adedoyin & Agu, 2021).

In this situation, corporate companies need to employ proper and efficient tax planning strategies to mitigate tax burden. Such strategies include capital intensity, tax avoidance and tax rationing. Corporate Tax Planning has been in existence throughout history and there will be likelihood of continuation for as long as corporate entities are liable to tax depending upon perception of the entities whether the benefits of such practices exceed their costs (Harvey, 2014). Tax planning principle has allowed corporate entities to make financial planning to avoid or reduce their tax liability as long as such planning is acceptable by the authorities or laws such as Financial Act 2020 and CAMA 2020 (Yee et al., 2018). Studies had shown that some multinational companies have maintained high profitability over the years, due to their efficient corporate tax avoidance or planning schemes (Kurawa & Saidu, 2018). Most companies efficiently manage their tax liabilities through corporate tax planning and, as such, translate the gained tax savings to effective financial performance (Kayode & Folajinmi, 2020).

The recent economy meltdown and the Nigeria 2015 to date economic recession, alongside insecurity, inflation and currency devaluation negatively affect the performance of entities in Nigeria. The financial performance is a key determinant of the going concern of a firm. The higher tax liability and poor tax planning had reduced manufacturing companies' profitability, return on capital employed, return on equity and economic activities (Nwaobia & Jayeoba, 2016; Ogundajo & Onakoya, 2016). Due to inefficient tax planning strategies, tax expenses of manufacturing companies had increased which led to reduction in asset tangibility and return on assets of most food manufacturing companies in Nigeria (Tsado & Gunu 2016) and Zwingina & Opusunju 2017). Salawu, Ogundipe and Yeye, (2017) asserted that manufacturing firms maintained lower profit over the years due to their inefficient tax planning schemes. It is therefore important, on this note, to not only explain the tax planning strategies but to also link tax planning to the financial performance of the consumer goods firms in Nigeria.

Numerous studies have been conducted to examine the relationship between tax planning and financial performance but mixed findings were reported. Studies such as Olabisi et al., (2019) and Fagbemi, Olaniyi and Ogundipe, (2019) on oil and gas companies and banking sector respectively reported a positive relationship between tax planning and financial performance. In contrast, research studies such as; Olarewaju and Olayiwola, (2019); Akintoye, Adegbie and Onyeka-Iheme, (2020); Adejumo and Sanyaolu, (2020) concluded on the existence of a negative relationship between tax planning and financial performance, while Kayode and Folajinmi, (2018) concluded that there is positive relationship between tax planning and financial performance of food and beverages firms in Nigeria. Most of the studies above were conducted on different sectors while this study used listed consumer goods sector in Nigeria. Studies such as Nwaobia, Kwarbai and Ogundajo, (2016) and Kurawa and Saidu, (2018) on consumer goods firms in Nigeria used effective tax rate and ignored cash effective tax rate while Blouin (2014) used cash effective tax rate (CETR) developed by Dyreng, Hanlon and Maydew (2008) as a measurement of tax planning. This study at hand employ cash effective tax rate and cover ten years period to 2019 for adequacy, currency of results and implication of findings for informed decisions. This study, therefore seeks to investigate the effect of corporate tax planning on financial performance of listed consumer goods sector in Nigeria. The main objective of this study is to investigate the effect of corporate tax planning on financial performance of listed consumer goods sector in Nigeria. The specific objectives include:

i. To examine the effect of effective tax rate on the financial performance of listed Consumer Goods firms in Nigeria,
ii. To investigate the effect of marginal tax rate on the financial performance of listed Consumer Goods firms in Nigeria,
iii. To examine the effect of cash effective tax rate on the financial performance of listed Consumer Goods firms in Nigeria
iv. To determine the effect of tax expenses on the financial performance of listed Consumer Goods firm in Nigeria.

2.0 Literature Review

2.1 Concept and Measures of Tax Planning

Tiley (2005) defined tax planning as "what all sensible people do in order to reduce their tax liabilities." This definition makes it open the concept of tax planning without detailing the legality of the action. Geetha (2012) opined that tax planning is an arrangement made by individuals, trusts, firms or other entities of their financial affairs, to ensure that a full gain is taken, regarding all exemptions relating to taxes, rebates, allowances and other benefits or reliefs allowed under the law, without necessarily violating the legal provisions in any form. Tax Planning is the arrangement of financial activities in such a way that maximum tax benefits are enjoyed by making use of all beneficial provisions in the tax laws. It entitles the tax payer to avail certain exemptions, deductions, rebates and reliefs, to minimize its tax liability. It shows from the above definitions that tax planning involves conscious efforts and a method of clever employment of economic affairs of taxpayers, to secure the desired tax benefits, bearing in mind the legislative and judicial stand. This is different from tax avoidance that involves taking advantage of the loopholes in the tax legislations and administration or a deliberate act to reduce tax liability. It is a systematic effort adopted by a taxpayer to reduce tax liability within the legal framework (Geetha, 2012). Tax planning includes not only strategies aimed at minimization of tax liability, but it also takes into consideration the cash flow effect on the business in the perspective of when it is most profitable for a business to settle tax liability without incurring any penalty.

Scholes et al. (1992) emphasized the concept of tax efficiency through the incorporation of three core areas of efficient tax planning and these include 'the parties, the taxes and the costs. For tax planning to be efficient, it must take into consideration the parties involved in tax collections, the amount of taxes levied, be it explicit or implicit, as well as the respective total cost related to the tax, either real or predicted cost. Scholes et al. (1992) adopted the concepts of risk and return theory to explain the meaning of implicit tax, which refers to the marginal difference in the cost of acquiring an asset, at a certain rate of return, relating to what it could have been worth in situations of changes in the tax levied (Scholes et al., 2008). Scholes et al. (1992) also introduced the tax clienteles' concept, which compares the tax burden of an asset with a similar one at the same level of risk, to give different levels of the transaction cost. These concepts take their root from the efficient markets' theory, balanced price theory and the risk and return theory. The concept of implicit taxes is the same as the tax clienteles' concept and they are also based on financial theory. Conclusively, Scholes et al. (2008) emphasized total costs as one of the core areas of tax planning, by suggesting that all managers must scrutinize all the costs involved in a tax plan. The costs must be structured to include other indirect costs attached to tax planning.

Tax planning can be measured using effective tax rate (ETR). ETR is defined as corporate income tax expenses divided by profit before tax (Kurawa & Saidu, 2018; Olabisi et al., 2019; Olarewaju & Olayiwola, 2019). It can also be measured using marginal tax rate (MTR), Cash effective tax rate (CETR) and Tax expense in the income statement. MTR is defined as change in tax expense divided by change in profit before tax as used (Samuel & Abdulateef, 2012; Watson 2011). Cash effective tax rate (CETR) is the income tax paid in the statement of cash flow divided by profit before tax (Blouin, 2014). Some other measurements of tax planning include thin capitalization, tangibility and firm size as use by Kayode and Folajinmi (2020).

Tax planning can be executed using the checklist that comprises approved taxes and levies, timing of fixed assets acquisition, timing of fixed assets disposals in view of balancing adjustments, timing of capital allowances claim and amount to claim, hire of assets as alternative to outright purchase – full hire charge is tax deductible. Others include making specific instead of general provisions, considering current tax incentives and investment option with low or no tax (ICAN, 2014). Pradip (2018) highlighted primary objectives of tax planning to include reduction of tax liability, minimization of litigation and productive investment. Tax planning is a measure of awareness of the taxpayer to the intricacies of the taxation laws and it is the economic consciousness of the income earner to find out the ways and means of productive investment of the earnings, which would go a long way to minimize its tax burden.

2.1.2 Concept of Tax Avoidance and Tax Evasion

This is the legal usage of the tax laws and institution by the taxpayer to his or her own advantage. Hoffman (1961) in the process of highlighting the difference between tax avoidance and tax evasion states that

> "Tax avoidance is usually the ultimate goal to be achieved by tax planning. In this sense, the exercise of legal prerogatives may aid in the avoidance of taxes. Tax evasion, however, connotes the misrepresentation or omission of key financial information in an effort to evade the taxes that are largely enforceable. One is fraudulent and abhorrent to any decent practitioner, and the other is completely acceptable" (Hoffman, 1961: 274-275).

It is sometimes carried out in order to reduce the quantity of tax burden owed by a personal or company organization, that is extremely a lot of among the extent of the law. The taxpayer takes advantage of the loopholes within the tax legislation and administration and therefore makes efforts to scale back tax payers' liabilities. The method of tax avoidance involves delaying of tax liabilities by using strategies such as issue of loans, disposal of assets, capitalization of taxable incomes, and conversion of capital expenditure into recurrent expenses. Other ways are dividend stripping, enjoying pioneering standing, acquiring insolvent firms with a significant loss with the aim of using such losses as relief against the profit and acquiring of qualifying non-current assets for claiming capital allowances on them. Tax evasion entails the efforts created by taxpayers to refuse to pay taxes by illegal means. It is the deliberate act of misrepresenting the tax payers' true financial positions to the tax authorities and endeavor to elude their liabilities.

2.1.3 Concept of Financial Performance

A firm's financial performance is crucial in determining how healthy a firm is and in addition its survival. A firm with high performance is expected to reflect its effectiveness and efficiency in the management of available resources for operational, investment and financing activities (Naser & Mokhtar, 2004). Corporate performance is at the heart of the managerial function of an organization. Curristine (2005) and Ilesanmi (2011) defined performance as the yield or results of activities carried out about the purposes being pursued. Its objective is to strengthen the degree to which organizations achieve their purposes. Ghosh and Subrata (2006) opine that the performance of an organization is measured by the choice of the management form of wealth to be held. If the performance of an organization is good, there will be little or no disagreement between the management and the shareholders. Thus, well designed and implemented financial management is expected to contribute positively to the creation of a firm's value. The subject of financial performance has received significant attention from scholars in the various areas of business and strategic management. It has also been the primary concern of business practitioners in all types of organizations since financial performance has implications for an organizational health and ultimately its survival. High performance in any company may be seen as effective and efficient management of resources and this, in turn, contributes positively to the nation 's economy at large (Naser & Mokhtar, 2004).

Many measures have been used in various studies to evaluate financial performance. the most common performance measures were combined stock market and accounting measures, like Tobin's Q or the ratio of market-to-book values, Stock markets measures, such as the cumulative abnormal returns (CAR) and Accounting-based measures that is figures and ratios from the financial statements such as return-on-equity (ROE) and return-on-assets (ROA). Also, Ra'ed, Mohammad, Idries and Ali (2015) suggested that performance could be measured either objectively or subjectively. While objective measurements, in general, relied on financial data, subjective measurements depended upon managerial assessments.

To evaluate firm performance effectively, accounting-based measures such as sales, earnings per share, a growth rate of a firm can be used. Most previous studies used accounting data to measure financial performance. This entails the use of documented sources from annual reports and accounts to another statistical bulletin as they tap only the historical aspect of firm performance. The major accounting-based measures of performance are the return on assets (ROA), return on equity (ROE) and return on capital employed (ROCE). ROA is an indicator of how profitable a company is relative to its total assets, return on equity (ROE) is the amount of net income returned as a percentage of shareholders equity and return on capital employed (ROCE) is used for comparing the relative profitability of companies after taking into account the amount of capital used. For the purpose of this study, the return on asset (ROA) would be used as a measure of firm performance.

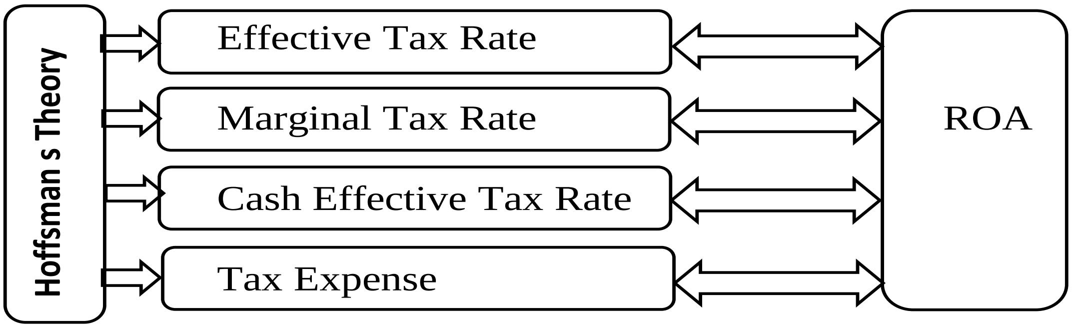
2.2.Theoretical Review

There are many theories that explain tax planning, such theories include: **Hoffman's Tax Planning Theory which** posits that tax planning seeks to divert cash (income), which would ordinarily have flown to tax authorities, to the entities, **Ability-To-Pay Theory of Taxation by** Kendrick (1939) propounded the theory that states that taxes should be levied on individuals and companies according to their ability to pay. The theory suggests higher tax burden on taxpayers (corporate companies and individuals). **Political Cost Theory**: Political cost theory is also referred to as power theory and it was advanced by Siegfried in 1972. Watts and Zimmerma (1978) asserted that political cost theory upholds that bigger firms possess greater economic and political influence relative to small firms. Among the theories above, Hoffman's Tax Planning Theory is the most relevant to this study.

2.2.1 Hoffman's Tax Planning Theory

This theory was propounded by Hoffman in 1961. The theory posits that tax planning seeks to divert cash (income), which would ordinarily have flown to tax authorities, to the entities. Tax planning activities are laudable to the extent that they reduce taxable income to the barest minimum, without sacrificing accounting income. This theory believes that taxation is based on business or accounting concepts, therefore a firm can modify such activities towards the attainment of reduction in tax liability. The theory thus recognized a positive association between firm tax planning activity and firm performance. Ogundajo and Onakoya (2016) asserted that Hoffman identified some ambiguity and loopholes in tax laws due to unclear intentions of the legislators. The study concluded that successful tax schemes work with the legal concepts and precise wording of the statute and complying with these concepts very precisely as it relates to individual firm tends to be advantageous to firms in form of tax savings (Ogundajo & Onakoya, 2016). It opines that tax planning includes all activities of entities within the concept of laws to reduce tax liability to the barest minimum. To achieve this, ETR, MTR, CETR and TE were tax-planning measurements employed to investigate the effect of tax planning on financial performance. Power theory also relates size of firm (SIZE) and age (AGE) to the efficient tax planning processes of an entity. The study used firm size and age as control variables. Figure 1 depicts the relationship between theories underpin this study and variables.

Figure 1 Theoretical framework



2.3. Empirical Review

2.3.1 Effective Tax Rate (ETR) and Financial Performance

The ETR is the average taxation rate for a corporation or individual. A corporation ETR is the average rate at which its pre-tax profits (PBT) are taxed (Jon, 2012). ETR can be measured as the corporate income tax expenses divided by profit before tax (Kurawa & Saidu, 2018). Kayode and Folajinmi, (2020) investigated the relationship between ETR and financial performance of 15 Nigerian food and beverages firms listed on Nigerian Stock Exchange for the period between 2008 to 2017. Using return on capital employed (ROCE) as a proxy of company performance, the results demonstrated that effective tax rate has a negative insignificant effect on financial performance. In the study of Chukwudi et al., (2020) on consumer goods companies in Nigeria, 21 firms were studied for 10 years from 2009 to 2018. ETR has negative significant impact on firm value proxied by Tobin's Q. This result is the same as the study carried out by Adejumo and Sanyaolu, (2020) on nine (9) selected deposit money banks (DMBs) in Nigeria where the result reveals a significant negative effect of ETR on ROA. In addition, the studies such as Olabisi et al., (2019); Salawu and Adedeji, (2017) and Nwaobia et al., (2016) reported positive significant effect of ETR on financial performance while Fagbemi et al., (2019) and Ogundajo and Onakoya, (2016) reported negative significant relationship between ETR and performance. The results of the studies reviewed above display empirical evidence showing that ETR contributes to financial performance. Consequently, this study hypothesizes that:

$H0_1$: Effective tax rate has no significant effect on the financial performance of listed Consumer Goods firms in Nigeria.

2.3.2 Marginal tax rate (MTR) and financial performance

Marginal tax rate (MTR) is the ratio of changing in tax expense to change in profit before tax (PBT). Samuel and Abdulateef, (2018) studied the relationship between Corporate Social Responsibility (CSR) and Corporate Taxation of deposit money banks DMBs in Nigeria. The study used MTR as a dependent variable against proxies of CSR where positive insignificant relationship between independent variables (CSR proxies) and MTR was reported. This paper used MTR as a measurement of tax planning to examine the relationship between tax planning and financial performance of consumer goods firms in Nigeria. On this note, this study hypothesizes that:

$H0_2$: Marginal tax rate has no significant effect on the financial performance of listed Consumer Goods firm in Nigeria.

2.3.3 Cash effective tax rate (CETR) and financial performance

Cash effective tax rate (CETR) is the ratio of cash taxes paid (in the statement of cash flows) to pre-tax income before special items. It was developed in Dyreng, Hanlon, and Maydew (2008). The phrase 'before special items' was removed from denominator following the argument of mismatch of taxes accrued in other periods (pre-tax income before special items) with the current period (CETR). Dyreng, Hanlon and Maydew, (2008) remove special items from the denominator, as special items are often accrued in the year before they are paid. The refined CETR compares the actual cash outflow (for tax purpose) with the PBT. A quite number of studies have used CETR as a measurement of tax planning (Rego & Wilson, 2012; Chen et al., 2010; Lennox et al., 2013; Guenther et al., 2013; McGuire et al., 2013; Neuman & Omer, 2013). Specifically, Guenther et al., (2013) used the volatility of the CETR over five years as a measure of tax risk, and McGuire et al., (2013) used the co-efficient of variation of the CETR over five years as the variable of interest in their analyses. Based on above studies, this study hypothesizes that:

$H0_3$: Cash effective tax rate has no significant effect on the financial performance of listed Consumer Goods firm in Nigeria.

2.3.4 Tax expense (TE) and Financial Performance

Tax expense is one of the major expenses charged against profit in the income statement. Tax expense is computed on PBT at a ruling rate. It serves as tax provision made that will be adjusted for computation of tax liability. In the study Samuel and Abdulateef, (2018) on relationship between Corporate Social Responsibility (CSR) and Corporate Taxation of deposit money banks DMBs in Nigeria. TE was also used as a dependent variable against proxies of CSR. The study reports positive significant relationship between independent variables (CSR proxies) and TE. This paper, therefore, employed TE as a measurement of tax planning to examine the relationship between tax planning and financial performance of consumer goods firms in Nigeria. This study hypothesizes that:

$H0_4$: Tax expenses has no significant effect on the financial performance of listed Consumer Goods firm in Nigeria.

The above studies and many other similar studies give contrary conclusions and findings while some are similar but with different gaps. The gaps include omission of some popularly used variables such as cash effective tax rate. Studies such as Nwaobia et al., (2016) and Kurawa and Saidu, (2018) on consumer goods firms in Nigeria used effective tax rate only and ignored cash effective tax rate while Blouin (2014) used cash effective tax rate (CETR) developed by Dyreng, Hanlon and Maydew (2008) as a measurement of tax planning. This study at hand employ cash effective tax rate and cover ten years period to 2019 for adequacy, currency of results and implication of findings for informed decision. This study, therefore seeks to investigate the effect of corporate tax planning on financial performance of listed consumer goods sector in Nigeria.

In line with the objective of the study, the following hypothesis were stated in null form.

3.0 Methodology

This covers research design employed in the study, population of study, sampling techniques, variables definition and measurement, and model specification of the study.

The population of this study comprises of all consumer goods companies in the Nigeria as at December 2019. The sample of the study consists of ten (10) listed consumer goods companies selected. The sampled firms are selected using the following criteria: The companies must be incorporated before year

2010; All selected companies must have their financial statement for the period under consideration (2010-2019) and the firms must not have been delisted from Nigeria Exchange (NGX) as at the period of the study.

Reason for using above filters was that the most complete data on all the variables included in the study from all the companies were available from reliable sources. Table 1 shows the list of sampled firms.

Table 1: **List of Sampled Consumer Goods Firms in Nigeria**

Names of Sampled Consumer Goods Firms Listed on Nigeria Exchange (NGX)	
S/No	**Company**
1	Cadbury Nigeria Plc
2	Dangote Sugar Refinery Plc
3	Flour Mills of Nigeria Plc
4	Guinness Nigeria Plc
5	Honeywell Flour Mills Plc
6	National Salt Company of Nigeria Plc.
7	Nestle Nigeria Plc
8	Nigeria Breweries Plc
9	Nigerian Enamelware Plc
10	Vita Foam Nigeria Plc.

Source: Fact Book 2019

The data of the sampled firms are collected from secondary source. The data extracted from the published annual report of the consumer goods companies listed in Nigeria include profit before tax, total assets, tax expenses, actual tax paid in cash from statement of cash flow, long term debt, equity and firms age since incorporation.

The measurement of the dependent variable (Performance) and independent variables (Tax Planning) are presented below:

Table 2: Variable's definition and Measurement

VARIABLE	MEASUREMENT
Dependent Variable	
Return on Asset (ROA)	Profit before tax divided by total asset as used by Olabisi, et al., (2019); Akintoye, Adegbie and Onyeka-Iheme, (2020); Ogundajo, and Onakoya, (2016).
Independent Variables	
Effective Tax Rate (ETR)	Corporate income tax expenses divided by profit before tax as used by Kurawa and Saidu (2018).
Marginal Tax Rate (MTR)	Change in Tax Expense/ Change in Profit before Tax as used by Samuel and Abdulateef, (2012).

Cash Effective Tax Rate (CETR)	Corporate income tax paid (in the statement of Cash Flow) divided by profit before tax adapted from Dyreng, Hanlon and Maydew (2008) and Blouin (2014).
Tax expenses (TE)	Natural Log of total tax expenses as used by Huseynou and Kalmn, (2012).
Control Variables	
Firm Size	Natural Log of total asset as used by Kurawa and Saidu, (2018),
Leverage	Non-current debt divided by shareholders fund as used by Olabisi, et al., (2019).
Firm Age	Natural log of number of years between the date of establishment of the company and the year of observation as used by Olabisi, et al., (2019).

Source: Organized by the Researcher based on Literature (2021)

The data were analyzed using Prais-Winsten OLS regression with panel corrected standard errors (PCSE) featuring ROA as the dependent variable. The dependent variables consist of ETR, MTR, CETR and TE. In addition, control variables for the model include firm size (SIZE), leverage (LEV) and firm age (AGE). The model is therefore specified as follows:

$$\mathbf{ROA_{it} = \beta_0+\beta_1 ETR_{it}+\beta_2 MTR_{it}+\beta_3 CETR_{it}+ \beta_4 TE_{it}+ \beta_5 SIZE_{it}+ \beta_6 LEV_{it}+ \beta_7 AGE_{it}+\varepsilon_{it}}$$

Where:

$\mathbf{ROA_{it}}$ = Earnings before interest & tax divided by total assets of firm i in period t,
$\mathbf{ETR_{it}}$ = Effective Tax Rate of firm i in period t,
$\mathbf{MTR_{it}}$ = Marginal tax rate of firm i in period t,
$\mathbf{CETR_{it}}$ = Cash effective Tax Rate of firm i in period t,
$\mathbf{TE_{it}}$ = Tax expenses of firm i in period t,
$\mathbf{SIZE_{it}}$ = Natural logarithm of total assets of firm i in period t,
$\mathbf{LEV_{it}}$ = Leverage of firm i in period t,
$\mathbf{AGE_{it}}$ = Age of firm i in period t,
$\boldsymbol{\varepsilon_t}$ = The error term in year t,
$\boldsymbol{\beta_0}$ = Constant, and β_1, β_2, β_3, β_4, β_5, β_6 and β_7 are the regression coefficient

4.0 Results and Discussion

4.1 Descriptive Statistics

The characteristics of the data and the summary of the descriptive statistics of the variables are presented in Table 3. Considering the mean values and the standard deviation, it reveals that the series are not widely dispersed from the mean value. The mean value of ETR is 0.298 implies that on average the consumer goods firm in Nigeria had an effective tax rate of 29.8% for the period under review. In addition, the mean value of cash effective tax rate stood at 20.9% for the period under review, which is lower than mean value of ETR. This implies that on average, the consumer goods firm were paying lesser than the actual provision made in the income statements during the period under study. This showed that consumer good firms took enough advantage of the loopholes in the tax system by ensuring adequate tax planning that may reduce the tax expenses, thereby by increasing the after-tax profit. Moreover, total assets used to measure the size of the firms range from ₦1.242 billion to ₦ 482.603 billion while, the mean value was ₦112.881 billion naira. In addition, the mean value of return on asset stood at about 13%. This is due to effective tax planning by acquiring or investing in qualifying capital expenditure during the study period and ineffective used of assets to generate profit that led to reduction in performance of the company.

The mean of Tax expense is 4.043 billion naira that represents mean tax provision in the income statement of the firms during the period of study is higher than the mean of tax paid of 3.688 billion naira for the same period. On average, this connotes that effective tax planning mechanisms such as dividend stripping, enjoying pioneering standing, acquiring insolvent firms with a significant loss with the aim of using such losses as relief against the profit and acquiring of qualifying non-current assets for claiming capital allowances on them were put in place by the firms during the period of study. The average age of sampled consumer goods firms during the period under study is 35 years with age range between 1 and 59 years. This implies that average companies under study were in existence for reasonable number of years and therefore had opportunity of political cost for tax planning.

Table 3: Summary of Descriptive Statistics (2010-2019)

Variable	Obs	Mean	Std. Dev.	Min	Max
ROA	100	.129	.107	-.054	.392
ETR	100	.298	.149	-.217	.887
CETR	100	.209	.352	-2.492	.916
TE	100	4042.968	5562.93	-2571.01	25440.711
MTR	100	-.253	9.5	-81.134	33.301
SIZE	100	112881.22	119478.55	1242.05	482603.25
LEV	100	.443	.31	.038	1.742
AGE	100	35.7	17.656	1	59

Source: Author’s computation based on STATA 13

Trends analysis of ROA of consumer goods firms in Nigeria from 2010 to 2019 are shown on figure 2. Put together, ROAs of most of the firms under study during the period show downward slope. These imply that, on average, financial performances of listed consumer goods firms during the period require effective financial decision such as proper and efficient tax planning strategies to improve the situation in future.

4.2 Correlation Analysis and Variance Inflation Factor (VIF)

Table 4 depicts the correlation matrix results. As shown from the Pairwise correlation matrix, effective tax rate (ETR) has negative insignificant relationship with return on assets (ROA) while Tax expenses has positive significant relationship with ROA. This implies that an increase in ROA by 1 unit with other factors constant would increase the tax expenses of listed Consumer Goods firm by 59.9%. Furthermore, the study employed a formal test of multicollinearity using the variance inflation factor (VIF). Angahar and Malizu (2015) noted that a VIF value of less than 10 indicates that multicollinearity is not an issue. From the VIF values presented in the last column of Table 4, none is up to 10. Therefore, it can be concluded that there is no problem of multicollinearity in the model.

Table 4: Pairwise Correlation Matrix and VIF

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	VIF
(1) ROA	1.000								
(2) ETR	-0.121	1.000							4.32
	(0.229)								
(3) TE	0.599	-0.104	1.000						3.35
	(0.000)	(0.303)							
(4) CETR	-0.075	0.871	-0.029	1.000					4.30
	(0.456)	(0.000)	(0.777)						
(5) MTR	0.139	0.036	-0.011	-0.005	1.000				1.05
	(0.169)	(0.723)	(0.911)	(0.963)					
(6) LEV	-0.123	-0.039	0.150	0.010	-0.221	1.000			1.37
	(0.224)	(0.698)	(0.137)	(0.918)	(0.027)				
(7) SIZE	0.137	-0.121	0.814	-0.066	-0.179	0.387	1.000		3.79
	(0.176)	(0.231)	(0.000)	(0.517)	(0.075)	(0.000)			
(8) AGE	-0.128	0.033	-0.139	-0.012	-0.071	0.194	-0.048	1.000	1.12
	(0.205)	(0.744)	(0.168)	(0.905)	(0.480)	(0.053)	(0.637)		

Source: Authors computation based on STATA 13

4.3 Fixed Effect Model and Diagnostic Tests

The analysis starts by presenting an exploratory fixed effects (FEs) estimation to examine the relationship between variables in the empirical model. Table 5 shows the result of the estimation. The study uses the estimation as the basis for conducting the relevant post-estimation diagnostic tests that are expected to inform the determination of the appropriate model to estimate.

Table 5: Fixed Effect model Results

ROA	Coef.	St.Err.	p-value	Sig
ETR	-.002	.013	0.852	
TE	.054	.007	0.000	***
CETR	-.008	.012	0.527	
MTR	0.00	.001	0.599	
LEV	-.036	.025	0.162	
SIZE	-.106	.016	0.000	***
AGE	.053	.024	0.030	**
Constant	1.1	.26	0.000	***
R-squared	0.626			

*** p<.01, ** p<.05, * p<.1

Source: Authors computation based on STATA 13

4.4 Diagnostic Test

In addition to the FE estimation above, the model needs to be subjected to some post-estimation diagnostic tests. Therefore, FE model is subjected to panel heteroskedasticity; panel serial correlation and cross-sectional dependence (or correlation) tests. If there are presence of panel heteroskedasticity, and serial correlation, the standard errors of the FEs model are biased (Beck, 2001). The results of these tests are presented in Table 6. The residuals of the estimated FE model are found to suffer from the problems of heteroskedasticity. Consequently, the estimates of the FE model are therefore biased. This necessitates the application of an estimator that accounts for these problems. The PCSE estimator accounts for these issues and is therefore employed to estimate our baseline model.

Table 6: Diagnostic test results

Diagnostic Tests	Statistics	p-value	Remark
Group-wise Heteroskedasticity	214.22	0.000	Present
Contemporaneous Correlation	0.31	0.752	Absent
Panel Serial Correlation	-0.86	0.389	Absent

Source: Authors computation based on STATA 13

4.5 The PCSE Estimation Results

The results of the Prais-Winsten regression results with PCSE are presented in this section are shown in Table 7. The PCSE estimation is necessary in this situation to correct for group-wise heteroskedasticity as both FEs and OLS cannot handle these issues (Beck & Katz, 1995). In addition, feasible generalized least squares (FGLS) may not be appropriate, as it has been proved to inflate the p-values in the case of small TS-CS dataset (Beck & Katz, 1995). Based on the regression result in Table 7, the effective tax rate (ETR) has negative but insignificant effect on return on assets (ROA) with P-value of 0.479, which is greater than the 0.5% significance level. Tax Expenses (TE) has positive significant effect on return on asset (ROA) with the p-value of 0.000. These imply that an increase in ROA will increase tax expense. Cash Effective Tax Rate (CETR) has negative insignificant effect on return on asset as shown with the p-value of 0.419. The explanatory power of ETR, TE, CETR, MTR, LEV, SIZE and AGE combined on the ROA (that is the coefficient of determination) is 62.6% and the effect is significant with the Prob > F of 0.0000 which is less than 0.5%. This implies that the 77.5% changes in the ROA is caused by the combined influence of the explanatory variables (Tax Planning proxies) while the remaining 37.4% is caused by other determining variables that are not captured in this study.

Table 7: Prais-Winsten regression, correlated panels corrected standard errors (PCSEs)

ROA	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
ETR	-.005	.007	-0.71	.479	-.019	.009	
TE	.075	.007	11.00	0	.061	.088	***
CETR	-.005	.007	-0.81	.419	-.019	.008	
MTR	-.001	0	-1.38	.169	-.001	0	
LEV	.007	.026	0.25	.8	-.044	.057	
SIZE	-.071	.009	-7.81	0	-.088	-.053	***
AGE	-.002	.005	-0.31	.756	-.012	.009	
Constant	.331	.107	3.09	.002	.121	.54	***

Mean dependent var	0.129	SD dependent var	0.108
R-squared	0.775	Number of obs	100
Chi-square	337.857	Prob > chi2	0.000

*** P<.01, ** p<.05, * p<.1

The Prais-Winsten regression with PCSEs is used as the main analysis of this paper. It is important to state here that all the four hypotheses of this study are developed and tested at firm level.

H_{01}: Effective tax rate has no significant effect on the return on asset of listed Consumer Goods firm in Nigeria

Tax planning measured by effective tax rate is found to be statistical insignificantly associated with return on asset of listed consumer goods firms in Nigeria with the P value of 0.479. Therefore, the study accepts the null hypothesis that effective tax rate has no significant effect on financial performance of listed consumer goods firms in Nigeria. This is in line with the study of Kayode and Folajinmi, (2020).

H_{02}: Tax expenses has no significant effect on the financial performance of listed Consumer Goods firm in Nigeria

Tax expenses as a proxy for tax planning has significant effect on Return on Asset of listed Consumer Goods firms in Nigeria with the p value of 0.000. Therefore, the study fails to accept the null hypothesis that tax expenses have no significant effect on financial performance of listed Consumer Good firm in Nigeria. The result reveals that TE exerts a significant positive effect on the financial performance. This signifies that consumer goods firms under study have not been properly and efficiently used tax planning strategies to reduce tax liability.

H_{03}: Cash effective tax rate has no significant effect on the financial performance of listed Consumer Goods firm in Nigeria

Cash effective tax rate as a measure of tax planning has insignificant effect on Return on Asset of listed Consumer Goods firms in Nigeria with the P value of 0.419. Therefore, the study accepts the null hypothesis that cash effective tax rate has no significant effect on financial performance of listed Consumer Goods firms in Nigeria.

H_{04}: Marginal tax rate has no significant effect on the financial performance of listed Consumer Goods firm in Nigeria

Marginal tax rate as a measure of tax planning has insignificant effect on Return on Asset of listed Consumer Goods firms in Nigeria with the P value of 0.471. Therefore, the study accepts the null hypothesis that marginal tax rate has no significant effect on financial performance of listed Consumer Goods firms in Nigeria.

The effective tax rate (ETR) has negative relationship with return on assets (ROA) this means that any increase in tax rate will reduce expected ROA inconsequentially while Tax expenses has positive relationship with ROA. This implies that an increase in planning of tax expenses by N1 with other factors remain constant would increase ROA the tax expenses of listed Consumer Goods firm by 48.77%. There is a negative relationship between marginal tax rate (MTR) and ROA of listed Consumer Goods firms in Nigeria. For any percentage increase in tax rate will reduce the subsequent ROA immaterially. The actual cash paid for tax to proportion of income after tax has no significant influence on ROA of Listed consumer goods firms in Nigeria. This implies that the lagging or timely payment of due tax does not materially add up to influence in the upward or downward movement of ROA of listed consumer goods firms in Nigeria.

In addition, positive significant relationship exists between leverage, size and ROA of listed Consumer Goods firm in Nigeria. This implies that an increase in leverage and size increase the return on asset of listed Consumer Goods firms in Nigeria, will increase the productivity of the firms, hence profitability.

This is due to the benefit of using more debt than equity capital though, there is problem of financial distress in the case of default. Owing to growth in efficient and effective assets utilization, the firm increase in size, hence, expansion is expected which translate to increase in profitability.

5.0. Conclusion and Recommendations

The study investigates the effective of tax planning on financial performance of listed consumer goods firms in Nigeria. Tax as a one of the major expenses in the financial statements has cut the attention of many researchers because of its impact on performance. This study is motivated by the need to assess the efforts being made by the Nigerian consumer goods firms to legally plan their taxes in such a way barest minimum tax liabilities will be paid with a view to improve financial performances. In so doing, this paper uses Prais-Winsten regression with PCSEs, as the main method of analysis, to examine the relationship between four measures of tax planning (namely, ETR, CETR, MTR and TE) and financial performance, measured by ROA, at firm level. Tax expenses has positive significant effect on financial performance of listed Consumer Goods firms in Nigeria; cash effective tax rate and marginal tax rate have negative insignificant effect on financial performance of listed consumer goods firms in Nigeria.

This paper has contributed to the theories by providing additional evidence on how tax planning using ETR, CETR, MTR and TE may affect financial performance.
Based on the above conclusion the study recommended the following:

i. The management of the listed consumer goods firms in Nigeria should engage the services of tax practitioners in managing their tax computations and remittances; since an increase in return on asset increases the tax expenses significantly.
ii. The consumer goods firms in Nigeria should adopt moderate debt financing by weighing the cost and benefit of using debt for the benefit of tax shield.
iii. The management of listed consumer goods firms in Nigeria should acquaint themselves with relevant tax laws (such as 2020 Finance Act) to identify more available tax relieves and tax-heaven opportunities for effective and efficient tax planning.

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Effect of Selected Audit Features on Financial Reporting Quality: A Case of Nigerian Insurance Firms

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Abstract
This study examined the selected audit features on financial reporting quality through a case study of listed insurance firms in Nigeria. The gathered data was extracted out of the annual financial reports, accounts, and online information of 15 sampled insurance firms covering the period 2008 to 2019. The findings show that audit independence and audit fee have a positive and significant impact on the financial reporting quality of Nigerian listed insurance firms. Audit size has a negative and significant effect on financial reporting quality, while audit rotation has a positive but insignificant effect on financial reporting quality. Furthermore, audit expertise has a negative but minor impact on financial reporting quality. Based on the control variable of firm size, this has a positive and significant effect on financial reporting quality. On the whole, audit independence appears to be the best-selected audit feature that leads to a better disclosure of the qualitative information on the financial reporting quality of the Nigerian insurance firms. Therefore, to ensure and sustain high financial reporting quality, this paper recommends that regulators of the insurance industry such as NAICOM should enact a regulation that promotes audit independence in the industry. Furthermore, shareholders should restrain corporate management from awarding non-audit services, such as tax consultancy, etc., to the statutorily appointed auditor. This measure will address the situation where an audit firm earns excess revenue from a client, thereby increasing the likelihood of bending to management aspirations.

Keywords: *Audit, Audit Features, Financial Reporting Quality, Insurance Firms.*

1.0 Introduction

An auditor's legal responsibility is to assist in the production of a reliable financial report. The auditor's assessment of the report's fairness and truthfulness actually performed an assurance function that aided in boosting stakeholders' confidence. Implicitly, the level of the reporting entity's financial reporting quality is therefore determined by the quality of the audit that was performed. The aspects of an audit that contribute to its quality are its auditor specialization, independence, tenure, audit firm size, audit fee, auditor expertise, joint audit, and audit type (Abedalgader, et al., 2010; Umaru, 2014; Eyenubo, et al., 2017; Olanisebe, et al., 2018). It demonstrates that there are high expectations for an audit business with well-organized characteristics.

Precise earnings, and indeed earnings, are one of the fundamental determinants provided on the financial statement that demonstrate how shareholders' riches are maximized, particularly in light of the collapse of large enterprises, which most likely has an effect from faking reporting data.

Indeed, high-profile companies like Enron and WorldCom as well as banks including Cadbury Nigeria, Oceanic, Intercontinental, Afri, Sky, and Diamond Banks have all been impacted by business failures and scandalous reporting (Bernstein, 2018). Additionally, the severe recession in Nigeria during the years 2016–2017 had a negative impact on the value of the naira. Investigations into these crises actually turned up guilt on the part of these companies' auditors. In order to ascertain how elements such as audit firm features relate to audit quality, another group of research was conducted (DeAngelo, 1981; Lennox, 1999; Johnson, et al., 2002; Kamarudina, et al., 2010; Lawrence, et al., 2011; Yeganeh, et al., 2012; James & Izien, 2014; Alareeni, 2017; Saidu, 2017). However, whereas audit firm features have been found to determine audit quality (James & Izien.

Moreover, the outcomes are mixed. For instance, Semiu and Johnson (2012) highlighted the availability of non-audit services, but Semiu and Kehinde (2011) identified the size of the audit fee as the most significant factor affecting audit independence and, subsequently, financial reporting quality. The current study adds to this body of research by analyzing the impact of specific audit features on the caliber of financial reporting of listed insurance firms in Nigeria. These aspects include audit independence, audit size, audit rotation, audit fee, and audit expertise. According to researches, an auditor is more likely to express an uncompromising judgment about the audit work they performed the more independent they are from management and shareholders (De Angelo, 1981).

Additionally, it is claimed that the Big 4 audit firms are more likely to resist management pressure to deliver a good audit report due to the greater costs associated with doing so (Francis, 2004). According to Arrunada and Paz-Ares (1998) and Johnson, Kharana, and Reynolds (2002), auditors who audit a client for an excessive amount of time lose familiarity, which reduces their ability to conduct rigorous tests and issue a good audit report. The legitimacy of the audit job that auditors conduct is therefore dependent on an appropriate audit term. Additionally, larger audit firms typically have more incentives to undertake high-quality audits, which raises the caliber of financial reporting (Lennox, 1999).

Based on the above propositions, the paper hypothesizes that audit independence, audit size, audit rotation, audit fee, and audit expertise have no significant effect on the financial reporting quality of listed insurance firms in Nigeria.

No contemporary economy can live without the backing of viable and reputable insurance businesses, which is why the insurance industry is a significant component of the financial services sector and, as a result, is a crucial industry in the production and service activities of the national economy (Arena, 2006). This study is important because it informs regulators and shareholders about the audit elements that are important for increasing financial reporting quality, better positioning them to take action to raise the standard of financial reporting for businesses in the Nigerian insurance sector. The paper is divided into the foregoing introduction, literature review, methodology, results and discussion, and conclusion and recommendations.

2.0 Literature Review

Financial reporting is the dissemination of information to users of the information about the company's economic activity (Samaila, 2014). This demonstrates financial reporting as a process that involves the creation of financial statements that are released in compliance with established regulations and that are used by users to make a variety of decisions. Financial reporting must be of high quality in order to be relevant and meaningful for users' decision-making needs. Financial reporting quality has become more appealing to investors, managers, the government, financial marketers, and financial analysts as a result (Ifeanyi, et al., 2018; Olowokure, et al., 2016).

Verdi (2006) asserted that the accuracy with which financial reports convey information about the reporting entity's operations during the financial year is a measure of financial reporting quality. Martinez (2014) defined the integrity of the information provided in the financial statements as the financial reporting quality. According to these viewpoints, the accuracy, fidelity, and truthfulness of the information contained in the financial reports define financial reporting quality.

The effectiveness of financial reporting has been evaluated in a number of different ways in the literature. For example, Adamu (2017) and Tuta (2014) use both quantitative and qualitative methods to evaluate the effectiveness of financial reporting. However, the analysis reveals a biased impact. For this reason, the accrual model and value relevance model were used in this study's quantitative analysis of financial reporting quality. The level of earnings management is estimated by the accrual model. The approach is predicated on the idea that management uses discretionary accruals, over which they have some degree of influence, to manage earnings in a way that benefits them (Beast, et al., 2009). It is stated that the accrual model's effectiveness as a gauge of the caliber of financial reporting.

The value relevance model gauges the accuracy of financial reporting by examining the relationship between accounting data and stock market response (Nichloas & Wahlen, 2004). According to the concept, firm value is frequently used as a stand-in for an accounting figure, and share price serves as a stand-in for corporate market value. The model is particularly helpful in analyzing earnings persistence, predictive power, and variability as components of financial reporting quality, according to research by Beast et al. (2009). The accrual model's advantages are also present in this form.

2.1 Audit Features and Financial Reporting Quality

Audit features are the attributes of the audit firm. It is related to the characteristics of the auditing firm hired to undertake the financial statement audit. According to DeAngelo (1981), among other factors, an auditor's characteristics determine their capacity to reduce financial statement discrepancies. Included in the list of specific audit aspects are audit independence, audit specialization, audit tenure, auditor type, joint audit, audit firm size, audit fee, and auditor expertise (Abedalgader et al., 2010; Umaru, 2014). The influence of audit elements such as audit independence, auditor size, audit rotation, audit fee, and audit expertise on the quality of financial reporting is the focus of the current study.

2.2 Audit Independence and Financial Reporting Quality

The ability to provide an opinion on matters of financial reporting without bias or under duress is referred to as "audit independence" (The Consultative Council of Accountant Bodies, CCAB, 2012). Investors and other users rely on the auditor's expert opinion on the financial statements when making significant choices about the reporting firm. In order to be able to render an objective view, the auditor must keep a certain distance from the management, shareholders, or any other relationship with the entity that could in any way influence the opinion. Financial reporting quality is improved when the auditor performs independently and in compliance with professional and auditing standards.

In the literature, the quantity of the audit fee has generally been used to gauge auditor independence (Osamudiame, et al., 2015). Due to their substantial client revenue, auditors in poor nations like Nigeria are said to lack a significant degree of independence (Amadi, 2005). The quantity of the audit fee is a significant element that has the potential to inhibit auditor independence in the nation, according to Semiu and Kehinde's (2011) analysis of the perception of auditor independence in Nigeria between 2000 and 2008. Additionally, Semiu and Johnson's (2012) investigation into how Nigerian investors perceive the relationship between non-audit services and auditor independence concluded that the provision of both audit and non-audit services compromises auditor independence and, as a result, their capacity to support the production of high-quality financial reporting. The current study was motivated by the opportunity for further research into the apparent empirical disagreement regarding the audit features that have the greatest impact on financial reporting quality.

2.3 Auditor Size and Financial Reporting Quality

The size of an audit firm is used to categorize it as large or small. The Big Four or the non-Big Four audit companies are other names for this group. The non-Big Four audit firms are small audit firms with just national or local presences, whereas the Big Four audit firms are huge audit firms with global presences. Large audit firms are associated with good audit quality, which translates to high financial reporting quality since they have more resources to execute audits and a larger client network, which results in less dependence on a specific client than smaller audit firms (DeAngelo, 1981). Additionally, they have additional motivation to safeguard their reputation by conducting excellent audits in order to avoid being associated with audit failure (Francis, 2004).

When a company is audited by one of the large audit firms, a dummy variable with the value 1 is often assigned and the value 0 otherwise. Akintola Williams Delloitte, Pricewaterhouse Cooper, Ernst & Young, and KPMG are the Big Four auditors in Nigeria (Jerry & Saidu, 2018). While there has been empirical research into the relationship between auditor type and audit quality (Alareeni, 2017), there is generally a dearth of data regarding the direct connection between auditor type and the caliber of service companies' financial reporting, particularly in Nigeria.

2.4 Audit Rotation and Financial Reporting Quality

The duration of the audit firm-client relationship as of the fiscal year end covered by the audited financial statements is known as the audit rotation. In other words, it is the number of years that have passed after the auditor's appointment that they have been carrying out the audit function for a customer. It is stated that the longer an auditor works for a given client, the more familiar they become, and the more likely they are to "turn a blind eye" to some financial reporting inconsistencies that have an impact on the reliability of financial statements.

A long-standing auditor-client relationship may result in bonds of loyalty, trust, or emotional attachment, according to Arrunda and Paz-Ares (1998), which may lead to the auditor disregarding or engaging in less stringent audit processes. As a result of this recognition, legislation on auditor tenure with a focus on rotation has been passed worldwide. For instance, auditors must audit a customer for a maximum of 10 years in the United States of America. The Central Bank of Nigeria only controls the banking sector in Nigeria for a maximum of ten years. Although the aforementioned position is widely supported by audit literature, there is another school of thought that claims that longer auditor tenure improves audit quality therefore financial reporting quality.

According to Simon and Francis (1988), long audit tenure enables the auditor to get a thorough understanding of the client and puts them in a better position to produce high-quality audits. Previous research has not determined whether these two opposing schools of thought are empirically valid or not in the context of service organizations, which are frequently disregarded because of the distinctive nature of their activities (Malofeeva, 2018). Listed insurance companies in Nigeria are used in this study to empirically examine the validity of these two schools of thought.

2.5 Audit Fee and Financial Reporting Quality

The audit fee is a gauge of the resources available to the audit business, including the quantity and caliber of staff, technology, and other tools required to carry out an efficient audit. The natural logarithm of total assets serves as the main proxy for the audit fee (James & Iziens, 2014). According to Lys and Watts (1994), larger audit firms have stronger financial resources, research facilities, cutting-edge technology, and skilled people than smaller audit firms, enabling them to efficiently undertake audits of significant clients. According to Muhammed and Karbhari (2006), large audit companies are better able to withstand management pressure brought on by conflicts than small audit firms. Lennox (1999) in the United Kingdom (UK) provides empirical evidence of a favorable correlation between audit fee and audit accuracy.

2.6 Empirical Review

The argument that audit firm features influence audit quality, which in turn influences financial reporting quality, underlies the relationship between specific audit features and financial reporting quality. Alareeni (2017) looks at the relationship between the attributes of audit firms and the audit quality of listed companies in Bahrain from 1992 to 2016. According to the study, audit firm size has a negative link with audit quality, but audit client tenure, audit fee, and audit quality all have positive and significant relationships. Yeganeh, et al. 2012) especially looked at the effect of audit firm size and auditor tenure on the accounting conservatism of companies listed on the Tehran Stock Exchange. According to firm data from 2002 to 2010, the size of the audit firm and the tenure of the auditor were found to have no impact on the firms' level of accounting conservatism. In contrast, Kamarudina, et al. (2010) also found a positive correlation between auditor tenure and earnings conservatism in Malaysia.

In Nigeria, as elsewhere, there is conflicting empirical evidence about the relationship between audit firm features and financial reporting quality. Umaru (2014) investigates the effects of audit firm characteristics on the accuracy of the financial reporting for four building material companies from 2002 to 2011. The study, which used OLS multiple regression for analysis, discovered that audit firm independence has a favorable and significant impact on financial reporting quality, whereas auditor type, as evaluated by the Big 4, has a detrimental but minor impact. In a different study, Jerry and Saidu (2018) used OLS multiple regression to analyze the effect of audit firm size on the financial reporting quality of thirteen listed insurance companies. They found that this impact is both positive and significant on financial reporting quality. In contrast, audit firm rotation and audit tenure had a negative link with the financial reporting quality of deposit money institutions in Nigeria, according to research by Olanisebe, et al. (2018).

2.7 Theoretical Framework

The agency theory serves as the foundation for this essay. Alchian and Demseo (1972) introduced the agency hypothesis, which was further expanded by Jensen and Meckling (1976). The interaction between shareholders, who are regarded as the primary, and managers, who are regarded as the agent, inside a corporate structure, forms the basis of the theory. According to the theory, the shareholders appoint managers to run the company on their behalf. Managers must put the interests of the shareholders ahead of their own and any other interests. However, managers are prone to self-interest, thus they might not always act in the shareholders' best interests (Padilla, 2004).

A conflict of interest is referred to as an agency issue. Through the financial reporting process, managers periodically update the shareholders, who are the company's owners, on company affairs. Managers may distort the financial reporting process in order to further their own interests at the expense of shareholders. Thus, a monitoring mechanism is required to prevent managers from using their positions to further their own interests. The external auditor's auditing work is an essential monitoring mechanism for reducing managers' financial reporting errors and raising the quality of financial reporting.

According to Umaru (2014), an auditor's capacity to reduce misstatements in financial statements depends on his or her effectiveness and efficiency, which empirically could be gauged by the number of hours spent auditing and the industry knowledge of the auditor, which in turn is made up of factors like auditor independence, auditor compensation, auditor type, and joint audit. Simply expressed, the qualities of the auditors determine their capacity to reduce financial statement inaccuracies (De Angelo, 1981).

In order to effectively prevent managers from making major misstatements during the financial reporting process, audit companies with the correct qualities will also help to ensure high-quality financial reporting. Abedalgader, et al. (2010) and Umaru (2014) were two previous research that used the agency theory to examine the relationship between certain traits of audit firm and disclosure quality.

3.0 Methodology

This study uses a qualitative methodology to explore how specific audit aspects affect financial reporting quality of listed insurance firms in Nigeria. Because of the nature of the firms under investigation, the qualitative approach is appropriate. In order to estimate the quantitative quality of financial reporting using the discretionary accrual technique, insurance companies, like banks, are service businesses without real stocks. Therefore, using a qualitative approach is the best way to gauge the quality of financial reporting for service firms like banks and insurance.

The study adopts an ex-post factor research design where historical data on selected audit features and financial reporting quality were extracted from the published annual reports and accounts of fifteen out of the thirty-two insurance companies listed on the Nigerian Stock Exchange (NSE) as at 31st December, 2021. The study period covers 2008 to 2019. The dependent variable is financial reporting quality which was measured qualitatively based on Beest, et al., (2009) framework.

The independent variable is selected audit features which was proxied by audit independence, audit size, audit rotation, audit fee and audit expertise. Audit Independence (AI) was measured by the proportion of audit fee to the audit firm's revenue (James & Izien, 2014). Audit size (AS) was measured using a nominal scale of “1” for Big4 audit firm (Akintola Williams Delloitte, PriceterhouseCooper, Ernst and Young, and KPMG) and “0” for non Big4 audit firms. Audit rotation (AR) was measured in length of years spend by the audit firm as external auditor of a client whereby consistent with the section 8.0 clause of the NAICOM; 1-5 years was scaled “1” and above 5 years “0” and audit firm size was measured by the natural logarithm of total assets (James & Izien, 2014). And, audit expertise (AE) by the proportion of audit committee members with financial know-how in the audit committee to total number of the committee (Khrishnan & Visvanathan, 2008). Moreover, for robustness, the control variable of firm size (FS) introduced into the model to avoid misspecification.

3.1 Model Specification

The empirical model is stated as:

$FRQ_{it} = \beta_0 + \beta_1 AI_{it} + \beta_2 AS_{it} + \beta_3 AR_{it} + \beta_4 AF_{it} + \beta_5 AE_{it} + \beta_6 FS_{it} + e_{it}$ ------------(1)

Where: FRQ_{it} = Financial Reporting Quality (Qualitative), AI = Audit Independence, AS = Auditor Size, AR= Audit Rotation, AF= Audit Fee, AE = Audit Expertise, FS = Firm Size, β_0, β_1, - β_6 = Regression intercept, e = Error term, and it = company i in year t.

The study data was analyzed using descriptive statistics, correlation statistics and OLS multiple regression analysis.

4.0 Discussion of Results

The Table 2 presents the descriptive statistics of the study data.

Table 2: Descriptive Statistics

Variables	Obs.	Min	Max	Mean	Std. Dev.
FRQ	165	1.88	3.57	2.780684	0.3575147
AI	165	0.04	1.53	0.2786325	0.1891036
AS	165	0	1	0.5128205	0.5019854
AR	165	0	1	0.6153846	0.4885968
AF	165	12.08	12.08	9.337607	0.8434214
AE	165	0.17	0.67	0.4924786	0.0750506
FS	165	0.29	0.87	0.6251282	0.1452502

Source: Generated by the Authors from Annual Reports and Accounts of Sampled Insurance Companies using Stata 12.0.

Table 2 indicates that the financial reporting quality of insurance companies is moderate. This is inferred from the mean score of 2.780684 out of the maximum of 5.00. The insurance companies highest financial reporting quality was 3.57 with the lowest being 1.88 during the period under review. The standard deviation of 0.355147 shows little dispersion in the financial reporting quality of the sampled companies during the period of study. The statistics with respect to the independent variables reveal mean audit independence of 27.9%, about 51.3% of the insurance companies are audited by the Big-4 audit firms, 61.5% of the company's auditors have spent between 1 to 5 years as required by section 8.0 clause of the NAICOM, average total assets size of ₦9.33 million, and audit firm member of the sampled insurance companies are 49.2% experts. The standard deviations associated with the variables do not show elements of wide dispersion. These statistics clearly indicates that selected audit features of insurance companies in Nigeria possess attributes capable of contributing to high financial reporting quality. A look at the mean value of the control variables indicates that firm size is above average by 62.5% level. This is indicative that firm size is well position to impact the dependent variable (financial reporting quality) hence the introduction as a control variable is justifiable.

Table 3 depicts the correlation between financial reporting quality and the independent variables as well as the independent variables among themselves.

Table 3: Correlation Matrix

Variables	FRQ	AI	AS	AR	AF	AE	FS	VIF
FRQ	1.0000							
AI	0.3305*	1.0000						1.10
AS	-0.2762*	0.0756	1.0000					1.27
AR	0.0124	0.0605	0.1784	1.0000				1.04
AF	0.1637	0.2023*	0.3399*	0.0398	1.0000			1.39
AE	0.0153	0.2015*	0.3733*	0.0732	0.4276*	1.0000		1.40
FS	0.0517	0.1828*	0.1102	0.0341	-0.1053	0.1777	1.0000	1.13

*Correlation is significant at the 0.05 significance level.

Source: Generated by Authors from the annual reports and accounts of the sampled insurance companies using Stata 12.0.

Table 3 shows that audit independence has a positive and significant effect on financial reporting quality as reveal by the coefficient of 0.3305 which is significant at the 5% significance level. Audit size is negatively and significantly associated with financial reporting quality. Audit rotation, audit fee, audit expertise, and the control variables of firm size all have positive but insignificant effect on financial reporting quality as reveal by the coefficients of 0.0124, 0.1637, 0.0153 and 0.0517 respectively.

The correlation coefficients on the main diagonal are 1.0000 because each variable has a perfect positive linear relationship with itself. The correlation among the independent variables shows that audit fee is positively and significantly correlated with audit independence and audit size with coefficients of 0.2023 and 0.3399 respectively. Audit expertise is positively and significantly correlated with audit independence and audit size, and audit fee while firm size is positively and significantly correlated with audit independence. The relationship of all the others is positive but insignificant except in the case of firm size and audit fee which are negatively correlated.

The suitability of the study data was confirmed by performing normality, multicollinearity, heteroskedasticity and Hausman specification tests. The normality test of normal p-plot of the regression standardized residual indicates a good fit and does not suggest the presence of any significant outliers among the regression standardized residuals. The result of the multicollinearity test indicates a Variance Inflation Factor (VIF) of minimum of 1.04 and maximum of 1.40 (see Table 3). Since, the mean VIF of 1.22 is less than 10, it is clear that there is absence of multicollinearity between the independent variables of the study. The result of the heteroskedasticity test shows the presence of heteroskedasticity as the p-value of the chi-square is 0.0000 which is significant. Since heteroskedasticity which is not the ideal condition was found, it was corrected through the Ordinary Least Square (OLS) robust test. Due to the trade-off between the efficiency of the Random Effect (RE) and consistency of the Fixed Effect (FE) approach of the OLS regression, Hausman specification test was conducted to decide which of the approach was best to analyze the study results. The test shows chi-square p-value of 0.5712 which is insignificant and indicates that the variables are correlated which further implies that the study result is to be interpreted using the Random Effect (RE) model. Table 4 presents the summary OLS regression and RE model results.

Table 4: Summary Regression Result

OLS					Random Effect			
Variables	**Coef.**	**Std. Err.**	**T**	**P**	**Coef.**	**Std. Err.**	**Z**	**P**
Constant	1.6119	0.3933	4.30	0.000*	1.5771	0.4744	3.33	0.001*
AI	0.5630	0.1637	3.44	0.001	0.5925	0.1638	3.62	0.000*
AS	-0.2802	0.0661	-4.24	0.000*	-0.2424	0.0804	-3.01	0.003*
AR	0.0393	0.0614	0.640	0.523	0.0519	0.0598	0.87	0.386
AF	0.1066	0.0412	2.59	0.011	0.1261	0.0448	2.81	0.005*
AE	-0.1030	0.4639	-0.22	0.825	-0.2656	0.5413	-0.49	0.624
FS	0.1701	0.2155	0.79	0.431	0.1329	0.2799	0.47	0.635
R^2	0.2522							
Adj. R^2	0.2114							
F-value	6.18							
Prob-F	0.0000							
Rho.	0.1434							
Prob.	0.0000							

*Correlation is significant at the 5% significant level.

Source: Generated by Authors from the annual Reports and Accounts of Sampled insurance companies using Stata 12.

Table 4 shows R^2 of 0.2522 which means that about 25.22% of total variation in financial reporting quality of listed insurance firms in Nigeria is accounted for by audit independence, audit size, audit rotation, audit fee and audit expertise. The F-statistics of 6.18 is associated with p-value of 0.000 which is less than the 5% significance level indicating the model is a good fit. Jointly considered, the OLS p-value of 0.001 at 5% reveal that selected audit features has significant effect on qualitative aspect of financial reporting quality of listed insurance firms in Nigeria.

The individual results indicate that audit independence and audit fee have positive and significant effect on financial reporting quality as reveal by the coefficient of 0.5925, 0.1261 and p-values of 0.000 and 0.005 respectively at 5% significance level. The finding with respect to audit independence and audit fee is consistent with that of Umaru (2014) and Jerry and Saidu (2018) respectively. Audit size is reveals to have a negative and significant effect on financial reporting quality as the coefficient is -02424 with p-value of 0.003 at 5% significance level. This finding is similar but different from Umaru (2014) who found a negative but insignificant effect of audit size on financial reporting quality. Furthermore, audit rotation has a positive but insignificant effect on financial reporting quality as indicated by coefficient of 0.0519 and p-value of 0.386 which exceed the chosen 5% significance level. This result is contrary to Olanisebe, et al. (2018) who found a negative relationship between audit firm rotation and financial reporting quality. And, audit expertise has a negative but insignificant effect on financial reporting quality. A consideration of the control variable reveals that firm size is positively but insignificantly related with financial reporting quality.

5.0 Conclusion and Recommendations

This study shows that selected audit features could significantly affect the financial reporting quality of insurance companies in Nigeria. This means that regulators and especially shareholders of insurance companies in Nigeria should be concerned about the features of audit firms when deciding on the appointment of the external auditor. It is obvious from the 0.2522 results that audit independence, audit fee, audit size, audit rotation, and audit expertise of the audit firm engaged to perform audit work matter in improving the financial reporting quality of Nigerian insurance firms, while audit size (i.e., engagement of a Big-4 or non-Big-4) does not matter. In particular, the selected audit features of audit independence drive financial reporting quality the most, as indicated by their having the highest coefficient of 0.5925.

Therefore, to ensure and sustain high financial reporting quality, this paper recommends that regulators of the insurance industry such as NAICOM should enact a regulation that promotes audit independence in the industry. Furthermore, shareholders should restrain corporate management from awarding non-audit services, such as tax consultancy, etc., to the statutorily appointed auditor. This measure will address the situation where an audit firm earns excess revenue from a client, thereby increasing the likelihood of bending to management aspirations.

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Disruptive Technologies and Internal Audit: A Conceptual Review

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Abstract
This study conceptually explained the influence of disruptive technologies on internal audit functions using extensive review of existing literatures. Open systems theory was adopted to underpin this study, this is because internal auditors must adapt to changes in the technological environment to remain relevant. Based on the review of the existing literatures, it was found from theoretical perspective that disruptive technologies including blockchain, drone, robotic process automation, data analytics tools, artificial intelligence and machine learning continue to emerge as factors that have the potential to further shape internal auditors' future responsibilities, skills and knowledge required. However, internal audit concepts, functions and principles will remain relevant in the digital era. In fact, advances in modern technologies will make internal audit functions even more effective, efficient and pervasive. It was therefore recommended that internal auditors will need to keep pace and embrace the changing dynamics linked to disruptive technologies.

***Key words**: Disruptive Technologies, Internal Audit Functions, Conceptual Review.*

1.0 Introduction

Advances in emerging and sophisticated technologies have brought monumental changes to most professions including accounting where many of the manual, routine-based accounting tasks of the past are now undertaken by non-human support. Hence, advances in digital disruption and rapidly evolving technologies have signals many opportunities and risks to accounting profession (Stathis, 2017; Ibrahim, Yusoff and Rashid, 2021). In order to remain relevant, Rughani (2019) assert that accountants will need to keep pace and embrace the changing dynamisms linked to disruptive technology. The future profile of the profession will include key shifts, accountancy will be cloud based, will harness the power of big data, will integrate non-traditional financial information, will be more efficient and mobile and accountants' roles are and will continue to change radically.

In addition, advances in digital technologies have transformed traditional industries and business models, these technologies are also impacting not only the common control procedures and the overall control environment, but also the risk management processes and audit. Organisations are using predictive analytics and experimenting with blockchain, drones and artificial intelligence to strengthen their controls to prevent errors and fraud. Moreover, as organizations continue to adopt new and emerging technologies to digitized business processes, then, internal auditors must proactively assess and gain insight into the risks associated with new emerging technologies (Ibrahim, Yusoff and Rashid, 2021). This will enable internal auditors to not only assess but also evaluate whether appropriate controls are in place to prevent and detect risks associated with emerging technologies (Deloitte, 2018).

As such all organizations pu t in place strong and reliable internal controls system to safeguard assets, detect and prevent errors and fraud, verify financial and non-financial records, ensure efficient and uninterrupted flow of organizational activities, monitor and evaluate organizational performance (PWC, 2019).

In addition, **advances in modern technologies is not in any way intended to r**eplace humans in the audit work in consideration that the major and irreplaceable part of the audit process is the human capacity and qualities of evaluation, analysis, and judgment (Rainie, Anderson & Connolly, 2014; Topan, 2014; **Tysiac, 2022)**. Hence, the use of modern technologies will make internal audit functions even more effective, efficient and pervasive. Furthermore, the need for accounting jobs are set for robust growth over the next few years as predicted by the Bureau of Labor Statistics in USA that there would be at least 10 percent increase in employment in accounting and auditing between 2016 and 2026 (Bureau of Labor Statistics, 2018).

According to DeLoach (2020) as the risks and complexities organizations face change rapidly, so do the focus, skill sets, responsibilities and capabilities needed by internal auditors change. This has become very necessary to ensure that the risks are not only mitigated but are also control within the risk appetite of the organization. Hence, internal auditors' of nowadays face severe alignment challenge. As such this study conceptually explains the influence of disruptive technologies on internal audit functions.

2.0 Literature Review

2.1 The Concept of Disruptive Technologies

According to Adams (2021) Disruptive technologies is defined as any sort of technology that disrupts the way businesses, consumers, and industries function. These technologies sometimes even create new industries and markets. Disruptive technologies can also be defined as innovation that creates an entirely new market and value proposition, disrupting the old established market and significantly altering the way businesses operate. Hence, an organization that fails to adopt these emerging and evolving technologies may not survive the intense competition in this rapidly changing business environment. Furthermore, introducing new advanced technologies comes with associated risks, particularly around cyber security and data privacy. As such it becomes critical to balance advances in this modern innovations with safety and security to mitigate the risks involved (Conner, 2019; Raghavan, 2020).

2.2 Cognitive Technologies Implemented in Next-Generation Transformations

The cognitive technologies implemented in next-generation transformations include artificial intelligence, machine learning, blockchain and robotic process automation, drones and data analytics tools as explained below.

2.2.1 Artificial intelligence (AI) and Machine Learning (ML)

These are advances in emerging technologies that allows computers to not only solve problem but also reason in the same ways humans do. This advances increases the efficiency of complex testing and provides real time evaluation of complex analysis (Raghavan, 2020 & DeLoach, 2020). These emerging technologies provide tools that will enable internal auditors to not only translate an increasingly overwhelming amount of complex data into meaningful, impactful evaluation and analysis but will also influence internal auditors value-delivery significantly. ML can provide the tools for processing and standardizing the data. Large data sets, including contracts and other complex transactions, can be analyzed quickly and accurately, helping to free up the internal auditor to focus on the areas that require human judgment. It will helps the auditors to increase their efficiency by accelerating and automating the audit process, and achieve higher quality and efficiency.

2.2.2 Blockchain Technology

Blockchain is a database that holds data and programs in heavily encrypted "blocks" of individual transactions results of executable files. The programs and codes can only be added and cannot be edited or deleted, with each block linked to the previous one making a "blockchain." The digital ledger shares and tracks information related to contracts and other transactions (PWC, 2018). While this emerging technology is still evolving and has not yet reached the masses, it is considered a disruptive technology that is changing the e-commerce domain. It is important because it involves a cashless system that will change how organizations exchange money.

In short, blockchain is a distributed database system consisting of blocks of items that are time stamped, permanent, verifiable and linked to other blocks, with these properties unalterable, deterministic, synchronized, very fast and non-cancelable. These characteristics make it a network of trust and enhance the ability to perform analytics and forecasting. Confirmations may not be needed because of the distributed ledger verification of each transaction at inception. Forgeries and alterations to any transactions can be detected immediately, because of the alerts to all members in the chain. Using blockchain will allow internal auditors to reduce time spent on redundant tasks and increase value by devoting more time to internal controls, analytics and strategic initiatives.

2.2.3 Robotic Process Automation (RPA)

According to DeLoach (2020) Robotic process automation is an advanced and powerful means of eliminating manual-intensive tasks and non-value adding tasks allowing internal auditors to focus their attention on high business risks and key areas requiring exercise of professional evaluation and judgment. RPA unified these disparate actions into a single integrated automated process capable of allowing the internal auditors to operate at higher levels of effectiveness and efficiency. For examples software robots can be deployed to perform rule based functions such as reconciliations and analytical procedures in revenue audits, preparation of tax returns and reconciliations or reviewing large volumes of contracts to identify high-risk terms or clauses that require further review, analysis, evaluation and advanced monitoring techniques to drive greater audit work coverage, efficiencies and early alerts.

2.2.4 Drone technology and Data Analytics Tools

According to Kher (2022) aerial drone technology and data analytics tools are the most recent emerging technological development that will enhance the effectiveness of internal audit functions. Auditing inventories, fixed assets and production processes across multiple geographical locations has long been one of the most onerous tasks for an auditor as part of the year-end cut off procedures. Drones assist in enhancing internal audit productivity and process efficiencies and assist internal auditors in many ways for example:

i. Drones have great payload capacity for carrying sensors and cameras, thus they can photograph and physically examine the count of large quantities of fixed assets and inventory as well as examine the production process vis-à-vis the approved 'Bill of Materials', from multiple angles and over the entire storage/ shop floor area.
ii. Drones are integrated with image processing software, including photogrammetric and video content analysis that can algorithmically scan process and output audit information.
iii. Drone optimize quality of deliverables consolidate audit information and enhance the execution speed while ensuring correctness and completeness of data.

iv. Drones have extended battery life and can be in operation for longer periods to complete the audit procedures within defined timelines.

In addition, the benefits of data analytics tools for internal audit, includes: better risk management, greater assurance, enhanced efficiency, clearer reporting and improved audit quality.

2.3 The Concept of Internal Audit

The Institute of Internal Auditors (IIA) defines Internal Auditing as "An independent, objective assurance and consulting activity designed to add value and improve an organization's operations. The internal audit activity helps an organization accomplish its aim and objectives by bringing a systematic, disciplined approach to evaluate and improve the effectiveness and efficiency of risk assessment, management, control and governance processes."As such independence and resources are essential to the effectiveness of the internal audit function in performing the following tasks:

i. Verify the existence of assets and recommend proper safeguards for their protection;
ii. Evaluate the adequacy of the system of internal controls;
iii. Recommend improvements in controls;
iv. Assess compliance with policies and procedures and sound business practices;
v. Assess compliance with state and federal laws and contractual obligations.
vi. Review operations/programs to ascertain whether results are consistent with established objectives and whether the operations/programs are being carried out as planned;
vii. Investigate reported occurrences of fraud, embezzlement, theft, waste, etc.

In addition, the results of the survey conducted by PWC in 2017 revealed the distinctive behaviors of an agile internal audit function in the digital age to include:

i. Build the likelihood of disruption into planning and risk assessment.
ii. Meaningfully collaborate with other lines of defense. Collaboration is not about coordinating, scheduling or sharing findings but driving a more comprehensive view of risk.
iii. Invest in continuous learning. There is a sentiment that the time spent training in internal audit fundamentals versus developing business acumen is not at the balance it should be. Business acumen is a key contributor to the agility of the internal audit executives.

Furthermore, while DeLoach (2020) identified the three essential objectives of the next-generation internal audit functions to include improve assurance by increasing the focus on key risks, make internal audit more efficient and provide deeper, more valuable and more timely insights from audit activities and processes. Deloitte (2021) assert that without the help of digital resources and talent, it is unlikely that internal auditors will be able to keep up with the rapidly changing risk landscape associated with the evolving needs of the business.

2.4 Review of Empirical Studies

Several studies have been written on disruptive technologies and internal auditing for example the study of Grabmann and Hofer (2014) investigated internal auditing and its function at the end of the 20th century, examine the internal and external developments that affect internal audit function and described the new understanding of internal auditing. The study identified six streams in the literatures that have significantly influence internal audit functions to include corporate governance, organisation and management as internal factors, and information technology, regulations and external auditors as external factors. The major finding is that the diversity of the changes heightened the requirements for and enlarged the role of internal auditors.

Similarly, Wallberg (2017) conducted an exploratory study to increase the understanding of the effects of digitalization on the tools and working methods of the audit profession using semi-structured interviews with practicing auditors. Findings revealed that the effect of digitalization on the auditors' working methods is more prominent than on the tools, due to paperless working methods and increased flexibility.

However, Javed, Hajee, Rabiul, Jesmin & Javed (2017) evaluated the relationship between modern technologies and accounting within the northern part of Bangladesh using structured questionnaire and found that 84% of the respondents were habituated with using modern accounting technologies. Among them 52% of the respondents are satisfied, 36% respondents are highly satisfied, 6.67% respondents are neither satisfied nor dissatisfied, 4% respondents said they are dissatisfied and 1.33% respondent said that they are highly dissatisfied with using modern technologies in accounting practices. In the same vein, Shannon (2018) identified how technology advancement influence changes in accounting and information systems fields and found that careers and opportunity growth for these fields are expected to be favorable, Information technology has made the jobs of accountants more efficient and easier through accounting information systems, and this is expected to continue to influence the way accountants do their jobs.

Similarly, Feng (2019) conduct an exploratory study of digital disruption in the accounting profession and examines the extent to which Information and Communication Technologies (ICTs) and accounting software has digitally disrupted the accounting profession and professionals. The study addresses the deficiency and advances the understanding of digital disruption through the lens of disruptive innovation theory. The findings revealed that ICTs is yet to fully disrupt the accounting profession, but that disruption is ongoing as developments of emerging technologies continues.

In the same vein, Gulin, Hladika and Valenta (2019) analyzed the key challenges that digitalization brings for the accounting profession based on the review of relevant and available literature. The findings revealed that accounting profession is faced with numerous challenges in the era of digitalization including the use of big data in accounting and reporting, cloud computing and continuous accounting, artificial intelligence and blockchain technology. Adams (2021) examined the effect of disruptive technologies on modern accounting using primary data and found that disruptive technologies significantly influence all aspects of the accounting domain, ranging from employees to the standards these employees complied with. Automation and other technologies have eliminated the need for certain skills and replaced them with a demand for more analytical based skills. The increased productivity associated with disruptive technologies has increased firm's growth.

Salawu and Moloi (2021) investigated the extent to which the Nigerian finance professionals engaged in online transactions prior to the global pandemic and determine the level of ownership of digital currency by both individual finance professionals and the organizations they work for. Quantitative data were sourced using structured questionnaire from a sample of 250 accounting professionals. Data was analyse using descriptive statistics and correlation analysis, findings revealed a low level of ownership of digital currency among professionals and zero level of ownership by organisations. The findings further revealed a low level of responsiveness to digital currency transactions, which has a high potential of displacing the service of finance professionals in the near future.

From the literatures reviewed it is obvious that disruptive technologies including blockchain, drone, artificial intelligence and machine learning continue to emerge as factors that have the potential to further shape internal auditors' future responsibilities, and the required skills and knowledge. However, these emerging technologies will **not in any way r**eplace humans in the internal audit work because the irreplaceable part of the audit process is the human capacity and qualities of evaluation, analysis, and judgment as such the use of modern technologies will only make internal audit functions more effective, efficient and pervasive.

2.5 Theoretical Framework

According to the open systems theory, an organization interacts with, adapts to and seeks to control its environment in order to survive (Fowler, 2009). Therefore, organizations as an open systems that sourced input (humans and materials) from the environment, processes, produce and sent output (goods and services) to the environment, must adapts to the changes in the technological environment. Hence, it is clear that external environmental pressures have a significant impact on the behavior of all organizations looking from the decision-making process points of view. All these pressures have created a much more competitive environment for the business world. As such, making a high-quality and timely decisions depends on the quality of the data and the existence of on-line and real-time information necessary for decision making (Lina and Lithuania, 2015).

Digital solutions that have a significant impact on accounting profession includes smart technologies like artificial intelligence and machine learning have been actively providing real-time information to businesses. These technologies significantly reduce the need for human labour, and can be integrated into accounting and auditing processes (Moudud-Ul-Huq, 2014). Hence, modern internal auditors need to be placed in a strategic position to enable them assist their organizations to optimally navigate the wind of disruption to provide assurance services and prepare for new risks on the horizon (Okorie, 2018). Therefore, open systems theory was adopted to underpin this study because accounting and auditing professionals must adapt to changes in the technological environment for future survival.

3.0 Research Methodology

This study uses a cross sectional survey design to review the extant literatures and conceptually explain how disruptive technologies can influence internal audit functions. Existing literatures on disruptive technologies and their influences were critically reviewed and synthesized, this form the basis upon which conclusion is drawn and recommendations were made.

4.0 Conclusion and Recommendation

This study conceptually determines the impact of disruptive technologies on internal audit functions and based on the review of the existing literatures, it was concluded that from a theoretical perspective, disruptive technologies including artificial intelligence, blockchain, and machine learning continue to emerge as factors that have the potential to further disrupt internal auditors' future responsibilities, skills and knowledge required. However, these technologies are yet to fully disrupted the internal audit functions, because its effects have largely been managed, furthermore, its ability to cause further disruption is to a large extent dependent upon whether professionals accountant's fail to be critical and creative thinkers, strategic in focus, and adaptive toward the changing circumstances of the new and evolving technologies. Therefore, to remain relevant, this study recommended that internal auditors will need to keep pace and embrace the changing dynamics linked to disruptive technology.

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Moderating Effect of Free Cashflows on the Relationship between Board Attributes and Financial Performance of Listed Consumer Goods Companies in Nigeria

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Abstract
This study examines the moderating effect of free cash flows on the relationship between board attributes and the financial performance of listed consumer goods companies in Nigeria, for a period from 2011 to 2021. Using Tobin's Q as a measure of financial performance, four board attributes were used as independent variables (board size, board independence, managerial ownership, and gender diversity), free cash flow was used as moderating variable while the firm size and firm age were used as control variables. Fourteen companies were selected out of the twenty-one listed consumer goods companies in Nigeria. Data for the study were obtained from the annual report of the sampled companies and analyzed using panel-corrected standard errors (PCSEs). Findings revealed that free cash flows have a positive but insignificant influence on the relationship between board size and financial performance. However, free cash flows have a positive and significant influence on the relationship between gender diversity and financial performance. Moreover, free cash flows have a negative and significant influence on the relationship between managerial ownership and financial performance. The study concludes that free cash flows have no significant influence on the relationship between board attributes and the financial performance of listed consumer goods companies in Nigeria. It was recommended that directors on the board should be encouraged to have more shares in the companies they manage. This will make the board more efficient, and discourage managerial self-interest.

Keywords: *Board attributes, financial performance, free cash flows, and Tobin's Q.*

1.0 Introduction

The board attributes are important features of the board which is one of the internal mechanisms of corporate governance. Their nature and composition play significant roles in determining the efficiency and effectiveness of the board. Board attributes comprise of board size, board independence, management ownership, and gender diversity. The size of the board shows the number of both executive and non-executive members that constitute the board of directors. Managerial ownership refers to the proportion of total equity owned by the executive and non-executive director. Board independence refers to the number of non –executive directors against the aggregate number of director's. The gender diversity which show the proportion of female that constitute the board of directors. Ciftci, Tatoglu, Wood, Demirbag &Zaim (2019).

Financial performance is a measure of how well or poorly an entity is putting its resources into use. It measures the level at which financial objectives are being met, efficiency applied by a firm in the use of its assets to create profits, perhaps financial performance is an essential requirement for an organization's survival and growth. Tobin Q as a market based measure of performance was a powerful tool utilized since it analyzes the corporate performance from market perspective, unlike other ratios that uses the firm's financial statement. Kakanda et al., (2016).

Free cash flows denote funds that a firm was able to generate after setting aside cash needed to sustain or increase its asset. Free cash flows are important because they allow the firm to pursue investment that could improve value to shareholders. Without fund it will be hard to create new products and services, acquire new projects and pay out dividend. The justification for the use of free cash flows as a moderating factor was due to the findings of previous studies which shows that, good corporate governance improves firm's performance, others prove inverse relationship, while some fail to determine significant link between the variables. Palaniappan (2017); Freihat et al., (2019) As such there is need to assess the influence of free cash flows on the relationship between board attributes and financial performance of listed consumer goods companies in Nigeria,

The Nigerian consumer goods industry is a multibillion naira sector cutting across the whole spectrum of manufacturing value chain which involves production, wholesale, distribution and retail businesses. Over the years, strong demographics, the rising middle income class and steady economic growth positions Nigeria as an attractive investment destination for fast moving consumer goods players globally. However, the harsh operating environment given poor infrastructure, rising inflation, trade and foreign Exchange (FX) restrictions, porous land borders logistical setbacks, COVID 19 pandemic and level of insecurity has also dampened the performance of industry players. The contribution from fast moving consumer goods (FMCG) spending to GDP grew enormously over the ten years (2011-2020) from 13 % to 24.3%. The consumer goods sector is divided into four industries which comprises flour mills industry, sugar refining industry, beverage industry and home & personal care industry. (FBNQuest Capital Research, 2021).

The current economic situation of the country which was badly affected by COVID 19 pandemic, high rate of inflation, unemployment and the level of national security has seriously affected the operation and performance of consumer goods industry as such there is a practical gap that need to be bridge so as to provide a better information that will aid decision making. Also several studies have been conducted in developing and developed countries to investigate the relationship between board characteristics and firm performance. However, the results were inconsistent or contradictory. (Serah, 2015; Athalia & Sidharta 2016; Palaniappan, 2017). This lead to the introduction of moderator, which is free cash flows so as to be able to examine the interaction relationship between the variables.

Moreover, previous studies concentrated more on period that is less than eleven years as such there is a literature gap that need to be fill so as to provide comprehensive and latest information that will be used in making decision and enhancing further researches. Despite the importance of consumer goods companies to the growth and development of the Nigerian economy, research in both board attribute and financial performance in Nigeria was skewed to other industries of the Nigerian economy especially banks, oil and gas construction with little emphasis to the consumer goods companies. Consequently, there is the need to bridge the sectorial gap so as to provide a useful information's that will help in making decision and enhancing further researches.

Consequently, there is need to examine the effect of free cash flows on the relationship between board attributes and financial performance of listed consumer goods companies in Nigeria. In light of the foregoing, this study raises and intend to provide answers to the under listed questions:

i. Does free cash flows significantly moderate the relationship between board size and financial performance of listed consumer goods companies in Nigeria?
ii. Does free cash flows significantly moderate the relationship between board independence and financial performance of listed consumer goods companies in Nigeria?
iii. Does free cash flows significantly moderate the relationship between managerial ownership and financial performance of listed consumer goods companies in Nigeria?
iv. Does free cash flows significantly moderate the relationship between gender diversity and financial performance of listed consumer goods companies in Nigeria?

The main objective of the study was to examine the moderating effect of free cash flows on the relationship between board attributes and financial performance of listed consumer goods companies in Nigeria. The specific objectives of the study were to determine the moderating effect of free cash flows on the relationship between:

i. Board size and financial performance of listed consumer goods companies in Nigeria.
ii. Board independence and financial performance of listed consumer goods companies in Nigeria.
iii. Managerial ownership and financial performance of listed consumer goods companies in Nigeria.
iv. Gender diversity and financial performance of listed consumer goods companies in Nigeria.

Based on the statement of problem and the objectives of the study, the following hypotheses were formulated in a null form to guide the study:

i. Free cash flows does not significantly moderate the relationship between board size and financial performance of listed consumer goods companies in Nigeria.
ii. Free cash flows does not significantly moderate the relationship between board independence and financial performance of listed consumer goods companies in Nigeria.
iii. Free cash flows does not significantly moderate the relationship between managerial ownership and financial performance of listed consumer goods companies in Nigeria.
iv. Free cash flows does not significantly moderate the relationship between gender diversity and financial performance of listed consumer goods companies in Nigeria.

2.0 Literature Review

2.1 The Concept of Financial Performance

The concept of financial performance is an important aspect in evaluating the achievement of organizational goals; it shows the extent at which resources of the firm were used efficiently to achieve their goals (Muller 2014). Financial performance is a function of time and organizational context and as such posit that there is no universal definition of the concept. Performance of firm is of extreme importance to shareholders in particular as it helps to maintain a going concern and also increase the value of the business, thus study of variables that influence performance is of great relevance both to practice and the academic world (Muller 2014). The purpose of measuring the achievement is to obtain useful information related to flow of fund, the use of fund, effectiveness, and efficiency. Besides, the information can also motivate the managers to make the best decision. The current study employed one of the market based measure of measuring performance which is Tobin's Q due to the fact that it is forward looking aspect and a reflection of the expectation of the shareholders concerning firm's future performance, which has its basis on previous or current performance. Tobin's Q is the ratio between physical asset market value and its replacement value and it is measured as ratio of market capitalization plus total debt divide by the total asset of the company (Wahla, et al , 2012).

2.2 Concept of Board Attributes

Board of directors is a panel of people who are elected to represent shareholders. Every public company is legally required to have a board of directors. They are the governing body of a Company. Board of directors of a company is an important organ not only responsible for the management of a firm but also for adopting good corporate governance practices. Firms with an effective board and competent management that act with integrity are better placed to achieve the goal of the business and contribute to the economy as the interest of the board and management are made to align with the interest of the shareholders and other stakeholders. Almadi, (2016). The current study considers the following board attributes because of their influence in determining the financial performance of an entity.

2.2.1 Board Size

The size of the corporate board plays an important role in the directors' ability to oversee and control managers (Anderson et al., 2004). A board of directors with diverse experience and knowledge would probably have more careful learning and decision-making processes, thus resulting in better firm performance. Board size is considered as crucial in board characteristic as the directors need to work together in a group of a certain size to be more efficient and effective. Board size refers to the total number of directors on a firm's board (Bukair & Abdul Rahman, 2015). (Maniruzzaman & Hossain ,2019) carry out a research on Corporate Board Attributes and Firm Performance of publically traded Manufacturing Companies in Bangladesh, for a period 2006-2017, using ROA, Tobin's Q as measure of performance, 85 companies as sample size and OLS as technique for analysis. Their findings revealed that, board independence has a positive and significant impact on financial performance. However, this study finds that board size has a negative and significant influence on the financial performance of consumer goods companies in Nigeria.

2.2.2 Board Independence

Board independence refers to the state in which all or a majority of the members of a board of directors do not have a relationship with the company except as directors. Mallin, (2016) sees independent executives as directors who besides receipt of director's compensation do not bear any other significant relationship with the entity in which the decision of the board may affect their independent judgment. Several empirical researches indicated a strong positive and strong negative link between board independence and firm performance. (Falah, 2017) carry out research on The Effect of Corporate Governance on Financial Performance of Listed Companies in Palestine Exchange, for a period 2008-2016, using ROA, ROE, & Tobin's Q as measure of performance, 32 firms as sample size and OLS as technique for analysis. Findings shows that, board independence has a positive and significant impact on financial performance. However, this study finds that board independence has a negative but insignificant influence on the financial performance of consumer goods companies in Nigeria.

2.2.3 Managerial Ownership

Managerial ownership refers to the proportion of total equity owned by executive and non-executive directors, it indicates the level of ownership of the directors along with their monitoring power within organization to implement effective corporate governance. The agency issues between shareholders and management may encourage the managers to exert less effort to administrate the firm (Ahmed &

Mubaraq, 2015). Moreover, these issues may lead the managers to use available resources for their personal well-being. Kallamu, (2016) conducted a research on Ownership Structure, Independence Directors and Firm Performance of Companies listed in Malaysia, for a period 2007-2017, using ROA & Tobin's Q as measure of performance, 37 companies as sample size, multivariate regression as measure of analysis. The result indicates a positive significant relationship using ROA, but a negative significant relationship using Tobin's Q measures of performance. Therefore, this study finds that managerial ownership has a negative and significant influence on the financial performance of consumer goods companies in Nigeria.

2.2.4 Gender Diversity

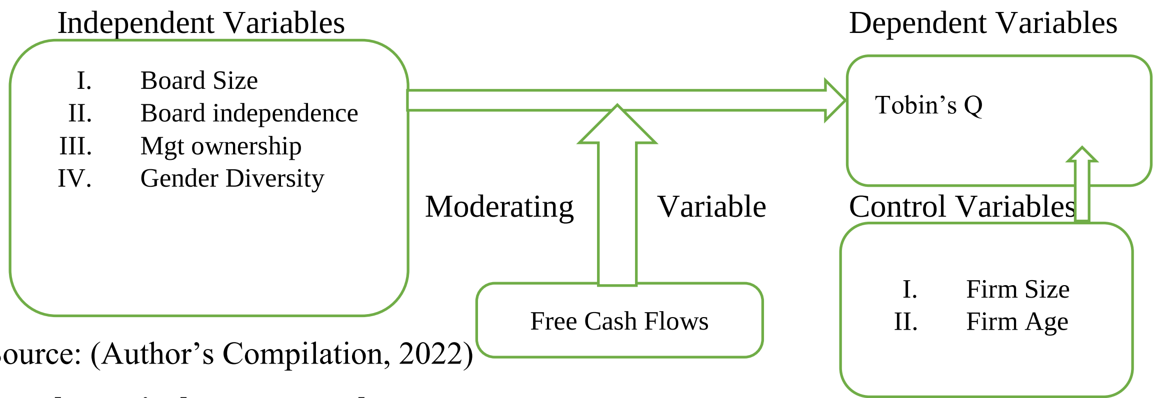
Boards are traditionally male dominants and the presence of female directors in the boards enhance the board independence and play a positive role towards the perception of shareholders and their confidence about company's success, which ultimately increase share price. Carter et al., (2003). Financial scandals and the high failure rate of companies over the past decade, as well as the 2008 financial crisis, have increased concerns about improving board effectiveness. AbdelAtty, et al., (2018) conducted studies on The Effect of Board of Directors Characteristics on Firm's Financial Performance: An Empirical Study on the Most Active Firms in the Egyptian Stock Exchange, for a period 2012-2017, using ROE, ROA, and Tobin's Q as measure of performance, 37 companies as sample size and regression as technique for analysis. Their findings showed that, gender diversity has negative and insignificant impact on financial performance. Therefore, this study finds that gender diversity has a negative and significant influence on the financial performance of consumer goods companies in Nigeria.

2.3 Concept of free cash flows

Free cash flows denote funds that a firm was able to generate after setting aside cash needed to sustain or increase its assets Chen, et al., (2016). It is important, as it allow firm to pursue investment that could improve value to shareholders. In the absence of free cash flows, it is hard to create new product and services, acquire new projects, pay out dividend and pay debts. Some shareholders believe that free cash flows show a better perspective of the firm's ability to create profit because, while earning can often be manipulated through creative accounting, it is more difficult to fake free cash flows. Agala, (2018) conducted a research on Free cash flow, agency cost, firm characteristics and performance of firms listed at the Nairobi securities exchange Kenya, for a period 2006-2015, using Tobin's Q as a measure of performance, 60 firms as sample size and multiple and single regression as a measure of analysis. The result shows that, free cash flows has a positive and significant influence on financial performance while agency cost, firm size and firm age have a positive and significant impact on financial performance. However, this study find out that free cash flows have a positive but insignificant influence on the financial performance of consumer goods companies in Nigeria.

2.4 Conceptual Frame Work

The conceptual frame work displays the relationship that exist between the independent variables, the moderating variable, the dependent variable and the control variables.



Source: (Author's Compilation, 2022)

2.5 Theoretical Frame Work

2.5.1 Agency theory

Agency theory having its roots in economic theory which was developed by (Jensen & Meckling, 1976). Agency theory is simply the relationship between the principal and the agent such as shareholders and the company executives or managers. In this theory, shareholders who are the owners or principals of the company, hires the agents to perform work. Principals delegate the running of business to the directors or managers, who are the shareholder's agents. The agency theory states that shareholders expect the agents to act and make decisions in the interest of the principal. The theory particularly advocates that, to ensure that management is in line with owners' expectations, a board of directors must work as a representative of principals (owners) and be responsible for monitoring agents' (managers') actions. Since the board adopts a control-oriented approach, monitoring duties should be separated from the rest of the firm's activities.

2.5.2 Free cash flows theory

The notion of free cash flows was initially suggested by Jensen, (1986), where free cash flows was described as net cash flow after subtracting all the needs of positive NPV projects. (Jensen & Michael, 1996) posits that in the free cash flows theory, managers do not behave in a manner consistent with profit maximization. Managers instead use increased cash flows to pursue objectives that have little to do with increasing profits and a great deal to do with making the managers lives better (such as increasing the size of their company), or easier. The agency cost explanation suggests that monitoring difficulty creates the potential for management to spend internally generated cash flows on projects that are beneficial from a management perspective but costly from a shareholder perspective. Agency theory and free cash flows theory have been found to be more appropriate to anchor this study.

3.0 Research Methodology

This study uses ex-post factor and correlational research design. The design was adequate and appropriate for the measurement of the moderating effect of free cash flows on the relationship between board attributes and financial performance of listed consumer goods companies in Nigeria The core of the data needed for analysis were adequately and conveniently obtained from annual report of the consumer goods companies. The population of the study consists of all the Twenty-one (21) consumer goods companies that were quoted on the floor of the Nigeria Stock Exchange from 1/1/2011-31/12/2021. As a result of incomplete data for some companies under review the working population was reduced to fourteen companies. The filtered companies were Cadbury Nig Plc, Champions Breweries Plc, Dangote sugar refinery plc, Flour Mills Nig Plc, Guinness Nig plc, Honeywell flour mills Plc, Northern Nig flour mills plc, Nascon allied industries plc, Nestle Nig plc, Nigerian Breweries Plc, Nigerian enamelware plc, PZ Cusson Nig plc, Uniliver Nig plc and Vitafoam Nig plc.

3.1 Model Specification

In order to achieve the objective of this study, a regression model was constructed for establishing the relationship between free cash flows, board attributes and financial performance

$$TOQ= \beta_O + \beta_1 BS_{it} + \beta_2 BI_{it} + \beta_3 BO_{it} + \beta_4 GD_{it} + \beta_5 FCF_{it} + \beta_6 BS*FCF_{it} + \beta_7 BI*FCF_{it} + \beta_8 MO*FCF_{it} + \beta_9 GD*FCF_{it} + \beta_{10} SIZE_{it} + \beta_{11} AGE_{it} + \varepsilon_{it}$$

Where: ROA= Return On Asset. TOQ= Tobin's Q. BS= Board Size. BI= Board Independence MO= Managerial Ownership. GD= Gender Diversity. FCF= Free cash flow. SIZE= Firm Size AGE= Firm Age. ε_{it} = Error term. β_1, β_{11} = is the regression coefficients of the of the study variables. it = Panel indicator.

3.2 Operational measure of variables

The variables were grouped into the dependent variable, independent variables, moderating variable and control variables. Financial performance was used as the dependent variable measured using Tobin's Q (TOQ) and was calculated as ratio of market capitalization plus total debt divide by total asset of the company. Also, board size (BS), board independence (BI), managerial ownership (MO) and gender diversity (GD), were used as independent variables. Board size was measured using total members of the board as stated in the annual report, Board independence was measured by ratio of non-executive board members to the total composition of the board, Managerial ownership was measured as the ratio of equity owned by the members of the board of directors and Gender diversity was a dummy variable which takes the value of 1 if women were present in boards and zero otherwise. So also, free cash flows (FCF) was used as moderating variable. Free cash flows were measured as operational cash flow minus capital expenditure divide by total asset of the company. Lastly, firm size (SIZE) and firm age (AGE) were used as control variables. Firm size was measured as natural log of total asset of the company while firm age was measured as number of years since listed.

4.0 Results and Discussion

Table 4.1: Descriptive Statistic of the Variables

Variable	Observation	Mean	Standard Deviation	Minimum	Maximum	Skewness	Kurtosis
Tobin's Q	154	1.9302	1.8045	.3369	8.9659	1.8736	6.2689
Board Size	154	10.0455	2.4827	6	15	.4282	2.3799
Board Independence	154	.7374	.1325	.5	.9286	-.1137	1.7723
Managerial Ownership	154	.0324	.0635	0	.2296	2.3226	7.2444
Gender Diversity	154	.0807	.0458	0	.1429	-.7248	2.4402
Free cash Flow	154	.0603	.121	-.5383	.3813	-.6416	4.8130
Firm Size	154	9.90e+10	1.11e+11	1.31e+09	4.83e+11	-.4206	2.1994
Firm age	154	34.3571	12.6882	2	56	-1.0863	3.3828

Source: Result output using STATA 13

Table 4.1 present the descriptive statistics of the variables of the study. The total observations were 154, the mean value of Tobin's Q was 1.9302, which indicates the proportion of market value to the book value of the company's total assets, with a minimum value of 0.34 times and a maximum value of about 9.0 times. The standard deviation of 1.8045 indicates significant dispersion among the listed companies with regard to Tobin's Q. The mean value of the board size was 10 members with a minimum of 6 members and a maximum of 15 members. The standard deviation of 2.561 shows that there was significant variation among the size of the board of the listed companies. The mean value of board independence was 0.7374 with ranges from 0.5 to 0.9286. This indicates that about 74% of the members of the boards for the period consist of non-executive directors while about 26% of the directors were executives which implies that, the board of directors is comprised mostly of non-executive directors. The standard deviation of 0.1325 indicates that there was no much difference in the proportion of the membership of the board among the listed companies.

Furthermore, Table 4.1 indicates that, on average directors own about 3% of the total equity shares of the companies. This shows that the majority (97%) of the companies' shareholders were outsiders, who were not directors. The standard deviation of 0.06 signifies that managerial shareholding among the directors of the companies was not widely varied as shown by the minimum managerial shareholding of 0% and maximum managerial shareholding of about 23% among the companies. The mean value of gender diversity was 0.078, indicating that an average of about 8% of the directors of listed companies were females with a minimum of 0% and a maximum of 14%. The standard deviation of 0.121 shows that, there was no significant variation among the female gender of the board of the listed companies. Free cash flows have a mean of 0.06, indicating that on average the listed companies have a free cash flows of 6% with a minimum of 54% negative free cash flows and a maximum of about 38% free cash flows. Firm size, measured by the total assets of the companies has a mean of 9.90e+10, with a minimum of 1.31e+09 and maximum 4.83e+11, with a standard deviation of 1.11e+11. This indicate that, on average the listed companies have a total asset of N 99,000,000,000, with a minimum total asset of N 1,310,000,000 and a maximum of N 483,000,000,000. The amount of N 111,000,000,000 shows that, there was a significant variation among the listed companies. Firm age has a mean value of about 34 years and a minimum and maximum of 2 and 56 years respectively. The statistics shows that, the series were positively and negatively skewed which indicates that the distribution has both right and left tail and the data were normally distributed.

Table 4.2 Correlation Matrix of the Dependents and Explanatory Variables

Source: Result output using STATA 13

Variables	TOBIN Q	BSIZE	BIND	MO	GEND	FCF	FSIZE	FAGE	VIF
TOBINQ	1.0000								
BSIZE	-0.1996	1.0000							2.60
BIND	-0.1155	0.2421	1.0000						1.69
MO	-0.2953	0.3198	0.0296	1.0000					2.59
GEND	0.0585	-0.1089	0.0416	-0.1194	1.0000				1.88
FCF	0.2618	-0.2511	-0.1382	-0.1931	0.1832	1.0000			
FSIZE	0.1466	0.4092	0.1252	-0.0681	0.5308	0.1109	1.0000		2.23
FAGE	0.1302	-0.1140	-0.2579	-0.6721	-0.0298	0.0925	0.0141	1.0000	2.24

Table 4.2 shows the correlation coefficients on the relationship between the dependent variables and explanatory variables. A weak and positive relationship exist between tobin's q and gender diversity, free cash flows, firm size and firm age with coefficient value of 0.0585, 0.2618, 0.1466 and 0.1302.

Also, a weak and negative relationship exist between tobin'q and board size, board independence, and managerial ownership with coefficient value of -0.1996, -0.1155 and -0.2953. Board size has a weak positive relationship with board independence, managerial ownership and firm size while a weak negative relationship exist with gender diversity, free cash flow and firm age. Board independence has a weak negative relationship with free cash flows and firm age and also a weak positive relationship with all the remaining variables.

Managerial ownership has a weak negative relationship with all the variables except board size and board independence which has a weak positive relationship. Gender diversity has a weak positive relationship with all the variables except board size, managerial ownership, and firm age which has a weak negative relationship. Free cash flow has a weak positive relationship with gender diversity, firm size and firm age and also a weak negative relationship with the remaining variables. Firm size has a weak positive relationship with all the variables except managerial ownership which has a weak negative relationship. Firm age has a weak positive relationship with free cash flow and firm size, and also a weak negative relationship with the remaining variables except for managerial ownership which has a strong negative relationship with firm age. The result of the variance inflation factor (VIF) test which ranges from a minimum of 1.69 to a maximum of 2.60 indicates the absence of collinearity between the independent variables of the study.

The simple moderation analysis was chosen by the researcher because of its appropriateness especially when the moderator is expected to exert its effect on the specific structural path(s) with the support of the relevant theory. A simple moderation effect can be assessed by creating a moderated regression model that explains whether a moderator alters the strength or/and direction of the relationship between an antecedent (independent variable) and an outcome (Baron & Kenny,1986).

Table 4.3 Panel Corrected Regression Result (PCSEs)

Tobin's q	Coefficient	Std Error	Z- Value	P-Value
CONS	-3.4517	2.2195	-1.56	0.120
BSIZE	-.1726	.0574	-3.01	0.003***
BIND	.3476	.9344	-0.37	0.710
MO	-7.1188	2.4602	-2.89	0.004***
GEND	-10.8807	3.8182	-2.85	0.004***
FCF	1.1109	4.5852	0.24	0.809
BSIZEFCF	.5629	.3877	1.45	0.147
BINDFCF	-6.7089	5.6749	-1.18	0.237
MOFCF	-46.9124	17.1193	-2.74	0.006***
GENDFCF	41.8382	18.1119	2.31	0.021**
FSIZE	.8308	.2493	3.33	0.001***
FAGE	-.0197	.0143	-1.38	0.166

No of Obs = 156.00. R- Squared = 0.2710. Wald Chi2(11) = 145.38. Prob > Chi2 = 0.0000

Source: Result output using STATA 13

***, ** and * indicate 1%, 5% and 10% significant levels respectively.

Table 4.3 present the regression result of the relationship between board attributes and Tobin's q, and the moderating effect of free cash flows on such relationship. The regression results reveal the cumulative R-square (0.27) which is the multiple coefficients of determination that gives the proportion or percentage of the total variation in the dependent variable explained by the explanatory variables jointly. Hence, it signifies that 27% of the total variation in Tobin's q of listed consumer goods companies in Nigeria was caused by board size, board independence, managerial ownership, gender diversity, free cash flows, firm size, and firm age of the companies. Similarly, the result of the P-value of 0.0000 implies that, the model was fit and significant at 1% level. Therefore, the model was fit and the explanatory variables were properly selected, combined, and used as the substantial value of Tobin's q as was accounted for by the explanatory variables.

The regression result of direct relationship between board size and tobin's q shows that, board size has a negative and significant relationship at 1 % level. This implied that, the size of the board of directors of the listed consumer goods companies contribute negatively and significantly to the performance of the companies. The interaction relationship of free cash flows on board size reveals a positive but insignificant relationship. This implied that free cash flows moderate the relationship between board size and tobin's q. As the result of the interaction justified, we failed to reject hypothesis (1) which state that, free cash flow does not significantly moderate the relationship between board size and financial performance of listed consumer goods companies in Nigeria.

The regression result of direct relationship between board independence and tobin's q shows a negative and insignificant relationship. This implied that, non-executive directors contribute negatively but insignificantly to the performance of the listed companies. The interaction relationship of free cash flows on board independence reveals a negative and insignificant relationship. This justified that free cash flows failed to moderate the relationship between board independence and tobin's q. The result of the interaction confirmed the assertion of hypothesis (2) as such, we failed to reject the hypothesis which state that, free cash flows does not significantly moderate the relationship between board independence and financial performance of listed consumer goods companies in Nigeria.

The regression result of the direct relationship between managerial ownership and tobin's q reveals a negative and significant relationship at 1% level. This implied that, managerial ownership of the listed consumer goods companies in Nigeria contributes negatively and significantly to the financial performance of the companies. The interaction relationship of free cash flows on managerial ownership reveals a negative and significant relationship at 1% level. Therefore, we reject the hypothesis (3) which stated that free cash flows do not significantly moderate the relationship between managerial ownership and the financial performance of listed consumer goods companies in Nigeria.

The regression result of direct relationship between gender diversity and tobin's q revealed a negative and significant relationship at 1% level. This implied that, female representation at the board of directors of listed consumer goods companies in Nigeria contribute negatively and significantly to the financial performance of the companies. However, the interaction relationship of free cash flows on gender diversity reveals a positive and significant relationship at 5% level. This finding shows that free cash flow moderates the relationship between gender diversity and tobin's q from negatively significant to positively significantly. Therefore, we reject hypothesis (4) which state that, free cash flows does not significantly moderate the relationship between gender diversity and financial performance of listed consumer goods companies in Nigeria.

The regression result shows that, free cash flows have a positive and insignificant relationship with tobin's q. The size of the firm has a positive and significant relationship at 1% level while firm age has a negative and insignificant relationship with tobin's q.

5.0 Conclusion and Recommendations

The followings were the conclusions drawn from the results of analysis and findings of the study:

i) Board size contributes positively but insignificantly to the performance of listed consumer goods companies in Nigeria.
ii) Non- executive directors contribute negatively but insignificantly to the performance of listed consumer goods companies in Nigeria.
iii) The level of managerial ownership contributes negatively and significantly to the performance of listed consumer goods companies in Nigeria.
iv) The proportion of females in the board of directors contribute positively and significantly to the performance of listed consumer goods companies in Nigeria.

The followings were the recommendations made based on the conclusions of the study;

i) In order to improve financial performance, appropriate size of the board of directors need to be maintained. The policy makers need to come up with a policy on the minimum number of person that are required to make a board size and also the appointment shall be based on the ability and availability of the appointee to fully participate in the affairs of the company as this will help in improving the financial performance of the consumer goods companies.
ii) The appointment of independent directors on the board should be based on their availability and commitment rather than emphasizing on the proportion to total number of directors on the board. Proper segregation of role and duties need to be maintained so as to prevent clash of interest between executives and non-executive directors.
iii) Directors on the board should be encouraged to have more shares in the companies they manage. This will make the board more efficient, and discourage managerial self-interest.
iv) More female representation on board is required, so as to make their own contribution on the financial performance of the companies.

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Public Accounting Standards, Financial Reporting Quality and Prevention of Fraud in Gombe State

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Abstract
This study investigates the impact of Public Sector Accounting Standards on financial reporting quality and the prevention of fraud in the Nigerian public sector. Distinctively, the study examines the link between International Public Sector Accounting Standards with report quality and the management efficiency for public funds in terms of fraud prevention in Gombe State Government Offices/agencies. The population of the study comprises of staffs in Accounting and Finance Departments, Internal Audit Departments of Gombe State Ministries and the staffs of EFCC and ICPC. Out of 200 staffs that were randomly deduced as the population,, using convenient sampling technique, 176 respondents qualified for to be used in data analysis having scaled through the selection process. A designated questionnaire was adapted and used to gather information from the targeted respondents in the agencies and the respective departments. The questionnaire is having five-point Likert scale and constructed to compose the relevant data. The study used descriptive Statistics to analyze the data and to identify the effect of Public Sector Accounting Standards on financial reporting quality and fraud prevention in the Nigerian public sector. The study empirically shows that Public Sector Accounting Standards has a positive and significant impact on the reporting quality and management of public funds in terms of fraud prevention in the Nigerian Public Sector. Thus, the study recommended that the government should put more effort to ensure the use of International Public Accounting Standards (IPSAS) by releasing required funds and resources to impose the adoption IPSAS and made it accessible for civil servants to have primary knowledge on International Public Sector Accounting Standards applications.

Key words: *Public Accounting Standards, Financial Report Quality, Fraud Prevention*

1.0 Introduction

In the mid 1970's, the oil boom years mark the inception of structurally weak regulatory mechanisms and a number of loopholes that tended to promote and maintain corrupt activities, which have been the bane of Nigeria's public sector financial mismanagement. From there on, Obasi and Mamidu (2015) empirically recorded that there has been a wide spread of unethical behavior, such as ghost employees on the payroll of Ministries, Extra-ministerial Departments and Parastatals, frauds, embezzlements, setting fire to offices housing critical papers, and a common corruptions practice in Nigerian society. Nonetheless, the literature reported that in the recent years of great economic destabilization, a number of improvements were realized in the public sector which has a significant impact on the accounting and reporting system (Ababne, Poretta & Hija, 2019). It was primarily caused by the finance markets becoming more globally connected against the backdrop of a quickly advancing economic globalization, although those with an interest in government may not find all the information they require in the general purpose public sector financial report. In fact, users of the report may look to alternative sources of economic data to adequately address their inquiries concerning the situation with government finances. Some of these other sorts of information may be incorporated into the financial reports as government financial reporting was generated.

Additionally, Nigeria and almost the entire developing countries are looking for the best strategies conceivable to overcome the crisis that emanated from the global economic crisis which has affected the biggest economies in the world, as well as the fluctuations in the price of crude oil on the international oil market (Udeh & Sopekan, 2015). Due to this, the need for a qualitative financial reporting system that will curtail fraud, mismanagement and fragile public funds administration arises. The International Public Sector Accounting Standards (IPSAS) and business-style accounting were approved for use in the public sector by Nigeria's Federal Executive Council in 2010. The said adoption of IPSAS has been strategized to pass designated stages: complete adoption of IPSAS cash basis in 2014; full adoption of IPSAS accrual basis in 2016. However, government involvement in the private sector after the global financial crisis has raised the exposure and debt levels of many States in Nigeria. Consequently, decision-making is becoming more complicated, especially if it is challenging to determine what constitutes "sustainability" (Fasua & Osifo, 2016). When failure occurs, the public sector is heavily scrutinized, therefore strict accounting, audit, and reporting standards are needed to be established. Nigeria's Federal Government officially stated that the country wide will be adopting IFRSs and IPSASs in all financial reporting processes, as in Ajao, Evans and Samuel (2013) the Federal Executive Council (FEC) approved the adoption of both the IFRSs and the IPSASs since the administration thought it would bring about a number of advantages for the country in terms of accountability and transparency and to follow the footsteps of developed countries. Adoption of IPSAS and full of its implementation is anticipated to improve comprehensive disclosure of financial information, meeting the needs of various users.

Moreover, because fraud and corruption are such major problems in the public sector today, it is impossible to guarantee that everyone, from the highest ranking officials to the lowest offices, is free from both. These viral public sector fraud infections are widely spread on social media and in publications. The goals and objectives of establishing the public sector would be compromised and unreached if this were to continue without the requisite prevention and effective control. In addition to the points made above, experts contend that some instances of fraud and corruption in the public sector may retard governmental agencies/departments growth and development, affects nations in overcoming bureaucracy leadership style, and resulted in poor administrations of public funds (Akhidime, 2012; Ajao et al., 2013). The fundamental goal of public sector accounting was to prove the government's compliance with legal and contractual obligations. Financial Accountability is therefore utilized as a trusted control tool for such purposes since the government serves as the trustee to safeguard/manage public funds and discharge accountability.

The Economic and Financial Crimes Commission (EFCC) has recently convicted several top government officials – Chief Accountant, Chairman of a board, Director and other lower ranking officers in Gombe State (EFCC, 2019). It was reported by Vanguard (2019) that the Chairman, Gombe Internal Revenue and other officials were convicted on corruptions charges by EFCC. More recently, the government of Gombe State secures Biometric system installation with a tune of 1.49 Billion Naira so as to checkmate the fraud discovered in the payroll of the state government (Vanguard, 2021). The government is committed to reduce irregularities in the public sector, eliminate fraud in the payroll and increase transparency in fiscal policies and a positive result was achieved having achieved a record of almost 600 pensioners that were ghost; and saving of about N800 Million Naira from the payroll. This will justify a study of this nature having objectivities of studying the effects of reporting standards on the reports quality and prevention of fraud in public sector specifically in Gombe State government offices domain.

The review of existing literatures reveals that research is needed before the public sector can adopt the required accounting system because most prior researches have concentrated on the operational mechanisms of public sector accounting. Therefore, the purpose of this research is to conceptually and theoretically analyze the impact of adopting International Public Sector Accounting Standards on report quality and fraud prevention in the context of both Gombe state and similar developing states in Nigeria. The study hypothesizes that there is a positive and significant effect between the adoption of IPSAS with financial reporting quality and prevention of fraud. The findings of this study will be immensely useful to government and all stakeholders within the cycle of public sector in Nigeria.

2.0 Literature Review/Conceptual Framework

The study consults several literatures and draws a conceptualization of the terms for the study variables. There is also empirical discussion of the prior findings to ascertain the direction of the study. And lastly, the underpinning theory was explained so as to establish the effects within the study variables.

2.1 Public Accounting Standards

The process of recording, compiling, evaluating, transmitting, and interpreting financial transactions of governmental entities and agencies is known as public sector accounting (Ababne et al., 2019). It displays every level of activity involving the receipt, holding, and distribution of public cash, thus, financial accounting is essentially what public sector accounting is. IPSAS is the equivalent of International Financial Reporting Standards (IFRS), which govern financial accounting in private company enterprises (Aduwa, 2019). The IPSASs governs financial accounting procedures for government entities other than for-profit public agencies and departments. The primary objective of the International Public Sector Accounting Standard Board (IPSASB), which creates IPSAS, is to increase the accuracy of general purpose financial reporting by public sector organizations, which will enable better-informed assessments of resource allocation decisions and increase the transparency and accountability of governments to their electorate and citizens. Over the past ten years, the implementation of IPSAS for public sector reporting has slowly gained speed (Cosmas, 2015).

The financial information systems and financial disclosure procedures of a government are referred to as public sector accounting which was rest on a purpose of accounting to track budget execution. Aduwa (2019) states that efficient financial management of the government is made possible by effective accounting, and audit trails are provided to prevent and identify financial malfeasance. IPSAS are standards that control how transactions and events in general purpose financial statements must be recognized, measured, presented, and disclosed. The creation of IPSAS has its roots in the accounting industry as a means of enhancing and standardizing financial reporting to increase the accountability and transparency of governments and their agencies. This study therefor adopt the explanations of public sector made by Aduwa (2019) as is more comprehensive and aligned to the Nigerian public sector domain.

2.2 Financial Reporting Quality

According to Fasua and Osifo (2016) financial reporting quality is the dissemination to stakeholders of a venture's financial statements and related information. Delivering high-quality information on reporting organizations in order to encourage the making of informed economic decisions is the main purpose of financial reporting. The require for public sector organizations to have a consistent set of financial statements that are comparable to other public sectors of other countries is reflected in the comparability of financial reports and translate its quality (Opanyi, 2016).The quality of financial reporting increases the transparency and accountability requirements placed on public officials who oversee the operations and dealings of public enterprises. This could improve public-private partnerships even further.

The government's capacity to fulfill its financial management obligations and be accountable to its constituents is significantly influenced by the quality of its financial reports. In response to calls for greater government financial responsibility and transparency, which is one of the tenets of democracy, the introduction of IPSAS played a significant role in reforming the public sector and followed a global trend in Public sector accounting (Opanyi, 2016). The definitions by Opanyi (2016) are more encompassing and this study adopts it.

2.3 Prevention of Fraud

The term "fraud" is a comprehensive terminology that refers to any deception used by one person to gain an advantage over another (Hendri, Yuliantoro & Ama, 2020). It encompasses all the diverse methods that human creativity has come up with. This includes being taken by surprise, using deceit or other unjust means of cheating someone else. Accordingly, the literature documented reports that almost 33% of public sector agencies face an increase in fraud each year worldwide (Hendri et al., 2020). Internal problems like asset theft and embezzlement that go undetected might expose your agency to further financial reporting fraud, resulting in regulatory body’s involvement and possible revenue loss through standardize reporting systems. To minimize this loss, fraud prevention and detection measures must be used. Every reporting agency should have a plan in place because it is much simpler to avoid fraud than it is to recoup your losses once it has been committed (Okere, Damilola, Inemesit & Opeyemi, 2017).

Fraud prevention also refers to as the implementation of plans that identifies fraudulent transactions or banking operations and stops them from harming the client and the financial institution's finances or reputation (Okere et al., 2017). A solid fraud protection approach will only become more crucial as online and mobile banking channels gain popularity and monetary institutions continue to digitize operations. This study adopts the definition of Okere et al., (2017) as it’s more related and relevant to the conceptualization made in the study.

2.4 Empirical Review

In a review by Aduwa (2019) an investigation was made on how Nigeria's public sector will respond to the implementation of international public sector accounting standards. The study specifically examined the impact of international public sector accounting standards on the effective administration of public funds in the Nigerian public sectors and evaluated the degree to which these standards improve efficient budget execution in the Nigerian public sectors. All of the employees in the 18 Local Governments in Ondo State's internal audit, accounting, and finance departments make up the study's population. The study found that the effective administration of public finances in the Nigerian public sector is significantly and favorably impacted by International Public Sector Accounting Standards. According to the report, the federal government should make funds available for the implementation of IPSAS as well as for the training of civil officials in the use of the International Public Sector Accounting Standards.
In another study by Ababne et al,. (2019) the researchers intend to perform a thorough examination of how the introduction of IPSAS has affected the internal control and financial reporting systems in UN organizations. The study offered an unbiased assessment of the implementation procedure and outcomes attained in each agency. The study of the participants' responses revealed that the implementation of

IPSAS enhanced the financial reporting of UN agencies, bringing them into compliance with internationally recognized standards, and increased the comparability of their financial statements for all parties. It was concluded that UN agencies have a better internal control mechanism as a result of the implementation of IPSAS.

Ajao et al,. (2013) used an exploratory research approach by reading through the literature and looking for pertinent information to observe public sector standards and reporting issues. Review of the public sector accounting systems in Ghana and Nigeria revealed certain discrepancies that were caused by the governance framework (unitary and federal). Additionally, it was discovered that Nigeria has a distinctive mechanism for monthly distribution of tax revenue to its numerous constituencies. The adoption and implementation of the IFRRS for the public sector are goals that the two nations are gradually striving toward. Additionally, both nations combine the use of fund accounting and modified cash foundation of accounting. Even though Ghana uses a unitary system of governance, it is advised that Ghana adopt or adjust its method of income allocation to ensure equitable resource distribution to the regions. The study also suggested that policies be established or that they be changed in order to promote complete compliance with the Fiscal Responsibility Act's provisions in Nigeria. Finally, it was suggested that the Auditor-General be nominated completely by the civil service rather than by the president with input from the Federal Civil Service Commission or the Council of State (in Ghana) (in Nigeria).

A study by Fasua and Osifo (2016) examining the connection between financial control and fraud prevention in Nigeria's public sector. The study specifically aims to confirm financial control and prevention in the public sector. The study's methodology consisted of a survey that was created with the help of the administration of a questionnaire in order to gather information from two specific states: Edo State and Ondo State. The relationship between financial control and fraud prevention in the public sector was examined using a regression analysis, along with other theories. The results show that the federal government's current control procedures are adequate in both content and scope to stop fraud in the public sectors. The report so recommended, among other things, that honest and ethical staff members as well as forensic experts be hired to examine the pertinent controls put in place.

2.5 Theoretical Framework

The theory that underpins this study was Agency theory. The preferred theory expresses how public sector will balance accountability through qualitative reports in. Agency theory, which Jensen and Meckling introduced (1976) is applied to offer a logical justification for the implementation of International Public Sector Accounting Standards in any form of governance. The separation of ownership and control in a contemporary organization, as well as the worries that the interests of the owners (the principal) and agent (the managers), may not coincide, are what give rise to the agency perspective (Cited in Aduwa, 2019). Hence, the theory makes the necessity for tension diffusion mechanisms by presuming tension between the primary and the agent. One such approach is the use of published financial statements. It was argued further by Aduwa (2019) that a government official is elected or appointed to operate on behalf of the public as an agent, executing the function of directing and controlling resources on behalf of the public, and presented an opinion of the agency theory from the public sector perspective (principal).

Therefore, the agency theory demands for a high level of public accountability between the agent and his principal, which can be achieved by using a detailed financial statement standard such as the IPSAS. Opanyi (2016) argue that interpreted public accountability as being a function of a principal's ability to evaluate the performance of their agent. The agency theory is presented in this study as the foundation for understanding how IPSAS could enhance accountability in public sector financial reporting and mitigation of fraud. It has shown to be a flexible and practical approach for interpreting the effects of institutional arrangements on the accountability of public decision makers and public policy.

3.0 Methodology

For this study, a quasi-survey instrument was adapted from Ababne et al., (2019) and Fasua and Osifo (2016) with questions about the impact of adoption of IPSAS on the reporting quality and fraud preventions. A total of 200 questionnaires were distributed in Accounting and Finance Department, Internal Audit department of the whole 21 ministries in Gombe State. Officials in EFCC and ICPC are also among the targeted respondent. Convenient sampling was used as the sampling techniques. A total of 176 respondents have perfectly and completely responded to the posed questions and provide the necessary information in the questionnaire while the remaining 24 were returned uncompleted or completely blank. Therefore, 88% of the questionnaires are valid and qualify to be used in the data analysis and 22% were not usable, thus the outcomes are free from statistical errors or biasness (Krejcie & Morgan, 1970). A total of 34 valid responses were from the EFCC and ICPC and the rest of 142 responses were received from the designated department from the Ministries. The data was primarily hand-collected and coded into a numeric form to come up with the primary relationship and other statistical indicators (Fractions).

The study used quantitative approach to establish the empirical nature of the relationship between the study variables. After reviewing the study's objectives, a descriptive research design was selected for the study's purpose since it would comprehensively describe the perspectives and current state of relevant players in the domain in the population that was selected for the inquiry.

4.0 Discussion of Results and Findings

After the collection of the response, this study generated and summarizes the data in a table form as depicted in table 4.1.

Table 4.1 The percentages from the respondents

Questions	Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree
The current public sector Standards are OK and effective	56%	32%	0%	8%	4%
The public sector reporting is complying with the prescribed standards	41%	38%	2%	13%	6%
The standards help in reporting quality	37%	54%	0%	7%	2%
There is need to improve the standards	51%	22%	8%	13%	6%
The standards are capable of preventing fraud	66%	23%	1%	8%	2%

Source: Authors Compilation 2023

From the table 4.1 above, the first question was to test for the availability and adoption of IPSAS in the public sector of Gombe State. 56% of the whole respondents accepted that the standards in used are normal and effective meaning that more than half of the respondents agreed with the alternate hypothesis that there is relatively compliance with the prescribed standards. On other hand 12% disagree with the claim (with 4% in stronger terms). Moreover, the second question tends to support the earlier one and the statistics were still similar in which 2% are neutral while a total of 19% disagree (6% in stronger terms) and thereby, the rest of the respondents agrees that the public sector reporting is in compliance with the available standards. In terms of reporting quality, question three seeks to address that. The majority of the respondents 54% attested that the standard correlate with the reporting quality and another 37% agrees with the claim. This indicated that adoption of IPSAS in public sector will boost reporting quality. Furthermore, the responses also show that fraud can be mitigated with IPSAS adoption in the public sector reporting. Out of 176 responses, 66% concur with the alternate hypothesis that claimed a-priori to have a positive impact of IPSAS on fraud prevention. Another 23% backup the assertion. This clearly indicated that adopting IPSAS will improve reporting quality and help in fraud prevention and thus the study establishes that adoption of public accounting standard positively and significant determinant of reporting quality and fraud prevention.

5.0 Conclusions and Recommendations

This study examined the effects of adopting IPSAS on the financial reporting quality and fraud prevention in the public sector of Gombe State. A strict compliance with IPSAS is anticipated to increase reliance and confidence on public sector financial reporting and the statistics proved by the study's findings are in-conformity with the hypothesize constructs. It was determined that the standards that are IPSA-based would make it possible to give decision-makers (Government) more useful information and raise the caliber of fraud detection and a good financial reporting system. The study also concluded that IPSAS will enable financial budgets and accounting categories to share a uniform set of classifications that are compliant with international standards, thereby facilitating policy analysis and fostering accountability and transparency. Therefore the study recommended that the government should focus more and put more effort on the public sector standards usage aiming at qualitative reports and prevention of fraud.

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Determinants of International Accounting Standard (IAS) 41 Information Disclosures Requirements by Listed Agricultural Firms in Nigeria

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Abstract
The study extends the existing, yet limited literature on accounting for agriculture in Nigeria, to assess the determinants of the International Accounting Standard (IAS) 41 information disclosure requirements of listed agricultural companies. To achieve the objectives of the study, a total of all 5 listed agricultural firms in the Nigerian stock exchange market as of 31st December 2020 were selected and analyzed for the study using the census sampling technique. The firm's annual reports for the period 2012-2020 were used for the study. In testing the research hypothesis, the study adopted the use of both descriptive statistics and econometric analysis using the panel generalized least square (GLS) regression. Findings from the study revealed that biological assets intensity is negatively and statistically significant related to compliance with IAS 41 disclosures {proxied by dindex}. The study contributes to the existing literature by providing a more robust model (framework) that analyzes the effects of biological assets intensity, firm size, firm age, and firm listing status on IAS 41 information disclosure requirements in Nigeria. Based on the findings, the study recommends that listed agricultural firms should increase their biological assets as this leads to an increase in compliance with standards aimed at enhancing market comparability and assist the users of the related financial information to understand the performance of biological assets and firm value.

Keyword: *Biological Assets Intensity, IAS 41, Agricultural firms and Disclosures, Dindex.*

1.0 Introduction

The extent of compliance with information disclosure requirements of International Financial Reporting Standards (IFRS) has taken the stage of public discourse over time and it has continued to attract research attention among the academia and professionals. International Financial Reporting Standards (IFRS) are standards and interpretations adopted by the International Accounting Standard Board (IASB, 2012). They consist of International Accounting Standards (IAS) and International Financial Reporting Standards Interpretations (IFRSI). In July 2011, Nigeria decided to adopt IFRS as its reporting standard, backed by the Financial Reporting Council of Nigeria (FRCN) Act 2012 and the Nigeria Accounting Standard Board (NASB) Act 2003. Agriculture have long been recognized as one of the most common business activities, which differs significantly from other business activities and an engine that contributes to the growth of the overall economy of Nigeria, which serve as the major source of livelihood. In Nigeria it has over the years accounted largely as a private indigenous activity despite the diversification of interest by the government in the sector and its official effort to infuse foreign private participation (Izechukwu, 2011).

With modernization of business and finance world over, necessities the need for uniform single sets of financial reporting framework to be used across the globe aimed at enhance credible and comparability of accounting information (Tamosiunas, 2012). In response to this need, the Federal Executive Council of Nigeria in its meeting on 28th July, 2010 approved the 1st January, 2012 as day for adoption of International Financial Reporting Standard with International Accounting Standard on agriculture as a new standard. In spite of the importance of Agriculture to global economy, accounting for agriculture related activities had got negligible attention from researcher until the adoption of International Accounting Standard 41 (Herbohn & Herbohn, 2006). This is because there had been no local standard that specifically guided the matter of accounting for agriculture.

Prior to adoption of international accounting standard on agriculture, accounting for agriculture did not attract the attention of accounting and finance researchers in Nigeria. Accounting for agricultural activities was based on historical costs method which had limitation of not catering for the unique characteristics of biological assets; one of the important components of accounting for agriculture. There is now International Accounting Standard on agriculture (thereto referred to as IAS 41) which is expected to be used in reporting the financial matters of agricultural firms. Meanwhile, exiting studies revealed a strong compliance with the standard by all listed agricultural firms in Nigeria (Ibrahim & Kurfi, 2019).

Most importantly, the standard (IAS41) covers matters related to biological assets, agricultural produce at the point of harvest and government grants. The basic principle of IAS 41 is that increases in the values of all biological assets owned by reporting entity are recognized as the assets grown not solely on harvest or sales (IASB, 2014). More so, the adoption of IAS 41 lead to a radical change from the historical cost model because the standard requires that biological assets be measured at fair value less cost to sell on initial recognition and at subsequent reporting dates, other than when fair value cannot be measured reliably on initial recognition (Bagudo & Shaibu 2021). However, where there is no available market to be used as a basis for estimation and the reporting entity cannot reliably estimate the fair value, the assets should be measured at cost less depreciation and impairment (Gonçalves and Lopes, 2014). In addition, agricultural produce shall also be measured at fair value less cost to sell but at the point of harvest only (IFRS 2011).

Despite the fact that studies have shown that agricultural firms have complied with IAS 41 (Ibrahim and Kurfi, 2019), yet the effort to empirically examine those variables that influence the compliance with the standard is under studies. Most of the studies to this effect have focused on other sectors. For example, Siyambola, Adegbite and Nwaobia (2018) studied determined the effect of mandatory disclosures of accounting information on investment decisions in consumer goods in Nigeria, Segun (2019) studied small and medium scale enterprises (SMSEs) while Modugua and Eboigbe (2017) studied the determinants of corporate disclosure of 60 companies after the adoption of IFRS in Nigeria and considering the variables studied the sample may not include agriculture, additionally Echobu, Okika and Mailafia (2017) Agriculture and Natural Resources sector and then Odia (2016) examined the determinants of IFRS compliance of 50 companies quoted in Nigerian Stock Exchange from 2011 to 2013.

Moreover, in studying the determinants of compliance with IFRS in Nigeria, researchers have focused on variables that are mostly universally applicable to all firms operating in all sectors of the economy. For example, while Odia (2016) focused mainly on firm size, leverage, operating cash flow and liquidity, Siyambola et'al (2018) considered roe, size, leverage and liquidity as control variables, Modugua and Eboigbe (2017) studied firm size and leverage only and Segun (2019) mainly looked at auditor type and company age. The results generated from these studies cannot be specifically applied in agricultural sector. This is because variables that are peculiar to agricultural firms and covered by the standard like biological assets and government grants are least studied.

This study therefore extents to contribute to the existing literature on compliance with IAS 41 by examining the influence of one of the least studied variables that is peculiar to agricultural sector to which this standard applies. The study incorporates biological asset intensity as determinant of compliance with IAS 41 information disclosure requirements and adoption timing to examine the impact of years (age) of IFRS experience on the extent of compliance with information disclosures. The other variables that are examined in addition to biological assets intensity in the study are firm age, firm size, firm growth and firm listed status. In a general term, the study seeks to examine the extent to which biological asset intensity, firm age, firm size, firm growth and firm listed status determine compliance with IAS 41 information disclosure by listed agricultural firms in Nigeria.

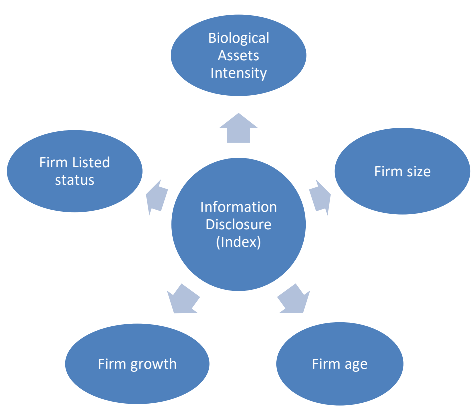
The rest of the paper is organized into four sections. Section two presents a review of related literature on information disclosure, intensity of biological asset, firm age, growth and firm listing status. Section three discusses the methodology adopted by this paper. Section four is on results and discussions. While, section five presents a summary, conclusion and recommendations arising from findings of the study.

2.0 Literature Review

Disclosure has been defined as the process by which firm management use to communicate facts and figures on economy and investment information (financial and non-financial) to investors and all other stakeholders. This section covers the concept of information disclosure, intensity of biological asset, age, growth, and firm listing status, empirical studies on firm determinants and IAS 41 information disclosure.

2.1 Conceptual Framework

The diagram below shows the graphical impact between the study variables. Figure 2.1.



Source: Researcher's 2021.

2.2 Information Disclosure

Accounting information is the information on financial or economic activities of an organization which is identified, measured, and communicated to users to enable them makes an informed judgment about the business or organization (ASSC, 1975). The resulting statistical reports of accounting information can be used internally by management or externally by other interested parties including investors, creditors and tax authorities.

Disclosure of accounting information is mostly a financial accounting issue as it relates to the provisions of value relevant accounting information to various users of accounting information. Study such as (Botosan & Plumlee 2002; Bagudo & Shuaibu 2021) shows that there exists a relationship between accounting information disclosure and economic effect. A justification to assertion is on the increase of stock liquidity, the reduction of capital costs and the increase of firm monitoring (Suleiman and Sani 2021). This study pointed out that regulated accounting information disclosure facilitates sound corporate government mechanism, stork market development and enhances international capital mobility. Therefore, study on accounting disclosure can never be over emphasize as it involves the whole accounting information system.

Similarly, the disclosure of the financial statement is defined as the delivery of various economic information by the firm which shows the firm's business performance and positioning that consist of information about financial and non-financial condition, also information about both quantitative and non-quantitative notes (Owusu-Ansah 1998; Carolina, Kusumawati, and Chamalinda 2020). The disclosure of information from the management is a strategic tool which can improve a firm's ability to obtain capital with a low cost (Healy & Palepu 2001). A firm's annual financial statement can be used as one of the means to disclose information and function as a firm's performance monitoring tool (Wardani & Puruwita 2012).

2.3 Biological Assets Intensity

According to International Accounting Standard (IAS 41) biological asset is considered as any living animal or plant used for sale or for conversion into agricultural produce or into additional biological asset. Yurniwati and Farida (2018) defined biological assets as assets such as living beings who experienced the biological transformation, start to grow, produce, and reproduce. Also, because of these biological processes, companies take step to measure the value of these assets appropriately following the leverage to generate profits in the company. Thus IAS 41, biological assets include for example sheep, pigs, beef cattle, poultry, fish, dairy cows, trees, tea leaves, coffee seeds or plants for harvest.

Therefore, the intensity of biological assets shows the level of firm investment against biological assets owned by the companies. Meanwhile, (Yurniwati & Farida,2018) as cited in Routes and Patricia (2014) states that the method of measuring biological asset intensity is by divide the value of biological assets by total assets. Biological assets are typically seen in the statement of financial position (Balance Sheet) of the companies in industries. The only distinguished features of biological assets are that it is living thing and the main difference is that biological assets change and depreciate naturally and more rapidly than other types of assets or goods.

However, the diversity in accounting treatment of agricultural activity based on special nature of this activity creates uncertainty or contracting view when applying traditional accounting methods, because of the biological transformation and difficulty of its recording using traditional model based on historical cost. Biological assets differ from non-living assets because they change biological form over their lives through growth, degeneration, production or procreation, resulting in changes in future economic benefits. On the other hand, not all biological assets are of the same substance; there are some kinds of biological assets that are similar to long-term assets like equipment during their period of growth and fertility.

2.4 Firm Attributes

2.4.1 Firm Size

Machfoedz (1994), Yurniwwati and Farida (2018) maintain that the size of the company is a scale that classifies the company into large and small companies in several ways such as total assets, the value of the stock market, the average level of sales and sales amount. In other word, (Ahmed & Courtis 1999; Zarzeski 1996). Define firm size as total assets or number of employees or amount of income or number of shareholders or in terms of sales volume of an organization. Prior literature shows that one of the advantages of firm size or large firm is economies of scale because production or distribution is higher than their smaller rivals. Studies indicate firm size as a determinant of compliance with financial reporting standards (Gunclaves 2015, Abdul 2013; Amiraslani, Iatridis, and Pope, 2013; Glaum, Schmidt, Street, and Vogel, 2012; Oliveira, Rodrigues, and Craig, 2006).

2.4.2 Firm Age

Firm age has been identified in previous studies as an attribute having impact on the quality of accounting disclosure practice. Overtime, company age has been often seen as a proxy for risk (Cerbiono and Perbonetti, 2007). Therefore, the extent of firm disclosure can be related to how many years it has been in operation (Graham, Harvey and Rajgopal, 2005). The older the firm the more likely they are to have strong internal control procedures.

Similarly, Tawiah and Boolaky (2019) in the study of the determinants of IFRS compliance in African an analysis of stakeholder, the study established the relationship between stakeholders attributes and firms compliance with IFRS. The study incorporated adoption timing to examine the impact of years of IFRS experience on the level of compliance and found that the longer the years a country or companies has been using IFRS may likely to affect compliance level; for instance, the longer the years, the higher the compliance level. Despite this strong relationship, prior studies in Nigeria have not considered it.

2.4.3 Firm’s Growth

Firm’s growth shows how good a firm is maintaining its financial performance. A firm growth can be expressed as the improvement in the numbers of sales within a firm (Carolina, Kusumawati & Chamanlinda 2020). A firm that experienced growth has a potential opportunity to increase the firm size and increase earnings. The growth level of a firm could influence management decision to disclosure more information. According to the stakeholder theory, a firm could develop if the firm can fulfill the stakeholder's interest (Freeman and Philip 2002). For stakeholders to know that their interest has been fulfilled, a firm should provide more adequate information disclosure. The management will choose to disclose more information if the firm ever experiences growth to fulfill the stakeholder's interest (Hanifa and Rashid 2005; Oliveire and Criag 2006).

Meanwhile, Whiting and Woodcock (2011) maintain a different opinion and state that, a firm which is new in the stock exchange listing will be more motivated to disclosure information to attract investors. It means the lower a firm’s growth, the higher its disclosure level. Another view by (Taliyang, Tatif & Mustafa 2011) claims that a firm with a low growth level will choose to not undergo the disclosure regarding the intellectual capital in the financial statement. There is near absence of research focused on agricultural firms in Nigeria to specifically test the influence of a firm's growth on biological asset disclosure in Nigeria.

2.4.4 Firm Listing Status

Muhammad (2009) assert that the firm listing is concerned with the admission of a company's capital or market instrument to the trading floors of the stock exchange. Before its admission, the company must have complied with the listing requirements as embodied in the stock exchange green book. Stock exchange is the "primary regulators of accounting standards" and it is seen as a "managerial choice variables" (Hope, 2003; Goncalves & Lopes 2015).

2.5 Biological Assets Intensity and IAS 41 Disclosures Information

Bagudo and Shuaibu (2021) studied the impact of some firm specific attributes on compliance with international accounting standard (IAS) 41 of listed agricultural firms in Nigeria. Using a sample of 5 agricultural firms and cross-sectional data, the study covered the period 2012-2019, the result showed that both biological assets intensity and firm size had positive and significance impact on compliance with IAS 41 disclosures, but leverage is negatively and significant to compliance with disclosures. Also, liquidity and firm age are positive but insignificant to compliance with disclosures. The study was among the few conducted in Nigeria related to accounting for biological assets and agricultural produce, the secondary source of data collected from agricultural firms listed in the floor of Nigeria stock exchange as at 31st December, 2019. The result cannot be applied at present as the period cover is of essence and there is the need for fresh study considering other variables such as, Firm listing status, firm growth and auditor type. More so, the study was conducted before disruptive regime imposed by COVID-19 pandemic and its economic and financial consequent with several countries imposing restrictions that made it almost impossible to travel from one place to another.

Additionally, Gonçalves and Lopes (2014) studied the determinants of compliance with international accounting standard on agriculture of 270 firms in Portugal. Using cross sectional data, the study focused on the year 2011 only. The study categorized the determinants into firm level (biological assets intensity, ownership concentration, firm size, auditor type, internationalization level, listing status, profitability and sector) and country-level (legal status). The study found the disclosure of biological assets by agricultural firms is influenced by biological assets intensity, ownership concentration, firm size, sector and legal status. The study covers firms across the globe and the study may not have taken into consideration the divergent institutional arrangements that affect all the firms.

However, Cyril, Elizabeth and Chukwuemeka (2019) studied the impact of fair value accounting on biological assets of listed firms in Nigerian agricultural sector with Okomu Oil Palm Plc as case study. The study used time series data for the period of 2009-2018. Using Ordinary Least Squares (OLS) multiple regression, the study found that fair value accounting has insignificant positive effects on biological assets. The study focused on only one agricultural firm out of only five that could have been studied.

2.5.1 Firm Size and IAS 41 Information Disclosures

Martanti, Lestari and Zarkasyi (2019) studied the impact of biological assets intensity and firm size on the financial performance of listed agricultural firms on the Indonesian and Malaysian Stock Exchange. Using a sample of 35 firms and cross-sectional data for the period of 2018, the study found that both biological assets intensity and firm size had no impact on financial performance both in Indonesia and

Malaysia. The study was conducted in different countries and due to some institutional factors; the result cannot be applied in Nigeria.

Yurniwati and Farida (2018) assessed the effect of biological asset intensity, company size, ownership concentration and type firm on biological assets disclosure of listed agricultural firms in Indonesian stock exchange. Using a selected 18 companies through purposively sample techniques and cross sectional data for the period of 2012-2015, the regression result showed that both biological asset intensity and company size listed in the Indonesian stock exchange had significant positive effect on the disclosure of biological assets, but a concentration of ownership does not affect the disclosure of biological asset, while type firm had significant negative effect on the disclosure of biological assets in an agricultural firms. The study was conducted in different countries and due to some institutional factors; the result may not be applicable in Nigeria.

More so, Echobu, Okika and Mailafia (2017) studied the determinants of financial reporting qualities among listed agricultural and natural resources firms in Nigeria using a sample of seven out of nine firms for the period of seven years from 2008 to 2015. Using regression and residuals from the modified Jones model by Dechow, Sloan and Sweeney (1995) as a measure of financial reporting quality, the study found that there is a positive significant relationship between leverage, liquidity, board size and financial reporting quality. The data used is old having been gathered in 2015 and may not reflect the current reality.

2.5.2 Firm Age and IAS 41 Information Disclosures

Segun (2019) studied determinants of compliance with International Financial Reporting Standards of Small and Medium Scale Enterprises (SMSEs) in Ondo state. The study covered the period of year IFRS was adopted for SMSEs which is 2014 to 2018. Using primary source of data and standard multiple regression, the study revealed that compliance with IFRS disclosures is significantly influenced by, company age, auditor type, firm indices and industry indices. However, the study covers only SMSEs whose institutional framework is still not robust enough.

Tawiah and Boolaky (2019) studied the determinants of IFRS compliance in African with analysis of stakeholder; the study established the relationship between stakeholders attributes (firm age, financial experts on board, ownership concentration and audit committee) on firms compliance with IFRS. The result of the study show (73.09%) compliance index indicates that there is strong compliance among the companies with IFRS. On the determinants the study found a significant positive relationship between audit committee competence and compliance and found the same for chartered accountants on Board. On the firm age the study incorporated adoption timing to examine the impact of years of IFRS experience on the level of compliance and found that the longer the years a country or companies has been using IFRS may likely to affect compliance level; for instance, the longer the years, the higher the compliance level. Despite this strong relationship, prior studies in Nigeria have not considered it more particularly on agricultural firms in Nigeria.

Alfraih and Alanezi, (2015) investigated firm specific attributes of listed firms in Kuwait Stock Exchange in relation to corporate disclosure. The study used 181 firms as sample of the study for the 2010, using self-constructed disclosure as dependent variable which was regressed against firm age, firm liquidity, firm leverage, firm size, firm profitability, audit quality and firm industry type. The multivariate regression results showed that older, highly leveraged, larger, and profitable listed firms in

Kuwait are associated with high levels of disclosures. The study period coverage only one year 2010 is matter of concern and there is the need for fresh study.

Meanwhile, Ibrahim (2014) also examined the effects of firm characteristics on corporate disclosures of 76 firms in Nigeria cutting across all sectors including agriculture with focus on segments reporting (IFRS 8). The study covered the year 2011 only. Using ordinary least square regression model, the result of the study revealed that firm listing age, growth, return on investment and ownership diffusion are negatively associated with voluntary segments disclosure. In addition, firm size and industry type are positively associated with voluntary segments disclosure. The study is somewhat old and the result may not be applicable to present situations.

2.5.3 Firm Growth and IAS 41 Information Disclosures

Carolina, Kusumawati, and Chamalinda (2020) studied the factors that influence the biological asset disclosure by testing the effect of firm's growth, leverage, profitability, liquidity, biological assets' intensity, firm size, type of auditor, and listing status. The study covered three years period from 2016 - 2018. The study used, as samples, the agriculture firms listed on the Indonesia Stock Exchange (IDX). Using multiple linear regression models. The result showed that intensity of biological asset had influences on the biological asset disclosure, while leverage, profitability, liquidity, firm's growth, firm size, type of auditor, and listing status do not influence the biological asset disclosure. The study was conducted considering Indonesian countries and due some institutional framework the result may not applied in Nigeria, while, the period covered is a matter of concern and there is the need for fresh study having in mind Nigeria experience.

2.5.4 Firm Listing Status and IAS 41 Information Disclosures

Meanwhile, Baazaoui and Ali-Zarai (2019) studied the effect of firm characteristics on the disclosure of IAS/IFRS information of listed firms in the three different countries (Tunisia, France and Canada). Using a sample of 52 Tunisian firm (40 listed on the first market and 12 on the alternative market), 244 form French firm (35 CAC40 Index (top 40 French firms) and 209 CAC small (index of small Capitalization French firms)) and 223 Canadian firm (36 TX60 (first 60 Canadian companies) and 187 TX20 Index (Small Capitalization Canadian firms). The study used regression model by ordinary least square. The dependent variable is the disclosure of the information, whether mandatory or voluntary or elementary (Accounting standard) and the independent variables includes size, leverage, liquidity, performance, listing status, audit quality, audit opinion and the country of domicile of the firm (generally, the nationality of the firm). For each firm, the study measured a disclosure score. If the item is disclosed, they record the score as 1 and if it is not disclosed, they record the score as 0. There after sum of the scores obtained by the firm was used to represents the value of disclosure. After which is used to divide the sum of the scores of the sum of the applicable items (accounting standards). The regression results showed that the determinants of the disclosure of IAS/IFRS information vary depending on the nationality of the firm and also showed the importance of the nationality of the firm in explaining disclosed information since the proxy used "country" has significant coefficients. More so, listing status, firm size, performance and leverage showed a positive and significant effect on the information disclosure, but audit opinion, and country of nationality had positive but insignificant effect on the disclosure of information. In addition, audit quality and liquidity both had positive and significant effect on information disclosure. However the study was conducted in different countries and study period cover was not mention and due to some institutional and social factors the result cannot be applied in Nigeria.

2.6 Theoretical Framework

This study used agency theory as theoretical basis. The theory was developed by Jensen and Meckling (1976). Agency theory is deemed appropriate for this study because compliance with reporting regulations released by appropriate regulatory agency is expected from managers who are seen as agents. This much is expected by shareholders who are seen as principal in the principal-agent relationship in which power to take decisions is vested in the agents by the principal. The relationship breeds conflicts as a result of which it cannot be said with certainty that the principal would do as expected by the agents. As a result of this, measures are put in place including monitoring like IFRS reporting framework that would reduce agency costs and by extension reduce the opportunistic tendencies of managers (Jensen & Meckling, 1976). Since financial reporting standard is one of the monitoring mechanisms put in place to properly monitor the behavior of agents with a view to reducing agency costs as opined by Jensen and Meckling, it follows, therefore, that agency theory can be used for study that revolves around compliance with accounting standards (Bagodu & Shaiabu 2020).

3.0 Methodology

The study utilizes a correlational (quantitative) research design, using the secondary source of data from financial statements of targeted firms. This is informed by the paradigm on which the study is based which is positivism in nature. The period covered is (2012 -2020). The decision for choice of the period was in recognition to the fact that Nigeria adopted the use of IFRS in 2012 and data relevant to the study can only be obtained within this period. The data used is panel because the data cut across different companies at different times. Thus, regression is used for the purposed of analyzing the relationship between the dependent and independent variables. The population covered all the five (5) agricultural firms listed on the floor of Nigeria Stock Exchange (NSE) as at 31st December 2020 and making up the sample of the study using census sampling technique. The firms are: Ellah Lake Plc, FTN cocoa Plc, Livestock Feeeds Plc Okomu Oil Palm Plc and Presco Plc.

3.1 Model specification and variables measurement

For the purpose of this study IASs 41 information disclosure requirements compliance was proxy using self-constructed disclosure index from IAS 41 checklist. The model to be used is then be represented below:

$$\mathbf{DINDEX_{it} = \beta_0+\beta_1BAI_{it}+ \beta_2FS_{it}+ \beta_3FA_{it}+ \beta_4FGr_{it}+ \beta_5FLS_{it} + u_{it}}$$

Where:

$\boldsymbol{\beta_0}$ = Costant
BAI = Biological Asset Intensity
FS = Firm size
FA = Firm Age (Adoption timing)
FLS = Firm listed status
FGr = Firm growth
$\beta_1 – \beta_2$= Coefficients of the variables.
μ= Error term, i= individual firms, t= time dimension.

The variables presented in the model above were measured in Table 3.1 as follows:

Table 3.1 Description and Measurements of variables included in the regression model

s/n.	Variables	Code	Measurements	Source	
1	**Dependent Variables**				
	Disclosure requirements	**Dindex**	Dummy of 1 for item disclosed and 0 for item not disclosed. Thereafter, the ratio of total items disclosed divided by total items to be disclosed as required by the standard will be taken for each. Using weighted Index.	**Annual reports**	Ibrahim and Kurfi 2019; Gonclave and Lope 2015, Maimako and Ayila 2015; Alfariah 2009; Ofoegbu(2018).
2	**Independent Variables**				
	Biological asset intensity:	**BAI**	Biological assets divided by total assets	**Annual reports**	Bagudo and Shaibu 2020; Routes and Patricia 2015).
	Firm Age	**FA**	Years of used of IFRS experience{Adoption timing}	**Annual reports**	Tawiah and Booklooky 2019;Kingsly 2018)
	Firm Size	**FS**	Natural log of total assets	**Annual reports**	Ioraver and Tsegba (2017); Uyer (2016)
	Firm Growth	**FGr**	$Sales_t$ minus $Sales_{t-1}$ divided by Sales t – 1.	**Annual reports**	Carolina,et'al (2020).
	Firm Listed Status	**FLS**	Natural Log of the numbers of year since listed on NSE	**Annual reports**	Alfariah(2009); Kabir(2014); Uyer (2016).

Source: Researcher's compilation 2021.

4.0 Discussion of Results

Under this section the results found by the study were presented and analyzed, from which conclusions were drawn. We began with presentation of descriptive statistics, then correlation matrix to multicollinearity assumption, here take denticity test, and finally regression results.

4.1 Descriptive Statistics

A descriptive statistic is an analysis of data that helps to describe, show or summarize the behaviour of data in a meaningful way, which allows for simpler interpretation of the data. This table contains the description of the properties of the variables ranging from the mean of each variable, minimum, maximum and standard deviation.

Table 4. 1: Summary of Descriptive Statistics

Variable	Obs	Mean	Minimium	Maximium	Standards deviation
DINDEX	45	0.67	0.30	0.88	0.14
BAI	45	0.35	0	0.79	0.26
FS	45	9.96	9.05	10.9	0.61
FA	45	0.58	0	0.95	0.32
FGr	45	4.59	-1	147.4	22.3
FLS	45	1.46	1.11	1.71	0.16

Source: STATA 13.0 output of descriptive statistics

From the table above, it can be seen that the average disclosure compliance with international accounting standard on agriculture is 0.67 meaning that on average the compliance with the standard by listed agricultural firms between the period of 2012 - 2020 stood at 0.67. The minimum level of compliance is 0.30 and the maximum is 0.88 with 0.14 standard deviation indicates that the compliance is not far away from the mean.

4.2. Correlation Matrix

A correlation matrix is a table showing correlation coefficients between variables. Each cell in the table shows the correlation between two variables. A correlation matrix is used to summarize data, as an input into a more advanced analysis, and as a diagnostic for advanced analyses. The table below shows the correlation between the dependent variable and each of the independent variables as well as among the independent variables themselves.

Table 4. 2: Correlation Matrix

	DINDEX	BAI	FS	FA	FGr	FLS
DINDEX	1.0000					
BAI	-0.4972	1.0000				
FS	0.2515	0.2865	1.0000			
FA	-0.1896	0.1278	-0.2723	1.0000		
FGr	-0.0920	-0.0947	-0.2555	-0.0314	1.0000	
FLS	0.5891	-0.6757	-0.1278	-0.0887	-0.0231	1.0000

Source: STATA 13.0 output of correlation matrix

Table 4.2 shows the correlation between the dependent variable, DINDEX and the independent variables, BAI, FS, FA, FGr, and FLS on one hand, and among the independent variables themselves on the other hand. Generally, high correlation is expected between dependent and independent variables while low correlation is expected among independent variables. According to Gujarati (2004), a correlation coefficient between two independent variables 0.80 is considered excessive and thus certain measures are required to correct that anomaly in the data. Thus, from the table 4.2, it can be seen that all the correlation coefficients among the independent variables and the dependent variables have both positive and negative values which implies that there is both positive and negative correlation among the variables and are below 0.80. This points to the absence of possible multicollinearity though the variance inflation factor (VIF) and tolerance value (TV) test is still required to confirm the assumption (Gujarati, 2004).

4.3 Multicollinearity Test

In testing for multicollinearity, variance inflation factors (VIF) and tolerance tests was conducted. The results are presented below.

Table 4.3: Multicollinearity test

Variable	VIF	1/VIF
BAI	2.07	0.483401
FLS	1.88	0.533205
FS	1.31	0.761747
FA	1.15	0.869527
FGr	1.09	0.914978
Mean VIF	1.50	

Source: STATA 13.0 output of multicollinearity test

From table 4.3 above, shows that the tolerance value (1/VIF) of the individual variables are all greather than 10% and less than 1. Therefore, with the highest value of VIFs stood at 2.07 (less than 10), this confirm the absence of multicollinearity among the variables (Gujarati, 2004).

4.4 Heteroskedasticity

To test for heteroskedasticity, the study used breuch-pagan/cook-weisberg test. The test revealed a **chi2 valued of 2.85 and the prob> chi2 of 0.0913** (insignificant). This indicates the absence of heteroskedasticity. However, after running the fixed effect and random effect regressions, Hausman test for fixed effect was conducted and the probability of the chi2 is significant. The significant value as reported by the probability of chi2 indicates that the Hausman test is in favour of fixed effect model. Based on the fixed effect regression, the results of fixed-effect OLS are as interpreted below.

4.5 Regression Result

Table 4.5: Fixed – Effect Regression

Variables	Coefficient.	T-Value	P>(t)
BAI	-.0786905	-0.82	0.041
FS	.0087816	0.12	0.903
FA	.1670504	3.81	0.001
FGr	-.0005674	-1.18	0.247
FLS	2.642021	7.32	0.000
Constant	-3.343121	-4.29	0.000
R Squared:	**0.7411**		
f. Statistics:	**20.03**		
Prob:	**0.0000**		

Table 4.5 shows that R^2 is 0.7411 at 1% level of significance meaning that all the five independent variables put together explain the dependent variable by 74% while the remaining percentage is accounted for by other variables that have not been captured in the model.

When the individual effects of the independent variables on the dependent variables are examined in the table above the study found that the coefficient of biological assets intensity is (-.0786905) at 1% level of significance meaning that there is a negative and significant relationship between biological assets intensity and compliance with IAS 41 information disclosure, with this we reject the null hypothesis which state that biological asset intensity has no impact on IAS 41 information disclosure by listed agricultural firms in Nigeria. This finding is consistent with study (Bagudu & Shuaibu 2020; Yurniwati et al 2018; Gunclave and Lopes 2014). But while prior studies (Bagudu & Shuaibu 2020; Yurniwati et al 2018; Gunclave and Lopes 2014) show a positive coefficient, the present study coefficient is negative indicating a decreases in the number of investment in Biological assets by the firms which could be due to the COVID 19 pandemic that cut across the world with several countries imposing restrictions to businesses and made impossible to travel from one place to the other and hence, economic and financial consequence to businesses and business owners.

More so, the coefficient of firm size which is (0.0087816) at 5% level of significance revealed that there is positive but insignificant relationship between firm size and compliance with IAS 41 disclosure information by listed agricultural firms in Nigeria, the null hypothesis is therefore accepted that firm size has no impact on IAS 41 information disclosure by listed agricultural firms in Nigeria. This finding is consistent with the study of (Martanti et al 2019) but contradicted the study such as (Bagudu & Shuaibu 2020; Yurniwati et al 2018; Gunclave & Lopes 2014).

Meanwhile, the results of the study shows that firm age with (0.1670504) coefficient and Firm listed status 2.642021 coefficient at 5% level of significance has positive and significant relationship with IAS 41 disclosure compliance by listed agricultural firms in Nigeria. Thus, the study fail to accept the null hypothesis which state that firm age and firm listing status has no impact on compliance with the standard. This shows that increase in the companies used of IFRSs experience (firm age) and the numbers of years since listed on floor of Nigeria stock market lead to increases in the level of compliance with the standard by listed agricultural firms in Nigeria. This finding corroborated the study of (Alfraih & Alanezi 2015; Ibrahim 2014; Tawiah & Boolaky 2019; Baazaoui & Ali-Zarai 2019), but inconsistent with study of Carolina et'al (2020).

However, for the result of firm growth the study shows a negative -.0005674 coefficient and statistical insignificant. We accept the null hypothesis in that direction. This means that decreased in firm growth will result to decrease in the compliance with IAS 41 information disclosure by listed agricultural firms in Nigeria. This finding is consistent with study of Carolina et al (2020).

5.0 Conclusion and Recommendations

The study is concerned with how firm attributes of listed agricultural firms in Nigeria influence compliance with IAS 41 information disclosure. In achieving this, the study utilized available data from the annual reports of the firms. The data collected was analyzed using GLS. The study used self-constructed compliance index as dependent variable and took biological assets intensity, firm size, firm age, firm growth and firm listed status as independent variables. The study concluded that biological assets intensity and compliance are negatively but significantly related to compliance, firm size and compliance is index positively but insignificantly related, while, compliance and firm age positively and significantly related, compliance and firm listed status positively and significantly related and finally firm growth is negatively and insignificantly related with disclosure compliance.

Based on the above findings, the study recommends that listed agricultural firms should increase their biological assets as this leads to increase in compliance with standard aimed at enhancing the value of the firms. The firms should also increase their size with focus more on total assets equity as decreases assets leads to decrease in compliance with the standard. Furthermore, as much as possible, firms should increase their sales turnover and participate more actively in the capital market as this leads to higher level of compliance with IAS 41.

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A Review of Relevant AAOIFI Standards on Accounting for Sukuk Issuance

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Abstract
*This paper reviews the provisions of the three AAOIFI standards on Accounting for sukuk issuance (FAS 33, FAS 34 and GS 12) with a view to appreciating their major provisions for ensuring high quality financial reporting, their expected impacts to accountability and transparency in accounting for Sukuk issuance. In line with the spirit of total quality management (TQM), the paper highlights areas where improvement could be brought about to the quality of the three standards, which include presenting a **return on investment** (ROI) estimate to potential investors, collecting and normalizing IFIs' data, and work on developing Islamic risk hedging tools to improve sukuk performance, among others. The paper concludes that AAOIFI management should adhere to the laid down institutional goals and vision of reporting entities as they initiate the issuance of Sukuk instrument and accounting for the issuance for the furtherance of Islamic finance principles and financial discipline in compliance with Shari'ah.*

Keywords: *Sukuk, financial instrument, financial reporting, Shari'a, standards.*

1.0 Introduction

An Islamic financial instrument known as a sukuk offers investors options and income from asset ownership. One of the Islamic capital market's fastest-growing products, sukuk, is gaining popularity across all sectors of society regardless of faith or culture (Ibrahim et al., 2014). Sukuk was able to attain a wide geographic dispersion and a market that was least impacted by the global financial crisis (GFC) of 2008, in addition to gaining attention from the top conventional finance hubs across the world.

Investment Sukuk are certificates of equal value, representing undivided shares in ownership of tangible assets, usufruct and services (or in ownership of) the assets of particular projects or special investment activity (Shari'a Standard 17). Sukuk is an Islamic finance certificate that provides investors with opportunities for wealth creation and accumulation from owning an undivided asset. Following the global financial crisis (GFC) of 2007/2008, government and corporations began searching for alternative means of investment outside the interest-based system of financing, and Sukuk emerged as the best option (Di Mauro et al, 2013; Godlewski et al, 2013). For instance, the increased usage of Sukuk for financing various projects during the past ten years has enhanced Islamic banking prosperity (Alhammadi et al., 2020). The problems with liquidity management that the Islamic financial sector is facing can also be solved via Sukuk issuance. Shari'ah scholars, however, stress Maqasid Al-Shari'ah (objectives of Islamic law) fulfilment as a fundamental goal for attaining societal well-being and not as motivations for profit maximization (Hassan & Aliyu, 2018; Alotaibi et al., 2020).

In the course of its standardization of financial reporting by Islamic Financial Institutions, the Accounting and Auditing Organization for Islamic Financial Institutions (AAOIFI) has issued a number of standards for ensuring high quality financial reporting. So far, AAOIFI has issued 40 Financial Accounting Standards (FAS), 13 Governance Standards (GS), 6 Auditing Standards (AS) and 3 Ethics Standards (ES). There are also about 50 Shari'ah Standards issued by AAOIFI. Out of the quality financial reporting related standards, three are specifically related to accounting for Sukuk issuance. These are FAS 33, FAS 34 and GS 12.

FAS 33 (which replaced the previous FAS 25) is entitled: **Investment in Sukuk, Shares and Similar Instruments.** The standard outlines enhanced principles for the classification, recognition, measurement, presentation, and disclosure of investments made in sukuk, shares, and other comparable instruments by Islamic financial institutions (IFIs/the institutions), in accordance with Shari'ah guidelines (Ahmed et al., 2015). In addition to outlining the fundamental types of Shari'ah-compliant investment instruments, the standard also defines the key accounting methods relevant to the characteristics and working model of the institution where the investments are made, handled, and kept. A number of investment types are also described and defined in FAS 33, along with the supervision, presentation, and disclosure rules that Islamic financial institutions (IFIs) must follow (Bhuiyan et al., 2019). The FAS goes into further depth regarding financial reporting and disclosure of different investments to make sure that stakeholders have a genuine and fair understanding of financial reporting.

Similarly, FAS 34, entitled: **Financial Reporting for Sukuk-holders,** aims to establish the principles of accounting and financial reporting for assets and businesses underlying the Sukuk to ensure transparent and fair reporting to all relevant stakeholders, particularly including Sukuk-holders. As this standard prescribes the accounting principles and reporting requirements for underlying assets of a Sukuk instrument and it addresses the requirements of the financial reporting for the benefit of the Sukuk-holders and other stakeholders with regard to the assets and businesses underlying the Sukuk. It is expected that with the introduction of the same, the Sukuk market will have an improved level of transparency and financial discipline, as well as, enhance the level of compliance with Shari'ah, as described by the Accounting and Auditing Organization for Islamic Financial Institutions (AAOIFI).

GS 12 entitled: **Sukuk Governance** is a component of a broad Sukuk project that was launched by AAOIFI in 2015 to create and update the standards on Sukuk in response to changes in the industry over the last 20 years. It specifies a thorough framework for controlling Sukuk issuance, management throughout investment, and maturity / termination phases, and it offers specific guidance on Sukuk governance to Islamic Financial Institutions (IFIs) and corporates globally (Biancone & Shakhatreh, 2016). The goal of this governance standard for Sukuk is to offer extensive coverage of areas that are important for the transparent issuance of instruments and administration of investments, as well as to establish principles with the intention of harmonizing worldwide standards in this area. The standard lays forth the uniform standards for the different Sukuk management phases, including issuance, management, maturity or termination, and restructuring or rescheduling. This extensive coverage will offer a framework that is anticipated to put improved governance into action and boost confidence in Sukuk markets (Ab Majid et al., 2011).

This paper is a review of the provisions of the three AAOIFI standards (FAS 33, FAS 34 and GS 12) with a view to appreciating their major provisions for ensuring high quality financial reporting by relevant reporting entities, their expected impacts to accountability and transparency in accounting for Sukuk issuance, and areas where they need improvement as they are being complied with by various stakeholders. The rest of the presentation is in 4 parts. Part 2 is about the major/key provisions of the three standards. Part 3 highlights expected impacts of the standards to high quality financial reporting. Part 4 discusses areas for improvement on the quality of the standards when next they are reviewed, while Part 5 concludes the paper.

2.0 Major Provisions of the Standards

2.1 FAS 33: Investment in Sukuk, Shares and Similar Instruments

This standard replaces and improves Financial Accounting Standard (FAS) 25 which was created by AAOIFI in 2010.The standard makes a number of provisions on accounting for various models of Sukuk issuance, investments in different types of share and investment in other investment instruments. Some of the key provisions are:

i. The standard seeks to provide principles for the categorization, recognition, measurement, presentation, and disclosure of investments made in sukuk, shares, and other analogous instruments by Islamic financial institutions (IFIs) and other investors.
ii. The standard outlines the main categories of Shari'ah-compliant investment instruments as well as the fundamental accounting procedures in accordance with the characteristics and business model of the institutions where the investments are made, managed, and retained.
iii. The standard provides for treatment of investment as per the criteria that apply to Islamic finance institutional investors and other interested investors, regardless of whether or not the investment takes the form of equity-type securities, debt-type instruments, or other investment vehicles.

These provisions and many others are designed to ensure quality financial reports as Sukuk transactions are accounted for in the financial reports of Sukuk issuer as well as the financial report of the Sukuk-holder.

2.2 FAS 34: Financial Reporting for Sukuk-holders

The standard makes a number of provisions on quality financial reporting by Sukuk-holders, who are expected to establish and maintain the discipline of proper financial reporting that would demonstrate high level of transparency and accountability. Some of the major provisions of the standard are:

i. It prescribes the accounting principles and reporting requirements for underlying assets of a Sukuk instrument, requesting the originator to prepare or cause to prepare financing reports that would make Sukuk transactions very precise, concise and transparent.
ii. It prescribes the necessity of financial reporting for the benefit of sukuk instruments stakeholders' and their underlying assets in a manner that a transparent and fair financial information sharing takes place. It provides for how a simplified version of financial report following decision useful approach.
iii. The standard considers two primary types of sukuk instruments for the purpose of financial reporting to the Sukuk-holders. Even within the two types of summarized financial information, it allows further simplified financial reporting for non-business Sukuk, as compared to the business

Sukuk, considering the fact that the informatio n needs for the stakeholders of such Sukuk are further limited.

The highlighted provisions and all other provisions of the standard are designed to ensure quality financial reports in the best interest of Sukuk-holders who are desirous of ensuring that they obtain information about their investment in Sukuk as timely and accurately as possible for them to take informed decision on their investment.

2.3 GS 12: Sukuk Governance

The goal of this standard is to offer extensive accounting coverage of areas that are important for the transparent issuance of Islamic Finance instruments for investment and administration of the investments. The standard makes provisions on the best ways to govern Sukuk issuance and the need to fully account for the issuance in the books of both the Sukuk issuer and the Sukuk-holder. Its provisions are geared towards ensuring transparency, accountability and integrity in Sukuk Issuance, especially from the side of the issuer. Some of the key provisions are:

i. The established accounting and ethics principles that must be complied with in the production of audited financial statements and the need for harmonizing worldwide accounting and ethics standards for financial reporting by all ethical businesses globally.
ii. The standard lays forth the uniform treatments of financial and non-financial transactions for the different Sukuk management phases, including issuance, management, maturity or termination, and restructuring or rescheduling. This extensive coverage offers a framework that is expected to ensure good governance of Sukuk issuance transactions and boost confidence in Sukuk markets.
iii. The implementation of the provided governance framework will lead to an increase in Sukuk-holder and other stakeholders' trust, particularly with regard to transparency, accountability, responsibility and conformity with Shari'ah principles, and this would ensure fair and equitable treatment of all parties.

3.0 Expected Impact on Quality Financial Reporting

The three Sukuk Issuance-related AAOIFI standards are expected to impact positively on quality financial reporting by Islamic Financial Institutions (IFI) and other ethical businesses and individuals who may wish to be involved in Sukuk issuance transactions for one purpose or another. Some of the likely positive impacts of the standards are highlighted below:

3.1 FAS 33

i. **Enhanced openness and financial responsibility**: It is important to highlight that before the issuance of FASS 33 there was no obligation for financial reporting from the parties to Sukuk issuance, endangering the openness that is essential to Islamic finance operations. In order to guarantee a fair and transparent exchange of financial information and to strengthen financial discipline, the standard places a strong emphasis on financial reporting for the benefit of Sukuk-holders and other stakeholders and their underlying assets. In addition, the standard permits a more straightforward method of financial reporting for various forms of Sukuk structures and it does not mandate detailed financial statements for the same (Chan-Jane et al., 2015).
ii. **High level adherence to the Shari'ah Principles**: The release of FAS 33 is bound to enhance Sukuk-holders' financial reporting interest and commitment to timely production of financial statements. By meeting the Sukuk holders' informational needs and boosting Shari'ah compliance, the standard contributes to closing the informational gap which truncates good decision making by investors (Chen et al., 2011).

3.2 FAS 34

i. **Raising the level of adherence to the principles of Islam:** Prior to the issuance of this standard, there are no well-established practices of financial reporting in the best interest of Sukuk-holders or for accounting to the established Special Purpose Vehicles (SPVs) on the Sukuk transactions. Hence, the issuance of the standard to improves financial reporting practices for Sukuk-holders. This will help to fill the identified informational gap by making adequate financial accounting information available to the Sukuk-holders and also increase Shari'ah compliance (Chen et al., 2011).

ii. **Comparability:** This is a fundamental qualitative characteristic of FAS 34 issuance. The standard allows accounting information user to find similar Sukuk issuance information which is presented by different companies at different times as they prepare financial reports. Since the process of prepare the reports is the same as provided by the standard, the user could make comparative analysis for informed decision to be taken. Thus comparability means the ability that the information has in explaining and identifying similarities and differences between two common sets of transactions of economic phenomena (Fariba & Mehran, 2016). Comparability could happen as companies use the same accounting procedures, as emphasized by the standard, either from period to period within an entity or in a single period across entities.

iii. **Better financial discipline and transparency:** It is important to keep in mind that the stakeholders are not required to submit financial reports before the issuance of FAS 34, endangering the transparency that is essential to Islamic finance transactions. The standard places a strong emphasis on financial reporting for the benefit of Sukuk-holders and their underlying assets as a fundamental requirement, in a way that ensures an equitable and transparent exchange of financial information and enhances financial discipline. For various types of Sukuk structures, the standard permits a more straightforward method of financial reporting because it does not mandate comprehensive financial statements for the same (Chan-Jane et al., 2015).

iv. **Faithful Representation:** This is a fundamental characteristic of FAS 34. It means that all information listed in financial report must be represented faithfully. IASB (2006) stated that in order to accomplish this all information and economic phenomena listed in annual reports must be complete, accurate, neutral and free from bias and errors as prescribed in the Shari'ah law. FAS34 was issued on the premise that all of economic phenomena and transactions are changeable in due course, so the annual report must document every event and transaction carefully and accurately.

3.3 GS 12

i. **Accountability:** This is the ability to give reasons or explanations as to what one does. GS 12 provides for the institutionalization of the type of accountability that allows all the organs of governance, including management, to be accountable for their respective functions and business transactions.

ii. **Fairness and Transparency:** The standard provides for high level fairness and transparency in financial reporting and governance of the affairs of the reporting entities dealing with Sukuk issuance. Complying with the provisions of the standard would ensure that all the stakeholders are treated fairly and all affairs of the Sukuk issuers are transparent and financial and operational reporting shall be performed in a manner that nothing of significance is concealed from respective stakeholders.

iii. **Shari'ah compliance:** The standard provides for all the organs of governance, including management, to ensure that the overall operations of the Sukuk issuers, including the financial reports, are in line with the Shari'ah principles and rules.

iv. **Responsibility:** The standard influences I FIs and other corporate organizations that are interested in Sukuk issuance to reflect responsibility towards stakeholders and society/ community at large.

4.0 Suggestions for Improvement on Quality of the Standards

The three Sukuk issuance-related AAOIFI standards are expected to be subjected to occasional reviews/revisions to catch up with the advancement in economic activities and the dynamism of the accountancy profession. Again, in the spirit of total quality management (TQM) which suggests that no matter how well you are doing you should know that you can do better, this paper highlights areas where improvement could be brought about to the quality of the three standards.

4.1 FAS 33

(a) Present a return on investment (ROI) estimate to potential investors: Despite their belief in the Sukuk concept, investors nonetheless invest for financial gain. Therefore, it is always a wise choice to emphasize to them the benefits of investing in Sukuk. Although investors want to know what is in it for them, many entrepreneurs/investors choose to concentrate mostly on their company strategy, where they are sure of what return to make. The standard should have provided for need to account for estimated ROI per unit of Sukuk in issue, so that the Sukuk investors could measure whether or not their investment will be profitable. Clearly accounting for how and when Sukuk investors will receive their expected ROI is the greatest motivation for investment in Sukuk.

(b) Speak to the appropriate investors: Each investor has a certain favorite market or markets, a specific quantity of money, and a specific firm size that they are willing to invest in. Pitching to investors who are "into" the type of project the Sukuk issuer would want to finance, will provide the best results on the fundraising. Speaking with an investor who is either too big or too little for the amount of funding needed would make little sense. Issues like these need to be provided in one way or another in FAS 33.

(c) Describe the possible investment in detail: Investors frequently want to know how the Sukuk issuer plans to utilize the money they would invest for the project. Do they aim to use the invested fund for expansion or diversification of existing business or for executing new projects? Or the money is to be used for expand workforce (or payment of salaries!), conduct of marketing, advancement of technology of their products, or for paying off debt? The standard would be more encompassing and more effective if it is clear about the accounting treatment of issues like these.

(d) Have an attractive business plan: Creating a business strategy is the first stage in persuading investors to embrace the notion of Sukuk. The business strategy should include information on what Sukuk is all about or what it offers, goals Sukuk seeks to accomplish, how AAOIFI intends to accomplish those goals, possible clients, and approaches to attracting them, among other things. A business plan acts as a roadmap for how Sukuk will get off the ground and eventually improve. A detailed business strategy can also convince potential partners or investors that Sukuk are a serious investment, providing them another incentive to support Sukuk.

(e) Demonstrate to the investor the huge demand for your good or service: The board should utilize data it has obtained from census surveys, economic reports, the internet, and pertinent news stories to demonstrate that there is a real-world need for Sukuk goods and services. The amount of events that are typically catered has not decreased despite the weak economy. However, a lot of individuals would choose to go with a less expensive choice. This indicates that this company will undoubtedly have a competitive advantage over other local firms due to its low prices and high level of service.

(f) Be prepared for critical feedback: The pitches that are most effective are those in which the entrepreneur has anticipated probable questions and has adequate responses ready in advance. Investors will still have questions, designed to test their expertise and determine their ability to handle challenging conditions, no matter how in-depth the board pitch is. It will go a long way toward demonstrating to them that the board is devoted to their proposal and they won't forsake it in trying times if they have prepared their replies on time. Investors will want to know who Sukuk's rivals are, what Sukuk's competitive edge is, how qualified the staff is, and how successful the company has been thus far.

4.2 FAS 34

The following are suggestions whereby the quality of financial reporting could be improved:

(a) Organize information: The AAOIFI Board could build and define datasets that can be managed through tagging, filters and other metadata controls. Development of report guidelines, templates or formats that can be applied across organization is alleviate and smoothing the reporting process. In addition, they can use permissions to limit who can view and edit specific documents, pages or spreadsheet cells to help preserve data integrity.

(b) Collect and normalize IFIs' data: The AAOIFI Board should create flexible templates that enable contributors to submit structured and unstructured data in a consistent fashion. They should leverage a consistent collection process to normalize data, so they do not have to worry about reformatting of documents and data. More so, links between source data and all related destinations, so that when a figure changes, that change can propagate through all the destinations should be established.

(c)Collaborate across the organization: A shared yet secure financial reporting environment where users can work concurrently, not one at a time should be created and sustained. Eliminate wasted time by avoiding processes that involve checkout systems, shared drives and other workflow bottlenecks, and also clear up version control questions with a single live document with an audit trail into changes, rather than resaving and renaming files.

(d) Centralizing and integrating accounting and reporting processes: As a good and important step in making FAS instrument more efficient, many organizations invest in centralizing and updating their ERP systems. This creates a solid base for efficient documentation and reporting of financial figures. A bigger step towards a more advanced financial reporting process is centralizing and integrating accounting and reporting processes. For example, by implementing shared service centres organization wide. This increases the efficiency of financial operations, especially in a multinational context. The board should ensure employees pulls data from the source repository to eliminate errors and inconsistencies.

4.3 GS 12

Sukuk instrument represents a promising opportunity for economic growth. This system can help the government to afford significant amounts of liquidity to fulfill many large-scale projects, such as infrastructure projects. They offer an attractive alternative of funding and investment. The introduction of a new financial tool is very risky as the reaction of market players still remains unknown and uncertain. The capital market also suffers from the lack of Islamic risk management tools to hedge the risks associated with Sukuk (Ab Majid et al., 2011). In addition, governments are recommended to make much more efforts and preparations to face all potential challenges. They should place competitive Tax incentives to encourage Islamic finance industry activity, especially the future Sukuk market. They should also increase the number of Islamic financial institutions to stimulate the supply and demand. In addition, there should be precautious so as to avoid Sukuk defaults and work on developing Islamic risk hedging tools to improve Sukuk performance. It should also be innovative in Sukuk structuring and Islamic finance engineering. Finally, governments of various nations should ensure a stable political climate to attract the investment of local and foreign market players (Mohd et al., 2011).

5.0 Conclusion

The Accounting and Auditing Organization for Islamic Financial Institutions (AAOIFI) initiated several Islamic financial instruments that outline enhanced principles for the classification, recognition, measurement, presentation, and disclosure of investments made in Sukuk shares in accordance with Shari'ah guidelines. These instruments are vital towards reporting of financial statements, assets and transactions in regard to Sukuk to ensure transparent and fair reporting to all relevant stakeholders, particularly Sukuk-holders. Hence, AAOIFI management should adhere to the lay down institutional goals and vision of initiating this instrument for the furtherance of Islamic principles and financial discipline in compliance with Shari’ah.

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Audit Committee, Board Independence and Financial Reporting Quality of Listed Deposit Money Banks in Nigeria

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Abstract
The credibility of financial reporting and its relevance have been questioned in the wake of recent corporate accounting scandals. In spite of the identified functions and roles played by the audit attributes in strengthening financial reporting processes, corporate financial scandals still being perpetrated under its watchful eye. This study examines the moderating effect of board independence on the audit attributes and financial reporting quality of listed Nigerian deposit money banks from 2012 to 2021. The study was guided by a quantitative approach and correlation research design. The data was extracted from secondary sources and analyzed using OLS multiple regression analysis. The finding reveals that board independence has a significant moderating effect on the relationship between audit attributes and financial reporting quality proxy by Discretionary Loan Loss Provision. Based on the findings, the study therefore recommends the appointment of more outside directors to guarantee independence which would improve the financial reporting quality.

Keywords: *Discretionary Loan Loss Provision, Financial Reporting Quality, Audit Committee Attributes, Deposit Money Banks.*

1.0 Introduction

Provision of financial reports is one of the prime responsibilities of management which enables them give report of their stewardship. Financial reports provide the needed information to stakeholders on the operational and financial activities of the firm. It therefore, becomes imperative for users of financial reports not to disregard its quality for better resources allocation, economic and investment decisions (Aifuwa, Embele & Saidu, 2018).

Shareholders freely entrusted their resources to managers on the pledge that the self-serving managers will apply their discretionary rights suitably to achieve shareholders' wealth maximization objective (Junaidu & Saheed, 2014). The preparation and presentation of annual reports in line with pertinent laws is the responsibility of the managers of an entity in each financial year. The accounting standards guiding the preparation and presentation of financial reports and accounts accorded the managers the room to make independent valuation. However, sometimes managers capitalize on these flexibilities inherent in the standards and general principles to apply personal discretion and make some accounting valuation that may be harmful to the quality of financial statements (Mehdi, Yasser and Ahmad, 2021). This is mostly motivated either to save their career or for compensation reasons (Ekanayake, 2021). The acts altered the true financial position and misguide the interested users while making relevant decision (Aifuwa et al, 2018). The consequence resulted to the fall down of several renowned corporations such as; Enron Corporation, Tyco, Xerox and WorldCom in the U.S and Cardbury Plc and Oceanic Bank Plc in Nigeria.

Hence, several measures were taken to prevent occurrences such as establishment of the audit attributes (audit committee independence, meetings, size, financial expertise, etc). Nevertheless, the trend nervously continues. Other newly widely broadcast accounting scandals, such as the case of Wirecard (Germany) in 2020, Patisserie Holdings in 2018, British Telecommunications in 2017, Tesco and Banco Espirito (Portugal) in 2014, Wema Bank Plc in 2021 and Spring Bank (Nigeria) in 2013 were also exposed. As a result, investors lost billions of dollars and employees lost their means of livelihood/jobs, government lost taxes and generally affected the economic stability (UK Essays, 2018). The continuing reported scandals confirmed that there was a hidden cloudiness surrounding the financial reporting process that had not been resolved yet. The reasons behind the collapse of these entities included but were not limited to the involvement of their managers in manipulative accounting practices through the use of discretionary accruals concealed in the financial reports (Otunsanya & Uadiale, 2014).

Thus, the trend suggests the strengthening of the audit attributes to discharge their primary functions effectively to protect all relevant stakeholders. It is believed that audit committee independence guides professional conduct, provides avenue for neutrality and professional examination of accounting information to ascertain its truthfulness, correctness and relevance which improve it quality (Mehdi et al 2021, Aifu, Musa & Gold 2020, Kibiya, Ahmad & Amran 2016). Also, regular meeting of the audit committee assures smooth financial reporting process and regular checks of manager’s unwanted discretion (Mohammed and Dauda, 2019). In addition, audit committee composition with members that has vast financial knowledge and experience would achieve better and logical scrutiny of the information contained in the financial reports for completeness, relevance and error free report that meet stakeholders’ expectation (Chikwuani & Ugwoke, 2019).

Accordingly, the most common trend in nearly all of the studies on audit attributes and financial reporting quality were conducted on direct relationship (Bajra & Cadez 2017, Kantudu & Samaila 2015, Hussaini & Gugong 2015, Shehu 2015, Shehu 2013, Abdulkadir & Noor 2013, Shehu & Ahmad 2013, Shehu & Abubakar 2012 and Shehu 2011). Virtually, all these studies reported different and inconsistent findings. This suggests the introduction of board independence as a moderator variable, as the non-executive and independent board member are appointed base on their track record of independent mind, integrity, experience, among others (Shehu & Ahmad, 2013 and Shehu, 2013). As a result, stand better chance to help audit committee achieve their oversight monitoring functions for better financial reporting quality. Thus, the outcome of this study helps informed those parties that pay more emphasis on the financial reporting quality and in particular, the conclusion enlightens policymakers and regulators of the likely weight of financial reporting on audit committee independence, audit committee meetings, audit committee financial expertise and audit committee size.

The next part of the study develops hypotheses base on the empirical review, this is followed by the research methodology in section three; section four and five present and analyses the results obtained from the statistical analysis which is followed by the conclusions and recommendations respectively.

2. 0 Literature Review

This section covers the concepts, review of empirical studies and hypotheses development on Audit Committee Characteristics, Financial reporting quality and Board independence.

2.1 Audit Committee Characteristics and Financial Reporting Quality

2.1.1 Audit Committee Independence and Financial Reporting Quality

Considerable literatures have examined how the audit attributes (audit committee independence, meetings, financial expertise and size) impact financial reporting quality. The results of these studies show significant positive or significant negative effects of audit attributes and financial reporting quality. It is expected that functions perform by independent audit committee member would restrain manager's accounting manipulation, which will in turn enhance the quality of financial reporting, thereby shows significant negative (inverse) relationship and vice-versa (Almagtari, Farhan, Al-Homaidi & Mishra 2020, Kibiya, Ahmad & Amran 2016; Paul & Simon 2014). As a result, audit committee independence is showing to be a vital instrument available by the principals in monitoring manager's unwanted discretionary behavior. Literatures have established the vital role audit committee independence plays as a constituent of corporate governance in ensuring quality financial reporting (Akeju & Babatunde, 2017; Akinleye & Aduwo, 2019). The studies cited above established a negative and significance association between audit committee independence and discretionary accruals. The result from the study of Alzoubi (2014) who examined the effect of board characteristics sampled audit committee independence and financial reporting quality of Jordanian firms revealed that audit committee independence mitigates manager's unwanted discretion and improve financial reporting quality. This finding was countered by Bajra and Cadez (2017) who emphasize that audit committee independence does not guarantees better and quality financial reporting. Bradbury, Mak and Tan (2006) investigated the effect of board characteristics, audit committee independence and abnormal accruals. The study found that independence audit committee member is associated with less quality financial reporting. It is therefore, hypothesized as thus;

Ho_1: Audit committee independence has no significance influence on financial reporting quality.

2.1.2 Audit Committee Meetings and Financial Reporting Quality

Buallay and Al-Ajmi, (2019) studied the effect of audit committee attributes on corporate sustainability reporting in Gulf and found that regular meetings by audit committee help improve adequate sustainability reporting which improve financial reporting transparency and disclosure thereby improving it overall quality. Davidson, Goodwin-Stewart, and Kent (2005) in their study of internal governance and earning management found that as audit committee hold regular meetings within a particular financial year, earning management reduces thereby enhancing financial reporting quality. This was supported by a study of Jordanian firms by Deaa, Raneem, and Mohammad, (2019) for ten years and employed logistic regression model found a significance negative association between audit committee meetings and cosmetic accounting. It is evident by this that, regular audit committee meetings help reduces window dressing accounting and improve financial reporting quality of Jordanian firms. Ibrahim, Alkasim, Udoh and Onipe (2019) and Odjaremu and Jeroh (2019) and also reported this conclusion. In contrast, Dhaliwal, Naiker, and Navissi (2008) conducted an empirical study on audit committee and accrual quality within the period of seven years. Their empirical results after employing multiple regression technique for data analysis discovered that regular audit committee meetings reduce accrual quality within the scope of their study. In another study of Vietnam companies by Diem, and Anh, (2021) the findings confirm the result of Dhaliwal et al (2008) by establishing a positive association between audit committee meetings and financial reporting quality. In that way, it is deduced that where the audit committee meetings increase, earnings manipulation increases. Ekanayake, (2021),

Enofe, Iyafekhe and Eniola (2017), Moses, Ofurum and Egbe (2016) and Moses (2016) also support this finding. Therefore, based on the above contradicting views, it is hypothesized that:
Ho_2: Audit committee meetings has no significance influence on financial reporting quality

2.1.3 Audit Committee Size and Financial Reporting Quality

Enofe, Mgbame, Okolie and Ezedonmi (2014) studied the Audit firm characteristics and audit quality; the Nigerian experience. They selected audit committee size among the proxy of audit firm characteristics. The study reported that audit size helps in improving audit quality which invariably increases firm's financial reporting quality. Eyenubo, Mohammed and Ali (2017) in their study of audit committee effectiveness and financial reporting quality of listed companies in Nigeria stock exchange within the period of ten years. The study employed multiple regressions as the technique of data analysis found significant negative association of audit committee size and financial reporting quality, thereby portraying inverse relation with discretionary accruals. This was supported by a study of Quoted companies in the Nigerian Stock Exchange by Eze and Nkak (2020) the study utilized logistic regression model and document significant negative effect of audit committee size and financial reporting. Amina, Hassouna, Moez (2018) also document thus finding. Contrarily, Faozi, Abdulwahid, Mohd and Waleed (2020) in their study exploring Indian data and the empirical results shows that audit committee size have no significant impact on financial reporting quality. In another study by Firnanti and Karmudiandri (2020) the findings confirm the result of Faozi et al (2020), as it establishes a positive association of audit committee size and financial reporting quality. These findings were supported by the studies of Firth, Fung and Rui (2007) and Hamdan and Abdalmuttaleb (2013) who also found significant positive of audit committee size, which reduces financial reporting quality.
It is therefore, hypothesized that:
Ho_3: Audit committee size has no significance influence on financial reporting quality

2.1.4 Audit Committee Financial Expertise and Financial Reporting Quality

Several studies argued on the fact that audit committee financial expertise enhances agency relationship and reduce conflicting interest between managers and shareholders caused by manager's excessive use of discretion in financial reporting. This position has been confirmed by the studies (Adeleke 2021, Diem & Anh 2021, Eze & Nkak, 2020, Eyenubo et al 2017,). They established significant negative of audit committee financial expertise, which reduces abnormal accruals and improves financial reporting quality. More so, Xie, Wallace and Peter (2003) and Zaitul and Ilona (2019) believe that audit committee with financial experts as members reduces financial reporting timeliness.
On the other hand, another stream of studies argued to the contrary suggesting that audit committee financial expertise increases managers earning manipulation and reduces financial reporting disclosure (Mehdi et al 2021, Umobong & Ibanichuka 2017, Thomas, Marjorie & Frances 2019, Tran, Hassan & Houston 2020, Spathis 2002, Sharma & Kuang 2013). These studies supporting the likely hood that a dominant financially experts audit committee increases unwanted discretionary accruals by managers which may be a consequences of related party transaction as suggested by Saftiana, Mukhtaruddin, Putri and Ferina (2017). They stressed that potential related party transaction and or manager's influence in appointing audit committee members could jeopardize the objective of the committee, hence, reduces the quality of financial reporting. Robinson and Owens-Jackson (2009) and Piot and Janin (2007) also, affirmed this view. Based on the above contradicting arguments, the study therefore, hypothesizes that:
$Ho_{4:}$ Audit committee member's financial expertise has no significance influence on financial reporting quality.

2.2 Audit committee, board independence and financial reporting quality

Sufficient number of studies confirmed the worthiness of audit committee in exercising oversight monitoring functions in financial reporting processes (Eze & Nkak 2020; Zandi & Abdullahi 2019; Mohammed & Dauda 2019). This was supported by Bajra and Cadez (2017), Kantudu and Samaila (2015), Hussaini and Gugong (2015) who argued that existence of non-executive and independent directors on the board is a strong monitoring mechanism and it helps in improving financial reporting quality. Also, this position was supported by a study on the effect of earnings response coefficient exploring Pakistanian data, Wahid, Anjum and Shahid (2018) confirms that non-executive and independent directors serving on the board and audit committee of business corporations are preventing misuse of tendency by managers. They also, advanced that the more the outside directors on the board and other statutory committees of the firms, the better and it brings solace to each business entity. In addition, Mohammed, Yousef and Mahmoud (2020) supported this assertion. These conclusions advocate for more examinations of audit committee and financial reporting quality as the association could be indirect. This therefore, informs the necessity of exploring what is actually the extent of audit committee role while moderated by board independence on the financial reporting quality of a firm.

Relying on the above position, it can be presumed that board independence could moderate the associations between audit committee attributes and financial reporting quality. This could be informed by the independent monitoring power of the outside directors. They have an independent objective judgement for better monitoring of manager's opportunistic tendency and this improves financial reporting quality. It thereby hypothesized that:

Ho_5: Board independence has no moderating effect on audit committee attributes and financial reporting quality

Ho_6: Board independence has no moderating effect on audit committee independence and financial reporting quality

Ho_7: Board independence has no moderating effect on audit committee meetings and financial reporting quality

Ho_8: Board independence has no moderating effect on audit committee member's financial expertise and financial reporting quality

Ho_9: Board independence has no moderating effect on audit committee size and financial reporting quality.

3.0 Methodology

3.1 Design and Sample

Consistent with Shehu and Farouk (2014) and Shehu (2015) the study adopted correlation research design. The correlation design allows for testing the extent of causal association between two or more variables. In addition, the study paradigm; which is positivist with quantitative approach and quantifiable observations that require statistical experiments to test the study hypotheses.

The population for this study consists of all the fourteen Deposit Money Banks (DMBs) listed on the Nigerian Exchange Group (NGX) as at 31st December 2021 for the period of ten years (2012-2021). Further, all the listed banks with the exception of Jaiz Bank Plc which is quoted in 2017 were utilized using censored sampling technique making the adjusted population to thirteen DMBs.

3.2 Variables and Measurements

Following Baron and Kenny (1986) this study has three sets of variables: the explain, explanatory and the moderating variables.

3.2.1 Explain Variable

The Financial reporting quality is the dependent variable proxy by discretionary loan loss provision (DLLP) which was first originated as the bad debt estimation model by (McNicholas and Wilson, 1988). The discretionary loan loss provision was attained using the absolute values of the residuals advanced by Chang, Shen and Fang (2008) model. The model is suitable as the study domain is Nigerian deposit money banks, where their operations warrant the use of accruals and it allows for the required degree of freedom for estimating residuals. The absolute value of the discretionary loan loss provision derived from the residual of the model is used as the dependent variable (financial reporting quality) tested against the explanatory variables. The model is reviewed below:

$$DLLP_i = LLP_{it}/TA_{t-1} - \{\beta_0\, 1/TA_{t-1} + \beta_1 LCOi + \beta_2 BBAL_i/TA_{t-1}\} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots.. (1)$$

Where:
DLLP = Discretionary loan loss provision
LLP = Loan loss provision
LCO = Loan Charge-off
BBAL = Beginning Balance of loan loss
TAt-1 = Lagged Total Assets
β_0 = Constant

3.2.2 Explanatory Variable

The audit committee attribute is the independent variable represented by internal audit attributes (audit committee independence, meetings, financial expertise and size). The variables selected in the study covered the strategic points of loan loss provisions. The internal audit attributes of audit committee independence ensure unbiased and all-inclusive interests of stakeholders toward reliable and fair presented financial information. Also, the audit committee meeting serves as the avenue for deliberation, scrutiny and consideration of all financial information presented by managers. In addition, financial expertise of audit committee members plays a greater role of reviewing complex and technical issues presented in the financial statements. Further, audit committee size accommodates the different, cross sectional and unique expertise and experience of members in taking decision on the observations highlighted in the financial reports.

3.2.3 Moderating Variable

Board independence is the moderating variable represented the ratio of outside directors (non-executive plus independent directors) to the total number of board size. It is widely believed that higher number of non-executive and independent directors serving in the board of directors, audit and other statutory board committee ensure equitable and interest balance between the managers and other stakeholders. Therefore, in affirmation of this theoretical supported assertion, board independence was selected and used as moderator on the established relationship between the audit attributes and financial reporting quality. Table I below contains the summary of variables definitions and measurements.

Table I: Variable Measurement and Definition

Variables	Definition and Measurement	Source
Financial Reporting Quality (FRQ) (Dependent Variable)	Measured by the absolute values of Discretionary Loan Loss Provisions, derived from the residuals of Chang et al. (2008) model.	Chang et al (2008)
Board Independence (BDIND) (Moderator Variable)	The ratio of outside directors (non-executive plus independent directors) to the total number of board members (size).	Mohammed et al (2020); Wahid et al (2018)
Audit Attributes (Independent Variable)	Audit attributes was derived from the four commonly used audit committee attributes:	
Audit Committee Independence (ACI)	The ratio of outside directors (non-executive and independent directors) to the total number of audit committee members.	Diem and Anh (2021)
		Ibrahim et al (2019)
Audit Committee Meetings (ACM)	The number of meetings held by the audit committee in the year.	Adeleke (2021)
Audit Committee Member's Financial Expertise (ACFE)	The ratio of audit committee members with financial and, or accounting expertise to the total number of audit committee size.	Amina et al (2018)
Audit Committee Size (ACS)	The total number of audit committee members (size).	

Source: Author, 2023

3.3 Model Specification

The model of the study that tested the hypotheses postulated in section one above was presented below as used by Ekanayake (2021), Amina et al (2018) and Asokan, Cornelia and Iftekhar (2007).

$$FRQ_{it} = \alpha_0 + \beta_1 ACI_{it} + \beta_2 ACM_{it} + \beta_3 ACFE_{it} + \beta_4 ACS_{it} + \beta_5 BDIND_{it}\, \varepsilon_{it} \ldots\ldots \quad (2)$$

$$FRQ_{it} = \alpha_0 + \beta_1 ACI_{it} + \beta_2 ACM_{it} + \beta_3 ACFE_{itt} + \beta_4 ACS_{it} + \beta_5 BDIND_{it} + \beta_6 ACI_{it}*BDIND_{it} + \beta_7 ACM_{it}*BDIND_{it} + \beta_8 ACFE_{it}*BDIND_{it} + \beta_9 ACS*BDIND_{it} + \varepsilon_{it} \ldots\ldots \quad (3)$$

Where:

α_o= constant

$\beta_1 - \beta_6$ = coefficients of the parameters

ε= stochastic disturbance term

4.0 Results and Discussions

4.1 Descriptive Statistics

Table II: Descriptive Statistics

Variables	MEAN	STD. DEV	MIN	MAX
DLLP	0.690	0.575	0.004	1.908
ACI	0.538	0.106	0.500	0.920
ACM	4.385	0.761	3.000	6.000
ACFE	0.279	0.114	0.130	0.500
ACS	6.054	0.503	4.000	8.000
BIND	0.679	0.138	0.500	0.970

NOTE: DLLP= Discretionary Loan Loss, ACI= Audit Committee Independence, ACM= Audit Committee Meetings, ACFE= Audit Committee Member's Financial Expertise, ACS= Audit Committee Size

Source: STATA 11

The result in table II above reveals that discretionary loan loss provision (DLLP) as measurement of financial reporting quality has an average of 0.690. The average of 69% of DLLP across the listed sampled banks signifies average involvement in earnings manipulations through the period of the study. Standard deviation of 0.575 indicates average variation of the data across listed deposit money banks in Nigeria. The minimum and maximum values of discretionary loan loss provision throughout the period covered by the study are 0.004 and 1.908 respectively. The minimum values implied that a number of sampled banks were involved insignificantly in earnings manipulations throughout the study period, while the utmost manipulation of earnings by the sampled banks through the study period stood at 1.908.

Also, from Table II audit committee independence has a mean value of 0.538, with a minimum value of 0.500 and maximum values of 0.920. This shows that the average ratio of outside directors in the audit committee of the selected banks is approximately 54%. This complied with the applicable laws that require the banks to appoint at least 3 independent non-executive directors into the 6-member audit committee as required. The minimum and maximum value of 92% implies that majority of the committee members are independent non-executive directors. The standard deviation of 0.106 denotes minimal variation in the data of audit committee members across the sampled banks.

In addition, the average of frequent meetings held by the audit committee is approximately 4 times with the corresponding standard deviation of 0.761. The minimum and maximum numbers of meetings held are 3 to 6 times in a year. The minimum of 3 times implies that some banks are yet to comply with the applicable provision for holding meeting at least four times annually and may hold emergency or extra ordinary meetings when necessary.

Furthermore, from the Table II above shows on average 28% of the audit committee members have financial expertise and the committee has 50% maximum members with financial expertise. The standard deviation of 0.114 signifies close variation across the sampled banks as it clustered around the mean. Accordingly, audit committee size on average has approximately six (6) members with corresponding standard deviation of 0.503. This confirmed the small dispersion of audit committee size in the sampled banks. The minimum and maximum members are four (4) and eight (8) members respectively. The result shows compliance with the provision of Nigeria Stock Exchange 2011, CAMA

(2020) as amended for minimum of two (2) and maximum of six (6) members of equivalent representation of non-executive and independent directors (representing the board) and shareholders in the statutory audit committee.

4.2 Correlation Matrix

Correlation matrix provides insight in to the extent, strength and direction of the association between two or more variables (Gujarati, 2004). The direction of the relationship and the density of the value show the extent of the relationship as presented in table III below:

Table III: Correlation Matrix

Variables	DLLP	ACI	ACM	ACFE	ACS	BIND	ACI*BIND	ACM*BIND	ACFE*BIND	ACS*BIND
DLLP	1.000									
ACI	0.028	1.000								
ACM	-0.076	-0.043	1.000							
ACFE	0.008	-0.162	0.119	1.000						
ACS	0.063	0.009	0.006	-0.068	1.000					
BIND	0.169	0.097	-0.194	-0.127	-0.160	1.000				
ACI*BIND	0.255	0.157	-0.296	-0.216	-0.117	0.770	1.000			
ACM*BIND	0.170	0.095	0.526	-0.098	-0.095	0.544	0.645	1.000		
ACFE*BIND	0.175	0.189	-0.277	-0.230	0.157	0.683	0.926	0.596	1.000	
ACS*BIND	0.119	-0.113	-0.013	0.879	-0.139	0.236	0.249	0.213	0.195	1.000

NOTE: DLLP= Discretionary Loan Loss, ACI= Audit Committee Independence, ACM= Audit Committee Meetings, ACFE= Audit Committee Member's Financial Expertise, ACS= Audit Committee Size, BIND= Board Independence

Source: STATA 11

From Table III, it shows that audit committee independence, audit committee member's financial expertise, audit committee size and board independence are having positive association with financial reporting quality (FRQ) proxy by Discretionary loan loss provision (DLLP) as indicates by their correlation coefficient 0.028, 0.008, 0.063 and 0.169, respectively. This implies that, these variables are moving in same direction in relation to financial reporting quality (FRQ).

The relationship between the independent variables themselves, the results suggest less implication of multicollinearity, as such multicollinearity is not a problem to the study estimation model (Gujarati, 2004). However, this is confirmed by the variance inflation factor (VIF) test carried out confirmed the absence of multicollinearity as the all the individual mean of VIF is less than 4 (Ghasemi & Zahediasi, 2012).

4.3 Estimation Result

The estimation result of the regression model (Models II and III) which test hypotheses is presented and discuss below:

Table IV: Regression Model Results

	MODEL II			MODEL III		
Variables	**Co-efficients**	**Z-Values**	**P-values**	**Co-efficicents**	**t-Values**	**P-Values**
Constant	-2.441	-3.670	0.000***	2.618	0.460	0.649
ACI	-0.752	-0.570	0.569	8.427	3.480	0.001**
ACM	0.056	0.760	0.450	1.277	2.430	0.017*
ACFE	2.497	4.380	0.000***	0.177	0.050	0.963
ACS	0.339	4.440	0.000***	4.844	0.820	0.414
BIND				44.443	1.770	0.079*
ACI*BIND				-106.943	-2.110	0.037*
ACM*BIND				-1.945	-2.370	0.019*
ACFE*BIND				-1.945	-2.160	0.033*
ACS*BIND				2.505	2.390	0.180
R-square				0.348		0.321
Mean VIF			1.050			
F-Statistics		60.720	0.000***		6.310	0.000***
Het-test		8.250	0.004**			
Hausman		1.220	0.874			
LM Test		46.400	0.000***			

NOTE: DLLP= Discretionary Loan Loss, ACI= Audit Committee Independence, ACM= Audit Committee Meetings, ACFE= Audit Committee Member's Financial Expertise, ACS= Audit Committee Size, BIND= Board Independence; *p < 0.1, **p < 0.05, ***p < 0.001

Source: STATA 11

The Table IV presents the results of the robust ordinary least square regression (OLS) for both direct and interaction effect model. As presented in table IV above it shows a cumulative coefficient of determination (R-Square) of 0.348 and Wald Chi2 is significant at 1% (P<0.01), signifying the overall model is fit in explaining the empirical association between audit committee attributes and financial reporting quality (FRQ) in Model I. Thus, the model suggests that 34.8% of the total variant in FRQ is explained by combinations of the independent variables selected in the study. For Model II it demonstrates that the R-Square improves from 32.1% as reflected in Table IV.

Moreover, to authenticate the accuracy of panel data regression estimate, the study check for multicollinearity using tolerance values (TV) and variance inflation factor (VIF). The result from the test indicated that all the tolerance values (VIF) are consistently below 1 and variance inflation factor (VIF) consistently below 10. This result from the diagnostic test signifies that multicollinearity will not be a predicament to the inferences of the regression result. On the other hand, the result of the heteroscedasticity test for model I indicated that the panel elements are not homoscedastic, meanwhile they are heteroscedastic, this can be deduced from the p-value of 0.000 in model I as can be seen in table IV above. The study went ahead to conduct a Hausman specification test. The results of the Hausman specification test as presented in table IV above indicated a chi2-value of 1.220 with a significance p-value of 0.874. This informs the preference of the random effect model (RE) over the fixed effect (FE) model as presented above.

4.3 Multi-faceted Models

As presented in Table IV audit committee independence (ACI) is negative and significantly linked to discretionary loan loss provision (β -0.752, P< 0.569). The results imply that the predicted value of DLLP decrease with an increase in those audit committee independence (ACI). Thus; signified improved quality of reported earnings. Conversely, audit committee meeting (ACM) is positively and statistically significant to DLLP (β 0.0562, P< 0.450). This implies that an increase in the number of meetings held by the statutory audit committee does not guarantee quality earnings significantly by the deposit money banks listed in Nigeria. On the other hand, audit committee member's financial expertise (ACFE) was found to have significant positive impact on the DLLP of deposit money banks (β 2.497; P< 0.000). This indicated that higher number of members with financial expertise within the mix of audit committee members would not influence or improve the quality of earnings, but increase the managers tendency to manipulate DLLP, thereby indicating lesser quality financial reporting. Furthermore, the results reveal that audit committee size (ACS) has a positive and significant influence on the financial reporting quality (DLLP) of listed deposit money in Nigeria (β 0.339, P <0.000). This implies that the quality of reported earnings of deposit money banks in Nigeria is not influenced by the size of the banks audit committee.

As mentioned earlier, the relationship between audit attribute and financial reporting quality is still mixed and inconclusive. In regard, the study postulates that this link can be moderated by the intensity of board independence. In view of this, Table IV demonstrates that the overall R-square of model III stood at 32.1% as a result of the interface effect. This signifies that board independence moderates the link between the audit attribute and financial reporting quality of deposit money banks listed in Nigeria. The result therefore, failed to support the Hypothesis five (H_{05}) postulated in section one.

The regression estimates in table IV shows that the contact effect of board independent on the relationship between audit committee independent and discretionary loan loss provision (DLLP) is negative and statistically significant (β-106.943, P <0.037) and positively linked with financial reporting quality (FRQ) of the DMBs. This suggests that the positive and significant effect of audit committee independence in encouraging earning management in model I was overturned in model III. This finding established that the presence of board independent moderate the link amid the audit committee independence and financial reporting quality proxied by discretionary loan loss provision (DLLP). This suggests an inverse link of audit committee independence with manipulative tendencies of manager to distort earnings, thereby improving the financial reporting quality. The result is in stripe with prior expectation that the more the independent of the audit committee is, the less managerial opportunistic behavior to manipulate earnings. Also, the results sustain the agency theory proposition.

Thus, Hypothesis six (H_{06}) postulated in section one is not supported. This finding agreed with the position of Diem and Anh (2021), Almaqtari et al (2020), Amina et al (2018), Bajra and Cadez (2017) and Kibiya et al (2016). However, it contradicts that of Mohammed and Dauda (2019), Akinyele and Aduwo (2019) and Eyenubo et al (2017).

The regression estimates in Table IV also, reveals that the direct effect of audit committee meetings on DLLP was found to be insignificant and positive while it was found to be negative and insignificant with

FRQ of DMBs. However, with the introduction of board independent as moderating variable, the direction of the result completely changes. The regression results of the interaction effect model indicated that the association of audit committee meetings with DLLP was negative, meanwhile, it is positively connected with financial reporting quality significantly at 5% (-1.945, P<0.05). This suggests that board independence moderates the connection between audit committee meetings and financial reporting quality of the DMBs. This may be owing to reality that audit committee meetings could control information flow, take advantage of diverse experience and professionalism of the committee members and regular brainstorming as a result of regular meetings. The result confirmed the compliance of the sampled banks with the requirement of the law for holding regular meetings with relevant stakeholders for better financial reporting quality. This finding coincided with that of Odjaremu and Jeroh (2019), Amina et al (2018) and Sharma and Kung (2013). However, it contradicts the results of Moses et al (2016) and Moses (2016). Therefore, the study found enough evidence for rejecting hypothesis seven (H_{07}).

In addition, the regression results presented in Table IV shows the moderating effect of board independence on the affiliation between audit committee member's financial expertise and DLLP is negative and significant (-1.945, P>0.05) as against the direct relationship where audit committee member's financial expertise has positive and significant influence on financial reporting quality in model II. The result of the direct relationship in model II implies that appointment of more outside directors with financial expertise into the audit committee has no significant influence on financial reporting quality. Also, the model II result contradicts theoretical assumption that more numbers of outside directors with financial expertise enhance financial reporting quality. But the moderator was able to change the direction of the result when interacted with board independence. The moderation result may not be surprising considering the fact that financial expert members can handle technical and complex financial information, resolves all observations and reject manipulation of financial information, specifically loan loss provision. The hypothesis eight (H_{O8}) is therefore not supported. The finding supports the position of Adeleke (2021), Diem and Ahn (2021) and Eze and Nkak (2020). However, it contradicts the results of Mehdi et al (2021), Tran et al (2020), Thomas et al (2019) and Umobong and Ibanichuka (2017).

Furthermore, the regression results in Table IV support the argument that board independence can strengthen or weaken the affiliation between the audit committee size and financial reporting quality. The results show the moderating effect is positive and significant to financial reporting quality (2.505, P>0.180). This result confirmed the results in model I and indicated that board independence does not moderate the nexus between audit committee size and financial reporting quality. The result implies that any increase in number of audit committee size, will not significantly enhance financial reporting quality. Thus, hypothesis nine (H_{09}) postulated in chapter one is supported and is in line with that of Faozi et al (2020) and Firnanti and Karmudiandri (2020) and go against Amina et al (2018), Eyenubo et al (2017) and Enofe et al (2014).

Accordingly, the conclusions of this study have ramifications in terms of practice, theory, and regulation. The contributions to literature are intended to benefit executive, regulators (SEC), policymakers (CBN) and other researchers, as indicated by these implications. One of the most imperative policy implications is the variables considered propose that the CBN should continue to urge banks to fully implement corporate governance regulations. This, on the other hand, allows for effective and efficient monitoring of financial reporting, particularly quality of reported earnings of Nigeria's deposit money banks; particularly those with a well compose audit committee.

In Nigeria, most publicly traded companies are required to compose audit committee, most notably the DMBs with non-executive and independent directors as members. Based on this, policymakers; Securities and Exchange Commission should apply the findings of this study to other sectors or persuade parallel efforts in other sectors, particularly non-financial service institutions, as this will be beneficial in improving the reliability and transparency of reported earnings in order to portray the firms' true economic reality.

5.0 Conclusion and Recommendations

In line with the findings of the study, it is concluded that board independence has moderating role on the nexus between audit committee attributes and financial reporting quality of deposit money banks in Nigeria. Consequently, in line with the findings and conclusion herein, the study recommends as follows:

i. To the board of director, the appointment of more non-executive and independent directors into the audit committee. This guarantees their independence to discharge their oversight functions effectively. The banks will on implementation of this recommendation gain from the empirical findings of this study that appointment of every additional outside director improves the quality of financial reporting.
ii. That SEC and CBN should enforce the strict implementation of the minimum number of audit committee meetings and sanctions the erring banks and the board of directors should certify that audit committee hold meetings regularly as provided by code of corporate governance, 2018.
iii. That CBN should strictly enforce mandatorily appointment of outside directors with financial expertise into the board and statutory audit committee of Nigerian banks. This as per the provision of the revised CAMA (2020) mandating the corporations to only appoint members of audit committee with financial expertise, of which one of them must be a member of any recognized Nigerian certified accounting body.
iv. The regulatory bodies of SEC and CBN to review the requirement which will allow the banks to increase the number of statutory audit committee membership from six (6) to ten (10) or any larger flexible number. This is to allow the variance among the banks who wish to appoint more in consideration of the needs or volume of transactions.

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E-Procurement as a Panacea to Public Procurement Challenges in Nigeria - A Theoretical Exposition

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Abstract
Every project must meet the cost, time, and scope expectations of key stakeholders while maintaining acceptable quality standards. However, these expectations are not satisfied in all circumstances. In Nigeria, for example, despite massive investments in infrastructure, only minimal advantages have been realised. Some argue that burdensome procurement methods have an impact on supply and the extent to which these expectations are met. Previous research recognised and classified procurement problems as financial, technological, administrative, and legal. According to existing research, a greater understanding of why this expectation is not reached guarantees that proper contractual arrangements are established and a competent management team is allocated, boosting the likelihood of project success. While conflict of interest, bid shopping, collusive tendering, bid cutting, corruption, favouritism, fraud, and supplier delays are all potential barriers to project completion, this paper contends that the use of an e-procurement system could help to reduce supply-related challenges encountered during project execution.

Key words: *Contract, e-procurement, Project, Supplier, Supply chaine*

1.0 Introduction

T Every project must satisfy the cost, schedule, and scope expectations of critical stakeholders, within acceptable quality standards. The fulfilment of these criteria has been associated with procurement practices (Naoum & Egbu, 2015). Good procurement management is a determinant of project success (Alias et al., 2014). The importance of procurement in project execution has been highlighted (Baily et al., 2022). However, it is not in all cases that these expectations are met. There are suggestions that the procurement processes, especially in developing countries have failed to provide the essential infrastructure needed for economic development (Ogunsanya et al., 2016). Earlier studies note adversarial relationship is encouraged by traditional procurement methods (Erik Eriksson & Laan, 2007). Unethical practices are prevalent in traditional procurement (Celentani & Ganuza, 2002; Hill et al., 2009; Schwartz, 2004), as well as data accuracy issues, and stakeholder management concerns (Kafile & Fore, 2018) are challenges in the procurement process.

Nigeria is not immune from these procurement challenges such that despite the huge resources committed to infrastructure projects, limited benefits have been obtained. Therefore, authors such as Ekung et al. (2015) have recommended improvements in procurement management in Nigeria. With the introduction of digitalized systems, such as e-procurement, the procurement process has been reformed to improve transparency, accountability, expedited deliveries, and value for money (Neupane et al., 2014). Electronic procurement or e-procurement (EP) describes the process of driving the sourcing of goods and services using information and communications technology (de Boer et al., 2002; Presutti, 2003; van Weele, 2002). The improvement of traditional procurement processes through e-procurement has been acknowledged (Chan & Owusu, 2022). This paper highlights the challenges of public procurement in Nigeria and explains why these can be addressed using e-procurement. This has become necessary because the full impact of e-procurement has not been realized due to its slow adoption (Davila et al., 2003).

2.0 Literature Review

An insight from the literature is that the term procurement is used to describe all activities undertaken in the purchase of materials, products, or services in a firm (Lindstrom, 2014; Tassabehji & Moorhouse, 2008). It ensures the execution of a project that satisfies the needs of the project owner, by adhering to specified criteria. It is an agreement that defines contractual processes, funding patterns, risk allocation, work organisation, and the interaction between project partners.

Dubois and Gadde (2000) estimate that procured materials account for roughly 70% to 80% of the entire project cost, Nisssen (2007) notes that procured components, materials, and services account for more than half of the entire project cost. An efficient procurement system, therefore, is critical to the management of projects (Depaoli et al., 2013). Baily et al. (2022) note that procurement is necessary because of its contribution to value addition, and strategic alignment, in addition to being a core driver of competitive advantage because it provides an organisation with a continual flow of materials and services that meet its requirements; assures supply continuity; maximises value for every dollar spent through ethical, diverse, and sustainable means; forges strong collaborative links with other departments, and provides information and assistance as needed to promote the overall effectiveness of the organisation. Therefore, the main objective of procurement is to conduct procurement-related tasks in a way that ensures the goods and services acquired are of the proper quality, obtained from the proper source, priced reasonably, and capable of being delivered in the proper numbers, at the proper location, at the proper time (Benslimane et al., 2005).

Although procurement has traditionally focused on delivering value and ensuring supply consistency and continuity, it is now expected to expand its influence and add value in areas such as sustainability, diversity, digitalization, risk management, corporate strategy alignment, and innovation, in addition to delivering sourcing cost savings (Baily et al., 2022). An effective procurement process, according to Kafile and Fore (2018) must provide accountability, transparency, value for money, competition, and the ethics of procuring items and services. A procurement cycle (Figure 1) aligns with the position of Caldwell et al. (2009) who opine that procurement activities are guided by the principles of transparency, accountability, as well as efficiency and cost-effectiveness. Transparency ensures that the procurement process is fair and well-documented. Additionally, the principle of accountability requires a responsibility to financiers who may have expectations about how their funds are used. The principle of efficiency and cost-effectiveness is concerned with achieving the right price, right time, right quantity, quality services, and delivery to the required places and from the most cost-effective source. Without a doubt, this reliance on markets for the acquisition of commodities could lead to conflict of interest and coordination problems in the management of projects.

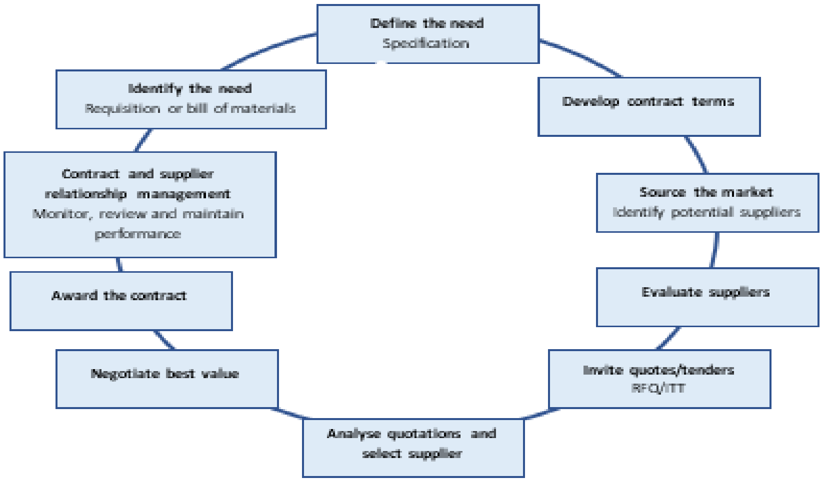

Figure I: Procurement Cycle
Source: Baily et al. (2022)

2.1 Public Procurement

Public procurement is concerned with the purchase of products and services by the government or public sector organisations to enable them to perform their tasks and deliver critical services effectively (Uyarra, Edler, Garcia-Estevez, Georghiou, & Yeow, 2014). It is the process of acquisition of goods, civil works and services ranging from identification of needs, selection and solicitation of sources, preparation and awarding of contracts, to all phases of contract administration from the completion of the services' contract to the completion of the asset's useful life (UNDP, 2010). It is estimated that public procurement may account for nearly one-third of government spending (OECD, 2019), and around 12% of global GDP in 2018 (Bosio et al., 2022). Due to constrained budgets, a lack of predictability in demand, high public expectations, and performance targets, public corporations must strategically and effectively manage their limited resources (Meehan et al., 2017).

Based on the view of Benslimane et al. (2005) about the objective of procurement, it could be concluded that ensuring an effective public procurement system is critical to governance reforms, as increasing value for money, improving public service performance, and growing the private sector are the foundations of effective and successful governance (IBRD/The World Bank, 2012). This aligns with Bodunrin (2016) who notes that the key principles that underpin public procurement are value for money (VFM), ethics, and competition. Value for money (VFM) is about achieving the desired procurement result at the best price possible - not necessarily the lowest price. The Asian Development Bank (2021) notes that VFM is the economical, effective, and efficient use of resources, which necessitates the assessment of risks, non-price features, and/or total cost of ownership, if necessary, along with an evaluation of pertinent costs and benefits. It is enhanced by efficiency, quality, and flexibility and underpinned by transparency and fairness. According to Qiao and Cummings (2003), in order to achieve VFM, it may be necessary to consider factors such as technical capability, key personnel qualifications, and past performance records other than the lowest price when awarding contracts to potential suppliers.

2.2 Challenges of Public Procurement

Every public procurement system strives for increased efficiency (Trepte, 2004) in addition to a better value for money in procured materials or services (Arrowsmith et al., 2000). However, there are observed inefficiencies in procurement implementation in many countries (Mawenya, 2008). Musanzikwa (2013) notes that implementation delays, corruption, inadequate market enquiry, political interference, and incompetence are some of the challenges to public procurement. According to Manu et al (2015, political interference and nepotism, as well as corruption and conflict of interest are among the top challenges of procurement. While Santoso and Bourpanus (2019) believe that the challenges with public procurement revolve around issues of transparency, justice, and accountability, Owusu et al. (2021) believe that administrative or management irregularities, as well as procedural, compliance, and contractual irregularities also affect the procurement process.

While it is inferable from Ndercaj and Ringwald (2014) that challenges encountered in procurement could be a result of legislation and regulatory framework, institutional, operational and management issues, or issues of control and integrity, the topmost challenges are deeply rooted in issues of corruption. Corruption impacts the level of transparency, integrity, and accountability, and these are among the most serious impediments to the effectiveness of public infrastructure procurement (Manu et al., 2018). Burguet and Che (2004) identify anti-competitive practises and ineffective competition policies as procurement challenges. Because of widespread fraud and corruption, these factors have to a failure to achieve good value for money and economic growth (Ware et al., 2007).

These fraud incidents typically occur during the source selection and contract administration phases and involve internal control activities, monitoring, and control environment components (Rendon & Rendon, 2016). The implication of these is far-reaching as they impact governments’ ability to perform their functions and deliver key services. Ndercaj and Ringwald (2014) note that the failure of a government to achieve good value for money and economic growth could be caused by an incomprehensive regulatory rule or an inefficient process of contract administration.

Bodunrin (2016) submits that although illegal activities like collusion, bid-rigging, fraud, and corruption may result in artificially inflated prices or compromise specifications, which could impact the procurement process, an effective public procurement could be achieved by redesigning the process to strengthen its integrity and increase its transparency. There are indications that efforts aimed at tackling these inefficiencies such as the challenges of fraudulent practices, lack of transparency, low efficiency, poor accountability, and poor value for the money (Achanya & Dickson, 2020) have not yielded desired results (Bawole & Adjei-Bamfo, 2020; Dza et al., 2013). Rendon and Rendon (2016) suggested that procurement improvement efforts should place emphasise that effective internal controls should be used to combat procurement fraud. Williams and Hardy (2007) observe that procurement practices could be strengthened by establishing a wide-ranging legal framework, strict compliance monitoring, adequate risk analysis, benchmarking against best practices, and increased transparency. Achanya and Dickson (2020) suggest, for example, the use of econometric tools to aid in the identification of suspicious bidding patterns, as well as the strengthening of institutional capacity to detect and prevent procurement fraud.

1.0 Methodology

The methodology used in this study included a review of available literature and an evaluation of existing publications or writings on procurement and its practices. The majority of these materials were academic publications. The topics of interest were procurement, public procurement, and e-procurement, which were chosen based on their contributions to public procurement in Nigeria.

4.0 Results and Discussions

4.1 E-Procurement: Panacea to Procurement Challenges

Funders, donors, and financiers typically care about obstacles to the wise use of allocated funds and may withhold financing if they cannot get a satisfactory return on their investment. The design, development, and implementation of digitalized processes, such as an e-procurement system were motivated by the need to increase trust and transparency, accountability, quicker delivery, and value for money, among other determining criteria (Neupane et al., 2014). Electronic procurement (or e-procurement) refers to the process of sourcing goods and services through the use of information and communications technology (Presutti, 2003).

Chan and Owusu (2022) note that the operational model of traditional procurement has been revolutionized by e-procurement, enabling the creation, advancement, and application of more clever solutions for managing and controlling infrastructure-related procurement activities (Chan & Owusu, 2022). The adoption of e-procurement has notable advantages categorizable into strategic, operational, and opportunity advantages (Attaran, 2001). Davila et al. (2003) for instance note that e-procurement adoption allows for real-time control of internal spending, a decentralised system that grants a level of autonomy to the purchasing units, as well as a reduction and restructuring of the supplier base. There are also suggestions that the adoption of e-procurement leads to utmost transparency in terms of contractual conditions, time and terms of each order, order tracking and tracing, internally and in relationships with suppliers (Puschmann & Alt, 2005).

The use of e-procurement platforms enables better inventory management (Chang et al., 2013). Better inventory management results in reduced costs. This aligns with the observation that e-procurement offers businesses the opportunity to more correctly and efficiently aggregate their corporate expenditure across all purchased product categories, giving them buying power advantage. The adoption of e-procurement technology according to Presutti (2003) has enabled organisations to reduce both transaction and material costs, thereby increasing the value for money. There are also observations of increase in efficiencies and competitive advantage of purchasing (Carter et al., 2000) as well as reduction of administrative costs in the procurement process and improved audit trails (Rajkumar, 2001).

Piera et al. (2014) claim that deep rationalizations in supplier procurement made feasible by digital technology can result in average savings of 8–12% on overall purchases. Again, the advantage of implementing elements of e-commerce, such as e-procurement, is that it reduces consumer penalties and boosts financial assets due to faster processes that are achieved by reducing non-value-added costs (Piera et al., 2014).

3.0 Conclusion and Recommendations

There is enough evidence in the literature to conclude that public procurement, especially in developing countries, has contributed as it should to national development. Therefore, there is a compelling business need to reform the traditional public procurement system and introduce implement alternatives. The e-procurement system, based on reviewed works is capable of bringing about cost reductions, increase in value, better inventory management, improved transparency, minimised cost, faster processing time and increased efficiency.

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Board Attributes and Earnings Quality of Listed Deposit Money Banks in Nigeria: The Mediating Effect of Accounting Conservatism

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Abstract
This study examined the mediating effect of accounting conservatism on the relationship between board attributes and earnings quality of listed deposit money banks in Nigeria. Data were extracted from annual reports and accounts of the thirteen (13) sampled deposit money banks for the period of 12 years, that is, 2009 to 2020. Data were analyzed by means of descriptive statistics to provide summary statistics for the variables and Pearson correlation was also carried out. Structural equation modelling was used to estimates the relationship. This study found that female director and board size have insignificant positive influence on earnings quality and board independence and board expertise have positive and significant effect on earnings quality, while board ownership and board meeting have significant negative effect on earnings quality of sampled DMBs. This study also found that board independence, board meeting and board expertise have significant positive effect on accounting conservatism, whereas female directors are insignificantly positive. In addition, board size and board ownership have insignificant negative influence on accounting conservatism. However, accounting conservatism fails to mediate the relationship between board attributes and earnings quality of DMBs. This study recommends that the board of listed Deposit Money Banks should consider the inclusion of more well experienced female on board in order to make more effective and confidence in enhancing accounting conservatism and high quality earnings. Further, the regulators should set-up a policy that will limit the percentage of shares held by directors. This is in order not to give them too much powers to override the interest of other shareholders and exert opportunistic behaviour.

Keywords: *Board Attributes, Accounting Conservatism, Earnings Quality*

1.0 Introduction

A firm with a sound board of directors is expected to present information in an accurate, relevant and timely manner, so that such information conveyed, especially on earnings will be trusted by stakeholders. Earnings quality is the good earnings information reported in financial statements. Therefore, good earnings quality should be able to help stakeholders to make economic decision and assess the firm's financial condition Thus, for earnings quality to be useful by the stakeholders, it should be presented faithfully and free from bias. Nevertheless, reporting good earnings quality requires a well-structured and implemented board of directors. The effectiveness of the board of directors in the financial reporting process is a major source of confidence building in the capital market. Holtz and Sarlo-Neto (2018) asserted that board is responsible for monitoring and ensuring managers to report good quality earnings. This can be done by a firm with effective board of directors.

On the other hand, accounting conservatism is one of the important attribute of reporting good quality financial statement that is often used by stakeholders to benchmark the earnings quality of the firm. Similarly, accounting conservatism contributes to the improvement of the quality of earnings through an effective board of directors (Jaimuk, 2020). Thus, a sound board of directors brings about a comprehensive vision of accounting conservatism and this is associated with reported higher quality earnings. Similarly, managers provide information through financial statements which apply a conservatism accounting policy that results in higher quality earnings (Asri & Habbe, 2017). This is because the principle prevents them from exaggerating earnings and helps the users of financial statements by presenting earnings that are not overstated.

However, evidence from empirical findings show that an ineffective board of directors give managers chance to exercise opportunistic behavior at the expense of shareholders' wealth. As such, most firms with weak board of directors experienced corporate failure compare to those with sound board (Adegbie & Fofah, 2016). Firms sometimes carry out financial practices that are unethical to achieve targets, thereby manipulating their earnings numbers (Egbunike & Odum, 2018).

Moreover, the challenges and failure of corporate entities in Nigeria resulted from weak board of directors and abuse of power by the management. Company executives enjoy an atmosphere of lack of checks and balances in the system, thereby making it easy for them to engage in gross misconduct, since shareholders and investors are not included in the management structure (Enache & Garcia-Meca, 2019). The heavy reliance placed on accounting numbers creates powerful incentives for managers to manipulate earnings for their own advantage (Aifuwa, & Embele, 2019).

Furthermore, the unethical accounting practices that persistently amongst firms in Nigeria revealed the collapse of some corporations as a results of unethical accounting practices. Particularly in banking sector, the recent corporate scandals stress the urgent need of accounting standards so as to have reliable accounting information. The reports on the collapsed of Skye Bank Plc in 2018 identified various malpractices such as manipulation of accounting records to present false profits, fraudulent, false ratios, unlawful loan and credit facilities (Eseoghene, 2018). This incidence has affected the credibility of the quality of earnings reported in financial statements arising from the threat of unethical accounting practice around the banking sector. Consequently, there will be continuous rise of doubt in the minds of investors, shareholders and other stakeholders on the credibility of the quality of earnings reported by the banks. This raises the question of whether board attributes contribute in improving the quality of earnings reported.

However, most of the studies in developed countries focused on linking board attributes, firm value and earnings quality while others focused on board attributes, ownership structure, accounting conservatism and earnings management evidence in the works of Zulfikaraq et al. (2020). But, studies conducted in Nigeria considered board attributes and earnings quality, board attributes and accounting conservatism, as well as accounting conservatism and earnings quality (Egbunike and Odum, 2018; Adegbie et al., 2019). Therefore, there is limited study that combine all the variables. This study contribute to the existing body of literature by integrating the variables on the effect of board attributes on earnings quality of listed Deposit Money Banks (DMBs) in Nigeria using accounting conservatism as a mediator.

2.0 Literature Review

This section covers the concepts of earnings quality, board attributes and accounting conservatism. It also captures the empirical studies on board attributes and earnings quality, board attributes and accounting conservatism as well as board attributes, accounting conservatism and earnings quality.

2.1 The Concept of Earnings Quality

In accounting context, the term "earnings" is the excess of revenue over expenses. Latif (2018) seen earnings quality as an honest expression of the reported profit and provides a real picture of the performance of a firm as well as its ability to survive in the future. According to Hyejeong and Su-In (2018), earnings quality indicates the real profitability of firms without distortion from earnings management. Similarly, Roya, Kamran and Ghadiri (2012) see earnings quality as the ability of reported earnings to reflect the firm's true earnings, as well as the usefulness of reported earnings to predict future earnings.

2.2 The Concept of Board Attributes

The board of directors is the highest executive body of a firm elected by the firm's shareholders to represent them within the framework of the relevant legislation, the articles of association and all other firm's laws and policies (Affes & Sardouk, 2016). The primary role of the board is that of trusteeship to protect and enhance shareholders' value through strategic supervision. As representatives, they will ensure that the firm has clear goals relating to shareholders' value and its growth. They provide direction and control to ensure that the firm is managed in a manner that fulfills stakeholders' aspirations and societal expectations (Kumar & Singh, 2013). However, board attributes is related to the adequate representation of female on board, board size, board independence, board ownership, board meeting and board expertise, as used in this study.

2.3 The Concept of Accounting Conservatism

Lawal and Shehu (2016) considered conservatism as reporting the highest values of liabilities and costs and reporting the lowest values of assets and revenues. Similarly, Wolk et al. (2013) defined accounting conservatism as a means of choosing between accepted accounting practices that may lead to the underestimation of the assessment of assets or the overestimation of the assessment of debts. Accounting conservatism may serve to reduce information asymmetry between managers and shareholders thereby lessen in an agency costs and resulting in better protecting shareholders as well as increasing the quality of reported earnings (Lara et al, 2012).

2.4 Board Attributes and Earnings Quality

The work of Haruna et al. (2018) examined the effect of board characteristics on the earnings quality of conglomerate firms in Nigeria. Data were extracted from the audited accounts of firms using secondary source of data from the period 2006 to 2015. Regression was adopted from the modified Jones (1996) model in deterring the quality of earnings. The study employed women director, foreign director, board size and independence director as the proxies of board characteristics. The findings reveal that independence director and women director had a significant negative impact on earnings quality but board size was insignificant and negative. Foreign director had insignificant positive effect on earnings quality. However, there was clear absence of tests relating to normality test, multi-colinearity test and heteroskedasticity test for relying on the validity of data. Aifuwa and Embele (2019) found that female directors has insignificant positive effect on earnings quality.

Furthermore, Egbunike and Odum (2018) explored the effect of board leadership structure on the earnings quality of manufacturing firms in Nigeria. Data were extracted from the audited account of forty eight manufacturing firms for the period 2011 to 2016. The Pool OLS regression model was employed in analyzing the data extracted. Board size, board composition, chief executive officer duality and non-executive director were employed as independent variables. The dependent variables was earnings quality. The results indicated that board size and board composition had a significant positive impact on earnings quality. Firm size as a control variable has insignificant impact on the earnings quality. However, there was no justification of measuring the earnings quality and absence of tests relating to normality, multi-colinearity as well as heteroskedasticity in the methodology.

Aifuwa and Embele (2019) investigated the influence of board characteristics and the financial reporting quality of Nigerian firms. Board independence, board diversity, and board expertise were used as proxies of board characteristics. While discretional accrual represented financial reporting quality. Secondary data were obtained from the annual reports and account of forty six selected firms for the period 2011 to 2017. The Generalized Linear Model Regression was adopted for the data analysis. The results revealed that board expertise had a significant positive effect on financial reporting quality. On the other hand, board independence and board diversity were insignificantly related to financial reporting quality.

The study of Adegbie et al. (2019) centered on the impact of corporate governance on the earnings quality of financial and non-financial sectors in Nigeria. Data were extracted from the published annual reports and accounts of thirty selected firms for the period 2003 to 2017. Board size, board independence, board meeting and audit committee meeting were considered as proxies of corporate governance. The regression results show that board size and board independence had a significant positive effect on earnings quality. But board meetings had a significant negative effect on earnings quality. However, the study failed to disclose the measurements of the independent variables. Also, there is no measurement of earnings quality that is peculiar to financial sectors. Given the mixed results of previous studies, the proposed hypothesis is:
Ho_1: Board attributes has no significant effects on earnings quality of the listed DMBs in Nigeria

2.5 Board Attributes and Accenting Conservatism

Enache and Garcia-Meca (2019) investigated the impact of board composition on accounting conservatism in the US. Board size, board expertise and chief executive officer are used as proxies of board composition. Data were obtained from the annual reports and account of the listed firms for the period 2005 to 2013. The multiple regression results showed that board size and board expertise had a significant negative effect on accounting conservatism.

Research by Nguyen, Duong et al. (2019) in London assessed accounting conservatism influence on the banking expertise of boards of directors. Data were extracted through secondary source from the annual reports and account of the firms for the period 2005 to 2012. The OLS regression technique was adopted by the study. They found that accounting conservatism was negatively correlated with banking expertise on the board of directors. For control variables, leverage had a positive impact on accounting conservatism. The reason may be that highly levered firms demand for high conservatism because they face high conflicts of interest between shareholders and debt holders. In addition, firm size had a significant negative effect on conservatism. However, large firms may need less accounting conservatism because they may have a richer information environment. Liu (2019) established the effect of ownership structure on conditional and unconditional conservatism in China using multiple regression. Secondary data were extracted from the annual reports and account of firms covered the period 2005 to 2014. The result showed that managerial ownership had a significant negative effect on both conditional and unconditional conservatism.

El-habashy (2019) examined the impact of corporate governance attributes on accounting conservatism in Egypt. The corporate governance mechanism comprised board independence, board size, institutional

ownership, ownership concentration, managerial ownership and audit quality. Data were extracted from the annual reports and account of forty firms for the period 2009 to 2014. Panel regression technique was employed for data analysis. The results revealed that board independence had a significant positive effect on accounting conservatism. Board size had an insignificant negative effect on accounting conservatism. Also, managerial ownership revealed an insignificant positive effect on conservative accounting. For the control variables, firm size and leverage had an insignificant positive effect on accounting conservatism. Therefore, the proposed hypotheses is as follow:
Ho_2: Board attributes has no significant effects on accounting conservatism of the listed DMBs in Nigeria.

2.6 Board Attributes, Accounting Conservatism and Earnings Quality
Laela et al. (2019) studied corporate governance index, earnings quality and firm value: empirical study on Islamic stock using structural equation model-partial least square method. The earnings quality was used as mediating variables. 58 firms in Indonesia were selected as sampled for the period 2008 to 2015. The study found that corporate governance affects directly firm value with a positive direction. Corporate governance also increases earnings quality. The better the quality of CG, the better the quality of earnings. Then earnings quality increases firm value.

Similarly, Jaimuk (2020) examined the mediating effect of accounting conservatism on the relationship between board characteristics, ownership structure and real earnings management. Secondary data were collected from listed companies in Thailand for the period 2016-2018. The results revealed that accounting conservatism had full mediation effect on the relationship between board leadership, managerial ownership and real earnings management. Zulfikara et al. (2020) assed the effect of managerial ownership and independent commissioners on financial performance using accounting conservatism as a mediator in Indonesia. Data of two hundred and sixty seven firms were extracted from the annual reports and account covered the period 2012 to 2016. Multiple regression results showed that independent commissioners and managerial ownership had a direct positive effect on financial performance. While accounting conservatism did not mediate the effects of managerial ownership on financial performance. Accordingly, the proposed hypotheses is as follow:
Ho_3: Accounting conservatism does not significantly mediate the relationship between board attributes and earnings quality of the listed DMBs in Nigeria.

3.0 Methodology
This section presents research design, population and sample, source and method of data collection, variables and their measurements, technique of data analysis and model specification.

3.1 Research Design
The research design adopted was correlation. Positivism paradigm was employed because it is dependent on quantifiable observations. This lead to statistical analysis through quantitative data collection and interpretation to establish what is without any form of human interaction within the study.

3.2 Population and Sample
The population of this study consist of fourteen (14) Deposit Money Banks (DMBs) listed on the Nigerian Stock Exchange (NSE) as at 31st December, 2020 (See Appendix A). This study used purposive sampling method by set up criterion to arrive at sample population. The criterion was established to ensure that bank must have been quoted and not delisted from 2009 to 2020. As a result of

this criteria, Jaiz Bank, Plc was filtered out as a result of its listed year being 2012. Therefore, only thirteen (13) banks scaled the filtering.

3.3 Source and Method of Data Collection

The secondary source of data was used in this study which was generated from the annual reports and accounts of the sampled banks from 2009 to 2020.

3.4 Variables of the Study and their Measurements

The dependent variable for this study is earnings quality. This was quantified using Chang, Shen and Fang (2008) discretionary loan loss provision model employed by Ibrahim (2017). The justification is that the model is appropriate in financial institution and this study is conducted in banking industry. The model is shown below;

$DLLPi/TAt\text{-}1 = LLPit/TAt\text{-}1 – \{\alpha_0 1/TAt\text{-}1 + \alpha_1 LCOi/TAt\text{-}1 + \alpha_2 BBALi/TA_{t-1}$

Where

DLLP = Discretionary loan loss provision

LLP = Loan loss provision

LCO = Loan Charge-off

BBAL = Beginning Balance of loan loss

TAt-1 = Lagged Total Assets

$\alpha 0$ = Constant

In line with the previous studies such as Ahmed (2014) and Shehu (2015), the absolute value of the residual were multiply by -1 so that the higher the residual values the higher the earnings quality. However, for explanatory and mediating variables, see Appendix B.

3.5 Technique of Data Analysis

This study used path analysis which shows the direct and indirect effect of a set of independent variables on the dependent variable. To support the analysis, this study used technical analysis of Structural Equation Modelling (SEM) using STATA version 12.0**.**

3.6 Model Specification

This study employed the approach made by Mackinnon, Coxe and Baraldi (2012) that what is required for testing mediation is the indirect effect to be significant. Therefore, the following models were used which is the modification of Laela, et al. (2019). The first model was used to predict the impact of earnings quality on independent variable (board attributes).

$EQ = \beta_{0\,+} \beta_1 FD_{it} + \beta_2 BS_{it} + \beta_3 BI_{it} + \beta_4 BO_{it} + \beta_5 BM_{it} + \beta_6 BExp_{it} + \beta_7 FS_{it} + \beta_8 Lev_{it} + \varepsilon_{it\ldots}$ 1

The second model was used to predict the impact of Mediator (accounting conservatism) on independent variable (board attributes).

$AccCons = \beta_{0\,+} \beta_1 FD_{it} + \beta_2 BS_{it} + \beta_3 BI_{it} + \beta_4 BO_{it} + \beta_5 BM_{it} + \beta_6 BExp_{it} + \beta_7 FS_{it} + \beta_8 Lev_{it} + \varepsilon_{it\ldots}$ 2

The third model was used to test the mediating effect of accounting conservatism on the relationship between board attributes and earnings quality.

$EQ = \beta_{0\,+} \beta_1 FD_{it} + \beta_2 BS_{it} + \beta_3 BI_{it} + \beta_4 BO_{it} + \beta_5 BM_{it} + \beta_6 BExp_{it} + \beta_7 AccCons_{it} + \beta_7 FS_{it} + \beta_8 Lev_{it} + \varepsilon_{it\text{-- --}}$3

4.0 Results and Discussions

This section discusses descriptive statistics and regression results.

4.1 Descriptive Statistics

Descriptive statistical analysis is used to provide an initial description of the characteristics and relationships among variables to support hypothesis testing. Characteristics of data to be described in this study include the mean, standard deviation, minimum and maximum.

Table 4.1: Descriptive statistics result

Variables	Obs	Mean	Stds. Dev.	Min	Max	Skewness	Kurtosis
EQ	156	0.013	0.014	0.001	0.052	1.322	3.668
FD	156	0.177	0.102	0.000	0.333	0.164	2.092
BS	156	13.352	2.749	6.000	20.000	0.008	2.738
BI	156	0.580	0.125	0.333	0.800	1.003	3.369
BO	156	0.078	0.130	0.000	0.565	2.148	6.545
BM	156	6.359	2.237	3.000	16.000	1.171	4.871
BEXP	156	0.237	0.173	0.000	0.833	0.624	3.368
ACCONS	156	0.002	0.002	0.000	0.010	1.697	4.697
FS	156	12.001	0.468	11.103	13.013	0.103	2.300
LEV	156	0.074	0.064	0.000	0.233	0.796	2.961
PROF	156	0.020	0.019	-0.020	0.064	0.358	3.302

Source: Generated from the Annual Reports and Account of the sampled companies using STATA 14.0

Table 4.1 above reveals average Earning Quality (EQ) DMBs of 0.013 with standard deviation of 0.014. The minimum is 0.001 while the maximum is 0.052. . This suggest that some of the banks in Nigeria have higher tendency of earnings manipulation in some years while others tend to record a relatively high earnings quality in some years. Female Directors (FD) have a mean of 0.177 and the standard deviation is 0.102 and the minimum and maximum are 0.000 and 0.333 respectively Board Size (BS) has a mean of 13 board members and the standard deviation is 2.749 and the minimum and maximum are 6 and 20 respectively. Similarly, Board Independence has a mean score 0.580 and the standard deviation is 0.125. The minimum number is 0.333 while the maximum number is 0.800. For Board Ownership (BO) the average value of 0.078 indicate that board members held about 8% of the total shareholding with standard deviation of 0.130. The minimum and maximum are 0.000and 0.565 respectively.

Similarly, Board Meeting (BM) has average of 6 meeting with minimum and maximum of 3 and 16 respectively. The standard deviation is 2.237. Board Expertise (BEXP) has mean of 0.237 with standard deviation of 0.173. The minimum and maximum scores are 0.000 and 0.833. Accounting Conservatism (ACCONS) has mean of 0.002 with minimum and maximum value of 0.000 and 0.010. The standard deviation is 0.002. For control variables, Firm Size (FS) has mean value of 12.001 with a standard deviation of 0.468 and maximum and minimum values of 11.103 and 13.013 respectively. The mean for the leverage is 0.074 with standard deviation of 0.064. The minimum and maximum scores are 0.000 and 0.233. Profitability (Prof) has a mean value of 0.020 with minimum and maximum values of -0.020 and 0.064. This result indicates that some Banks reported losses within the study period.

4.2 Regression Results

This section presents the regression results of the mediating effect of accounting conservatism on the relationship between board attributes and earnings quality of listed deposit money banks in Nigeria using Structural Equation Modelling (SEM). Three models were analyzed for the purpose of this study.

2.1 Model I: Total Effects (Board Attributes and Earnings Quality)

The results of this total effects is presented in order to test the null hypothesis one of this study. Therefore, the results are presented in Table 4.2.

Table 4.2: Model 1 – Total Effects (Board Attributes and Earnings Quality)

Path			Coefficient	z-value	P-value
FD	—>	EQ	0.007	0.63	0.527
BS	—>	EQ	0.000	0.97	0.331
BI	—>	EQ	0.029	2.75	0.002***
BO	—>	EQ	-0.022	-2.26	0.024**
BM	—>	EQ	-0.001	-0.12	0.901
BEXP	—>	EQ	0.019	2.83	0.005***
FS	—>	EQ	-0.005	-1.88	0.060*
LEV	—>	EQ	0.036	1.95	0.051*
PROF	—>	EQ	0.089	1.45	0.146
Obs	=	156			
R^2	=	0.207			
Prob>Chi	=	0.0000			

Source: STATA 14.0 outputs based on data generated (2009-2019). ***, **, * indicate significance level at 1%, 5% and 10% respectively.

The results of Table 4.2 reveal that there is insignificant positive relationship between FD and EQ having coefficient of 0.007 and P- value of 0.527. This signifies that FD has insignificant monitoring capacity to influence EQ of banks. Therefore, the null hypothesis one (Ho_1) is accepted. This is in line with work of Aifuwa and Embele (2019). BS has positive and insignificant total effect on EQ with the coefficient value of 0.000 and P- value of 0.331. Therefore, the null hypothesis one (Ho_1) is accepted. This finding contradict the resource dependence theory which emphasizes that larger board size is full of members with diverse skills and experience that will move the firm forward. This is contrary to the findings of Egbunike and Odum (2018). The coefficient value of BI is 0.029, with P- value of 0.002. This indicates that BI has a positive and significant total effect on EQ of banks in Nigeria. Therefore, the null hypothesis one (Ho_1) is rejected. BI serves as control mechanism in checkmating the activities of management in order to report high EQ. This is in line with the study of Adegbie et al. (2019).

Similarly, BO has coefficient value of -0.022 with P- value of 0.024. This implies that BO has negative and significant total effect on EQ. This indicates that managers may pursue opportunistic behavior at the expense of shareholders' wealth. Therefore, the null hypothesis one (Ho_1) is rejected. BM has negative and insignificant total effect on EQ as with coefficient value of -0.001 and P- value of 0.901. This suggest that frequent meeting by the board members do not enhance EQ as a result of paying more attention to other issues that are not relevant to Q. Therefore, the null hypothesis one (Ho_1) is accepted. This is in consistent with study of Adegbie et al. (2019). BEXP has positive and significant total effect on EQ with a coefficient value of 0.019 and P- value of 0.005. This signifies that members with diverse professional qualifications can provide better decision making that result to high earnings quality. Therefore, the null hypothesis one (Ho_1) is rejected. This is in line with the study of Aifuwa and Embele (2019). For control variables, FS and LEV have negative and significant total effect on EQ but PROF is insignificant. These evidence with coefficient value of -0.005, -0.036, 0.089 and 0.060.

4.2.2 Model II: Direct Effects (Board Attributes and Accounting Conservatism)

Table 4.3 presents the regression result of modelI.

Table 4.3 Model II – Direct Effects (Board Attributes and Accounting Conservatism

Path	Coefficient	z-value	P-value
FD —> ACCONS	0.001	0.57	0.566
BS —> ACCONS	0.000	-0.89	0.376
BI —> ACCONS	0.005	2.29	0.022**
BO —> ACCONS	-0.001	-0.70	0.226
BM —> ACCONS	0.001	3.38	0.001***
BEXP —>ACCONS	0.003	2.21	0.027**
FS —> ACCONS	-0.011	1.90	0.057*
LEV —> ACCONS	-0.003	-0.64	0.501
PROF —>ACCONS	-0.008	-0.64	0.524
R^2 = 0.160			
Prob> Chi2 = 0.001			
Obs = 156			

Source: STATA 14.0 outputs based on data generated (2009-2019). ***, **, * indicate significance level at 1%, 5% and 10% respectively.

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From Table 4.3, the SEM regression results reveal that FD have a positive and insignificant impact on ACCONS with coefficient value of 0.001and P- value of 0.566. This may be as a result of the fact that female directors are not exercising full power to monitor management due to issue of gender inequality. Therefore, the null hypothesis two (Ho_2) is accepted. This finding is inconsistent with the work Makhlouf, et al. (2018). BS has a negative and insignificant effects on ACCONS with a coefficient value of -0.000 and P- value of 0.376. This indicates that increase in BS may lead to free riding problems and internal conflict among members. Therefore, the null hypothesis two (Ho_2) is accepted. This finding is in line with El-Habashy (2019). BI has a positive and significant effects on ACCONS of banks with a coefficient value of 0.005 and P- value of 0.022. This may be attributed to the fact that independent directors protect and defend the interests of shareholders. Therefore, the null hypothesis two (Ho_2) is rejected. This finding is consistent with the work of El-habashy (2019).

Furthermore, BO has negative and insignificant effects on ACCONS with a coefficient value of -0.001 and P- value of 0.226. It implies that accounting conservatism decreases insignificantly with the increases in the shares held by managers. Therefore, the null hypothesis two (Ho2) is accepted. This corroborate the result of Liu (2019). BM has positive and significant effects on ACCONS with a coefficient value of 0.000 and P- value of 0.001. This is the fact that when meetings are held regularly, issues arising will be addressed before they degenerate into problems for the banks. Therefore, the null hypothesis two (Ho2) is rejected. BEXP has positive and significant effects on ACCONS with a coefficient value of 0.003 and P- value. Therefore, the null hypothesis two (Ho2) is rejected. This is consistent with work of Enache et al. (2019). For control variables, FS has positive and significant effects on ACCONS with a coefficient value of 0.011 and P- value of 0.057. On the other hand, LEV and PROF have negative and insignificant effect on ACCONS with coefficient value of -0.003, -0.008 and P- value of 0.501, 0.524 respectively.

4.2.3 Model III: Indirect Effects (Board Attributes, Accounting Conservatism and Earnings Quality)

The regression results in Table 4.4 is based on the Monte Carlo test described by Zhao et al. (2010)..

Table 4.4 Model III – Indirect Effects (Board Attributes, Accounting Conservatism and Earnings Quality)

Path				Coefficient	z-value	P-value
FD	—>	ACCONS	EQ	0.006	0.451	0.652
BS	—>	ACCONS	EQ	-0.01	-0.7	0.484
BI	—>	ACCONS	EQ	0.027	1.255	0.21
BO	—>	ACCONS	EQ	-0.008	-0.574	0.566
BM	—>	ACCONS	EQ	0.035	1.438	0.15
BEXP	—>	ACCONS	EQ	0.022	1.263	0.207

Source: Zhao et al (2010) procedure for Stata output based on data generated (2009-2020

FD have positive and insignificant relationship with EQ through ACCONS. This is confirm with a coefficient value of 0.006 and P- value of 0.652. This implies that as FD increase, EQ also increase through ACCONS as a mediator but insignificantly. That is ACCONS as an internal mechanism of reporting high EQ does not mediated the relationship between FD and EQ. The relationship between BS and EQ is negative and statistically insignificant through ACCONS with a coefficient value of -0.010 and P- value of 0.484. This indicates that ACCONS policy that result in high earnings quality does not significantly mediate the relationship between BS and EQ. The possible expectation is that larger boards are generally perceived to be less effective in exchanging ideas, delay in making decision. BI has positive indirect effect on EQ with a coefficient value of -0.027 and P- value of 0.210. This signifies that an increase in BI, will also lead to increase in EQ through ACCONS but insignificant. Therefore, accounting conservatism does not significantly mediate the relationship between board attributes and earnings quality.

Similarly, BO has negative and insignificant relationship with EQ through ACCONS with a coefficient value of -0.008 and P- value of 0.566. This implies that an increase in the level of shares held by the management will lead to decrease in earnings quality but not significantly mediated by the accounting conservatism. This expect poor monitoring of the managers to act in the best interest of shareholder thereby reporting high quality earnings. The relationship between BM, BEXP and EQ is positive and insignificantly mediated by ACCONS. This confirm by the coefficient values of -0.035, 0.022 and P-values of 0.150, 0.207 respectively. Consequently, based on the results discuss above the null hypothesis three (Ho_3) is accepted. This is in line with work of Zulfikara et al. (2020) but contrary to the finding of Jaimuk (2020).

5.0 Conclusions and Recommendation

The results of this study concluded that female directors and board size are not influencing earnings quality and accounting conservatism. The level of shares owned by the management is negatively affect earnings quality and accounting conservatism of listed DMBs in Nigeria. Board meeting plays insignificant negative effect on earnings quality. In addition, accounting conservatism has not influence the relationship between board attributes and earnings quality. This study recommends that the management of DMBs should consider the inclusion of more well experienced female as part of the board of directors in order to make more effective and confidence in enhancing the quality of earnings and accounting conservatism. Thu, this would reduce the issue of gender inequality. They should also make emphasis on the quality, effectiveness and efficiency of the members not just the number of the board so that issues that influence earnings quality should be treated promptly. The regulators (e.g Central Bank of Nigeria and Securities and Exchange Commission) should set-up a policy in form of benchmark that will limit the percentage of shares held by the directors in respect of board ownership. This is in order not to give them too much powers to override the interest of other shareholders and exert opportunistic behaviour.

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APPENDIX A

Population of the Study

S/no	Name of Banks	Year Listed
1	Access Bank, Plc	1998
2	Eco Bank, Plc	2006
3	Fidelity Bank, Plc	2005
4	First Bank of Nigeria Holdings, Plc	1894
5	First City Monument Bank, Plc	2005
6	Guaranty Trust Bank, Plc	1996
7	Jaiz Bank, Plc	2012
8	Stambic IBTC, Plc	2005
9	Sterling Bank, Plc	1993
10	Union Bank of Nigeria, Plc	1970
11	United Bank for Africa, Plc	1972
12	Unity Bank, Plc	2005
13	Wema Bank, Plc	1991
14	Zenith Bank, Plc	2004

Source: Genrated from web site of NSE as at December, 31st 2020.

APPENDIX B

Explanatory and Mediating Variables

Variable	Proxy (ies)	Measurement	Source(s)
Independent: Board Attributes			
	Female Directors	Number of female on board of directors over the total number of board members.	Hassan et al. (2018) and Makhlouf et al. (2018)
"	Board Size	Number of board members in a particular Year.	Egbunike and Odum (2018) Mohammed et al.2017).
"	Board Independence	Ratio of non-executive directors to the total number of directors.	Oyedokun and Oyedokun (2018) and Habashy (2019)
"	Board Ownership	Board of directors' shares over total shares.	Utomo et al. (2018) and Liu (2019
"	Board Meeting	Total number of meetings held by the board of directors in a year	Latif (2018) and Adegbie et al. (2019)
"	Board Expertise	Ratio of board members belongs to one of the professional body such as Institute of Chartered Ac countant of Nigeria (ICAN), Association of National Accountant of Nigeria (ANAN), Chartered Institute of Bankers of Nigeria (CIB N) and Chartered Institute of Taxation of Nigeria (CITN) to total number of directors.	Aifuwa and Embele (2019) and Enache and Garcia-Meca (2019)
Control Variable:			
	Firm Size	Log of Total Asset	Sana'a (2016)
"	Leverage	Total debt to total assets	Hassan and Farouk (014) and Mercy (2018)
"	Profitability	Profit after tax to Total Asset	Jaimuk (2020)
Mediating Variable:			
:	Accounting Conservatism	Total provisions to total liabilities. The provision recognized strictly according to International Accounting Standard (IAS) 37. i.e provisions for: retirement benefit; tax; and litigation claim.	Feleaga et al. (2010)

Source; Generated from the Review of Literature

Impact of Sustainability Reporting on the Financial Performance of Listed Deposit Money Banks in Nigeria

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Abstract
The fundamental idea of sustainability is that current decisions should not obstruct the prospects for maintaining or improving future living standards. The challenges of sustainable development are many and it is widely accepted that organizations have not only a responsibility but also a great ability to exert positive change on the state of the world's economy, environmental and social conditions. This study examines the impact of sustainability reporting on the financial performance of deposit money banks listed in Nigeria. Data have been generated from the published annual reports and accounts of deposit money banks, selected using simple random sampling. Generated data have been analyzed with the help of stata. The results suggest that sustainability disclosure is positively related to return on asset (ROA) and return on equity (ROE). This interface was statistically significant. The study, therefore, recommends that Deposit Money Banks should increase investment in economic, environmental and social activities aspect of their CSR, since their disclosure will positively and significantly influence their return on asset and return on equity.

Keywords: *Sustainable Development, Sustainability Reporting, Financial Performance, Deposit Money Banks, Economic, Environmental, Social.*

1.0 Introduction

Sustainability reporting is a voluntary organization's activity with two general purposes (Hahn & Kuhnen, 2013): to assess the current state of an organization's economic, environmental and social dimensions, and to communicate an organization's efforts and sustainability progress to their shareholders. Sustainability Reporting can be used for assessing corporate sustainability performance over time, benchmarking against other organizations, and demonstrating how the organization influences and is influenced by, expectations about sustainability development. Organization should take accountability for various beneficial and harmful impacts of their activities on the overall society and the environment in which they exist. Moreover, the firms should make proper disclosures of these impacts in an appropriate sustainability report which provides a detailed description of their governance structure, stakeholder engagement approach and 'triple bottom line' to emphasize on three aspects – people (social), profits (economic) and planet (environmental).

It is widely believed and suggested by researchers that in today's dynamic and complex business environment, corporate sustainability is likely to influence corporate profitability and overall performance. It lays a foundation for preserving and enhancing value of the firm. Performance refers to the accomplishment of a given task measured against preset standards of accuracy, completeness, cost, and speed. In other words, it refers to the degree to which an achievement is being or has been accomplished. One of the ways of measuring the performance of a business is through financial performance, which refers to the degree to which financial objectives has been accomplished. It is the process of measuring the results of a firm's policies and operations in monetary terms. Financial performance can be measured by proxies to profitability such as Return on Assets (ROA), Return on Equity (ROE), Net Profit Margin (NPM), Gross Profit Margin among others.

It is unclear, what impact sustainability reporting has actually had on organization's strategies, practices and outcomes (Hubbard, 2008). The result of most researches conducted on sustainability reporting and financial performance are either inconclusive or contradictory (Kwaghfan, 2015), reporting positive (Eccles, Ioannou, & Serafeim, 2011) or sometimes negative results (Detre & Gunderson, 2011) to mixed (Aggarwal, 2013). Worthy of note also is that most of the researches on sustainability reporting centered on developed countries such as United Kingdom, United States of America, Germany, Australia etc., with little emphasis on developing countries. In the light of these limitations, this study therefore set to find out the impact of sustainability reporting on the financial performance of deposit money banks listed in Nigeria.

The main objective of this study is to examine the Impact of Sustainability Reporting on the Financial Performance of Deposit Money Banks Listed in Nigeria. The specific objectives of this paper are: To ascertain the impact of sustainability reporting on Return on Assets (ROA) of Deposit Money Banks listed in Nigeria; and to determine the impact of sustainability reporting on Return on Equity (ROE) of Deposit Money Banks listed in Nigeria. The following research hypotheses, formulated in null form will be tested by this study. Sustainability Reporting does not impact positively and significantly on Return on Assets of Deposit Money Banks listed in Nigeria. The impact of Sustainability Reporting on Return on Equity of Deposit Money Banks listed in Nigeria is not positive and significant. This paper is organized into five sections; section 2 presents review of related literature; section 3 is on methodology; section 4 presents the discussion of results from the data analysis; section 5 presents conclusion and recommendations of the study.

2.0 Literature Review

This section covers the concepts of sustainability reporting, corporate social responsibility, global reporting initiative, financial performance, empirical studies and theoretical framework underpinning the study.

2.1 Concept of Sustainability Reporting

There is no single, generally accepted definition of sustainability reporting. It is a broad term generally used to describe a company's reporting on its economic, environmental and social performance. It can be synonymous with the triple bottom line reporting, corporate responsibility reporting and sustainable development reporting, but increasingly these terms are becoming more specific in meaning and therefore subsets of sustainability reporting (Dilling, 2010). GRI (2013) defines sustainability reporting as "the practice of measuring, disclosing and being accountable for organizational performance while working towards the goal of sustainable development. In essence, sustainability reporting is to disclose the organizations' commitment and achievement towards all aspects of sustainability, from both internal and external stakeholders' perspectives. Sustainability reporting is a form of value reporting where an organization publicly communicates its economic, environmental and social performance.

2.2 Concept of Corporate Social Responsibility (CSR)

According to Ismail (2009) CSR simply refers to strategies corporations or firms conduct their business to show that it is ethical and society friendly. CSR can involve a range of activities such as working in partnership with local communities, socially sensitive investment, developing relationships with employees, customers and their families, and involving in activities for environmental conservation and sustainability. CSR reporting is a strategic plan that shows how a firm manages stakeholder relationships. In other words, we could say that a firm uses CSR reporting to communicate with its stakeholders. Corporate disclosures provide a firm the opportunity to spread value information mainly to financial stakeholders as stock analysts, capital markets and institutional investors and thereafter get evaluated on its financial measures, hence, the need for sustainability reporting.

2.3 Global Reporting Initiative (GRI)

The GRI was established in late 1997 with the mission of developing globally applicable guidelines for reporting on economic, environmental, and social performance, initially for corporations and eventually for any business, governmental, or non-governmental organizations (NGOs). According to Garg (2015), The GRI Reporting Framework is intended to serve as a generally accepted framework for reporting on an organization's economic, environmental and social performance. It is designed for use by organizations of any size, sector or location. The GRI Reporting Framework contains general and sector-specific content that has been agreed by a wide range of stakeholders around the world to be generally applicable for reporting an organization's sustainability performance." Below are the performance indicators for GRI reporting guideline.

2.3.1 Economic Indicators

The economic dimension of sustainability concerns the organization's impacts on the economic conditions of its stakeholders and on economic systems at local, national, and global levels. The Economic Indicators illustrate: Flow of capital among different stakeholders; and Main economic impacts of the organization throughout society (GRI, 2013).

2.3.2 Environmental Indicators

The environmental dimension of sustainability concerns an organization's impacts on living and non-living natural systems, including ecosystems, land, air, and water. Environmental Indicators cover performance related to inputs (e.g., material, energy, water) and outputs (e.g., emissions, effluents, waste). In addition, they cover performance related to biodiversity, environmental compliance, and other relevant information such as environmental expenditure and the impacts of products and services (GRI, 2013).

2.3.3 Social Performance Indicators

The social dimension of sustainability concerns the impacts an organization has on the social systems within which it operates. The GRI Social Performance Indicators identify key Performance Aspects surrounding labor practices, human rights, society, and product responsibility (GRI, 2013).

2.4 Concept of Financial Performance

Financial performance is a useful source of information for investors. One measure of financial performance is profitability. The financial performance reflects the company's fundamental performance which will be measured by using data derived from financial statements. The statements of financial performance are made to describe the financial condition of the past and they are also used to predict the financial future (Nugroho & Arjowo, 2014). Financial performance is of great importance to banks, since it opens the way for the bank's management to determine the level of the bank's overall performance, stand on the strengths and weaknesses of the performance, seize investment opportunities, secure the needs and accomplish the goals of all individuals who have ties with the bank, enhance the bank's competitive position among other banks, achieve competitive advantage, provide the ability to reduce pressure on stakeholder's equities, and highlight the importance of bank's financial performance in the measurement of its ability to cope with external threats and adapt to events and developments, since financial performance is considered a good i ndicator of a bank's ability to deal with external events in its environment (Dufera, 2010). Financial performance measurement can be done with the assessment of financial ratio analysis.

2.5 Empirical Studies

Hubbard (2008) observes that while many frameworks have been developed for sustainability reporting, few have received general attention. Because of this limited attention, it is unclear what impact it has actually had on organization strategies, practices and outcomes. The empirical studies which examined the impact of sustainability reporting on the financial performance of companies are discussed below.

Umar, Mustapha, and Yahaya (2021), assesses the effects of sustainability reporting on financial performance of 26 listed consumer goods firms in Nigeria. Secondary data were collected from the annual reports and accounts where multiple regression technique was employed to analyze the data. The results show that social performance and environmental performance have significant positive effect on financial performance, whereas economic performance has a significant negative effect on financial performance.

Pasko, Marenych, Diachenko, Levytska and Balla (2021), evaluates how stakeholders are consulted and involved by preparers, Ukrainian publicly-listed agricultural companies, while compiling sustainability reporting (SR) and by assurance providers, during assurance processes of SR. The study found that the most cited stakeholders in engagement actions are on level 1 employees, consumers and suppliers. Consumers also alongside authorities and local communities are the most cited stakeholders on the level of response strategy, whereas the authorities are the single stakeholders' group being honoured to be treated on the highest third level.

Ning, Yim, and Khuntia (2021), analyse the influence of the firm's sustainability strategic intent on its financial performance. A secondary panel dataset consisting of information on 680 firms in 3 years was constructed by matching the text mined data with information from other sources. Latent Dirichlet allocation (LDA), latent Markov model (LMM) were employed to analyse the data collected and the result of the analysis revealed that while external stakeholder engagement is the primary motivation behind voluntary disclosure of sustainability reporting, firms are starting to engage internal stakeholders through workforce practices. On the other hand, internal employee-oriented intent has more influence on firm performance than external customer-oriented intent.

2.6 Theoretical Framework

Different theoretical approaches have been used to explain sustainability or triple bottom line reporting, the most widely advanced theories are stakeholder theory, legitimacy theory and political economy theory (Aggarwal, 2013). However, the underpinning theory for this study is the stakeholder theory. Stakeholder(s) theory posits that the organization exist not primarily for itself and owners but also for the benefit of the society. Moral and value considerations are as important as profitability matters in a business. Recognizing that there are other stakeholders that have interest in the organization has implications for business policy and strategies, such as striking a balance between sustainability and profitability (Oyewo & Badejo, 2014). Freeman (1984) defined stakeholder(s) as "any group or individual who can affect or is affected by the achievement of the firm's objectives." According to this definition, stakeholders can be owners, customers, suppliers, and public groups.

3.0 Methodology

This section of the study discusses the research design, population and sample size of the study, sources and method of data collection as well as method of data analysis, model and variables specification and measurement.

3.1 Research Design

Due to the nature of the study, expost-facto research design and secondary sources of data collection were adopted. This involves the use of Annual Reports and accounts for the period covering 2017 to 2021. The population of this study shall be all the 13 Deposit Money Banks listed on the Nigerian stock exchange (NSE) as at 31st December 2022. Eight (8) banks were randomly selected to be the sample size for this study, this is necessary to give all banks equal opportunity of being selected and to remove all forms sample bias. The data collected were analyzed using Regression analysis.

Table 1. Sample size

S/N	Name	Year of Corporation	Year of Listing on NSE
1	Zenith Bank Plc	1990	2004
2	Guaranty Trust Bank Plc	1990	1996
3	Access Bank Plc	1989	1998
4	First City Monument Bank Plc	1982	2004
5	Eco Bank Plc	1986	2006
6	Sterling Bank Plc	1960	1993
7	United Bank for Africa Plc	1961	1970
8	First Bank Plc	1894	1971

Source: Author’s work 2022

3.2 Variables of the study

Dependent variable: Return on Asset (ROA), Return on Equity (ROE), which are dimensions of profitability are used to proxy for financial performance. These two Accounting-based measures, namely, Return on Assets (ROA) and Return on Equity (ROE) have been used because the audited accounting data is likely to be authentic and credible and is not influenced by market perceptions or speculations, and is thus considered less noisy in comparison to market based indicators like stock returns, share prices, among others and it is also believed to have embedded other types of profitability dimensions like Net profit margin, Gross margin among others. Independent variable: Economic performance (community investment, defined benefit plan liabilities), Social performance (employee benefit, health and safety, and diversity in governance) and Environmental performance (fuel consumptions, energy reduction and client environmental risk) disclosures are used to proxy for sustainability reporting. It is measured by obtaining the Deposit Money Bank’s sustainability reports as used in the study of Nnamani, Onyekwelu and Ugwu (2017) and also in Nwobu, Owolabi, and Iyoha (2017). The performance indicators were obtained from the current GRI 4 framework issued in 2013.
The dependent variables are measured as follows.

3.2.1 Return on Asset (ROA)

Return on Assets (ROA) measures the overall effectiveness of management in generating returns to ordinary shareholders with its available assets. According to (Kabajeh, AL Nu’aimat, & Dahmash, 2012) the formula for Return on Asset (ROA) is given as:

$$\text{Return on Asset} = \frac{\text{Net Profit After Tax}}{\text{Total Asset}} \times \frac{100}{1}$$

3.2.2 Return on Equity (ROE)

According to Lesakova (2007), Return on Equity is a measure of the efficiency with which the firm employs owner´s capital. It is an estimate of the earnings of invested equity capital, or alternatively, the percentage return to owners on their investment in the firm. It is given by the formula:

$$\text{Return on Equity (ROE)} = \frac{\text{Net Profit (after interest, taxes and preference dividend)}}{\text{Shareholder's Equity}} \times \frac{100}{1}$$

Independent variables which represent the components of Sustainability Reporting disclosure;
Economic performance disclosure measured using dichotomy 1 for disclosure otherwise 0
Social performance disclosure using dichotomy 1 for disclosure otherwise 0
Environmental performance disclosure using dichotomy 1 for disclosure otherwise 0. Control variables are:
Net interest income obtained by subtracting interest expenses from interest income.
Leverage measured as the total liability divided by total assets
Bank size measured as log of total assets

However, given that the data on the above variables were collected from different companies with different status, the model was logged by taking the double logarithm of the model. Thus the model is restated as follows:

Model 1

ROAit = α + β1ECONDit + β2ENVDit + β3SOCDit + β4NIIit + β4LEVit - β5BSIZEit +ε

Model 2

ROEit = α + β1ECONDit + β2ENVDit + β3SOCDit + β4NIIit + β4LEVit - β5BSIZEit +ε

4.0 Result and Discussion

This section presents the results of the analysis conducted on the data collected from the annual report. The descriptive statistics, correlation and GLS regression results are presented below.

Table 2. Descriptive Statistics of the Variables

Variable	Obs	Mean	Std Dev	Min	Max
roa	40	0.0236	0.01672	-0.0007	0.0636
roe	40	3.4284	2.1056	0.1701	8.6192
ecn	40	0.975	0.15811	0	1
env	40	0.875	0.3349	0	1
soc	40	0.95	0.2207	0	1
nii2	40	1.10E+12	6.44E+12	2.18E+08	4.08E+13
lev	40	2.797722	12.13854	0.0801	77.6092
bsize	40	12.28784	0.1853	11.958	12.6318

Source: Generated from Annual Report Data of the Banks using STATA

The descriptive statistics above shows that ROA has a mean of 0.0236, standard deviation of 0.01672, with a minimum and maximum of -0.0007 and 0.0636 respectively. ROE has a mean of 3.3428, standard deviation of 2.1056 with a minimum and maximum of 0.1701 and 8.6192 respectively. Economic disclosure has a mean of 0.975 standard deviation of 0.15811 with a minimum and maximum of 0 and 1 respectively. Environmental disclosure has a mean of 0.875 standard deviation of 0.3349 with a minimum and maximum of 0 and 1 respectively. Social disclosure has a mean of 0.95, standard deviation of 0.2207 with a minimum and maximum of 0 and 1 respectively. Net interest income has a mean of 1.10e+12, standard deviation of 6.444 with a minimum and maximum of 2.18e+08 and 4.08e+13 respectively. Leverage has a mean of 2.797722, standard deviation of 12.13854, with a minimum and maximum of 0.0801 and 77.6092 respectively. Bank size has a mean of 12.28784, a standard deviation of 0.1853, with a minimum and maximum of 11.958 and 12.6318. The implication is that the mean is assumed to be the average for all banks however, this might not be a true representation for all the data. This is because of the wide gap existing between the minimum and the maximum figures.

Table 3. Correlation Matrix

Variables	roa	Roe	ecn	env	soc	nii2	lev	bsize
roa	1.0000							
roe	0.5897	1.0000						
ecn	0.1155	-0.3998	1.0000					
env	0.1325	-0.2005	0.4237	1.0000				
soc	0.1299	-0.1537	0.6980	0.2601	1.0000			
nii2	-0.1110	0.4018	-0.1000	-0.4245	-0.6977	1.0000		
lev	-0.0645	-0.1275	0.0260	0.0481	0.0386	-0.0267	1.0000	
bsize	0.1216	0.6231	-0.1132	-0.0941	0.0037	0.1132	-0.2016	1.0000

Source: Correlation Matrix result from STATA

Table 3 shows the correlation coefficients which indicates the extent of the relationship between the dependent variable (ROA and ROE) and the independent variables (Economic disclosure, Environmental disclosure, Social disclosure, Net interest income, Leverage and Bank size). The results revealed that ROA is more positively correlated with Economic disclosure, Environmental disclosure, Social disclosure than ROE, however, the Net interest income and leverage is negatively correlated with both ROA and ROE while Bank size was found to be more positively correlated with ROE than ROA. The variance inflation factor (VIF) test of all the variables revealed absence of multicollinearity because the VIF value ranges between 1.06 and 1.88. The heteroscedasticity test revealed absence of heteroscedasticity (appendix 1).

The implication is that, this relationship has important policy implication as it provides evidence to shareholders that investment on economic pursuit activities, environmental planet activities and social activities are more positively correlated with, to the return on asset (ROA) than return on equity (ROE). However, ROA determines the management efficiency to use assets to generate earnings but shareholders value ROE. The implication is that return on equity measures the shareholders return on their investment, it is the speed limits on a bank’s growth rate which make managers rely on it to gauge growth potentials and it offers a useful signal of financial success since it might indicate whether the company is progressing without pouring equity capital into the business.

Table 4. GLS regression results on Sustainability reporting and R OA

Roa	coefficient	std. err	z	p>|z|
constants	-7.461057	2.567138	-2.91	0.004
ecn	7.991998	2.608212	3.06	0.002
env	0.0107742	0.0049058	2.2	0.028
soc	-0.0025543	0.0094395	-0.27	0.787
nii2	1.96E-13	6.42E-14	3.05	0.002
lev	0.0000127	0.0001236	0.1	0.918
bsize	-0.0431704	0.0157982	-2.73	0.006
	R-square			0.6814
	P-value			0.0005
	F-value			5.47
	Mean VIF			1.47
	Hettest p-value			0.7356

Source: Regression results computed by the author using STATA

The GLS regression results displayed in table 4 above revealed a cumulative R^2 of 0.6814 for ROA model which is the multiple coefficient of determination that gives the proportion or percentage of the total variation in the dependent variable explained by the explanatory variables jointly. Thus, it signifies that 68.1% of total variation in ROA of listed Nigerian banks is caused by the Economic disclosure, Environmental disclosure, Social disclosure, Net interest income, leverage and Bank size while 31.9% of the variation is as a result of other variables not considered in this study. The P-value is 0.0005 and the F-statistics value is 5.47 implying that the model is fit and significant at 5% significance level considering the rule of the thumb of 2 (Samaila, 2014).

The results as shown in table 4 above indicate that economic disclosure has a positive and significant relationship with ROA. The implication is that, a consistent disclosure on economic activities increase the industry and consequently will increase the ROA by 799.1%, environmental disclosure equally has a positive and significant relationship with ROA. The implication is that, a consistent disclosure of environmental activities will increase the industry and consequently will increase the ROA by 1.01%, Social disclosures has a negative but not significant relationship with ROA. The implication is a decrease in the ROA by 0.2% as a result of 1% increase in social activities disclosures.

Net interest income has a positive and significant relationship with ROA. The implication is that, a consistent disclosure of net interest income will increase the industry and consequently will increase the ROA by 196%. This relationship is statistically significant. Leverage equally has a positive but not significant relationship with ROA. This implies that an increase in leverage will increase the industry and consequently will result to an increase in the ROA by an insignificant level of 0.00127%. Perhaps this may be as a result of debt covenants which may demand for high compliance in sustainability reporting. Bank size has a negative and significant relationship with ROA. This is contrary to the researcher's expectation. The researcher expects larger banks to suffer reputational damages by not complying with sustainability reporting. These findings are consistent with the findings of Nwobu (2015) who document a positive relationship between sustainability reporting and profitability in the Nigerian banking sector. It is equally in line with the findings of Nnamani et al., (2017) who found a positive and significant relationship between sustainability reporting and firm's financial performance. It is however, contrary to the findings of Zyadat (2017) who document no significant effect of the dimensions of sustainability on financial performance (ROE). And also contradict the findings of Nobanee and Ellili (2016) who conclude that sustainability reporting has no significant impact of financial performance.

Table 5. GLS regression results on Sustainability reporting and ROE

roe	coefficient	std. err	z	p>|z|
constants	-677.3536	221.4231	-3.06	0.004
ecn	596.7176	219.8322	2.71	0.01
env	0.2793019	0.7721245	0.36	0.72
soc	1.273363	1.480692	0.86	0.396
nii2	1.48E-11	5.40E-12	2.74	0.01
lev	0.0044342	0.0196244	0.23	0.823
bsize	6.607741	1.295255	5.1	0
	R-square			0.6008
	Mean VIF			1.47
	Hettest p-value			0.5414

Source: Regression results computed by the author using STATA

The GLS regression results displayed in table 5 above revealed a cumulative R^2 of 0.6008 for ROE model which is the multiple coefficient of determination that gives the proportion or percentage of the total variation in the dependent variable explained by the explanatory variables jointly. Thus, it signifies that 60.08% of total variation in ROE of listed Nigerian banks is caused by the Economic disclosure, Environmental disclosure, Social disclosure, Net interest income, leverage and Bank size, while 39.92% of the variation is as a result of other variables not considered in this study. The P-value is 0.0005 and the F-statistics value is 5.47 implying that the model is fit and significant at 5% significance level considering the rule of the thumb of 2 (Samaila, 2014).

The results as shown in table 5 above indicate that economic disclosure has a positive and significant relationship with ROE. The implication is that, a consistent disclosure on economic activities increase the industry and consequently will increase the ROE by 59671.76%, environmental disclosure equally has a positive and significant relationship with ROE. The implication is that, a consistent disclosure of environmental activities will increase the industry and will consequently increase the ROE by 27.9%, this finding is consistent with the findings of Zyadat (2017) who document significant effect of the dimensions of sustainability on financial performance (ROE). Social disclosure has a positive and significant relationship with ROE. This implies that a consistent disclosure in social activities increases the industry and consequently will increase ROE by 127.3%.

Net interest income has a positive and significant relationship with ROE at 10% significant level. The implication is that, an increase in net interest income will increase the industry and consequently increase the ROE by 148%**.** This relationship is statistically significant. Leverage equally has a positive but not significant relationship with ROE. The implication is that, an increase in leverage will increase the industry and consequently increase the ROE by 0.4%. Perhaps this may be as a result of debt covenants which may demand high compliance in sustainability reporting. Bank size has a positive and significant relationship with ROE. This is consistent with a prior expectation because larger banks are expected to avoid reputational and cost damages by n ot complying with sustainability reporting. These findings are consistent with the findings of Reddy and Gordon (2010) who document that sustainability reporting is statistically significant in explaining abnormal returns for the Australians companies. It is equally in line with the findings of Loh, Thomas and Wang (2017) who found a positive and significant relationship between sustainability reporting and firms' value. It is however, contrary to the findings of Zyadat (2017) who document no significant effect of the dimensions of sustainability on financial performance (ROE). And also contradict the findings of Makori and Jagongo (2013) who conclude that sustainability reporting has no significant impact on financial performance and Ezejiofor, John-Akamelu and Chigbo (2016) who found that environmental cost does not impact positively on revenue of corporate organizations in Nigeria, also that environmental cost impact positively on profit generation of corporate organizations in Nigeria.

The models based on the findings of this study is shown below.

$$ROAit = \alpha + \beta 1ECONDit + \beta 2ENVDit + \beta 3SOCDit + \beta 4NIIit + \beta 4LEVit - \beta 5BSIZEit + \varepsilon$$

$$ROEit = \alpha + \beta 1ECONDit + \beta 2ENVDit + \beta 3SOCDit + \beta 4NIIit + \beta 4LEVit - \beta 5BSIZEit + \varepsilon$$

5.0 Conclusion and Recommendations

This paper examines the interface between sustainability reporting and financial performance of listed DMB's in Nigeria, the results suggest that sustainability disclosure is positively related to the return on asset (ROA) and return on equity (ROE) these interface was statistically significant. The stronger the disclosure in sustainability reports, the better the quality of sustainability reporting and this consequently results in higher financial performance. In addition, the study also concludes that net interest income and leverage are positively related with sustainability reporting in the Nigerian banking sector. The results will encourage better awareness, acceptance and adoption of sustainability amongst Deposit Money banks, especially with the confidence that there are benefits in terms of return on asset and return on equity.

The study therefore recommends that Deposit Money Banks should increase investment on economic activities (community investment and defined benefit plan liabilities), environmental activities (fuel consumptions, energy reduction and client environmental risks) and social activities (employee benefit, health and safety, and diversity in governance) since their disclosure will positively and significantly influence their return on asset and return on equity. And the regulators (FRCN, NESREA and CBN) should continuously monitor sustainability reporting issues on a timely and balanced manner as this will positively influence return on assets.

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A Transparent and Traceable Budget Process in Nigeria Using Blockchain Technology

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Abstract
The Nigerian economy is beset by a slew of imbalances in the formulation and implementation of economic policies. Most problems in Nigeria are caused by imbalances in budget formulation and implementation. Budget padding and budget mismanagement are the primary modes through which corruption is carried out in Nigeria. In the 2019 Open Budget Index (OBI), Nigeria ranked 97th out of 117 countries, with a transparency score of 21 out of 100. This study employed a qualitative research method, using three approaches: a literature review, secondary research and case studies, to generate research evidence. Qualitative data collection and analysis were undertaken using a literature study to discover Blockchain Technology's benefits and examine the underlying challenges and causes of corruption in the budget process. The results of this study identify government non-trnsparency and lack of traceability as the primary causes of long-term budget failures. A consensus-driven collaborative National budget framework based on blockchain is recommended to establish communication between government departments. Blockchain technology can help combat budget-related corruption and the technology can be used as a budget-tracking system. Nigerians will be able to track budgets in this manner, which will aid in the elimination of corruption and embezzlement of funds because transaction data such as transaction amount, time, account numbers, and receivers will all be made public. The blockchain promises tamper-proof records that corrupt bureaucrats will be unable to alter. When corruption represents a breach of trust, a technology that builds trust becomes an appealing solution.

Key words: *Budgeting, Budget process, Blockchain Technology, Nigeria.*

1.1 Introduction

The Nigerian economy is beset by a slew of imbalances in the formulation and implementation of economic policies. Most problems in Nigeria are caused by imbalances in budget formulation and implementation. Budgeting is an integral part of the government, which is the nerve center of governance at all levels. This is particularly because of its central role in the determination of government revenue and expenditure (Ejumudo & Ejumudo, 2021). Budgeting can be viewed as a process of taking deliberate steps to move the relevant economic system from its current state to the desired state (Shimawua, 2020).

The budget is a critical policy document that prioritizes the government's annual and multi-year goals. Aside from financing new and existing programs, the budget is the primary tool for implementing fiscal policy and thus influencing the overall economy (Idris et al., 2021). The annual budget is the legal mechanism for acquiring, allocating, and distributing national resources for the nation's socioeconomic development (Ngara & Dasat, 2020). Budgeting is thus central to implementing government policy and realizing its numerous programs, projects, operations, and activities (Ejumudo & Ejumudo, 2021). The significance and vital function that budgeting is expected to play in the development of all nations explains why a growing number of researchers and professionals have given increasing attention to the academic debate on the relevant problem. (Ejumudo & Ejumudo, 2021).

Government budgetary corruption is a severe problem in Nigeria, and it is a strategy used by politicians and government workers to divert public funds (Olarewaju et al., 2021). Nigeria's budgetary processes have been left to the whims and caprices of bureaucrats and politicians. Thus, extra-budget spending, large government deficits financed largely by monetary growth, large recurrent spending and debt service costs, poorly conceived projects and programs, poor linkage between spending and development priorities, poor accountability and transparency, low level of capital budget implementation, and reliance on largely manual and outdated procedures have all plagued Nigerian public budgets (Olu-adeyemi & Okajare, 2020). Many modern governments have adopted ICT and e-transparency tools to create more inclusive regimes in a variety of areas, including budgeting. While the federal government is mired in bureaucracy and slow-moving processes, blockchains have the potential to significantly increase the federal government's efficiency and speed (Bedin et al., 2020).

Following the 2008 Global Financial Crisis, the term "blockchain" exploded onto the international stage (Boiardi & Stout, 2021). Blockchain technology has the potential to transform interactions between governments, businesses, and citizens in ways that were unimaginable a decade ago. Though it is frequently associated with technologies such as artificial intelligence (AI) or the Internet of Things (IoT), the technology is distinct in its fundamental nature. Unlike other technologies, which have the potential to provide entirely new services to citizens and other stakeholders, blockchain has the potential to revamp existing processes in order to unlock new sources of efficiency and value (NITI, 2020). Blockchain technology is a distributed ledger technology that can be used to share decentralized and transactional data across a large network of untrusted entities. This technology enables a new type of distributed software architecture capable of achieving consensus on shared states without the need for trust with any central entity/participant (MeitY, 2021).

Blockchain technology has the potential to play a critical role in preventing government corruption and increasing public transparency. Its technology is distinctive in that it combines permanent and tamper-proof record keeping with real-time transaction transparency and automated smart contract functionality (Tong, 2021). Blockchain enables network participants to interact and communicate with one another without the need for a significant third party to manage and provide verification services. Communication between network nodes is validated before being saved as a transaction in a Blockchain database. In Blockchain, various cryptography primitives, such as digital signatures, are used to determine the level of trust for broadcasting transactions between nodes (Hameed et al., 2021).

The data structure used in Blockchain Technology aids in the preservation of an unchangeable record of transactions in a chronological order. As a result, Blockchain Technology improves transparency, immutability, and efficiency, making it unique. (MeitY, 2021). Blockchain systems use the consensus idea to assure the trustworthiness of data and transactions and to preserve trust across decentralized nodes. Nodes do not accept any trusted third party's services to govern their behavior and interactions (Hameed et al., 2021).

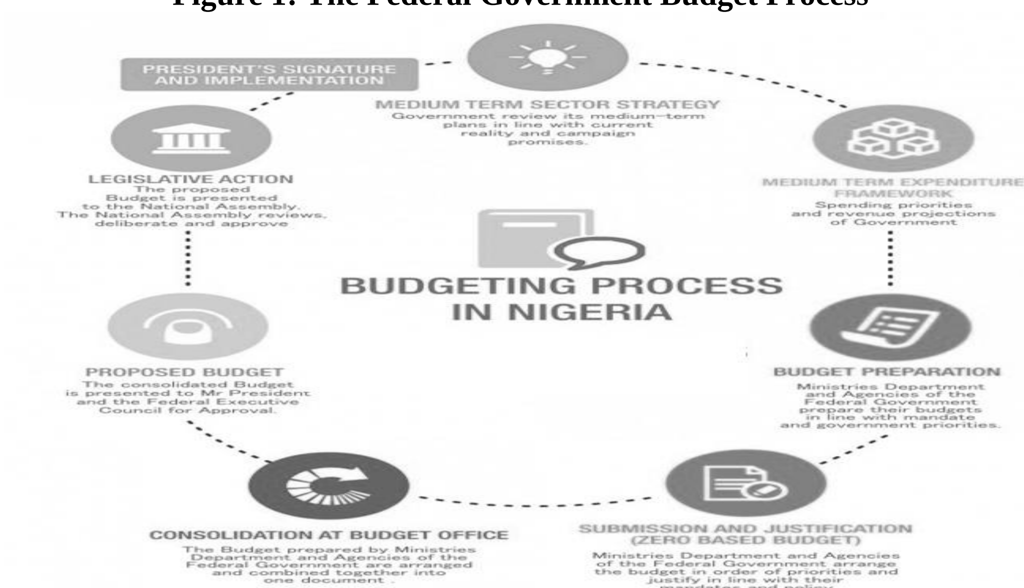
Blockchain technology, as a distributed ledger, has the potential to reduce bureaucracy, improve administrative process efficiency, and boost trust in public record keeping (Piya Yuenyongsuwan, 2021). As a result, as Moura, Brauner, and Janissek-Muniz (2020) point out, the fact that blockchain can provide secure data storage and management helps to make the case for its use in government budget processes.

2.0 Literature Review

2.1 Budget Process in Nigeria

The process by which governments initiate, consider, and approve budget proposals are referred to as the budget process. It entails an institutionally and legally ordered series of interconnected activities such as preparation, submission, authorization, execution, audit, and review (Ngara & Dasat, 2020). The President is legally responsible for budget preparation under Section 81(1) of the 1999 Constitution of the Federal Republic of Nigeria (CFRN), as amended. Traditionally, the President delegated this function to the Ministry of Finance (Effiom, 2019). The 1999 Constitution (as amended) established the executive and legislature as the primary actors in Nigeria's budget process. Sections 4, 59, 80-81 of the 1999 Federal Republic of Nigeria Constitution, as amended, specifically detailed the powers and responsibilities of the two arms of government regarding how monies accruing to the country may be expended over time (Ngara & Dasat, 2020). The establishment of the Budget Office of the Federation (BOF) and the Federal Ministry of Budget and National Planning (FMBNP) signaled a shift away from the traditional practice of centralizing federal budget-related matters in the Federal Ministry of Finance (FMF). Thus, in Nigeria, the responsibility for preparing the national budget is now a function of multi-agency collaboration, facilitated primarily by the FMBNP, BOF, and FMF (Effiom, 2019). Figure 1 depicts how the federal government budget is prepared.

Figure 1: The Federal Government Budget Process



(BudgIT, 2016)

2.2 Challenges Facing the Nigeria Budget Process

The budget process in Nigeria is not without its huge challenges.

- **Budget Padding:** The constitution empowers the executive to initiate and prepare the budget estimate and present it to the legislature for scrutiny and approval before funds can be withdrawn from the consolidated revenue fund, but the arms have always been involved in attempts to outwit each other (Chiamogu et al., 2019). According to (Mark, 2019), Padding a budget means increasing a project's expenses or decreasing its expected revenue to make the budget proposal larger than the actual estimates for the Budget. Padding a budget establishes a precedent that allows those involved to corner public funds by advancing the excess of project costs to themselves or their cronies.
- **Inaccurate Data:** Data is critical for budgeting, but it is frequently unreliable or unavailable. The budgeting process has always been reduced to hunches and guesswork due to a lack of reliable qualitative and quantitative data (Ngara & Dasat, 2020). Cyberattacks on an organization's data are frequently the result of data residing on a centralized database. Furthermore, these centralized solutions do not provide adequate transparency (Geroni, 2021).
- **Poor accountability and transparency:** lack of transparency and accountability is at the top of the list of challenges confronting Nigeria's public budgetary process. This occurs frequently throughout the budgetary process (Olu-adeyemi & Okajare, 2020)
- **Late presentation of the appropriation Bill:** The executive's late presentation of the appropriation Bill to the National Assembly, strained executive-legislative relationship, which causes unnecessary delays in the passage of Appropriation Bills, corruption, and a lack of political will by legislators (Ngara & Dasat, 2020)
- **Delay in budget processes:** Budget preparation, submission, consideration, approval and signing delays are prevalent in the Nigeria’s budget process to an extent that the budget is often not available for implementation in the first quarter and a better part of the second quarter over the past one and half decades (Idris et al., 2021).

2.3 Blockchain

Blockchain is an innovative distributed ledger technology that Satoshi Nakamoto first used in the design and development of Bitcoin in 2009. Blockchain is a conglomeration of various inventions with a clear commercial value (MeitY, 2021). A blockchain is a distributed append-only data structure that stores data in blocks that are linked using cryptography (Avarikioti, 2021)

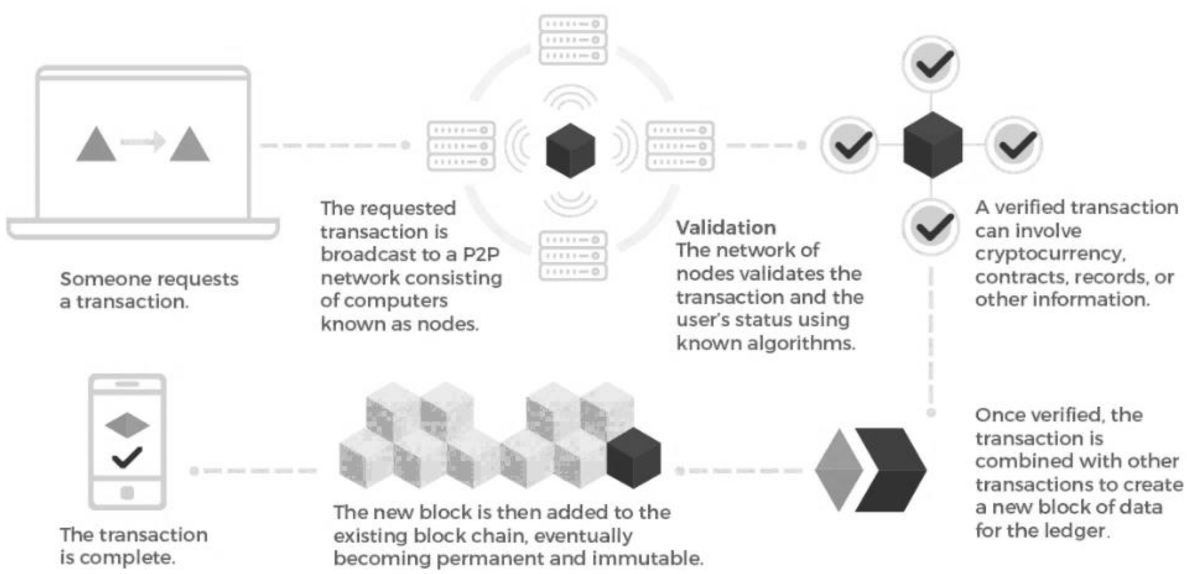
2.4 Blockchain Process

Transactions are secured by an encryption code and composed of the receiver, the transaction information, and the sender.

- **Transaction definition:** It is the initial step in which the transaction is created by a sender who has the receiver's public address information and a cryptographic digital signature that verifies the transaction's credibility and validity.
- **Transaction authentication:** The message is held temporarily until the nodes validate the transaction used to create a block, with nodes performing message validation cryptographically by decrypting the digital signature.
- **Block Creation**: one of the network nodes uses pending transactions to update the block or ledger, and this updated block is shown to nodes waiting for validation at a specific time interval.

- **Block validation:** When a node in the network receives a request for updated block validation, it goes through a repetitive process in which nodes seek the agreement of other nodes in the network to verify the block.
- **Block chaining:** When all transactions in the block are approved, a new block is attached to the current block and the latest state of the block is shown to the remaining blocks in the network.

Figure 2: Blockchain Process

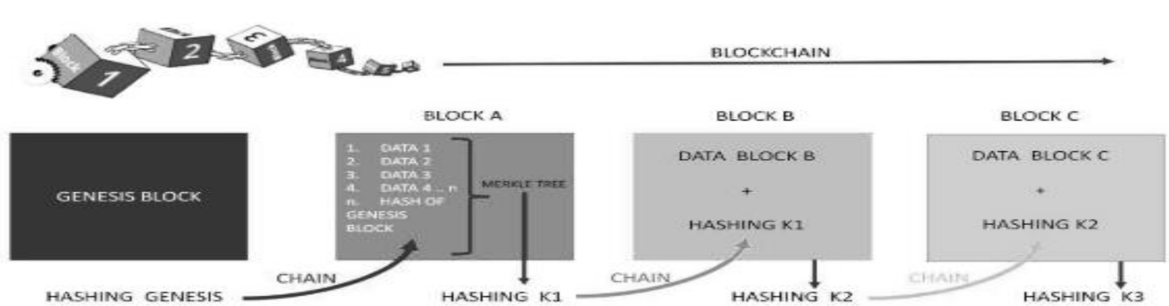


Source: Meiklejohn & Cary (2018)

2.5 Blockchain Architecture

Blockchain is a chain of ordered backlinked blocks that are linked together using cryptography. Each block contains data, a timestamp, a hash of the current block and a hash of the previous block, and a Merkel root. The first block is referred to as the genesis block. Transactions are first hashed, and a Merkle tree is constructed from these hashes. To keep the chronological order, a timestamp is associated with each transaction.

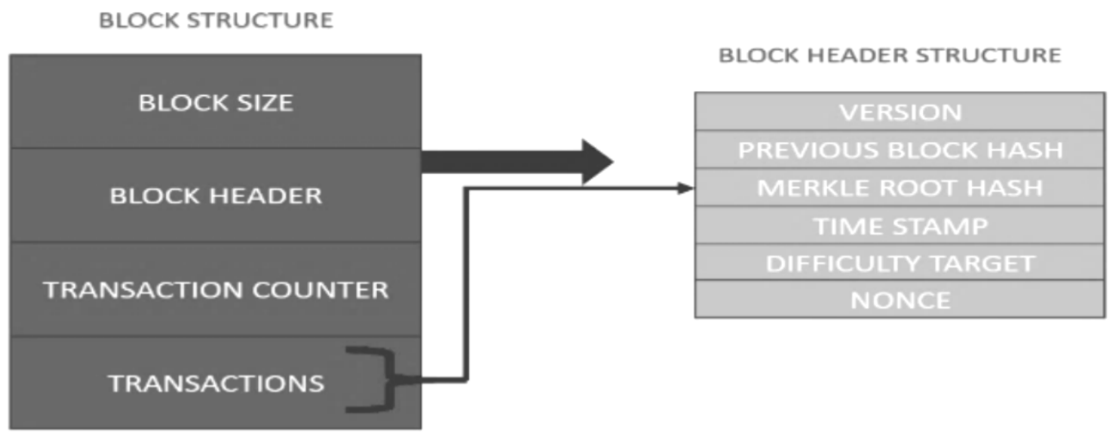
Figure 3: Chain of Blocks



Source: Dwijayanto (2020)

A blockchain block's basic structure consists of four sections, the first of which is the block size. Block size is the number of bytes in a block that contains the hashes of several transactions. The block header is the second section. The third section is the transaction counter, which displays the number of transactions in a given block. The final section contains the transactions themselves, which are being processed within this block (Dwijayanto, 2020).

Figure 4: Block Structure



Source: Dwijayanto (2020)

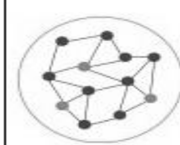
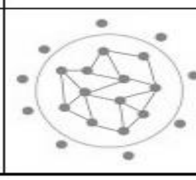
2.6 Types of Blockchain

The different blockchain types came into existence based on the need to adapt them to function in various industries. Primarily the two broad types of Blockchain are Public and Private Blockchain. Two variation also exist like the Consortium and Hybrid Blockchain.

2.6.1 Public and Private Blockchain

From public and private blockchains, four major blockchain types can be distinguished: public permissionless blockchains, public permissioned blockchains, private permissioned blockchains, and private permissionless blockchains, as shown in Table 1. The darker dots represent validating nodes, which can validate transactions in the system and participate in the consensus mechanism (Yong et al., 2019).

Table 1: Types of Blockchain

Blockchain type	Explanation	Example	Visualization
Public permissionless blockchains	In these blockchain systems, everybody can participate in the consensus mechanism of the blockchain. Also, everyone in the world with a connection to the internet is able to transact and see the full transaction log.	Bitcoin, LiteCoin, Ethereum	
Public permissioned blockchains	These blockchain systems allow everyone with a connection to the internet to transact and see the transaction log of the blockchain, but only a restricted amount of nodes can participate in the consensus mechanism.	Ripple, private versions of Ethereum	
Private permissioned blockchains	These blockchain systems restrict both the ability to transact and view the transaction log to only the participating nodes in the system, and the architect or owner of the blockchain system is able to determine who can participate in the blockchain system and which node can participate in the consensus mechanism.	Rubix, Hyperledger	
Private permissionless blockchains	These blockchain systems are restricted in who can transact and see the transaction log, but the consensus mechanism is open to anyone.	(Partially) Exonum	

Source: Yong et al. (2019)

2.6.2 Consortium Blockchain

Consortium blockchains, like private blockchains, are intended for multiple organizations. The network can only be joined and maintained by invited and trusted participants. In terms of security, consortium blockchains handle information in a more secure manner for alteration than private blockchains. Because of the participation of multiple organizations, hacking is also better protected in this type of Blockchain. Energy Web Foundation, R3, and other consortium blockchains are examples (Mukherjee & Pradhan, 2021).

2.6.3 Hybrid Blockchains

Public and private blockchains are combined in hybrid blockchains. It combines the privacy and permissioned features of Private Blockchain with the ease, flexibility, and transparency of Public Blockchains. Participants in a Hybrid Blockchain can exert authority over and access to the data stored in it. Dragonchain is the most common Hybrid Blockchain example (Mukherjee & Pradhan, 2021).

2.7 Blockchain Platforms

Table 2 shows a comparison of the major blockchain platforms. The platforms are contrasted in terms of blockchain type, consensus mechanism, smart contract, transaction capacity, forks, lack of permission, and fee-less operation.

Table 2: Blockchain Platform Comparison

	Bitcoin	Ethereum	Hyperledger Fabric	Hyperledger Burrow	Ripple
Blockchain-Type	Public	Public / Private	Private / Consortium	Private / Consortium	Private
Consensus	PoW	PoW/PoS	PBFT	Tendermint	BFT(RPCA)
Smart contract	No	Yes	Yes	Yes	Yes
Capacity	7 tps	12 tps	Thousands tps	Thousands tps	Thousands tps
Forks	Yes	Yes	No	No	No
Permission-less	Yes	Yes/No	No	No	No
Fee-less	No	No	Yes	Yes	No

Source: Abdi et al. (2020)

2.8 Related Works

Weingärtner et al., (2021) discuss some of the frauds in public procurement and propose smart contracts to automate different stages of the public procurement procedure in an attempt to address their major flaws. They created a prototype that demonstrates the process, using sample data to demonstrate the feasibility and usability of their proposal. Fiergbor (2020) also discusses the prospects of Blockchain Technology in Ghanaian Fund Management. His findings revealed that incorporating Blockchain technology into the fund management industry would improve data credibility, transparency, accuracy, accountability, and immutability between fund managers and investors. This is due to Blockchain technology's data storage security features, which make data alteration difficult. The goal of (Sengupta, 2021) is to introduce and present the blockchain concept as well as its current applications in supply networks and logistics. Blockchain technology promises to overcome issues with trust and enable a trustless, secure, and authenticated system of information exchange for supply networks' logistics and supply chains.

In a different line of work, (Olarewaju et al., 2021) offers suggestions for preventing budgetary corruption in government. The study has demonstrated how ICT, in this case social media and a specialized online monitoring platform, can be used to promote accountability and transparency surrounding the government budgeting process. Using abductive reasoning, the article outlines four stages of citizen empowerment and four social marketing transition stages that can help increase budget transparency and decrease corruption. The study (Olu-adeyemi & Okajare, 2020) looked at Nigeria's budget process in relation to the problems that plagued its public budgets. The study raised the issue that Nigeria's budgetary process is secretive, which has prevented fiscal documents from accomplishing their goals. The study concluded that if the budgetary process is made open, transparent, and participatory, the myriad of issues affecting it will be resolved. Reinsberg (2021) investigated how blockchain technology could improve global governance. The study's theoretical analysis revealed that three ways could be used to promote cooperation using blockchain-enabled functionalities such as smart contracts: first, by leveraging collective information feeds to help resolve uncertainty about the state of the world and state behaviors; second, to effectively address distribution issues; and third, to enable states and other actors to interact.

2.9 Research Gap

Blockchain technology has grown in importance as a tool for governments all over the world. However, it is unclear to what extent blockchain can improve the budget process, and some policy domains, such as the national budget process, have not been the focus of recent studies. Budget allocation, in particular, is one of the areas where Blockchain Technology may have the most potential. As a result, this study attempts to fill a gap, and there is a need for organizations to focus on these issues in order to improve overall operational efficiency

3.0 Methodology

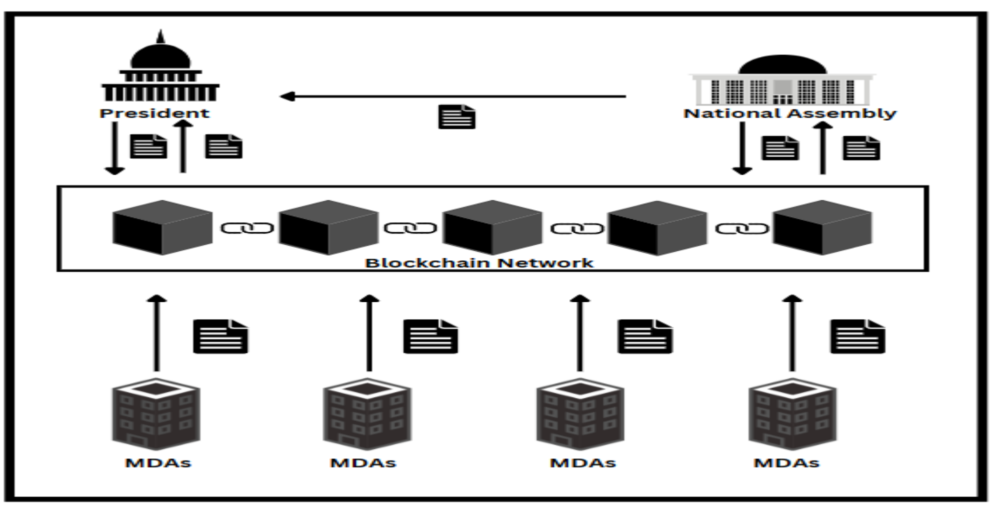
This study employed a qualitative research method, using three approaches such as a literature review, secondary research and case studies, to generate research evidence. With the recent introduction of blockchain technology in government operations, using qualitative approaches gives a realistic strategy to engage with the technology in its early phase. This strategy is used to describe conditions that occur in-depth and in a clear manner. Qualitative research, according to (Tenny et al, 2022), is a sort of study that investigates and delivers deeper insights into real-world situations. Qualitative research is used for preliminary research when the study subject is not clearly defined and poorly understood, to comprehend particular issues regarding the scenario, reality encountered, and to investigate anything in greater depth.

The first step in the research is a review of published literatures on blockchain technology applications in government. The non-financial applications of blockchain technology, such as smart contracts and digital assets, were then examined. Secondary research is carried out on primary sources that cover technical aspects of key blockchain implementations such as Bitcoin, Ethereum, and Hyperledger Fabric.

4.0 Results and Discussions

To discover the benefits that Blockchain Technology can offer to the government budget process, qualitative data collection and analysis were undertaken using a literature study. The literature from top journals and online resource databases such as Google Scholar, Emerald Insight, Academia, Science Direct, Scopus, and Springer Link was searched for primary studies using keywords such as Blockchain Technology, National budget, use cases, and benefits. the literatures were scrutinized based on the relevancy of the abstracts collected, and finally a framework for the national budget process was proposed, as depicted in figure 5, and Blockchain Technology attributes were identified that can repel obstacles encountered during the budget process.

Figure 5: National Budget Process using Blockchain Technology



Source: Compiled by the Authors

Ministries Departments and Agencies (MDAs) of the Federal Republic of Nigeria prepare and arrange the budget in order of priorities and justify in line with their mandates and policy of thrust of government. The budgets prepared by the MDAs are arranged and combined together into blocks of document by the blockchain network. The blockchain network receives individual budget proposals from all the MDAs, and groups proposals together to form a block base on the time they are submitted. As each proposal is submitted, the blockchain network broadcast the proposals to all participants for validation before adding them to a block making the process transparent and preventing the submission of false documents. When the consolidated budget is presented to Mr. President and the national assembly for approval by the Federal Executive council, they are able to compare and contrast the initial budget proposals submitted by the MDAs and the consolidated budget because they are also members of the blockchain before making any approval. Making the budget process efficient and trustworthy. A Harmonization Committee comprised of NASS Appropriations Committee members meet to iron out kinks. Following that, a clean copy of the Appropriation Act is sent to the President for his signature.

This study has explored the budget process and identified certain governmental practices that affect the level of budget transparency. The research findings identified blockchain attributes that can fend off challenges faced by the national budget process.

1. Disintermediation: The elimination of a single point of failure and a potentially vulnerable central authority is a key component of all blockchain technologies. Despite the fact that a central authority controls who has access to the system, blockchains avoid a centralized server architecture. Disintermediation offers two major benefits:

- **Security:** Blockchains are less susceptible to attacks, especially DDoS attacks. There is a distinction to be made between increased external security, which protects records from outside attack, and increased internal security, which makes it more difficult for people within an organization to tamper with the data.
- **Efficiency:** Direct communication between parties can result in significant efficiency gains and quick transaction times.

2. Immutability: Data cannot be changed once it is added to the blockchain. The use of cryptography and the manner in which the data is linked prevents it from being altered later. The data's time and origin can also be determined. The immutability of data can provide two significant benefits:

- **Accountability:** A device or person who entered the data at a particular site on the blockchain and at a particular time can be linked to a transaction. These people can also be connected to the data and made answerable. It is easier and more accurate to identify and attribute fraudulent data**.**
- **Trust:** Because data cannot be changed once it has been entered onto a blockchain, there is more trust in the system. While this is an important feature of cryptocurrencies, it can also be beneficial in other blockchain use cases. They can provide a way to monitor the data that is being stored while trusting that the data has not been tampered with.

3. Transparent: Blockchain technology was built with irreversible transparency in mind. Once a transaction is added to a blockchain ledger, it cannot be modified or removed without causing irreparable damage to the blockchain (Hirsh & Alman, 2019).

4. Anonymity: Transactions in blockchain are made using the generated wallet address, and personal identity is hidden. To ensure complete anonymity, multiple addresses are used.(Banchhor et al., 2021).

Anonymity refers to an entity's status as being secret and unrevealed, which means that no one can determine the users' true identities based on their behavior or transactions in the system.(Hameed et al., 2021).

5. Integrity: The distributed validation mechanisms that confirm blockchain additions cannot be manipulated to intentionally add low quality or inaccurate information to the blockchain. The automated capture of transaction metadata for all activity undertaken on each chain also contributes to the integrity of user information and activity.(NGRI, 2020)

6. Resilience: The distribution of information among blockchain nodes provides the information security that the technology offers. While malicious attacks can target centralized databases, given the distributed nature of a blockchain, a similar level of effectiveness would require "an attack on every copy of the ledger simultaneously."(NGRI, 2020).

7. Autonomy: Autonomy is defined in any system as the ability to perform functions independently in order to achieve specific goals. The anonymity feature of Blockchain allows users to participate in a self-organizing system and to verify transactions without the involvement of a centralized third party.(Hameed et al., 2021).

8. Cryptographically sealed: secures assets recorded on the ledger and ensures the integrity of the blockchain. This increased security enables individuals and businesses to transfer value directly without incurring the additional costs associated with using an intermediary or third-party service to route these payments or trades.

9. Traceability: Because each transaction on the Blockchain is validated and timestamped, users can easily verify and trace previous records by connecting to any node in the blockchain network. Each transaction can be iteratively traced back to previous transactions. It enhances the traceability and auditability of data stored in Blockchain. (Haneem et al., 2020).

5.0 conclusion

The obstacles to a successful budget process are numerous and encapsulated in government corruption. The complexity of corruption undermines the success of most proposed solutions, and thus failures in effective budget processes persist. Further investigating the underlying causes of corruption, we identify government non-transparency and lack of traceability as the primary causes of long-term budget failures. A consensus-driven collaborative national budget framework based on blockchain is recommended to establish communication between government departments.

The blockchain promises tamper-proof records that corrupt bureaucrats will be unable to alter. The distributed ledger and consensus mechanisms make it difficult for a single entity to falsify entries. In the fight against corruption, blockchain has emerged as the most promising disruptive technology. It has important features that can help bureaucracies maintain integrity by securing identity, tracking funds, registering assets, and procuring contracts.

When corruption represents a breach of trust, a technology that builds trust becomes an appealing solution. To conclude, blockchain technology encourages greater participation and awareness by increasing transparency, which will eventually help the Nigerian government develop.

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Application of Accounting Software and its Impact on the Roles of Chief Finance Officers in Micro, Small and Medium Enterprises in Nigeria

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Abstract
The roles of Information Technology (IT) in shaping the directions and conducts of business activities in the 21st Century cannot be over emphasized. At a greater percentage, hardly does any of the MSMEs do without employing the use of Accounting Software (AS) which is a product of IT. The study examined the impact of AS applications on the roles of CFOs of the MSME in Nigeria by exploring the effects of using AS in the discharge of the roles of CFOs of the MSMEs of Nasarawa Local Government Area of Kano State as the case study. Extant literatures have highlighted several characteristics of AS which include efficiency, reliability, ease of use, data quality and accuracy as influencer to the use of IT and therefore AS. These qualities were used as our independent variable against the roles of CFOs as dependent variable. Primary data generated through the administration of 105 questionnaires, where 87 were returned and only 64 valid were used to test the study hypotheses. Normality Test was conducted using Shapiro-Wilk measure to ascertain the distribution of data used. The results indicated that our data were not normally distributed. Hence, we conducted an Ordinal Regression for data analysis via SPSS. The results showed that all the independent variables; EFF, RELB, D_QLTY and D_ACCRY have positive impact on the dependent variable; CFOs but not significant. The result of this study shall help the owners and managers of the MSMEs in understanding the importance of using Accounting Information System (AIS) i.e. derived from accounting software viz-a-viz the enhancement of the roles of their CFOs.

Keywords*: Accounting Software, Accounting Information System, MSMEs, CFOs*

1.0 Introduction

Financial transparency implies a full, comprehensive and total disclosure of all financial activities of a going-concern within a given period of time for a concise, rightful and objective decision making by the shareholders. A well-documented activities related to finances are such that entities either publicly or privately relating should not toy with due to the importance attached to every kobo spent and its eventual or consequential results being awaited by the owners. In the same vein, a full disclosure of such financial activities is so eminent due to the agency/principal relationship that exists between the fund owners and the managers as the case may be, who in return will demand full explanations of how the trusted funds are spent for certain decisions to be made. This is why managers at any given time and of any form of organizational setup, at least a larger proportion of them if not all, gives all it takes to ensure this responsibility is fully, comprehensively, concisely and timely discharged.

The traditional method of bookkeeping and accounting has taught how to account or disclose financial activities of the enterprises which in fact is the basis upon which modern accounting methods are built. Traditionally, accountants make use of prime books, journals, ledgers, extract trial balance, prepare a trading, profit and loss account, balance sheet, cash flow statement and so on to explain to the owners and general public at large the movement of every kobo spent by an organization. Accounting activities have considerably increased and complex with expected increased volume speed for transactions processing, an enhanced and vast storage and processing speed was really needed. Besides transaction volumes and processing, other notable limitations of this method may be entry and processing errors, loss of data, etc.

These indeed are the duties and responsibilities of the Chief Finance Officers (CFOs) of all enterprises. They are responsible for adequate, full and comprehensive disclosure and explanations on daily basis recording of how every kobo and related activities are carried out. Financial activities are now vast, voluminous and sophisticated and therefore require sophisticated and modern way of discharging these fundamental roles. This is why Accounting Information System (AIS) and invariably accounting software is so important to the CFOs in the discharge of their roles. We can therefore not underestimate the influence of these accounting software on the performance of the roles of the enterprise' CFOs. Considering the roles these accounting software and indeed AIS generally have on financial disclosure and transparency and in the discharge accounting duties, researchers have turned their searchlights to dig deeper on the impacts they have on performance and other accounting and finance phenomena.

Accounting Software are electronic applications created in order to aid accountant performing accounting activities which may include entry, processing, analyzing and presenting accounting activities for rightful and timely decision making. According to Wickramsainghe, et al. (2017), accounting software was introduced to satisfy the increase demand for up-to-date and accurate information. Accounting software is an integration of accounting and information technology.

According to Hla and Teru (2015), accounting information system is of great importance to businesses and organizations because it facilitates management decision making, quality of financial report, internal controls, aid company's transactions recording and besides, playing a crucial role in economic system. Researchers have made serious efforts in establishing empirically, relationship between accounting software and many other variables. Saira, et al. (2010), Gullkvist (2002), Sajady, et al. (2008), Kouser, et al. (2011) in their studies found that adoption of accounting information system increased firm's performance, profitability and operations efficiency in Malaysia, Finland, Spain, Iran and Pakistan. Some also researched between accounting software (Accounting Information System) and internal control mechanism as in the case of Hla and Teru (2015), Teru et al. (2017) discovered that accounting software will greatly impact internal control system. We got from the available extant literatures and empirical findings that little or no works have really studied impacts the use or applications of Information Technology (IT), Accounting Information System (AIS) and or Accounting Software (AS) has the jobs performance of the enterprise Accounting Officers. This study therefore intends to bridge this gap by conducting an empirical investigation on the impact of the application of AS on the roles of Chief Finance Officers, CFOs of the MSMEs in Nigeria.

It needs to be stressed that the major intent of this study is to examine the impact of using accounting software on the roles of Chief Finance Officers (CFOs) in Nigeria by focusing majorly on the Micro, Medium and Small Enterprises (MSMEs) in Nigeria focusing Nasarawa LGA of Kano State as a case study. To help achieve this, the following alternate hypotheses are developed:
H_1: Accounting software efficiency positively and significantly affects the roles of CFOs of MSMEs in Nigeria.
H_2: There is a positive and significant impact of accounting software reliability and roles of CFOs of MSMEs in Nigeria.
H_3: Quality of accounting software data impacts positively and significantly on the roles of CFOs of MSMEs in Nigeria.
H_4: Accounting software data accuracy positively and significantly impacts on the roles of CFOs of MSMEs in Nigeria.

Investigations have shown that a great percentage of all categories of businesses; small and medium scale in Nigeria employ the use of accounting software in the discharge of account activities. This study is therefore expected as a matter of fact assists the decision makers as well as industry players and stakeholders to determine the usefulness of the bulk of resources being spent on acquiring and maintaining this software. Besides, it shall contribute to the existing literatures and researches in the field of accounting and finance for the young researchers.

2.0 Literature Review

This section reviews some empirical studies relating to the role of Information Technology and Accounting Software and as well, explain some concepts of Accounting Software.

2.1 Theoretical Framework

Accounting information system according to Manchilot (2019) in Ganyam and Ivungu (2019) may be a computer-based electronic system used for collecting, storing, processing and communicating financial and accounting data through financial statements with the aim of supporting and guiding organizational decision-making process. They went further that computers are the hub of accounting information as they provide a platform for the workability of all information systems. For an accounting information system to be operational, its appropriate software application must be on the computer system intending to be used. To Nzomo (2013) accounting software may comprise Quick Books and Enterprise Resource Planning (ERP) and explained further that they obeyed set of instructions to produce data while users are people that interact and use the information produced by the software. Contemporarily however, different and more sophisticated accounting software packages and applications are being used. These include Oracle (Peoples Account), Peachtree, Autocount, Sage, Statutory Accounting Principle (SAP), etc. Generally speaking and according to Dastgir, et al. (2008), accounting systems provide financial reports on a regular basis; daily and weekly, provide essential information for monitoring decision-making process and performance of the enterprises. According to Borhan and Bader (2018), accounting information system contains a group of harmonized business, components, and resources which process, manage and control the data for producing and carrying the relevant information for decision makers in the organization.

According to Chau and Gray (2002), financial transparency is a set of rules and policies put in place by management to regulate its affairs and have efficient management of financial resources to improve the value of the company and achieve maximum shareholders returns. Firms with good financial transparent practices would be investors' friendly, which enable them to optimize their capital structure by attracting cheaper funding thereby maximizing returns to shareholders (Degryse, et al. (2010).

In 2016, Ali, et al. examined the effect of Accounting Information System on organizational performance and the moderating effect of organizational culture in the relationship between AIS success factors and organizational performance in Jordanian banking sector. They employed service, information, data and system qualities as four types of information success factors as the determinants performance. A well-structured questionnaire survey were used and analyzed with PLS SEM technique and found that service, information and system qualities are the success factors that increase organizational performance significantly.

Chong and Nizam (2019) investigated and explored the impact of Accounting Software on performance of Malaysian firms by employing some features such as: efficiency, reliability, ease of use, data quality and accuracy influenced the use of accounting software to affect firm's performance. Using a secondary datavia 150 questionnaires administered and analyzed via Statistical Package for Social Sciences (SPSS), the study found that all the attributable features have significant effects on the use of accounting software sand firm's performance.

Besides, Muhammad et al. (2019) conducted an empirical study on the effects on information system and accounting software on transparency of financial statement information on listed firms in Tehran. Questionnaires were as well administered on active 86 brokers out of the 110 brokerage firms and the analysis showed that the information systems and accounting software have a significant effect on three main characteristics of financial statement transparency which are relativeness, reliability and comparability.

Furthermore, Boniface, et al. (2018) studied the effect of financial transparency on financial performance of companies listed in East Africa Securities Exchanges. They examined the effect of financial policy, investment policy and liquidity disclosures on financial performance by employing a correlational research design and purposive sampling on selected seventy-three (73) firms listed from 2006 to 2015.While analyzing the secondary data used via a descriptive, correlation and regression analysis, the results revealed a positive and significant relationship between financial policy, investment policy, financial liquidity and financial performance.

2.2 Conceptual Framework

2.2.1 Accounting software efficiency and CFOs' role

Wilkinson et al. (2000) asserted that efficient and effective accounting information system shall perform multiple roles which include; data collection and maintenance, accounting systems and knowledge management, data control and information generation. Likewise, Greene and Segal (2004)'s study showed that efficiency increases enterprise returns on equity in the insurance industry.

2.2.2 Accounting software reliability and roles of CFOs

Accounting software are expected to produce a reliable and unbiased information useful for decision making therefore making reliable beyond any necessary doubt, all things being equal. Chong and Nizam (2019) stated that Chandar and Bricker (2002) in closed-end mutual funds predict and find that returns to market-wide portfolios S&P 500 Index and the Russell 2000 Index provide useful information to enable users to gauge the reliability of these funds' estimates of fair value gains and losses.

2.2.3 Accounting software data quality and roles of CFOs

A computer or information system is a garbage-in-garbage-out in respect to data input and output. Accounting software processes any form of data imputed; if the data is genuine, a genuine is processed and produced and vice vasa. Xu (2003) stated that output of accounting information system and invariably accounting software depends majorly on the data quality input as poor data quality will result in garbage in garbage out. Lee and Strong (2003) explained that achieving high data quality depends on the process of data production such as data collection, utilization and storage must work satisfactorily.

2.2.3 Accounting software accuracy and roles of CFOs

Accounting software is not only speedy but also accurate and reliable. Computers are being used to collect data and process into meaningful information that management use to make timely and effective decisions and the entire data processing are carried out using accounting software through sorting, classifying calculating, summarizing the data and production of reports (Chong and Nizam, 2019). Ravichandran and Rai (2000) posited that by leveraging on IT, organizations can achieve internal operational efficiencies, if management is able to earnest internal resources efficiently and effectively and improve customer service to attain strategic advantages.

3.0 Research Methodology

This section discusses the overall methodology the study adopted in achieving its set objectives in line with research objective and hypotheses formulated earlier. It adopted a positivism paradigm which is based on values of reasons and validity and it focuses on facts garnered from theories which can be measured empirically using quantitative methods. The study design was both exploratory and explanatory as it aimed at exploring and explaining the interrelationship between the study variables while the methodology was quantitative as data were collected for facts investigations.

We sourced our data primarily through by adapting a well-designed and close-ended questionnaire, structured on a 5-point Likert format which was administered on one hundred and five (105) randomly selected respondents in Nasarawa Local Government Area of Kano State. The questionnaire method was used so at to reach hundreds of respondents at a relatively lower cost and to allow them (respondents) respond at their own pace. A total of eighty-seven (87) questionnaires were returned representing 82% of the total distribution while only sixty-four (64) representing 74% were valid. The rest were rejected for disobeying certain rules or the other.

The study used statistical procedures via the Statistical Package for Social Sciences (SPSS) to measure the accuracy of our data. Some statistical tests carried out include Normality Test, Reliability Test and Ordinal Regression. The study resorted to the Ordinal Regression upon discovering that our data were not normally distributed.

4.0 Results and Discussions

This section is devoted for the presentation, analysis and interpretation of data used in the study.

4.1 Demographic Analysis

Table 4.1 below displays the demographic distribution of the data or the respondents used in the study:

Table 4.1: Demographic distribution of the respondents

Variables	Measures	Frequency	Percentage	Cumulative percentage
Gender	Male	45	70.31	70.31
	Female	19	29.69	100
Years in service	0 – 5yrs	18	28.13	28.13
	6 – 10yrs	16	25	53.13
	11 – 15yrs	23	35.9	89.07
	16yrs and above	7	10.9	100
Staff strength	1 – 9	32	50	50
	10 – 49	24	37.5	87.5
	50 – 249	8	12.5	100
Are you using accounting software	Yes	58	90.63	90.63
	No	6	9.38	100
Type of accounting software in use	Sage	7	10.94	10.94
	Peachtree	54	84.38	95.32
	Quick books	3	4.69	100
Years of using the accounting software	0 -5yrs	14	21.88	21.88
	6 – 10yrs	24	37.5	59.38
	11 – 15yrs	24	37.5	96.88
	16yrs and above	2	3.13	100

Source: Authors' Compilations May, 2022

Table 4.1 above showed the demographic breakdown of the respondents. 70.31% are male while 29.69% are female as shown on the Table which implies that more male comprise more of workforce than female in Nasarawa Local Govt. of Kano. In the same vein, the Table showed that larger proportion of the respondent is experienced with service year of 16years and above having 10.9%, 11 - 15years comprising 35.9% follow by 6-10years with 25% while 0-5years make up 28.13%. Besides, we deduce from the Table that respondents operate more of micro and medium enterprises that small enterprise. This is evidenced from the staff strength of the respondents with 50% having 1-9 staff, 37.5% gets between 10 – 49 staff while just 12.5% have between 50 – 249 staff. The Table as well depicts that more of the respondents use accounting software and in particular Peachtree with 84.38% while Sage and Quick Book users get 10.94% and 4.69% respectively.

4.2 Normality analysis
This is the analysis of the test conducted to know if our data are normally distributed or not.

Table 4.2a: Tests of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	Df	Sig.	Statistic	Df	Sig.
CFOROLES	.278	64	.000	.792	64	.000
EFFC	.286	64	.000	.776	64	.000
RELB	.288	64	.000	.815	64	.000
D_QLTY	.484	64	.000	.462	64	.000
D_ACCRY	.363	64	.000	.638	64	.000

Source: Authors' Generation via SPSS May, 2022.

Table 4.2a above showed the result of the first round of normality test (transformed) conducted. The analysis was based on Shapiro-Wilk measure because our data is less than one hundred. Given this, we expected an insignificant result. Reverse was the case however where it showed a significant result for all the variables used. This necessitated a second round of normality test which was conducted by logging the entire variables to base ten also via SPSS. The results of the second test of normality are shown below on Table 4.2b.

Table 4.2b: Tests of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	Df	Sig.	Statistic	df	Sig.
LOG_CFOROLE	.257	64	.000	.757	64	.000
LOG_EFFCY	.275	64	.000	.766	64	.000
LOG_RELBY	.335	64	.000	.760	64	.000
LOG_D_QLTYY	.473	64	.000	.427	64	.000
LOG_D_ACCRYY	.334	64	.000	.553	64	.000

Source: Authors' Generation via SPSS May,2022.

As can be seen as well from Table 4.3b above, Shapiro-Wilk results still showed a powerful significant level for all the variables even after transforming and login the data. These therefore indicated that our data were not normally distributed. We hence resorted to conduct an Ordinal Regression.

4.3 Regression Analysis.
Ordinal Regression was conducted since our data were not normally distributed as shown in the previous section of the study. Firstly, the Model Fitting Test was conducted to know how well the model fit the data. As seen on Appendix 1, the statistical result showed a statistical significance level at 1%. This indicates that the model fits the data very well. Secondly, the Goodness-of-fit test was carried out. This test determines wheither the model fits the data set. As shown on Appendix 1, both Pearson and Deviance Chi-Square Tests showed an insignificant statistic estimates which clearly indicate that the model fits the data set perfectly. In the same vein, in the Pseudo R-Square Test measures the extent of the effects of the independent variables on the dependent variable. The result as depicted on Appendix 1, going by the Nagelkerte measure of 0.976 indicates that approximately 98% change in the dependent variable was as a result of the changes in the independent variables. In

other words, 98% change on the roles of Chief Finance Officers of the MSMEs in Nigeria is as a result of changes in the accounting software efficiency, reliability, data quality and data accuracy. The Test of Parallel Lines was not left out of the estimates. It was tested to know if the study violated the test of parallel lines or not. The test takes on the assumption of proportional odd. It denies the null hypotheses are consistent or the same across the explanatory variables. The result was expected to be statistically insignificant. The result indicated that we have not violated the test of parallel lines as the Table on Appendix 1 indicates an insignificant statistic. The parameter estimates of the regression needs to be explained. Table 4.5 below displays the parameter estimates of the data used in the study.

Table 4.3: Parameter Estimates

		Estimate	Std. Error	Wald	Df	Sig.	95% Confidence Interval	
							Lower Bound	Upper Bound
Threshold	[CFOROLES = 2.00]	49.990	38.473	1.688	1	.194	-25.416	125.397
	[CFOROLES = 3.00]	78.834	51.585	2.335	1	.126	-22.272	179.939
	[CFOROLES = 4.00]	87.399	52.877	2.732	1	.098	-16.238	191.036
Location	EFFC	8.606	7.495	1.318	1	.251	-6.085	23.297
	RELB	5.961	5.786	1.061	1	.303	-5.380	17.301
	D_QLTY	.431	8.421	.003	1	.959	-16.074	16.936
	D_ACCRY	4.916	5.225	.885	1	.347	-5.326	15.158

Source: Authors' Compilation via SPSS May, 2022.

To analyze the regression results on Table 4.3 above, we need to take both the coefficient estimates and their levels of significance into consideration. From the Table, all the independent variable is positive but insignificant effect on the dependent variable. The estimate coefficients of 8.61, 5.96, 0.43 and 4.92 respectively for EFF (accounting software efficiency), RELB (accounting software reliability), D_QLTY (accounting software data quality) and D_ACCRY (accounting software accuracy) indicate a positive impact on CFO roles but insignificant levels because the significant estimates show a 0.25, 0.30, 0.96 and 0.35 in the same order.

The implication of this is that all the independent variables are not significant predictor of our dependent variable. In other words, a level rise in EFF, RELB, D_QLTY and D_ACCRY may not necessarily result to an improvement on roles of the CFOs of the MSMEs in Nigeria at 8.61, 5.96, 0.43 and 4.92 respectively. Therefore, given the results of the study, EFF, RELB, D_QLTY and D_ACCRY are not the most important predictors of the roles of CFOs of the MSMEs in Nigeria.

The hypothesized a positive and significant impact between EFF and CFO, RELB and CFO, D_QLTY and CFO and finally D_ACCRY and CFO. The results however negated these. Hence, we rejected all the alternate hypotheses. The implication of this is that there are other important predictors that impact better on the roles of the CFOs than those used in the study.

5.0 Conclusion and Recommendations

The study achieved the objectives it set to achieve having found that all the independent variables impact positively on the dependent variable but not significant. In other words, a unit rise in accounting software efficiency, reliability, data quality and accuracy will lead to an enhanced performance in the roles of the CFOs of the MSMEs in Nigeria but not necessary. Hence, the alternate hypotheses were all rejected. This is because, the results of the regression conducted depicted insignificant statistical coefficients for all the variables. It is therefore recommended given the results of this study that accounting software is an important tool useful in the discharge of accounting duties and enterprises should endeavor to put their applications into use.

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Audit Committee Attributes and Financial Reporting Quality of Listed Deposit Money Banks in Nigeria

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Abstract
The Nigerian banking sector was bedeviled with financial scandals despite regular annual audit. This put doubt to the audited financial reports quality, credibility and authenticity. These audit failures were believed to have occurred because of audit committees' failure to exercise its proper oversight functions. In this study, we empirically examine the effect of audit committee attributes on the quality of financial reporting of deposit money banks in Nigeria. Ex-pot facto research design was adopted where data was extracted from the annual reports and accounts of the sampled thirteen deposit money banks for eleven years (2011-2021). The dependent variable in this study is financial reporting quality proxies by discretionary loan loss provision (DLLP). In contrast, the independent variables are the audit committee attributes. Descriptive statistics, correlation analysis and regression methods were techniques used for data analysis and test of our hypotheses The study revealed that except for audit committee financial expertise and frequency of audit committee meetings, the other independent variables were found to be insignificant and are not, therefore, determinant of financial reporting quality in deposit money banks in Nigeria. The study recommends that emphasis should be given to financial expertise ability in the appointment of members to the audit committee and advises that the audit committee should always be given adequate consideration by management in decision making.

Key words: *Audit Committee Attributes, Discretionary Loan Loss Provision, Financial Reporting Quality, Deposit Money Banks*

1.0 Introduction

Financial statements are the primary means through which firms convey important information about their operations to their shareholders and other stakeholders, such as creditors, the government, and appropriate agencies (Bala, Amran & Shaari, 2019).. These publicly available annual financial statements report clearly provides the user with a foundation for making decisions among available options and evaluating the company's growth and results. Thus, Investors can compare companies within or across time periods using audited financial statements as a common ground (Zandi, Sadiq, & Mohamad, 2019).

The accounting numbers stated in a company's published annual report and accounts have a big impact on investors, current shareholders, creditors, and other financial statement users. However, directors of a company who are responsible for the preparation and presentation of financial statements are expected to act diligently in order to avoid frightening shareholders and investors through aggressive earnings management, implying that accounting earnings as reported in a company's published financial reports are expected to be faithful, timely, and reliable to various stakeholders for a prudent economic decision.

As a result, audit quality is critical for ensuring trustworthy and high-quality financial statements. The external auditor's role is complementary to the board of directors' and audit committee's monitoring and supervision roles in improving financial reporting quality (FRQ) and protecting the company's public image. Previous research has found that auditor attributes can help firms enhance their financial reporting quality (Bala & Ibrahim, 2015). This is due to auditor independence, which protects auditors from outside influence and biased auditing, resulting in better financial reporting quality FRQ (Al-Najjar, 2018).

Despite the importance of financial statements and the role of auditors in confirming their authenticity and trustworthiness, shareholders are nevertheless concerned about their quality. This was a result of a string of corporate failures around the world, including the Enron Corporation incident in 2001, the Cadbury Nigeria crisis in 2009, Tyco, A.P., Xerox, and Health South. The recent Sky and Diamond Bank catastrophe, in which the Central Bank of Nigeria ordered the termination of the bank's top management employment, is a case in point (Al-sraheen, Saleh, & Alsmadi, 2019; Zandi et al., 2019). This entire incident stemmed from an accounting issue that continues to jeopardize financial reporting's accuracy, therefore misleading concerned stakeholders. Furthermore, these current widespread manifestations of fraudulent or deceptive financial reporting can be argued to be accountable for business distress, causing damage to the integrity of the financial reporting process and the obligations of those who certify the financial reports (Umar, Che-Ahmad & Afza, 2016). Surprisingly, all the above maladies happened under the watch and oversight functions of the audit committee of these banks. It is pertinent to note that these financial flaws continues despite the introduction and frequent review of various standards and enactment by different authorities in order to strengthen the oversight function of the audit committee to support external audit.

However, due to two opposing perspectives; demand-based and risk-based, it is difficult to forecast if the auditor attribute is associated to financially expertise audit committee member. Firms with strong governance are more likely to appoint financial expert within the mix of their audit Financial statements are the primary means through which firms convey important information about their operations to their shareholders and other stakeholders, such as creditors, the government, and appropriate agencies (Bala, Amran & Shaari, 2019).. These publicly available annual financial statements report clearly provides the user with a foundation for making decisions among available options and evaluating the company's growth and results. Thus, Investors can compare companies within or across time periods using audited financial statements as a common ground (Zandi, Sadiq, & Mohamad, 2019).

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However, due to two opposing perspectives; demand-based and risk-based, it is difficult to forecast if the auditor attribute is associated to financially expertise audit committee member. Firms with strong governance are more likely to appoint financial expert within the mix of their audit committee members and thus likely to have larger audit committee size (Eriandani & Kurniawan, 2020). The complementing functions of audit committee in relation to auditor attributes are also demonstrated from a demand-based perspective. As a result, it is envisaged that a successful ACs would demand high-quality audit services from an external auditor in order to improve financial reporting systems, in line with the demand-based perspective.

The paper will explore the complimentary role of external auditors to the monitoring and oversight functions of board of directors and the audit committee in enhancing the quality of financial reporting and protecting firms image to the outside world. The study will equally pave way to the board of directors in knowing the tremendous contribution of audit committee in checkmating manager’s discretion in order to have a credible and reliable financial report that could aid users to take an informed decision.

2.0 Literature Review and Hypothesis Development

2.1 Audit committee independence and Financial Reporting Quality

An independent audit committee is presumed to be autonomous from form management influence, thus, expected to be effective in overseeing financial reporting process (Mishra & Malhotra, 2016). Prior studies on audit committee and financial reporting quality produce mixed results. For instance, Ormin, Tuta, & Shadrach (2015) reveal that audit committee independence has negative and significant impact on financial reporting quality of listed deposit money banks. Equally, Ayemere and Elijah (2015) posit that the independence of the audit committee improves the quality of reported earnings. In contrast, Kibiya, Ahmada & Amrana (2016) examines the impact of audit committee characteristics on the financial reporting quality of listed non-financial firms in Nigeria. They sampled 101 firms between 2010 and 2014. The results from multiple regression analysis shows that audit committee independent has no significant influence on the financial reporting quality(FRQ) proxies by McNicholas (2002) model. However, this study concentrated on deposit money banks and adopted DLLP model to captured FRQ, thus different results could be obtained. Likewise, Akpan and Nsentip (2019) reported positive and significant effect of audit committee independence on financial reporting quality of listed deposit money banks in Nigeria. Correspondingly, Alhassan (2020) using Nigerian commercial banks for a period of ten years (2010-2019) found that audit committee independence has positive and significant impact on financial reporting quality. This implies poor monitoring and supervision of reporting process. This suggests that audit committee independence failed to reduce managerial opportunistic behaviour. From the foregoing discussion, the study hypothesizes that:

H1: Audit committee independence is negatively related to financial reporting quality

2.2 Audit committee meeting and Financial Reporting Quality

Audit committee meeting frequency is expected to have significant effect in minimizing financial shenanigans and improved financial reporting quality. However, previous studies produce mixed findings. For instances, Kamolsakulchai (2015) show that frequency of audit committee meeting does not increased financial reporting quality. Likewise, using qualitative characteristics as a measure of FRQ, Mbobo and Umoren (2016) found that audit committee meeting does not improved audit committee effectiveness of listed deposit money banks in Nigeria. On the other hand, Mishra (2016) found that audit committee meeting significantly increased financial reporting quality. Conversely, Onyabe, Okpanachi, & Nyor (2018) reported that audit committee meeting has no impact on financial reporting quality. Moreover, Ogbaisi and Ezuem (2021) using 42 listed firms in Nigeria for a period of five years (2016 - 2020) found that audit committee meeting has positive and significant influence on FRQ. Thus, decrease quality of reported earnings. Similarly, Kabiru and Usman (2021) found that audit committee meeting has positive and significant impact on financial reporting quality of listed deposit money banks in Nigeria. However, Abbas (2021) found that audit committee meeting has significantly decrease earnings manipulation and improved financial reporting quality of agricultural listed firms in Nigeria. Equally, Abdel-Hafeez and Ali (2022) reported negative and significant effect of audit committee meeting on discretionary accruals. From the foregoing discussion, the study postulates that:

H2 Audit committee meeting is negatively associated with financial reporting quality.

2.3 Audit committee financial expertise and Financial Reporting Quality

Audit committee financial expertise (ACFE) is an important attributes of the audit committee which are expected to prevent earnings manipulations. ACFE is considered to possess knowledge and understanding of company’s internal control system as well as the financial reporting procedure of the company. Abubakar et al (2021) opined ACFE has the responsibility to ensure that company’s financial system is being managed efficiently and effectively. Thus, ACFE is expected to mitigate agency problems and improved financial reporting quality (FRQ). Previous studies reported mixed findings on the relationship between ACFE and FRQ. For instances, Hussaini, Gugong & Benjamin (2015) reveal that audit committee financial expertise has negative and significant effect on earning quality of listed food and beverages firms in Nigeria. In contrast, Umobong and Ibanichuka (2017) studied the relationship between audit committee attributes and financial reporting quality of food and beverages firms in Nigeria. Using a sampled size of four (4) for a period of four years (2011 to 2014), they found that audit committee financial expertise has positive and insignificant impact on financial reporting quality. On the other hand, Namakayarani, Daryaei, Askarany, & Askary (2021) examines the role of internal information environment and political connection on the relationship between audit committee characteristics and quality of financial information using panel data of 558 firms from Tehran Stock Exchange for 2011 to 2016. The results from multiple regression show that audit committee financial expertise has positive and significant influence on the quality of financial information. However, Mardessi (2021) using a sampled ninety (90) public listed companies from 2010 to 2019 in the Dutch context found that audit committee financial expertise is negative and statistically significant to FRQ proxies by abnormal CFO model. This proved that the presents of financial expertise in the audit committee curtail the management attitudes in manipulating company’s earnings. Likewise, Kantudu and Alhassan (2021) using GMM techniques of analysis found that audit committee financial expertise significantly influences financial reporting quality. In view of the foregoing, the study hypothesizes that:

H3 Audit committee financial expertise is negatively associated with financial reporting quality.

2.4 Audit Committee Size and Financial Reporting Quality

Ayemere and Elijah (2015) found that audit committee size has negative and significant influence discretionary accruals using modified Jones Model. Similarly, Mishra and Malhotra (2016) posit that audit committee size curtails managerial opportunistic behaviour, thus improved financial reporting quality. On the other hand, Aderemi, Kehinde, & Egbide (2016) found that audit committee size has positive impact on financial reporting quality of listed Nigeria quoted companies. This implies that size of the audit committee does not determine the quality of reporting earnings. However, Tanko and Siyanbola (2019), reveal that audit committee size is negative and significantly related to financial reporting quality of listed conglomerate firms in Nigeria. Likewise, Abubakar et al. (2021) using abnormal discretionary expenses on seventy-two listed companies in Nigeria for a period of five years (2014 -2018) found that audit committee size has negative and significant impact on earnings manipulations. Thus, suggests higher quality of reporting earnings. However, a similar study in Nigerian banking industry could produce different results. From the preceding discussion, the study hypothesis that:

H4 Audit committee size is negatively associated with financial reporting quality.

2.5 Agency Theory and Financial Reporting Quality.

Agency theory found its roots from contractual relationship between managers (agent) and principal (owners) better known as agent-principal relationship. Agency conflicts arise when the interest of the agent clashes with the overall objectives of the firms, this is due to separation of ownership and control. Lambe, Orbunde & Yohanna (2021) posit that managerial opportunistic behaviour could reflected in company's earnings. Thus, Agency theory is associated with financial reporting quality. Furthermore, Agency theory sees audit committee attributes as an important control mechanism that would reduce information asymmetry, build trust and protect owners investments by providing quality financial reporting. Therefore, the theory focuses on a contract the reduce agency costs. In this study, we use agency theory to underpin the relationship between audit committee attributes and financial reporting quality.

3.0 Methodology

This study uses ex-post factor and correlational research design. The population of the study comprises the entire listed deposit money banks on the Nigeria Stock Exchange between 2011-2021. Using purposive sampling the researchers were able to come up with thirteen (13) banks as a sample for the study. Data for the study were extracted from annual report and accounts of the sampled banks which was used for the analysis employing panel multiple regression techniques analysis. Definitions of all variables are provided in Table 3.1. Model for the study is presented below that is used to in testing hypothesis earlier postulated for the study:

FRQ = f(ACI, ACM, ACFE, ACS, ROA, LEV, BSIZE)----------------i

$FRQ_{it} = \beta_0 + \beta_1 ACI_{it} + \beta_2 ACM_{it} + \beta_3 ACFE_{it} + \beta_4 ACS_{it} + \beta_5 ROA_{it} + \beta_6 LEV_{it} + \beta_7 Bsize_{it} + \varepsilon_{it}$ ----2

We adopted Chen et al (2008) Model to proxy's financial reporting quality (FRQ), DLLP is obtained as follows:

$\mathbf{DLLP_i/TA = LLP_{it}/TA_{t-1} - \{\alpha_0\ 1/TA_{t-1} + \alpha_1\ LCO_i/TA_{t-1} + \alpha_2 BBA_i/TA_{t-1}\}}$

Where

DLLP = Discretionary loan loss provision

LLP = Loan loss provision

LCO = Loan Charge-off

BBAL = Beginning Balance of loan loss

Table 3.1 Operationalization of the Variables

Variables	Measurement	Sources
Dependent		
Financial Reporting Quality (FRQ)	Discretionary loss provision (DLLP)	Faruk and Isa (2018)
Independent Variables		
Audit committee independence (ACI)	Proportion of non-executive directors to total number of the audit committee.	Hussain et al (2015)
Audit committee meeting (ACM)	Number of the audit committee meeting	Umobong and Ibanichuka (2017).
Audit committee financial expertise (ACFE).	Proportion of audit committee member with financial knowledge in the audit committee to total number of the audit committee.	Hussain et al (2015)
Audit committee size (ACS).	Measured as the number of members of the audit committee.	Akpan et al (2019).
Control Variables		
Profitability (ROA)	Profit before tax divided by total assets.	Kibiya and Aminu (2019).
Leverage (LEV)	Interest bearing debt scaled by total assets.	Kibiya and Aminu (2019).
Banks size (Bsize)	Logarithm of total bank assets.	Ayemere and Elijah (2015)

Source: Authors, 2022

4.0 Results and Discussion

This section of the research present the result obtained from the regression model, interpret, discuss, analyze and tested the hypotheses earlier developed in section 2. Table 4.1 present descriptive statistics.

Table 4.1 Descriptive statistics

variable	Obs.	Mean	Std. Dev.	Min	Max	Skewness	Kurtosis
DLLP	143	0.603	1.848	1.908	5.998	1.697	5.641
ACI	143	0.509	0.028	0.500	0.600	2.698	8.482
ACM	143	4.406	0.762	3.000	6.000	0.608	2.920
ACFE	143	0.277	0.113	0.130	0.500	0.614	2.353
ACS	143	5.965	0.344	4.000	6.000	-1.599	0.058
ROA	143	0.025	0.029	-0.159	0.113	1.715	5.893
LEV	143	0.079	0.066	0.000	0.232	0.591	2.659
Bsize	143	11.97	0.560	10.860	13.01	-0.182	2.087

Source: STATA Output, 2022

Table 4.1 presents the descriptive statistics of the study variables. From the Table, financial reporting quality proxies by discretionary loan loss provision (DLLP) have a mean value of 0.603 and a minimum value of 1.908. This implies that on average the sampled banks have 60% involvement in earnings shenanigans. The standard deviation of 1.848 which is higher than the mean value signified significant variation among the sampled banks.

Likewise, from Table 4.1 audit committee independence (ACI) shows an average value of 0.51, with a minimum value of 0.50 and maximum values of 0.60. This shows that the average ratio of non-executive directors in the audit committee of the sampled banks is approximately 51%. This complied with the statutory requirements that banks to appoint three (3) independent non-executive directors into the 6-member audit committee. The minimum and maximum values of 50% implies that about three (3) members of the committee are independent non-executive directors. The standard deviation of 0.028 suggests small variation with regards to the selection of audit committee independence across the sampled banks. Similarly, audit committee meeting (ACM) has a mean value of 4.04 and minimum value of 3 with maximum value of 6. This indicates that on average audit committee met four times during the period of the study and met maximum of 6 times. The standard deviation of 0.762 indicates insignificant variation among the sampled banks.

Additionally, audit committee financial expertise has a mean value of 0.277, with a minimum value of 0.13 and maximum value of 0.50. This implies that on average the audit committee of the sample banks has two (2) with financial knowledge with maximum of 3 members. The standard deviation of 0.113 signifies insignificant variation with regards to financial expertise among the sampled banks. Consequently, audit committee size on average has approximately six (6) members with corresponding standard deviation of 0.344. This confirmed the small dispersion size of audit committee across the sampled banks. The minimum and maximum members are four (4) and six (6) members respectively. This agrees with the provision of Nigeria Stock Exchange 2011, CAMA (2020) as amended. The standard deviation of 0.344 indicates small deviation among the sampled banks.

With regards to the control variables profitability (ROA) has an average value of 0.025 with a minimum value of -0.159 and a maximum value 0.113. The standard deviation of 0.029 indicates significant variation among the sampled banks. Leverage (Lev) shows a mean value of 0.079 and minimum value of 0.000 and maximum value of 0.232. The standard deviation of 0.066 suggests insignificant variation among the sampled banks. Finally, bank size portrays a mean value of 11.97 with a minimum and maximum value of 10.860 and 13.01 respectively. The standard deviation of 0.560 implies small variation among the sampled banks with regards to size.

Table 4.2 Correlation Matrix

	DLLP	ACI	ACM	ACFE	ACS	ROA	LEV	Bsize	VIF
DLLP	1.000								
ACI	-0.097	1.000							1.40
ACM	0.289	0.060	1.000						1.08
ACFE	0.404	-0.207	0.101	1.000					1.13
ACS	0.035	-0.425	0.081	0.003	1.000				1.27
ROA	0.079	-0.158	-0.145	0.214	0.068	1.000			1.26
LEV	0.045	-0.160	0.138	0.057	0.032	-0.284	1.000		1.19
Bsize	-0.030	0.180	0.025	-0.017	-0.175	-0.256	0.175	1.000	1.13

Source: STATA Output, 2022

Table 4.2 presents the results of the correlation matrix between the study variable and the explanatory variables. Correlation matrix depicts the nature and the strength of associations among the variables of the study. From the tables audit committee (ACM), audit committee financial expertise (ACFE), audit committee size (ACS), ROA and Leverage have positive association with financial reporting quality (DLLP) with correlation coefficient of 0.289, 0.404, 0.035, 0.079 and 0.045 respectively. Meanwhile, audit committee independence (ACI) and Bank size have negative association with DLLP(-0.097 and -0.030). Furthermore, the correlation matrix suggests the absent of multicollinearity problem as none of the correlation coefficient is above 0.8 threshold (Gujarat, 2004), this is confirmed from the variance inflation factor (VIF) carried out as the individual mean is less than 0.5, thus the data are free from multicollinearity problems.

4. 3 Regression Results

This sub-section presents the results of multiple regressions analysis and the relevant diagnostics test carried out to ensure the validity of the inferences.

Table 4.3 Regression Results (PCSEs)

	Coef.	Z – value	P – value
Cons.	-1.846	-0.34	0.735
ACI	-2.152	-0.51	0.609
ACM	0.629	2.62	0.009***
ACFE	5.978	4.70	0.000***
ACS	-0.032	-0.09	0.932
ROA	1.705	0.28	0.779
LEV	-0.169	-0.09	0.925
Bsize	-0.059	-0.22	0.824
R-Square	0.228		
P-value	0.000		
Hausman	86.18***		
Wald Test	1394.34***		
Wooldridge Test	2.633		

Source: STATA Output, 2022

From Table 4.3 the results of the Hausman specification test for random effect favors fixed effect (FE), however, our data is characterize with the problem of heteroskedasticity and autocorrelation as indicates by modified wald test for groupwise heteroskedasticity for panel data and Wooldridge serial correlation test for panel data. Thus, we followed the suggestion of Moundigbaye et al. (2018) that panel correlated standard error regression estimate (PCSEs) is suitable to handle data with the problem of heteroskedasticity and provides standardize coefficient that is more efficient for hypotheses testing.

From the Table 4.2 the regression estimates show coefficient of determination (R-Square) of 0.228 signifying that approximately 23% of the changes in financial reporting quality(FRQ) are cause by the variables selected in the study while the remaining 77% are cause by the variables not selected by the study. The wald chi^2 value of 35.22 indicate that the model is fit and statistically significant at 1% level of significance to explains the empirical relationship between audit committee attributes and financial reporting quality of listed deposit money banks in Nigeria.

From the regression results audit committee independence (ACI) and audit committee size (ACS) are negative and statistically insignificant to DLLP. This implies that the quality of reported earnings is not determined by the independency of the audit committee and their size. The findings support the positions of Kibiya et al. (2016) and Umobong and Ibanichuka (2017) but contradict the findings of Tanko and Siyanbola (2019) and Mardessi (2021).

Furthermore, the regression estimates reveal that audit committee meeting and audit committee financial expertise are positive and statistically significant to financial reporting quality (DLLP). This suggests as these variables increase by 1% all things being equally DLLP will increase by 1%, thus, decrease the quality of financial reporting. This is consistent with the findings of Namakayarani et al. (2021) and Kabiru and Usman (2021), but inconsistent to the work of Hussaini et al (2015); Mardessi (2021) and Alhassan (2021).

5. Conclusion and Recommendations

This study examines the influence of audit committee attributes on financial reporting quality of listed deposit money banks in Nigeria. The study found that audit committee independence and audit committee size have no significant impact on financial reporting quality. Thus, the study concludes that the level of financial reporting quality of deposit money banks is not determined by the size and independence of the audit committee. Furthermore, the study revealed that frequency of audit meeting and audit committee financial expertise has positive and significant impact on financial reporting quality. Therefore, the board of directors should encourage frequent meetings of audit committee and emphasis should be given to financial expertise in the composition of the membership of the committee. These will invariably reduces earnings manipulations and improved financial reporting quality of listed deposit money banks in Nigeria.

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Financial Reporting Timeliness in the Digital Age: A Conceptual Review

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Abstract
Timeliness is one of the most important qualitative characteristics of financial reports as it supports the relevance and reliability of financial information. As such, timeliness can be viewed as an accountability medium through which financial information reaches its various users within the shortest possible time. Additionally, with the internet facility in place, users could nowadays access financial information much more quickly and take informed decisions more efficiently. This paper relies on the available literature to review the roles of the internet in reducing the time lag between the official release of audited financial reports and the time the reports reach their users. The paper also argues that the shorter the time lag, the more accountable a firm is to its stakeholders.

Keywords: *timeliness, accountability, digital accounting, internet financial reporting*

1.0 Introduction

The growing complexity of business operations, and the expansion of investment internationally, have led to the quest for more timely financial information in the form of financial report. Financial reporting is the process of providing financial report which contains and conveys information of varying length to various users and for different purposes. All listed companies communicate their financial transactions through financial reports to their various stakeholders including employees, managers, shareholders both potential and existing, creditors, customers and government (Uthman, Ajadi & Asipita, 2018; Fujianti, 2016; Nurijiah, 2015). It entails communicating the financial planning and predictions of all economic events that happen in a firm over a given period of time, usually a year. It also encompasses the financial disclosure of all accounting information needed by stakeholders and issued not later than the stipulated time, which enables them to make sound economic decision (Akadakpo & Mgbame, 2018; Alsmady, 2018; Gospel & Ngozi, 2019; Khasharmeh & Aljifri, 2010).

For the financial reports to be useful to their users, they have to possess certain qualitative attributes including relevance, reliability, comparability, understandability and timeliness (Soltani, 2002; Kythreotis & Constantinou, 2016; Yousef, 2016; Oraka et al., 2019). These qualitative attributes represent the methodological procedures and accuracy with which financial information reflects the fundamental economic realities as well as the true representation of the financial conditions of the firm (Pradhan, et al., 2018). Financial information is only relevant and useful if it reaches its users early enough before they take important financial decisions. To be useful, financial reports have to be timely, or else, it would lose their relevance and economic value (Hassan, 2020; Jimoh et al, 2020; Ogundajo, et al., 2022; Hashim et al., 2022). Nonetheless, the increase in the number of publicly listed companies coupled with the availability of the internet facility in the modern time, have significantly increased the speed at which the financial reports are transmitted to the users (Moradi et al., 2011; Boubaker et al., 2012). This has made the internet to become critical to the preparation, presentation and disclosure of financial reports (Ali Khan & Ismail, 2012a, 2012b). While numerous studies have focused on the determinants and status of internet reporting in organizations, very little have considered its effects on the timeliness of financial reporting (Pirchegger & Wagenhofer, 1999; Ettredge et al., 2002; Abdelsalam & Street, 2007).

Issuance of timely financial report has been given a legal backing globally. In Nigeria for instance, the Securities and Exchange Commission (SEC) and the Companies and Allied Matters Act (CAMA as amended 1990) require all publicly quoted companies to publish their audited financial reports at the end of every financial year, and make them available not later than ninety days thereafter (Akinleye, & Aduwo, 2019; Uthman, Ajadi & Asipita, 2018).

This paper reviews the available literature to highlight the effectiveness of the internet and digital accounting on the financial reporting timeliness. The aim is to provide the basis for further empirical investigations especially in developing countries such as Nigeria where this topic, though important, is largely neglected. The next sections present the literature on the two important concepts – timeliness and internet financial reporting.

2.0 The Concept of 'Timeliness' of Financial Reports

Financial reporting timeliness or financial reporting lag as it is widely termed, has been an issue of serious concern to accounting professionals, listing authorities, users as well as the accounting regulators (Fisher et al., 2004; Schmidt & Wilkins, 2013; Appah & Emeh, 2013; Dabor & Mohammed, 2015; Oraka et al., 2019; Hashim et al., 2022). It is one of the fundamental qualitative attributes of financial reports (Shafiy & Kamalluarifin, 2016)

Timeliness of financial report has been defined as the length of time between the financial year end and the date for the release of the audited financial statement for public view (McGee 2007; Appah & Emeh 2013; Akhor & Oseghale 2017; Alsmady 2018; Uthman et al., 2018; Zaitul 2019; Fujianti 2019; Gloria & Edirin, 2019; Abdulnaser et al., 2020). The International Accounting Standards Board (IASB) defines timeliness of financial report in a simpler term as "having information available to decision users before it loses its capacity to influence decision". Consequently, Yousef (2016) and Yi et. al., (2017) argued that the lesser the number of days between the end of fiscal year and the audit report date, the more useful the financial information, and the longer the number of days the less relevant and useful it becomes. Timeliness also includes the audit delay, which is the number of days between the balance sheet date and the date the external auditor's report was signed (Karim et. al., 2006).

The importance of a timely financial report cannot be overemphasized as it has the strength to boost investor confidence and reduce the chances of insider trading, misappropriation of firm's assets, price and cost of capital fluctuations and spread of rumor (Appah & Emeh, 2013; Zaitul, 2019; Ilaboye & Iyafekhe, 2014; Yousef, 2016; Suciani et al., 2021). Hence, scholars have found an association between timeliness and higher profitability (Ali Khan & Ismail, 2012a; Kamalluarifin, 2016). It also has an effect on uncertainty levels in financial decisions (Ashton et. Al., 1987; Alwi et al., 2013). Literature has provided the several factors that determine or influence the timeliness of financial reports. The following section presents these factors.

2.1 Factors influencing the Timeliness of Financial Reporting

There are a number of factors that affects the timeliness of financial reporting. Looking at the power vested on the board of directors by the code for corporate governance to ensure the timeliness, accuracy and continuous disclosure of information and activities of the corporation. This indicates that the board, the audit committee and their attributes such as size, expertise, meetings, composition, independence, could influence the time within which financial reports reach their users (Yousef 2016; Raweh, et al., 2019; Oraka, et al., 2019, Nwabochi & Chukwa, 2019; Ozan, 2019; Dare et al., 2021). Other studies have found firm attributes – firm size, age, leverage, profitability, liquidity, sector, index, audit firm type and audit opinion, as other factors affecting the timeliness of financial reporting (Modugu et. al., 2012; Dabor & Mohammed 2015; Suadiye, 2019; Suciani et al., 2021). Besides the listed factors, another very important determinant of timeliness of financial reports, is the internet facility. This will be discussed in the following section.

2.2 The Concept of Digital/Internet Financial Reporting

Digital accounting refers to the creation and representation of accounting and financial information in digital format, which can then be manipulated and transmitted electronically (Troshani, et al., 2019). This enables businesses to work faster and save time to concentrate on other important matters (Shan, 2021). The internet financial reporting has been described as a firm's mechanism of transferring financial information through the internet of website owned by the firm (Suciani et al., 2021).

Generally, the application of the internet in transmitting financial information by publicly listed companies around the world has nowadays become the norm (Moradi et al., 2011; Boubaker et al., 2012). While this practice has become common in the developed world, it is still evolving in the emerging markets (Ali Khan & Ismail, 2012). The internet is an important technology capable of transforming external financial reporting and providing unique and instantaneous voluntary disclosures (Jones & Xiao, 2004; Abdelsalam et al., 2007). It becomes an innovative medium of communication and reporting in the financial world (Ashbaugh et al., 1999; Chan & Wickramasinghe, 2006). According to Lymer (1999) and Haniffa and Ab. Rashid (2004) the internet financial reporting has the advantage of being speedy, cheap, flexible, dynamic and accessible from within and outside the national boundaries. Other benefits include convenience, security, ease of tracking, integration and syncing, etc. (Phornlaphatrachakorn & Na Kalasindhu, 2021).

Studies on the internet financial reporting could be categorised into four groups: the descriptive studies, the comparative studies, the analytical studies, and the recommendations of regulators (Henchiri, 2011). From another dimension however, internet financial reporting studies are grouped into the first generation – comprising mainly the descriptive surveys evaluating companies' Internet practices, and the second generation – which measures the extent of financial disclosures in company websites by using several techniques such as the disclosure index (Al-Htaybat, 2011).

2.3 Review of empirical studies on internet and timeliness of financial reporting

Ali Khan and Ismail (2012) used the perceptions of different users of financial reports in Malaysia through administered questionnaire. Findings revealed three main benefits of internet financial reporting to companies, which include attracting international investors, promoting and giving companies wider coverage. The study also revealed that the internet has reduced the time lag and increased the efficiency in accessing financial information by users inexpensively. Xiao et al. (2005) used an open-ended questionnaire on some UK-based internet accounting expert to develop a four-dimensional framework on the nature and change in financial reporting vis-a-vis the roles of the internet. From the Egyptian context, Ezat and Elmasry (2008) applied some corporate governance variables (size, industry, liquidity, ownership structure, board composition and size) to see if they impact on the timeliness of internet financial reporting. Their findings revealed that, apart from the general association between the corporate governance variables and timeliness, large and high liquidity firms that are in the service sector, high level of independent director and large boards, disclose more timely information on their websites. One of the few studies that considered the internet financial reporting in Nigeria was the one conducted by Agboola and Salawu (2012) which has only examined some determinants of internet financial reporting (including firm size, ownership and auditor type) although not relating them to timeliness. Even though Ogundajo, et. al., (2022) have identified the importance of timeliness as a qualitative feature of financial reports, they failed to show how timely financial reports are achieved through digitalised financial reporting. These are some of the reasons why there is an urgent need for this area to be explored in the Nigerian context.

3.0 Conclusion

The importance and relevance of timely financial reports cannot be overemphasised. The paper has briefly reviewed the concepts of internet financial reporting as it affects financial report timeliness. Several empirical studies conducted elsewhere were reviewed, and the need for similar studies in the context of Nigeria was emphasised, especially due to the recognition given to the financial reporting timeliness by the Companies and Allied Matters Act 1990 (CAMA) in general, and the accounting profession in particular. It is therefore recommended that accounting researchers in Nigeria should give special focus on this area in order to keep pace with the current global trend.

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Firm Attributes and Performance: The Moderating Effect of Cash Conversion Cycle of Consumer Goods Firms Listed in Nigeria

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Abstract
The study investigated the impact of the moderating effect of cash conversion cycle (CCC) on the relationship between firm attributes and performance of consumer goods firms (CGF) listed in Nigeria. The study employed descriptive and expos factor research designs. The study covered the period from 2010-2020. The population of the study are the twenty (20) CGFs listed in Nigeria as at December, 2020. The census sampling method was used to obtain a sample size of 14 using filters. The data used was obtained from the published annual accounts and reports of the firms sampled. The multiple regression model (MRM) was adopted on the panel data collated and processed. The study found that liquidity has insignificant negative effect on ROA, while leverage, asset efficiency and capital structure have significant positive impact on ROA. The CCC significantly influences the ROA of CGFs, but as a moderator, shows no clear evidence of changes in the adjusted R^2 as compared to the impact the firm attributes have on ROA. Therefore, CGF management can improve liquidity by adopting conservative working capital policy, leverage should be monitored to avoid the debt trap, concerted effort should be made to maintain investment in fixed asset, while the firm should adopt an optimal capital structure by taking advantage of both debt and equity finance. Furthermore, the CCC should be maintained, but more effort is needed to improve the creditor payment period so as to guarantee stable supply.

Key Words: *Cash Conversion Cycle and Capital Structure, Efficiency, Leverage, Liquidity*

1.0 Introduction
The modern form of business organisation has financial or non-financial objectives. The financial objectives include profit, shareholders wealth, and stakeholders' interest maximization. While, the non-financial objectives are creating a healthy relationship with customers, growth in sales, growth in share value, compliance with government regulations such as corporate social responsibilities, IFRS compliance, among others (ICAN, 2014). When a firm achieves such objectives, it is said to be surviving. For the firm to meet up its survival objective, it needs to maintain an increase in its performance which include revenue and profit generation. Sustained growth in revenue and profit depends mainly on effective credit management and inventory management (Benmelech, Meisenzah & Ramcharan, 2017). In line with Charles, Ahmed and Joshua (2018) submission, it could be argued that growth in profitability of a firm depends on some factors including liquidity, solvency, leverage, productivity, capital structure among others.

Firms, in their quest for profit maximisation, employs numerous tactics, which includes granting credits to clients. Credit is one marketing device for growing sales which need to be watched. These is because regardless of the demand for products and the firm's net worth; if proper measures are not put in place regulating sales made on credit, problems are meant to arise especially those connected to liquidity. Extending credit to customers regularly enhances sales volume and subsequently, expected to improve the profit margin. In Nigeria, increasing firm's profit margin is one assuring survival. Trade credit creates accounts receivable which are collectable shortly. Firm investing in receivable is a function of the quantum of credit sales and operating cycle. Credit management is to ensure increased liquidity and profitability of firm. It can be achieved partly by putting in place a sound credit policy.

The policy is based on the firm's nature of the business, liquidity status, economic conditions, risk and uncertainty associated with the transaction. Similarly, modern, medium and large-scale firms operate with credit extended by suppliers. A firm needs to manage the relationship established with its creditors to sustain a stable supply of inventory to meet sales revenue target. Furthermore, when inventories are on credit, the management of the firm needs to be effective in its inventory management to avoid the cost of stock-out which includes loss of customer patronage, goodwill and cash inflow among others.

When creditors supply materials, without labour efficiency and effective machine utilization, there will be reduced output giving rise to a decline in revenue growth of the firm. When a firm is productive, the concerned firm needs to be liquid to meet up with precautionary motives. The extent to which firm recoup its receivables affects the firm's liquidity (Juwita, 2018). When suppliers are not satisfied with their client's liquidity position, that is not meeting credit terms and conditions. Inventory supply will be inconsistent, and the firm would be unable to meet demand; hence, the profitability of the firm will drop giving a wrong signal of survival. It is a common fact that debt is cheaper than equity in financing the operations of a firm, but excessive debt has its own cost. Equity finance is very risky and requires a higher cost of finance. Extreme debt or equity may harm financing a firm's activities. There is a need for an optimum mix of debt and equity whereby a firm explores the merit of each component of capital structure. Optimum capital structure can enhance improvement in productivity, which in turn increases profitability of firms over time.

The study introduced the cash conversion cycle as a moderator because, in the real world of business, firms operate by buying on credit from supplier and extending similar to its customer. Credit supply will add productivity of a firm, hence meet demand of product by customer. If the credit policy is not effective and efficient, it would negatively affect supply (productivity), hence decreasing sales revenue and profitability, while inventory management on the other hand, enhance cost control and availability of inventory to meeting timely the demand of customers. Inventory management will mitigate the issues of overstocking and understocking. Overstocking will increase cost of sale and affect liquidity status of the firm which may lead to increase in sale price which will significantly affect profitability. Similarly, understocking will lead a firm inability to meet demand, hence, cause loss of customer to competitors resulting to decline in profitability.

Base on the foregoing**,** the study investigated the influence of internal firm attributes on performance of listed CGF in Nigeria. The precise objectives comprise: examining how Liquidity, Leverage, efficiency and Capital Structure influence the Return on Assets of Listed CGF in Nigeria also, evaluate the moderating effect of cash conversion cycle on the performance of Listed Consumer Goods in Nigeria. Going by the objective of this study, the following hypotheses are formulated:

H1: Liquidity has no significant effect on ROA of CGF;

H2: Leverage has no significant effect on ROA of CGF;

H3: Assets Efficiency has no significant effect on ROA of CGF;
H4: Capital Structure has no significant effect on ROA of CGF;
H5: Cash conversion cycle has no moderating effect on the relationship between firms' attributes and ROA of listed consumer goods in Nigeria.

2.0 Literature Review

2..1 Concept and Measurement of Performance

Various measurement of firm's performance has been used in the extent literature. Delmar (1997) and Ardishvili (1998) provides list of operating performance indicators to include: employment, profits, market value of shares, assets and sales. Profit margin, Return on Assets and Return on investments are most commonly used in empirical studies (Juwita, 2018). For this study, performance is the focus and ROA is adopted.

2.2 Concept and Measurement of Firm Attributes

Jeroh (2020) provides that financial attributes of firm to include Profitability, Revenue growth, capital structure, tangibility, firm size and earning per share. Dean, Bulent and Christopher (2000), postulated that firm attributes determine firm's performance and more also its continuity. It is also the behavioural patterns of company's operation toward achieving their objectives as a going concern entity. Similarly, firm attributes are the accounting information disclosed by firms in their annual books and reports. Mohammed and Usman (2016) opined that Firms attribute to include size, growth, and liquidity. Charles, Ahmed and Joshua (2018) employed Age, leverage, growth and liquidity as firms' attributes. While liquidity, age and size were used as firms' characteristic by (Abubakar, Suleiman & Haruna, 2018). For this study, firm attributes include liquidity, solvency, productivity, and leverage and capital structure while firm performance is proxy with ROA.

2.3 Concept of Cash Conversion Cycle

The CCC is the average length of time between receiving cash from customers for sales of goods or services to paying creditors for supply of goods or services. The cycle is computed by adding the average length of time that inventory is held before it is sold and the average length of credit period given to credit customers subtracting the average credit period granted by suppliers.

2.4 Review of Empirical Literature

Jeroh (2020) investigated how firm attributes explain the value of firms listed in Nigeria. A period of nine years ranging from 2010 to 2018 was covered with population of thirty-two financial service in listed in Nigeria. The study revealed that return on assets, leverage, size, revenue growth, asset tangibility and earnings significantly influence tobins' Q and share price of sampled firms while, All the attributes of firms used in the study has no significant relationship with share-price to book-value. Precisely, earning per share and return on assets has positive relationship with firm value.

Olusegun and Olusegun (2020) examined the impact of firm characteristics on the financial performance of quoted manufacturing firms in Nigeria. Descriptive and cross-sectional research design were adopted on five quoted manufacturing firms in Nigeria over a period of 2005 to 2018. Panel least square regression model was used to test the study's hypothesis. The study found that all the independent variables jointly influenced the financial performance of manufacturing firms in Nigeria measured by return on assets. It was concluded the Firm Age, Firm Size, Sales Growth, Liquidity and Leverage were significantly associated with the dependent variable (Return on Asset). The study recommended that, the managements of manufacturing companies should improve and acquire the optimal utilization of their assets, while making maximum use of their resources this would help in improving profitability.

Abubakar, Sulaiman and Haruna, (2018) studied the effect of firm attributes on listed insurance companies' financial performance in Nigeria for a period of 2007 to 2016. The study revealed that liquidity and Age has significant negative effect on the listed insurance firm's financial performance in Nigerian. The study suggested that the companies should convert a significant portion of their cash and cash equivalent to productive assets capable of improving their level of financial performance. Charles, Ahmed and Joshua (2018), investigated the impact of firm characteristics on the profitability of the Nigerian CGF for period 2011 to 2016. The firms' liquidity, age, growth, size and leverage are the explanatory variables while return on sales (ROS) is the dependent variable. The study sampled 18 out of 22 listed CGF as at 31st December, 2016. The results revealed that firm size, leverage and growth have significant Impact on ROS. While liquidity and age insignificantly affect the profitability of listed CGF in Nigeria. The study suggested that CGF in Nigeria should improve on size, leverage and growth that influences their profits.

Juwita (2018) analysed the effect of liquidity, capital structure and growth on corporate performance. The study sampled 24 Companies using purposive sampling technique on the firms listed in Indonesia for Period of 2011-2016. The study found that the capital structure has a negative impact on ROA, CA/CL has positive impact on ROA, positive relationships between sales growth and ROA. The study concluded that the liquidity, capital structure and growth have significant impact on ROA.

Lucy, Blessing, and Okoh (2017) appraised the effect of firm attributes on Oil and Gas firms' financial performance in Nigeria. Firms' characteristic was proxy by Sales growth and firms' leverage while ROA was proxy of financial performance. The findings revealed that growth has significantly and negative effect while leverage has negative and insignificant effect on ROA. It was recommended that management should enhance sales growth to a level of influencing ROA significantly. Leverage level should be monitored to ensure that the cost does not outweigh the returns over time.

The study of Olusegun and Olusegun (2020) ignored moderating variable which this study introduced to existing studies. From the study of Jeroh (2020), it focused on financial service firm and used value of firm as dependent variable. This study will add to the study by exploring the effect of firms attribute on performance and introduce moderating variable which the above study ignored. This could aid in comparing financial services sector with other CGF all operating in Nigeria. Though, the study is current but ignore 2019 financial year. The economic and political activities during the year could distort the outcome of the study. The period of covering for the study at hand will include 2019 financial year to add to literature.

While, Abubakar, Sulaiman and Haruna, (2018) study, firm attributes are limited to liquidity, age and size. These attributes are not sufficient for generalisation and draw conclusion for Nigerian insurance firms. Though the period of ten year is enough to show any effect(s) of changes in decision by management capable of influencing firm attribute, hence return on equity for shareholders and other stakeholder to make an informed decision. The study at hand will in a way add to literature by including other attributes such leverage, capital structure, solvency, efficiency and controls serving as a link between the decisions made from financial attributes with operating performance.

The Charles et al (2018) study was restricted to six years period using return on sale. This study introduced credit policies (credit from supplier and credit extended to customers) and inventory management influencing financial attributes of firm could give better explanation of the extent those attributes combined influence performance either return on sales or revenue margin. The study of Juwita (2018) focused on Indonesia firms covering a period of seven years using ROA measurement of performance. The study at hand will harmonise by replicating the firms' attributes used with additions and employing of controls variables.

In line with the study of Lucy, Blessing and Okoh, this study by way of adding to existing literature evaluates consumer good firms in Nigeria but using solvency measure as an attribute of firm while return on assets as performance indicator and introducing controls to enhance the outcome and conclusion of the study at hand. The recommendation that management should enhance sales and profit capable of improving Return on Assets is logical and can be uphold in consumer goods firms in Nigeria.

Many studies such as Ali, Yassin, and AbuRaya (2020), Olusegun and Olusegun (2020), Uzoka, Ifurueze, and Anichebe (2020), Abubakar, Sulaiman & Haruna, (2018), Charles, Ahmed and Joshua (2018), Mohammed (2017), Mohammed and Usman (2016), Pranata and Pujiati (2015) Anton (2016), Costa and Donner (2016), Dimelis, Giotopoulos, & Louri, (2016), Rehman (2013) and Avarmaa (2011) concentrated on examining two to four firm attributes without taking into consideration vital moderating factors such as credit policies and inventory management inducing both firm attributes and performance of a firm; if not adequately managed. Many of such studies relating to firm attributes covered a maximum period of five years; and when extended beyond five years, the periods ended during 2017 accounting year. Few studies like Muema and Abdul (2021) focused on Kenyan commercial banks and cover period upto 2020, it ignores moderator and control variables. The study at hand will add to existing literature to cover accounting data of sampled firms up to December 2020 for ten years, and it will integrate vital control variables of credit policies and inventory management.

3.0 Methodology

This study adopted descriptive and expos factor research designs. This is because the study used documented data, while, the descriptive design gives explanations on the connection between the dependent, explanatory and control variables. The population of this research comprises the 20 listed CGF in Nigeria as of December 2020. The Census sampling technique was adopted and a sample of 14 listed firms is considered using the following filter: available of data from 2010-2020 and technical suspension within the period of study. Applying technical suspension filter, the following firms were excluded: DN Tyre & Rubber PLC, Golden Guinea Breweries PLC, Premier Breweries Plc, Jos International Breweries Plc, Big Treat PLC, Multi-Trex Integrated Foods PLC, P S Mandrides PLC, UTC Nigeria PLC, Beta Glass Company PLC, Vono Product PLC, Union Dicon Salt PLC, Unilever Nigeria PLC and PZ Cussons Nigeria PLC. Below are the sampled firms.

Table 1: Sample Firms

S/N	FIRMS	Year of Incorporation	Year of Listing
1	Champion Breweries Plc	1974	1983
2	Guinness Nigeria Plc	1950	1965
3	Nigeria Breweries Plc	1946	1973
4	International Breweries Plc	1971	1995
5	Dangote Flour Mills Plc	2006	2008
6	Cadbury Nigeria Plc	1965	1976
7	Dangote Sugar Refinery Plc	2005	2007
8	Honeywell Flour Mills plc	2008	2009
9	Northern Nigeria Flour Mill Plc	1971	1978
10	National Salt Company of Nig. Plc.	1973	1992.

11	Flour Mills of Nigeria Plc	1978	1979
12	Nestle Nigeria Plc	1961	1979
13	Nigerian Enamelware Plc	1960	1979
14	Vital foam Nigeria Plc	1962	1978

Source: NSE Fact Book, 2020.

The data of the selected firms for the years (2010-2020) were sourced from the published annual reports and accounts of CGF.

3.1 Model Specification

The model formulated was estimated using a multiple regression model. The panel data collated was processed with the aid of STATA statistical software. The dependent and independent variables are integrated to the model below:

Direct --------- $ROA = a_{it} + \beta1CACL_{it} + \beta2\ RETA_{it} + \beta3\ RNA_{it} + \beta4\ LTDTA_{it} + \beta5FIRMAGE_{it} + \beta7FIRMSIZE_{it} + e_{it}$

Where:
ROA is Return on Assets
Liquidity= CA/CL
Solvency=RE/TA
Assets Efficiency =FAT
Capital Structure (access to debt) = TD/TA
Age= Number of years from the Date of Listing
Size= Natural Log of Total Assets

3.2 Moderating role of Cash Conversion Cycle

To test the moderating role of CCC on the relationship of firm's attribute and performance and, based on model 1, this study constructs model 2.

$ROA = a_{it} + \beta1CACL_{it} + (CACL_{it} *CCC_{it}) + \beta2\ RETA_{it} + (RETA_{it} *CCC_{it}) + \beta3\ \ EFF_{it} + (EFF_{it} *CCC_{it}) + \beta4\ \ TDTA_{it} + (TDTA_{it} *CCC_{it}) + +CCC_{it} + \beta6\ \ FAGE_{it} + \beta7FSIZE_{it} + e_{it}$ ……………………..2

A priori expectations $\beta1>0$, $\beta2>0$, $\beta3>0$, $\beta4>0$, $\beta5>0$

Theoretically, there is an expectation that Liquidity, Solvency, Asset Efficiency, leverage and Capital Structure should have a positive and significant impact on performance. It can say that effective management of firm attribute alongside efficacy of credit policies and inventory management affects output that is meeting customers demand hence, sales revenue generation which is a major factor of firm's profitability.

4.0 Discussion of Results

This section reveals the discussion of results from the processed data of sampled firms of the study. The descriptive statistics are presented in Table 2 where the minimum, maximum, mean and standard deviations of the variables used in the study are shown.

Table 2: Summary of Descriptive Statistics (2010-2020)

Variables	Obs.	Mean Stat	Std.Dev. Stat	Min Stat	Max Stat
ROA	168	0.072	0.128	-0.363	1.077
CACL	168	1.040	0.463	0.0740	2.881

RETA	168	0.0580	0.124	-0.363	1.077
EFFI	168	0.183	0.308	-0.489	1.869
TDTA	168	0.683	0.527	0 .194	6.767
LAGE	168	29	0.377	1	55
SIZE	168	N9.93e+07	0.670	N1,242,049	N4.83e+08

Source: Descriptive Statistics Results using STATA 12.0

Table 2 shows the detailed account of the descriptive statistics for the dependent and independent variables respectively. ROA= Return on Assets, CACL= Current Assets to Current Liability, RETA= Retained Earnings to Total Assets, EFFI= Revenue to Noncurrent Assets, TDTA= Total Liabilities to Total Assets, AGE= Number of Years from date of listing and SIZE= Size of the companies. The most prominent among the results in the descriptive statistics are the higher standard deviations of Size (0.7) and lowest standard deviation of RETA (0.12) relative to the standard deviations of other independent variables used in the model which ranges from 0.12 to 0.7.

From Table 2, it is observed, on average, during the period of the study, CACL, RETA, EFFI and TDTA have mean values of 1.04, 0.08, 0.18 and 0.68 respectively with average performance (ROA) of 7%. The mean value of the AGE and SIZE of the companies examined are low for age at 29 years and high for size at N9.93e+07 respectively. The consumer goods firm experienced a high growth rate in their performance from a minimum of -36% to the maximum of 108%. liquidity from 7% to 288%, Leverage from -36% to 108%, efficiency from -49% to 187%, capital mix from 19% to 677%, age from 29 year to 55 years and size from N1,242,049 to N4.83e+08 respectively.

There was no decrease in size growth for the period studied. It could, however, be noted that this growth in size coupled with maturity really translated to the maximum ROA rate of 108% with the average value of 7% performance. Finally, the variables are skewed to the right except size that skewed to both side of the tail. While the kurtosis reveals that the data for each variable are heptokurtic in nature.

4.1 Correlation Matrix

Table 3 below displays the pairwise correlation of two-tailed significant values between regressor and the regressed and the relationship between the independent variables themselves.

Table 3 Correlation Matrix of the Sampled Observations

	ROA	CACL	RETA	EFFI	TDTA	LAGE	SIZE
ROA	1.0000						
CACL	0.1939*	1.0000					
RETA	0.9196*	0.2361*	1.0000				
EFFI	0.5662*	0.4116*	0.4861*	1.0000			
TDTA	0.3940*	-0.3658*	0.3816*	-0.0843	1.0000		
LAGE	0.0545	-0.0087	0.0250	-0.0026	0.0435	1.0000	
SIZE	0.0964	-0.3205*	0.1188	-0.1513*	-0.0888	-0.0806	1.0000

Source: Correlation Matrix Results Using STATA 12.0 (2022)

*** Correlation is significant at 0.05 level (2-tailed)**

Table 3 presents the correlation results between firm attributes and performance variable (CACL, RETA, EFFI, TDTA, LAGE, and SIZE) and the performance (ROA) of the listed consumer goods firms in Nigeria. The table result shows that all the firms' attributes used in the study CACL, RETA, EFFI, TDTA are positively related with ROA from the correlation coefficient of 19%, 92%, 57%, and 39% respectively which is significant at 5% level of significance. This indicates that the ROA of listed GCF has positive association with firms attribute of liquidity, leverage, efficiency and capital structure. For the firms' maturity and size, the table shows that there is a positive relationship between control variable of firms' age and size with ROE of listed CGF from the correlation coefficient of 5% and 10% respectively which are insignificant at 5% level of significance.

Following the analysis of the relationships between firms attribute and performance the listed CGFs in Nigeria, next section presents and discusses the regression results of the model of the study from which the hypotheses of the study are tested and the relevant inferences are drawn about the effect between the explanatory variables and dependent variable of the study.

4.2 Diagnostic Test

Shapiro-Wilk W Test for normal data was conducted and it was found that the data used for the study are not normally distributed as it revealed significant p-value (See appendix ii). Similarly, Multicollinearity Test was conducted to check whether there is a strong correlation between the independent variables which could mislead the result of the study. The result of the diagnostics test reveals no multicollinearity in the data. The variance inflation factor and the tolerance were found to be consistently lower than ten and one respectively indicating the absence of multicollinearity (see appendix ii). Heteroscedasticity Test evidenced from Breuch Pagan/Cook-Weisberg coefficient of 40.21 with a p-value of 0.000 confirms the presence of the effects of heteroskedasticity for the model, that is, there is constant variance in the residuals. This suggests the use of Robust Generalised Least Square model.

4.3 Regression Result

The summary of the regression results obtained from the model of the study presented in table below:

Table 4 Summary of Fixed Random Effect Regression Results

FIXED EFFECT ROA					RANDOM EFFECT ROA			
Variables	**Coefficient**	**Sig P**	**VIF**		**Coefficient**	**Sig P**	**VIF**	
CONST.	-.0071	**0.942**	**-**		**-.0603**	**0.396**	**-**	
CACL	0.002	0.883	**1.95**		-.0010	0.926	**1.22**	
RETA	0.7753	0.000	**2.05**		.788	0.000	**1.38**	
EFFI	0.074	0.000	**1.64**		.0809	0.000	**1.15**	
TDTA	0.0308	0.000	**2.05**		.0292	0.002	**1.19**	
SIZE	0.003	0.819	**1.50**		.00608	0.438	**1.09**	
AGE	-0.018	0.462	**1.01**		.0049	0.695	**1.08**	
R^2: Within				0.8686				0.8670
Between				0.8734				0.9056
Overall				0.8678				0.8764
F. Sig.				0.000				0.000

Source: Result output from STATA 12.0

From the summary of fixed random effect regression results in Table 4 above, Hausman specification test was conducted in selecting between fixed and random effect regression. The chi^2 of and prob>chi^2 of 0.0 suggests the adoption of fixed effect as against the random effect GLS regression.

For better and reliable result of the fixed effect regression, the robust fixed effect result is appropriate. This is because robustness filters out other statistical disturbance elements from the result. Thus, the robust fixed effect GLS regression result is presented below and used to test the hypothesis of the study.

Table 6 Summary of Robust Random Effect GLS Regression Results

	ROA			
Variables	**Coefficient**	**Sig P**	**VIF**	
CONST.	**-.0603**	**0.396**	**-**	
CACL	-0.0010	0.926	**1.22**	
RETA	0.788	0.000	**1.38**	
EFFI	0.081	0.000	**1.15**	
TDTA	0.029	0.002	**1.19**	
SIZE	0.006	0.438	**1.5**	
AGE	0.005	0.695	**1.08**	
R^2: Within				0.8670
Between				0.9056
Overall				0.8764
F. Sig.				**0.0000**

Source: Result output from STATA 12.0

4.4 Regression Equation

$$ROA= -0.0603_{it} -0.001CACL_{it} + 0.788RETA_{it} + 0.081EFFI_{it} + 0.029TDTA_{it} + 0.006SIZE + 0.005AGE_{it} +e_{it}$$

The result for the model above shows that the explanatory variables of Liquidity, Leverage, efficiency, and capital mix all have a significant positive impact on the dependent variable ROA while only liquidity has negative and insignificant impact on ROA. It is also observed that size and Age has insignificant and positive impact on ROA at 95% confidence level.

The logical explanation for this finding is that an increase in the RETA, EFFI, TDTA WCTA, would enhance the performance of the listed CGF by 79%, 8%, and 3% respectively. While CACL has negative and insignificant impact of performance. The cumulative influence of all the exogenous variables put together is able to explain the dependent variable up to 87% as indicated by the overall adjusted $R^{2.}$ This provides the adequacy of the model used as suggested by f-sig figure of 0.0000. The remaining 13% is explained by other factors not captured in this study.

4.5 Test of Hypotheses

The regression result is used to test the hypotheses and presented below:

H_{01}: Liquidity, measured by the variable CACL, has no significant impact on the ROA of listed CGFs in Nigeria.

Regression coefficient of -0.001 and a p-value of 0.926 indicating that CACL insignificantly influences ROA of listed CGFs in Nigeria. This, therefore, provides evidence of fall to reject the null hypothesis of one of the study. Thus, for hypothesis 1, H_{01} is accepted. The result is in contrary with the prior expectation of the study which believes that there should be a significant positive relationship between liquidity and performance.

H_{02}: Solvency, measured by the variable RETA, has no significant impact on the ROA of listed CGFs in Nigeria.

Regression coefficient of 0.79 and p-value of 0.000 indicating that RETA has significantly influenced performance of listed CGFs in Nigeria. Therefore, solvency has a significant impact on

ROA. This, therefore, provides evidence of rejecting the null hypothesis two of the study. Thus, for hypothesis 2, H_{02} is rejected. The result is in line with the prior expectation of the study which believes that there should be a significant positive relationship between leverage and performance.

H_{03}: Assets Efficiency measured by the variable FAT has no significant impact on the ROA of listed CGFs in Nigeria.

Regression coefficient of 0.08 with a p-value of 0.000 indicating that EFFI significantly influences performance of listed CGFs in Nigeria. Therefore, EFFI have a significant impact on ROA. This, therefore, provides evidence of rejecting the null hypothesis three of the study. Thus, for hypothesis 3, H_{03} is rejected. The result is in line with the prior expectation of the study which believes that there should be a significant positive relationship between EFFI and ROA.

H_{04}: Capital Structure, measured by the variable TDTA has no significant impact on the ROA of listed CGFs in Nigeria.

Regression coefficient of 0.03 and a p-value of 0.00 indicating that Capital structure significantly influences performance of listed CGFs in Nigeria. This, therefore, provides evidence of rejecting the null hypothesis four of the study. Thus, for hypothesis 4, H_{04} is rejected. The result is in line with a prior expectation of the study which believes that there should be a significant positive relationship between the capital structure and performance.

4.6 Moderating role of Cash Conversion Cycle

To test the moderating role of CCC on the relationship of firm's attribute and performance and, based on model 1, this study constructs model 2.

$$ROA = a_{it} + \beta 1CACL_{it} + \beta 2\ RETA_{it} + \beta 3\ ET_{it} + \beta 4\ LTDTA_{it} + \beta 5\ EQTA_{it} + \beta 6FAGE_{it} + \beta 7FSIZE_{it} + e_{it} \text{ -- } 1$$

CCC Moderating effect on model 2

$$ROA = a_{it} + \beta 1CACL_{it} + (CACL_{it} * CCC_{it}) + \beta 2\ RETA_{it} + (RETA_{it} * CCC_{it}) + \beta 3\ EFF_{it} + (EFF_{it} * CCC_{it}) + \beta 4\ TDTA_{it} + (TDTA_{it} * CCC_{it}) + +CCC_{it} + \beta 6\ FAGE_{it} + \beta 7FSIZE_{it} + e_{it} \ldots\ldots\ldots\ldots\ldots\ldots 2$$

Summary of GLS Regression Results with moderator effect of CCC

Variables	Coefficient	Sig P	
CONST.	**-.0503**	**0.408**	
CACL	-0.0180	0.198	
CACLCCC	-0.0001	0.501	
RETA	0.834	0.000	
RETACCC	0.002	0.006	
EFFI	0.067	0.000	
EFFICCC	-0.0008	0.002	
TDTA	0.097	0.426	
TDTACCC	0.00009	0.418	
CCC	5.030	0.972	
SIZE	0.006	0.307	
AGE	0.015	0.111	
R^2			**0.8893**
Adj R^2			**0.8815**
F. Sig.			**0.0000**

Source: Result output from STATA 12.0

4.7 Regression Equation

$$ROA = a_{it} - 0.001CACL_{it} + 0.788RETA_{it} + 0.081EFFI_{it} + 0.029TDTA_{it} + 0.006SIZE + 0.005AGE_{it} + e_{it}$$

To verify the moderating effect in hypothesis five, there are mainly three conditions that should be met. This includes: The coefficient on the interaction term CCC*Firms' Attributes is negative; The coefficient on the interaction term CCC*Firms' Attributes is significant and the change in R-square is evident.

For condition one,

Variables	Coefficient	Sig P
CACLCCC	-0.0001	0.501
RETACCC	0.002	0.006
EFFICCC	-0.0008	0.002
TDTACCC	0.00009	0.418

Only Liquidity and Asset's efficiency meet up the condition with negative interaction while Solvency and Capital Structure have positive interaction, On condition two, only Solvency and Asset's efficiency interaction are significant at 1% while Liquidity and Capital Structure are insignificant.

Model one		Model two	
R^2: Within	0.8670	**R^2**	**0.8893**
Between	0.9056	**Adj R^2**	**0.8815**
Overall	0.8764	**F. Sig.**	**0.0000**
F. Sig.	**0.0000**		

On condition three, there is no clear evidence of changes in the R^2 using the overall R^2 in model one and Adjusted R^2 of model two which provides 0.8764 (88%) and 0.8815(88%) respectively.

In line with the above conditions, it can be deduced that CCC has no clear moderating effect on the relationship between firm's attributes and performance

4.8 Liquidity and performance of listed consumer goods in Nigeria

The liquidity of a firm portrays the fair and current option of financing firm's activities and capable of influencing performance. For a firm to be efficient and effective in its activities, there is need to obtain and maintain optimum levels of liquidity position of 2:1 as a rule of thumb. Profit making is a major objective of CGF in Nigeria as a result, the firms are structured to make profit. the objective is premised on the fact that Profit is one of cheap source of financing the present and future growth of firm and the basis to meet up all stakeholder's interest in the firm. From the study, Performance measured by ROA is found to negatively associated with Liquidity and statistically insignificant with -0.001 coefficient and a p-value of 0.926 indicating that CACL insignificantly influences performance of listed CGFs in Nigeria. This implies that CGF are in adequate in the management of its liquidity. It is expected that the more effective a firm is toward liquidity, the better the performance (ROA) but the reverse is the case with CGF. The imply that the liquidity influences ROA insignificantly by reducing performance marginally over the period of study. The CGF do not maintain optimum liquidity ratio of 2:1 as a general rule of thumb as expected. This is evidenced by the descriptive start of 1.040: 1 ratio justifying the insignificant influence in ROA. The management of CGF adopts aggressive working capital policy as a risk-seeking team by keeping the working capital at minimum leading to this outcome. Though, the liquidity of CGF is not too bad, but adequate measure can be in place to improve the ratio and hence performance.

4.9 Solvency and performance of listed consumer goods in Nigeria;

Solvency and liquidity are two concepts that are closely related and reflect upon the actions of company's working capital policy. A low liquidity level may lead to increasing financial costs and result in the incapacity to pay its obligations. Liquidity problems when serious can lead to insolvency. Overinvestment in WCM should be avoided because it reduces profits and returns to shareholders. Similarly, under-investment should be avoided because it creates a liquidity risk hence, insolvency. From the study, the CGF can be adjudged to had under-invested in its WC over the period of study as evidenced of 1.04 average investment in liquidity with minimum and maximum investment over the study period of 0.07:1 and 2.8:1 respectively as compared with the rule of thumb of 2.0:1.

As a result of the foregoing, the solvency of CGF over the period of study is 0.058 at average with -0.36 and 1.07 stat min and max respectively. This implies that the solvency level of CGF is low. From the result of the study, solvency has positive and significant effect on the ROA of CGF in Nigeria. As evidenced of 0.79 coefficient and 0.000 p-value from the regression table. This suggests that for any increase in the solvency level of CGF, the ROA will be influenced by 79% and verse versa.

4.10 Asset's Efficiency and performance of listed consumer goods in Nigeria.

The result revealed that the CGF were able to manage it noncurrent assets efficiently toward generation of profit for the period under study. This suggested the influence FAT has on return on asset by 8%. For any 1% increase in noncurrent Asset Turnover, the ROA will increase by 8%. CGF had the option of capital and labour intensive in its operation. It is observed and can be deduced that CGF make a combination of both approaches toward meeting set objectives. The management team were able to manage its staff and labourers alongside noncurrent assets to attained an average ROA of 7% for the period of study.

4.11 Capital Structure and performance of listed consumer goods in Nigeria

The effect of capital structure is double edged matric, it can increase profit if properly managed or losses if the policy is not effectives. The capital structure of a firm is a reflection of it borrowing policy. This influences the profitability of a firm in that, cost of debt i.e., the interest element is tax deductible allowance which is add up to expenses of a firm there by reducing the firm net profit but reducing the tax liability. As the debt is used judiciously for operating activities of a firm in term of production output or purchases and cost of sale boosts the revenue generation of a firm, hence profit in the short run. On the other hand, the cost of equity been higher than debt, firm usually rely on debt than equity. But to avoid debt trap, management of firm consider using retain earnings or issuing additional share to finance its operating activities which by extension reduces the cost of operation hence, improve profitability of firm.

The result revealed that the current value of the tax benefit of debt outweigh the related risk influencing increase in profitability. Since interest payments from long-term debt are tax deductible the tax is lower as a result of higher profits accessible to shareholders suggested positive association. However, for the Nigeria situation, most short-term debt is non-interest bearing or bear insignificant interest rate as they are mostly trade creditors and accruals. many listed CGF firms used both short-term debt and long-term debt to include trade creditors and bank loan and financial securities. The tax savings effect of debt may high and improves revenue generation of a firm, hence, influences profitability. The value of the mean of total debt and profitability reveals that 68% of CGF listed firms' operating activities and assets were financed with debt. This means that CGF listed firms usually depended on debt to finance their operations. The listed firms relied more on SHT debt than long-term debt because of difficulties in accessing cheap bank loans from Nigerian DMB due to the fact that the Nigerian capital market is developing. With this, it is concluded that CGF had been profitable in spite of the dwindling and incessant in profitability during the period of study. The CGF mixture of debt and equity influences profitability.

4.12 Cash Conversion Cycle moderating performance of listed consumer goods in Nigeria

The CCC is the deduction of creditor conversion period from addition of debtor conversion period and inventory management period of a firm over given period of time. It is expected that profit should a function of how firm is able to turnover and manage inventory its trade on alongside efficiency in collection of sales on credit and meeting up supplier as at when due to avoid stock out and timely delivery of demand by customers. These process if effectively managed should enhance revenue generation hence, profit of a firm. From the outcome of this study, the CCC significantly influence profitability of CGF, but as a moderator, there is no clear evidence of changes of the adjusted R^2 as compared with the impact the firm attribute has on profitability as evidenced profit 88% overall adjusted R^2 for both the CCC and the firm attribute respectively.

On the conditionality of CCC moderating the relationship between firm's attributes and performance of CGF in Nigeria, the liquidity and efficiency of the firms meet up the condition with negative interaction while solvency and capital structure have positive interaction. This implies that the higher the CCC on (Liquidity) the ability to meet up short terms obligation as at when due and (efficiency) the ability to generate more income as a result of effectively used of limited resources, the lower the rate of influence on performance while the lower the CCC the higher the influence on performance that is liquidity and efficiency will affect the performance of firms.

Similarly, on the firm attribute of (leverage) the ability to effectively take advantage of short-term debt for smooth running of operating activities of a firm toward improving profit and (capital structure) the mixture of debt with equity in the financing of asset of firm, the CCC on solvency and capital structure have positive interaction. This means that the higher the effect of CCC on solvency and capital structure, the higher the effect on the performance and verse versa. The effect of CCC on solvency and efficiency interaction on performance are significant at 1% while that of liquidity and capital structure are insignificant on ROA of CGF in Nigeria.

Theory Implications.

Applicability of the M&M, agency, trade-off and pecking order theories. From the extant literatures, it is comprehended that the agency cost is as an outcome of conflicts of interests between managers and the owners of a firm. This occurred when shareholders are expecting the agent to maximise the owner's wealth, management instead involves in activities that may reduce wealth of shareholders. Largely, the agency problem does not exist in Nigerian CGF listed firms. The pecking order theory classified and arranged sources of capital in the order of income generated internally such as depreciation, tax savings, investment income, retained earnings among others, debt (short or long term) finance and then lastly, equity finance. The theory emphases to internal funds which is retained earnings. As the study reveals that Nigeria CGF depended on debt, it is concluded that the CGF does not adopt the pecking order theory. While, the trade-off theory forecasts the optimal capital mix as a trade between the tax benefits (debt finance) and costs of debt. The theory suggest that profitable firms rely on debt. It can be said that CGF adopts the trade-off theory. The CGF risk of relying on debt mostly is from the application of more debts as compared with other source of finance, because of the negative correlation between profitability and total debt.

5.0 Conclusion and Recommendations

From the discussion of finding, the study concludes and recommend the following:

i. Liquidity has insignificant negative effect on ROA, therefore, the management of CGF can turn to be a risk-averse team and can improve its liquidity by adopting conservative working capital policy aims to keep adequate working capital. If manage properly would increase profitability. Also, employ the matching funding policy by using long term finance to fund permanent working capital while the fluctuating capital should be funded using short term finance;

ii. Solvency has significant positive impact on ROA, the Leverage status of the firms need to be monitor to avoid debt trap, optimum leverage is advice and exploit the used of internal finance for its operating activities;

iii. Asset's Efficiency has significant positive impact on ROA, the productivity requires concerted and deliberate effort to maintain investment in fixed asset as it has positive impact on performance;

iv. Capital Structure has significant positive impact on ROA, the firm should adopt optimal capital structure by taking advantages of both debt and equity finance but strictly be aggressive in working capital funding policies.

v. The CCC significantly influence ROA of CGF, but as a moderator, there is no clear evidence of changes in the adjusted R2 as compared with the impact the firm attributes have on ROA as evidenced profit 88% overall adjusted R2 for both the CCC and the firm attribute respectively. The CCC of CGF should be maintain but effort need to put on to improve the creditor payment period so as to guarantee stable supply.

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Mediating Effect of Financial Distress on the Relationship Between Profitability and Firm Value: A Study of Listed Non-Financial Services Firms in Nigeria

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Abstract
This study examined mediating effect of financial distress on the relationship between profitability and firm value. The prior studies have focused on the FND and firm value, individually. To date, relatively little research has been conducted in this area, the current study would like to investigate this issue and fill such a research gap in Nigerian capital market. The study used listed non-financial services firms in the Nigerian Exchange Group for the period 2011 to 2020. Purposive sampling technique was used in the study. The study used 72 firms out of the 113 non-financial services firms that were listed for the period under study. The descriptive statistics, correlation and Structural Equation Modeling (SEM) were used as techniques for data analysis while Monte Carlo model was used to determine the level of significance of the indirect effects. The study found that profitability has positive and significant effect on value, as well as financial distress of listed non-financial services firms in Nigeria. Financial distress has negative and significant effect on firm value. Finally, financial distress partially mediates the relationship between profitability and value of listed non-financial service firms in Nigeria. Hence, the study recommends among others that listed non-financial service firms in Nigeria should put profitability into consideration as the effect of profitability reducing financial distress and increasing the value of their firms is very enormous.

Keywords: *Profitability, Financial Distress, Firm Value, Listed non-financial services firms.*

1.0 Introduction

Maximizing firm value is essential for a company because it means increasing the prosperity of shareholders as well, which becomes the company's main goal. However, a good firm value is able to attract other parties' interests to join the company. In other words performance on the stock market is an index or indicator of corporate success. Any corporate entity experiencing a rise in the market price of its stocks is considered a good company by the investors (Shuaibu et al., 2019). Firm value is the perception of investors to the success rate of companies that are often associated with the stock prices. High stock prices make the company value also high (Sujoko et al., 2007 as cited by Manoarfa, 2018).

Profitability is the ability to earn profit from all the activities of an enterprise. It indicates how well management of an enterprise generates earnings by using the resources at its disposal. Firms usually follow the goal of maximizing shareholder wealth. This solely cannot be achieved without ensuring that the returns or profits made are sufficient to meet the companies' operation and other obligations. Many studies such as Sabrin et al. (2016); Sucuachi and Cambarihan (2016); and Chen and Chen

(2011), examined the effect of profitability on the value of the companies and revealed that profitability indeed influence the firm value. The greater the profitability of a firm, the more assignable profit there is, and the higher is the value of the company (Chen & Chen, 2011).

The failure of top firms in the world who once represented the icon of their industries has renewed the interest of research on the subject matter of financial distress (FND) (Vincent & Dakare, 2019). Financial distress is referred to as a situation where a firm is unable to generate sufficient fund to meet its financial obligations as at when due (Ikpesu & Eboiyehi, 2018). High FND indicates that the company is experiencing financial difficulties so that it cannot pay its obligations. Higher profitability signifies lower risk of FND. This is because the high profit generated indicates that the company has sufficient funds to meet and pay its obligations. Thus, if the company's FND is higher, the firm value will be lower because investors will not invest in high-risk companies that also cannot fulfil their obligations (Dewi et al., 2021).

Researches by Chen and Chen (2011), Rajhans and Kaur (2013), Hermuningsih (2013), Sabrin et al. (2016), Pratiwi (2020) and Robert (2021) discovered that profitability have positive effect on firm value. However, other researches by Sharif et al. (2015), Lastari and Armayah (2016), Mohammad (2017) and Panji (2018) revealed that profitability has inverse relationship with firm value. Form the forgoing it is evident that effect of profitability on firm value yielded inconsistent results with some indicating positive association and others negative. The differences in the previous research findings show that there is gap between the profitability and firm value. It is believed that this happens because there are other variables influencing their relationship. Therefore, for these reason this study reviews the relationship between profitability and firm value by including FND as intervening variable.

Previous studies such as (Adedoyin 2011; Uwuigbe et al., 2012; Uwubanmwen & Obayagbona 2012; Rajhans & Kaur 2013; Hermuningsih 2013 and Abdallah 2014) apart from Dewi et al. (2021) rarely take the relationship between profitability, FND and firm value into consideration at the same time. This shows that there is research paucity with regards to these three variables. The divergence in the previous studies may introduce a question whether profitability just directly affects the firm value or an important hidden variable like financial distress may influence such a relationship. If financial distress is put as a hidden variable in the profitability and firm value association, the FND can play a substantial role in this regard. As a matter of fact, the level of FND of a company may affect the company value. The prior studies have focused on the FND and firm value, individually. Since little research has been done in this area, the current study would like to investigate this issue and fill such a research gap in Nigerian capital market.

The aim of this study is therefore, to further examine the relationship between profitability and firm value by adding financial distress as mediating variable. Financial distress is believed to be able to intervene the relationship between profitability and firm value because it is an illustration for creditors, suppliers, customers, other stakeholders and investors that lend, supply, patronize and invest in the firm, which increase its profitability and value to see the company financial condition.

The rest of the paper is divided into four sections; section two is literature review from previous studies. Third section describes methodology used in conducting this study. Section four comprises of the results and discussion and fifth section captures conclusion and recommendation.

2.0 Literature Review

2.1 Concept of Firm Value

Firm value can be defined as an economic measure that reflects the market value of the whole business. It is the aggregate claims of the debt holders, preference stockholders, and common stockholders (Bhuiyan et al., 2010). Baye (2010) however sees firm value as the present value of the firm's current and future profits, while Bhullar and Bhatnagar (2013) see it as the past, present and future performance of a firm as well as the long term interest of investors. The primary goal of an organization is the maximization of value. And the value of a firm takes into account the long-term impact of managerial decisions on profits. Thus, a firm that is expected to maximize its profit is actually concerned with maximizing its value, because the value of a firm is linked to profit maximization (Pipalia, 2007), even though profits can only to a certain extent explain value, because profits are accounting category and represent only the historical performance of a firm.

Guleryuz (2009) cited in Mohammad (2017) declared that firm value is the acquisition and the trade value of the company anticipated by volunteer buyers and sellers with thorough information about the company free from any problem. The value of a firm depends on numerous factors such as the corporate governance mechanisms, the firm specific characteristics, the sector in which the company operates and the broad market environment among others (Hamidu & Modibbo, 2015). According to Sabrin et al. (2016), firm value can be measure through Tobin's Q, Price to book value and market to book ratio. Firm value is considered as a crucial thing since it describes the prosperity of the company's owner.

2.2 Concept of Profitability

Profitability is defined as the management efficiency in achieving profits from its operating activities (Abdallah, 2014). 'Profitability' is different from 'Profit' even though they are often used interchangeably (Trivedi, 2010). Profit refers to the total income earned by the enterprise during the specified period of time, while profitability refers to the operating efficiency of the enterprise. However, they are closely related having distinct roles in business. The profitability of a firm is the state or condition of yielding a financial profit or gain (Malik, 2011). Manoarfa (2018) defined profitability as the company's ability to generate profit.

Profitability of a firm is determined by factors such as liquidity, size, capital structure and intellectual capital (Nyandumo, 2016; Tui et al., 2017; Hirdinis, 2019 and Bala et al., 2019). Profitability ratio was use to assess the company's ability to make a profit (Kashmir, 2012 and Tui et al., 2017); this ratio also provides a measure of the effectiveness of management of a company. According to Manoarfa (2018), profitability ratios can be measured from sales approach which include gross profit ratio, operating profit ratio, net profit ratio as well as investment approach which comprise return on asset, return on equity and return on capital employed.

2.3 Concept of Financial Distress

financial distress is the initial process before bankruptcy or liquidation which is marked by declining financial performance (Sugiarto & Mahanani, 2020). Financial problems that can be experienced by companies that are financially distressed. According to Betz et al., (2014) and Ndicu (2018), firms are said to face financial distress when they are faced with insolvency. Insolvency means a situation where firm is not able to meet its short-term maturing obligations or the liabilities are more than the assets. A situation where operating cash flows are not enough to satisfy short term maturing obligations and the firm is under obligation to take remedial action.

As stated in Andrade and Kaplan (1997) and Enyew et al. (2019), as cited by Isayas (2021) financial distress is a circumstance in which a firm cannot fulfill its debt obligations to the creditors, which in return leads to either restructuring or bankruptcy. Financially distressed firms are believed to face multiple difficulties including operational insolvency, dividend reductions, losses, plant closings, reduced stock prices, and loss of customers, valuable suppliers, and key employees.

2.4 Review of Empirical Studies

2.4.1 Profitability and Firm Value

The impact of profitability on value is a central issue to the corporate organizations and researchers. There are a number of studies on profitability and value at different times in developed, as well as, developing countries, and most of which are well documented in the area of accounting and finance. Some of these studies are Chen and Chen (2011), Adedoyin (2011), Uwuigbe et al. (2012), Uwubanmwen and Obayagbona (2012), Rajhans and Kaur (2013), Hermuningsih (2013), Abdallah (2014), Almumani (2014), Kumar (2015), Sabrin et al. (2016), Sucuahi and Cambarihan (2016), Lestari and Armayah (2016), Abba and Usman (2016), Mahmoud (2017), Panji (2018), Sari and Sedana (2020), Pratiwi (2020) and Robert (2021) among others.

However, studies on the impact of profitability on firm value have yielded inconsistent results. In Taiwan, Chen and Chen (2011), focus on the relationship between profitability and firm value with capital structure as mediator and firm size and industry as moderators for 647 listed companies for the years 2005 to 2009. Using correlation and regression analysis, the results confirmed that profitability has a positive effect on firm value. In India, Rajhans and Kaur (2013), investigate the determinants of firm value creation for 16 companies listed on Bombay Stock Exchange (BSE) from 2002 to 2011. Ordinary Least Square (OLS) and Generalized Least Square (GLS) regressions were used for statistical analysis. The study finds that profitability among others has a significant and positive effect on value of a firm.

In Indonesia, Hermuningsih (2013) examines the influence of profitability, growth opportunity and capital structure on firm value for 150 companies listed on the Indonesia Stock Exchange (ISE) for the period 2006 to 2010. Using Structural Equation Model (SEM), result shows that profitability positively and significantly affects the company’s value. Sabrin et al. (2016), also examine the effect of profitability on firm value for manufacturing companies listed in ISE for the period 2009 to 2014. Result of Path analysis shows that profitability positively affects the firm value of the firms. In addition, Lestari and Armayah (2016), study the effect of profitability on company value for 10 manufacturing companies listed in ISE for the period 2009 to 2014. Empirical results from OLS regression analysis show that profitability variability explains change in company value. Return on Investment and Return on Equity have significant positive effect on company value, while Net Profit Margin has significant negative effect on company value. This panel study only used OLS regression.

Again, Panji (2018) examines the effect of managerial ownership and profitability on firm value for 15 foods and beverages companies listed on the ISE for the period 2012 to 2015. Using OLS regression, the result shows that profitability negatively affects firm value. In the same vein, Pratiwi (2020) explores the effect of capital structure, profitability and size on firm value using a sample of 31 companies listed on ISE for the period 2014 to 2018. Using SEM, the findings show that profitability affects firm value positively.

Moreover, Sari and Sedana (2020) study the intervening effect of capital structure on the relationship between profitability and liquidity on firm value using a sample of all the construction and building companies listed on the ISE for the period 2013 to 2017. SEM was used to analyze the data and the result shows that profitability has a positive and significant effect on firm value. Furthermore, Robert (2021) studies effect of profitability, firm size, equity ownership and firm age on firm value of 65 manufacturing companies listed on the Indonesian Stock Exchange for the period 2012 to 2019. Using SEM, the result shows that profitability has positive and significant effect on firm value.

In Philippines, Sucuahi and Cambarihan (2016), conduct a study to determine the factors that influence the firm value of 86 diversified listed companies for the period 2014, using OLS regression, and the results, show that profitability has significant positive effect on firm value. In Nigeria, Adedoyin (2011) assesses the effect of corporate firm characteristics in determining share prices of listed firms on the NSE. A panel data design is adopted using seventy-two companies for the period 2004 to 2009. Using OLS and GLS regressions, the result indicates that profitability has insignificant positive relationship with share price in both models.

In a related development, Uwubanmwen and Obayagbona (2012), conduct a study on the impact of company fundamentals on equity returns in Nigeria using a sample of eight companies for the period 2000 to 2011. GLS regression technique is employed in estimating the relationships. The company fundamentals selected in the study was firm's debt, firm size, firm price earnings ratio and the book-to-market value of the firm. Based on the analysis, it discovers that price-earnings ratio has insignificant positive effect on firms' stock returns. In addition to the above, Mahmoud (2017) examines the determinants of capital structure and their combined effect on firm value in Nigerian listed manufacturing companies for the period 2012 to 2016. Using probit regression analysis, the study finds that profitability has significant negative impact on Tobin's Q of listed manufacturing companies in Nigeria.

2.4.2 Impact of Profitability on Financial Distress

Thim et al. (2011) analyze the relationships between financial distress and firms' characteristics and risk of 101 companies selected randomly from Bursa Malaysia during the period 2005 to 2009. Two models were used to analyze the relationships between financial distress and firms' characteristics and risk. The independent variables are profitability, liquidity, firm size, solvency, growth and risk. Size is found to be significant and has a positive relationship with financial distress. Interest coverage ratio has a positive relationship with FND; while profitability has a negative relationship with financial distress.

Also, Baimwera and Muriuki (2014) examine the determinants of corporate FND for non-financial firms listed in the Nairobi Securities Exchange for a three year period 2007 to 2010. The study adopted a descriptive research design. It analyzed univariate and multivariate accounting based distress prediction approaches. The Pearson product moment correlation and regression analysis were used to examine the degree and nature of relationship between determinants of corporate FND and corporate FND itself. Growth and profitability were found to have significant influence in determining corporate FND. In the same vein, Yadiati (2017) analyses the influence of profitability on FND on listed Agricultural firms in Indonesia for 3 years starting from 2012 to 2014. Altman Z-score was used to measure FND and 18 Agricultural firms were selected at random which formed the sample size. Multiple regression result shows that profitability has insignificant effect on financial distress.

Ikpesu and Eboiyehi (2018) investigated the effect of capital structure on corporate FND of manufacturing firms in Nigeria by employing panel corrected standard error (PCSE) technique. The variables used in the study are corporate FND, capital structure, firm size, assets tangibility, revenue growth, profitability and age of firms. The outcome of the research reveals that profitability affects corporate financial distress positively. Sugiarto and Mahanani (2020) determine the effect of profitability, leverage, liquidity and activity on financial distress for a period of one year 2018. The study was based on quantitative research approach using all manufacturing companies listed on the

IDX in 2018 as the population, which were then selected by purposive sampling method to obtain samples. The research uses logistic regression analysis method. The result of the study indicates that profitability has a significant negative effect on financial distress.

Isaya (2021) investigate the determinants of financial distress of insurance companies in Ethiopia. The study used balanced panel data for 11 insurance firms for a period of twelve-year (2008-2019). A quantitative approach and explanatory design were used. The descriptive statistics show that sampled insurance firms are in safe zone. The random effect regression shows that profitability is negatively correlated with financial distress.

2.4.3 Impact of Financial Distress on Firm Value

Ahmad et al. (2020) examined the effect of financial distress on firm's performance of non-financial firms registered with Pakistan Stock Exchange. The population of the study is comprised of all the companies which are related to the non-financial sector and whose shares are traded in Pakistan stock market covering the time span of six years from 2011 to 2016. 161 corporations, listed on PSX have been chosen as a sample which represent the whole population of non-financial companies. Regression result shows that financial distress has significant negative effect on firm performance measured by Tobin's Q.

Kanyugi (2016) examined the effects of financial distress on the value of firms listed at the NSE. Secondary data was collected from the annual reports and financial statements of 34 companies listed on the NSE over a five-year period spanning between 2011 and 2015. Regression result shows that financial distress has a strong positive effect on firm value. This means that high financial distress suggest that the company is facing financial difficulties so that it cannot pay its obligations as at when due and this will affect the firm value because investors will not invest in high-risk companies that also cannot fulfill their obligations.

2.4.4 Profitability, Financial Distress and Firm Value

This sub-section reviews studies on the mediating effect of financial distress on the relationship between profitability and firm value. However, based on the review of literature, evidence of the mediating effect of FND on the relationship between profitability and firm value seems not to have been clearly recorded in previous research efforts at local level. The available one were conducted in Indonesia by Dewi et al. (2021) who examined the mediating effect of FND on the relationship between profitability and liquidity of listed manufacturing companies in Indonesia. The research looked at 170 manufacturing companies listed on IDX for a period of five-years (2016-2020). The data were analyzed using Partial Least Square (PLS). Profitability and firm value are perfectly mediated by financial distress, with liquidity as the independent variable. The study's major finding is that profitability and liquidity have no direct effect on Firm Value, but have an indirect effect via financial distress.

2.5 Theoretical Review

2.5.1 Signalling Theory

Various firm attributes are sent out to the receivers as signals for firm value. These signals could be positive or negative. For instance, high firm profitability signals good firm's prospects. This makes investors to respond positively and consequently leads to an increase in firm value (Putu et al., 2014). Also, based on signal theory, profitability is information that must be provided by the company. According to Tahu and Susilo (2017), a high profit firm will improve the quality of financial reports which have an impact on increasing profits and the company's stock price. This may send a positive signal to different stakeholders. In essence, signaling theory is used in explaining the relationship between profitability and firm value.

2.5.2 Wreckers Theory

According to Baimwera and Muriuki (2014), and Campbell, Jens and Jan (2005), stocks of distressed firms perform in a manner which is vastly inferior to stocks of financially healthy firms. The wreckers' theory of financial distress seeks to explain the benefits that may step out of financial distress to stakeholders. Therefore, Wreckers theory explains how the financial distress diminishes firm and firm value.

2.5.3 Modigliani and Miller Irrelevance Theory

This theory argues that an increase in firm value is the function of earnings which comes from company's investment. Therefore according to this theory revenue generated by firm (profitability) plays tremendous role in increasing or decreasing the value of firm. In essence, M & M irrelevance theory is also used to explain the relationship between profitability and firm value (Modigliani & Miller, 1961 as cited in Bello et al., 2020).

2.5.4 Liquidity and Profitability Theory

According to Hashi (1997), as cited in Isayas (2020) when the firms' indicators (liquidity and profitability) are good it is perceived as healthy, otherwise if the indicators are poor it is perceived as unhealthy and at risk of bankruptcy. A positive and high level of these two indicators shows a lower risk of bankruptcy. This theory suggests that a firm can fail even though its profitability is good. If the firm's growth rate is significantly greater than the internal rate of return, its revenue flow can be inadequate to finance expenditures and the firm is unable to pay its obligations if it is highly indebted. The firm's profitability should be greater than the company's growth rate. Hence, liquidity and profitability theory describe the relationship between profitability and financial distress.

3.0 Methodology

The study is conducted using correlation research design and used quantitative research approach in order to examine the mediating effect of financial distress on the relationship between profitability and firm value of listed non-financial services firms, covering the period of ten-years (2011-2020). The population of the study consists of all the non-financial services firms listed on the Nigerian Stock Exchange as at 31st December, 2020. They are as follows:

Table 3.1: Population of the Study

S/No	Sectors	Population	Sample Size
1	Agriculture	5	4
2	Conglomerate	6	5
3	Construction /Real Estate	8	2
4	Consumer Goods	21	16
5	Healthcare	10	6
6	ICT	7	5
7	Industrial Goods	14	10
8	Natural Resources	4	3
9	Oil and Gas	12	7
10	Services	26	14
Total		**113**	**72**

Source: Nigerian Stock Exchange website (www.ngxgroup.com)

The population of the study is all the 113 non-financial services firms listed in Nigerian Stock Exchange as at 31st December, 2020. The study uses filtering to arrive at the new population of the study, which is in line with Rabiu (2018). This filter requires that a company must be listed without been delisted between 2011 and 2020, which results in 95 companies as new population of the study.

Purposive sampling technique is used in selecting the sample size of the study which ensures that all the selected companies have complete data required for the study. Thus, 72 listed non-financial service firms emerge as the sample size of the study.

3.1 Variables and their Measurements

The study consists of four (4) set of variables; independents, dependent, mediating and control variables. For the purpose of this study the dependent variable is Firm value, independent variable is profitability, mediating variable is financial distress and lastly, age and size serve as control variables.

3.1.1 Dependent Variable

The dependent variable is firm value. To measure firm value, this study used Tobins' Q. Tobin's Q is generated from the calculation of a company's market value of equity and book value of debt, divided by the company's total assets. It is given as ratio of equity and debt to total asset (Rabiu, 2018).

3.1.2 Independent Variable

Profitability: The measurement of profitability used in this study is the Return on Asset (ROA), i.e. profit after tax divided by total asset, as used by Rabiu (2019).

3.1.3 Mediating Variable

Financial Distress: FND is measured using the Altman Z-Score to calculate the financial difficulties or economic failure experienced by the company, as well as predicts the risk of company bankruptcy. Altman's 1968 model takes the following form:

$Z = 0.012A + 0.014B + 0.033C + 0.006D + 0.999E$

Thus, this was later translated to; $Z = 1.2A + 1.4B + 3.3C + 0.6D + .999E$

Where:

A = Working Capital/Total Assets; B = Retained Earnings/Total Assets; C = Earnings before Interest and Taxes/Total Assets; D = Market Value of Equity/Book Value of Total Debt; E = Sales/Total Assets, Z = Overall index.

Z-score is calculated by multiplying each of the financial ratios by an appropriate coefficient and then summing the results (Baimwera & Muriuki, 2014). The critical categories used by Altman to predict FND, based on Z score model, are as follows:

For $Z > 2.6$: "Safe" Zone; the company is in a non-bankruptcy zone, it is financially healthy;

$Z = 1.1 - 2.6$: "Grey" Zone; the company should be on alert and exercise caution on fiscal health; and

$Z < 1.1$: "Distress" Zone; the company is in FND, probability of bankruptcy is very high.

3.1.4 Control Variables

The control variables included in the model are firm size and firm age.

Firm Size: This refers to the dimension of a firm in terms of whether a company is small or large which could be measured in terms of total assets, net assets or turnover (Adamu, 2018). This is given as: Firm Size = Natural Logarithm of Total Asset

Firm Age: Age means year of incorporation or year of listing. It is the number of years passed since the company was incorporated or listed on the stock exchange. In this study, year of listing is used as a proxy of firm age as used by Rabiu (2018).

The techniques of data analysis used in this study include descriptive statistics which is used in order to describe the dependent and independent variables of this study using the mean, median, maximum, minimum and standard deviation of the variables; correlation analysis and regression analysis.

Correlation matrix is used to determine the level of association between profitability, FND and firm value. Also, regression analysis is used to establish whether FND mediates the relationship between profitability and firm value. This study adopts the Zhao et al. (2010) models to establish the mediating effect of FND in the relationship between profitability and firm value.

Furthermore, the selection of the appropriate technique among the many multivariate statistical tools available depends on the measurement of the study. Therefore, the study used Structural Equation Modeling (SEM). SEM has advantage over traditional multivariate techniques; firstly, it is explicit in assessment of measurement error. Secondly, its estimation power of latent (unobserved) variables via observed variables and finally, model testing where a structure can be imposed and assessed as to fit of the data (Kaplan, 2001). To test the indirect effect, MEDSEM was used to test the significance level.

3.2 Model Specification

The current study adopts Memon et al. (2018), Mackinnon et al. (2012) and Zhao et al. (2010) in testing the indirect effect. They concluded that to test mediating effect, regressing the independent variable on the dependent variable does not necessary because it represents a total effect, therefore can be misleading. According to them what is crucial is for the indirect effect to be significant. The graphical representation of mediating models is shown in Figure 1 below:

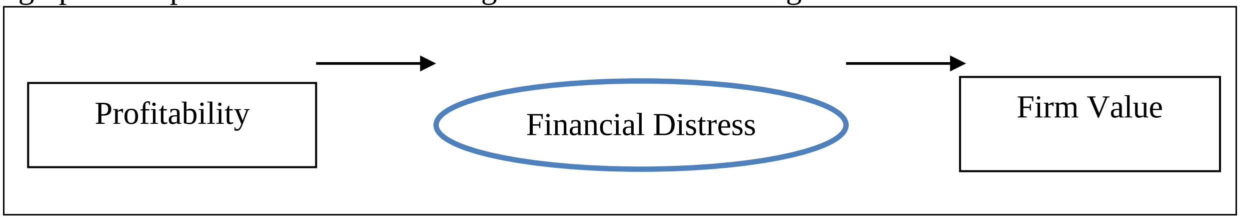

Figure 1: Conceptual Framework

Figure 1 depicts the conceptual relationship among the three concepts, which is profitability impacts on financial distress, which in turn affects firm value. Thus, the relationship between profitability and firm value is presumed to be mediated by financial distress. Figure 2 below clearly shows the direct path and indirect path.
Figure 3 below clearly shows the direct paths and the indirect paths.

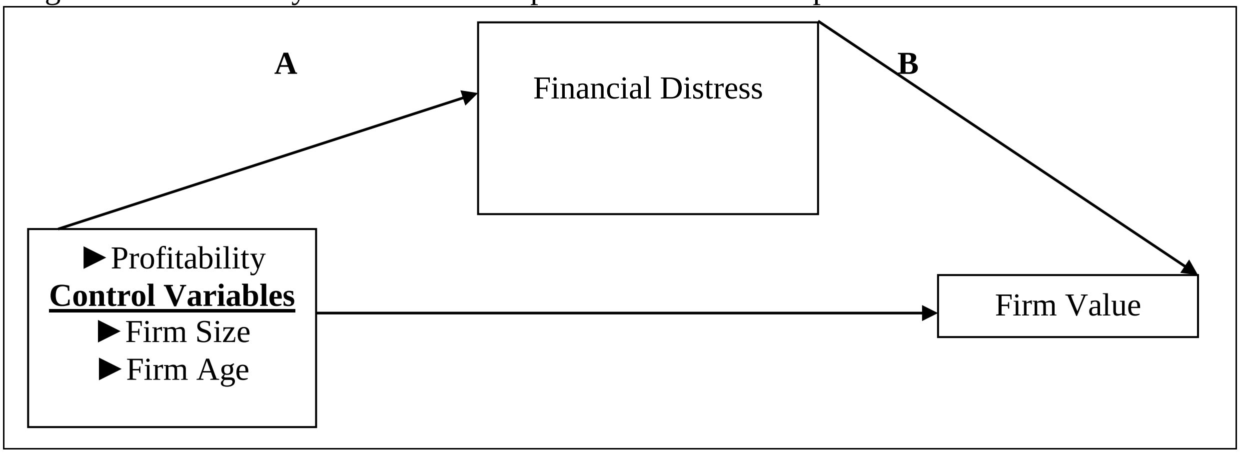

Figure 2: Statistical Diagram

From Figure 2, the relationship between profitability and financial distress represents the direct effect (Path A), while the statistical relationship between financial distress and firm value represents Path B and the impact of profitability on the firm value through financial distress is represents by **C'**

(indirect effect). Thus, adopting Mackinnon et al. (2012) and the recommendation of Memon et al. (2018), the study used the following models, which is a modification of Dewi et al. (2021).
The functional relationship of the variables
TQ = f(ROA, AZ-SCORE, FAGE & FSIZE)
AZ-SCORE = $\beta_o + \beta_1 ROA_{it} + r_1 FAge_{it} + r_2 FSize_{it} + \mu$ ………………………………Model 1
This model was used to predict the impact of mediator (financial distress) on independent variable (profitability);
TQ = $\beta_o + \beta_1 Roa_{it} + \beta_2 AZ\text{-}SCORE_{it} + r_1 FAge_{it} + r_2 FSize_{it} + \mu$ ………………..…..…Model 2
The second model was used to test the mediating effect of financial distress on the relationship between profitability and firm value.
Where:
TQ = Tobin's Q of company "i" in year "t"
ROA = Return on asset of company "i" in year "t"
AZ-SCORE = Altman Z-Score of company "i" in year "t"
FSIZE = Firm size of company "i" in year "t"
AGE = Firm age of company "i" in year "t"
βo = Constant
β_1 and β_2 are the coefficients to estimates
r_1, r_2 = Parameters of the control variables
μ = Error term

4.0 Results and Discussion

This section presents the results of the analysis of the collected data from the Annual Reports and accounts of the sampled companies. The descriptive statistics, correlation and regression analysis were conducted in the section.

4.1 Descriptive Statistics

Table 4.1 presents the descriptive statistics of the variables included in the Regression Models as presented. Therefore, the mean, standard deviation, minimum value and maximum value are depicted in the table below:

Table 4.1: Descriptive Statistics Result

Variables	Obs.	Mean	Std. Dev.	Min	Max
Tobin's Q	740	1.3656	0.9754	0.5	4.3
ROA	740	0.0240	0.0919	-0.1988	0.1944
FSIZE	740	7.1064	0.7946	5.24	9.31
FAGE	740	26.5945	13.6190	2	56
AZ-Score	740	5.1136	2.8971	-1.93	9.75

Source: STATA 14 Outputs.

Table 4.1 reveals that the firm value of listed non-financial service firms has a mean of ₦1.37. This means that the sampled firms have average firm value of ₦1.37 with the minimum of 5k and the maximum of ₦4.3. The standard deviation of 98k which is lower than the mean value indicates that there is low variation of firm value among the firms. In the same vein, the profitability has on average 2k. In other words for every 100 naira of asset the firms can generate 2k profit after tax. On the other hand, the minimum value -0.1988 implies that some firms incurred losses within the period of the study with a maximum value of 0.1944. Standard deviation of 0.0919 implies that there is significant dispersion in ROA among the firms. Company size has a mean value of 7.1064 with minimum value of 5.24 and a maximum value of 9.31. Standard deviation of 0.7946 indicates that there is wider deviation from the mean among listed firms with regards to size.

Furthermore, the age of listed non-financial service firms has a mean of 26.5945 (27) years. This means that the sampled non-financial service firms have average year of listing of 27 years. The minimum and maximum years of listing are 2 and 56 years respectively. The standard deviation of 13.6190 years which is lower than the mean indicated that there is no wider dispersion among the years of listing of the sample firms. Finally, the average value of AZ-SCORE is 5.1136, which implies that non-financial services firms included in the sample are in safe zone. The minimum and maximum values are -1.93 and 9.75 with a standard deviation of 2.8971. The result indicates the existence of non-financial services firms in the distress zone and moderate variation in the distress level of the sampled firms.

4.2 Correlation Matrix

The correlation matrix measures numerically the association between all the pairs of variables. The Table 4.2 presents the association of the dependent variable and Explanatory variables.

Table 4.2: Correlation Matrix Result

VARIABLES	TOBIN'S Q	ROA	FSIZE	FAGE	AZ-SCORE	VIF	I/VIF
TOBIN'S Q	1.0000						
ROA	0.2184	1.0000				1.07	0.9362
FSIZE	0.0586	0.2522	1.0000			1.09	0.9196
FAGE	0.0572	0.0475	0.1415	1.0000		1.02	0.9798
AZ-SCORE	-0.1022	0.6416	0.0005	0.0703	1.0000	1.01	0.9950

Source: STATA 14 Outputs.

The correlation matrix as per Table 4.2 shows the association between all pairs of variables used in the regression model. Return on asset has a positive and weak association with firm value with correlation coefficient of 0.2184. Firm size and age have positive and very weak correlation with the firm value with correlation coefficients of 0.0586 and 0.0572 respectively. These means that increase in profitability, firm size and firm age lead to small increase in firm value of the sampled firms. The FND however, has a negative and very weak association with the firm value (correlation coefficient = -0.1022). The negative correlations imply that as the FND increase firm value decreases and vice versa.

Also profitability has a positive and moderate association with FND (correlation coefficient = 0.6416). Firm size and firm age have a positive and very weak association with FND with correlation coefficients of 0.0005 and 0.0703 respectively. The values on the diagonal are all 1.0000 which shows that each variable is perfectly correlated with itself. The highest correlation between the variables is 0.6416, which is evidence of absence of multicollinearity in the variables. Similarly, to determine the presence of multicollinearity problem, a Variance Inflation Factor (VIF) tolerance test is also carried out, the results of which provide evidence of the absence of Collinearity. This is because the results of the VIF test ranges from a minimum of 1.01 to a maximum of 1.09.

4.3 Regression Results

This sub-section presents the regression result of the mediating effect of FND on the relationship between profitability and firm value of listed non-financial services firms in Nigeria, using Structural Equation Modeling (SEM). Table 4.3 showed the estimation result of direct effects (profitability and financial distress).

Table 4.3: Impact of Profitability on Financial Distress (Direct Effects)

Variables	Coefficient	Std. Err.	OIM z	P>/z/
ROA	21.5610	0.8931	24.14	0.000
FSIZE	-0.6603	0.1043	-6.33	0.000
FAGE	0.0135	0.0059	2.29	0.022
_CONS.	8.9290	0.7357	12.14	0.000
R-Squared	0.4434			
P-Value	0.0000			
Likelihood	-5700.6044			
OBS	740			

Source: STATA 14 Outputs.

From Table 4.3, the p-value indicates fitness and reliability of the model to show statistically significant relationship between profitability and FND variables. Hence, the p-value of 0.0000 provides evidence that the model was fit. The cumulative R^2 is 44% (0.4434), which gives cumulative effect of explanatory variables jointly on the dependent variable. This means that 44% of the total variation in FND of listed non-financial services firms in Nigeria is caused by explanatory variables while the remaining 56% of the total variation in the FND is caused by other variables not included in model two.

The result revealed that (ROA, FSIZE and FAGE) have significant impact on FND of listed non-financial services firms in Nigeria. The result reveals profitability affected FND positively (coefficient 21.5610; P-value 0.000). This means that profitability influences FND. Agency theory suggests that a firm can fail even though its profitability is good. If the firm's growth rate is significantly greater than the internal rate of return, its revenue flow can be inadequate to finance expenditures and the firm is unable to pay its obligations if it is highly indebted. The finding is similar with Baimwera and Muriuki (2014) and Ikpesu and Eboiyehi (2018), and contrary to Yadiati (2017).

4.4 Profitability, Financial Distress and Firm Value

Model three tests the nature of indirect effects of FND on the relationship between profitability and firm value of listed non-financial services firms in Nigeria. In this analysis, Monte Carlo model was used to determine the level of significance of the indirect effects. The approach involves computation of the indirect effect and standard errors estimates for the separate coefficient for the full sample as presented in Table 4.4 and Table 4.5:

Table 4.4: Result of Indirect Effect (Profitability, Financial Distress and Firm Value)

S/No	Path	Coefficient	Conf.	Interval	Z-Value	P-Value
1	ROA ---> AZ-SCORE --->TOBIN'SQ	-0.263	-0.320	-0.209	-9.301	0.000

Source: Stata Output 14.0 Outputs (MEDSEM) 2022

Table: 4.5: Significance Testing of Indirect Effect

Estimates	Delta	Sobel	Monte Carlo*
Indirect effect	-0.264	-0.264	-0.263
Std. Err.	0.029	0.028	0.028
Z-value	-9.102	-9.369	-9.301
P-value	0.000	0.000	0.000
Conf. Interval	-0.321, -0.207	-0.320, -0.209	-0.320, -0.209

Source: Stata Output 14.0 Outputs (MEDSEM) 2022

Table 4.4 and Table 4.5 present the MEDSEM approach in testing the significance level of the indirect effect of FND on the relationship between profitability and firm value of the listed non-financial services firms in Nigeria. FND plays the role of mediator variable in the relationship between profitability and firm value. The indirect effect result shows that profitability has shown a beta coefficient of (-0.263) and p-value of 0.000, this means that profitability has a negative relationship with firm vale through FND. This can also be confirmed with the LLCI and ULCI of (-0.320 and -0.209) respectively. This means there is a competitive mediation (partial mediation).

Also, the ratio of Indirect to Total Effect (RIT) of 121% is implies that about 121% of the effect of profitability on firm value is mediated by FND (See Appendix). The result shows that there is domination of total effect of profitability on firm value, and also the meditational effect using Monte Carlo test approach is significant. This can be confirmed with a p-value of (0.000), this means there is mediation. This implies that FND plays the role of a mediating variable in the relationship between profitability and firm value of listed non-financial services firms in Nigeria. The finding is similar with Dewi et al. (2021) and Ndicu (2018).

5.0 Conclusion

This study examines how FND mediates the relationship between profitability and value of listed non-financial services firms in Nigeria. On the basis of the findings of the study, the paper concludes that profitability significantly influence both FND and value of listed non-financial services firms in Nigeria. Therefore, in accordance with the Modigliani and Miller irrelevance theory, profitability of listed Nigerian non-financial service firms influences their value. Also FND has negative and significant effect on firm value. This is in line with Wreckers theory, which explains how the decreases in FND increase firm value. Finally, FND partially mediates the relationship between profitability and value of listed non-financial services firms in Nigeria. Hence, the study recommends among others that listed non-financial services firms in Nigeria should put profitability into consideration as the effect of profitability reducing FND and increasing the value of their firms is very enormous.

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Board Attributes and Environmental Disclosure: The Moderating Role of Institutional Isomorphism

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Abstract
The study investigates the extent board attributes (board size, board independence board meetings, board educational background, board gender, board nationality, multiple directorships, and board age) impact on the environmental disclosure of listed non-financial firms in Nigeria, and the extent institutional isomorphism moderate the relationship between board attributes and environmental disclosure of listed non-financial firms in Nigeria. The study used a sample of top 50 firms selected based on market capitalisation using purposive sampling technique. The analysis revealed board size has a significant negative relationship with environmental disclosure (wevd), while board qualification and board age have a significant positive relationship with wevd. Also, the study revealed a well-diversified board could lead to more environmental disclosures. The remaining variables are statistically insignificant. Hence, the overall analysis supports the argument that a well-diversified board could lead to more environmental disclosure. Also, larger boards do not always guarantee more environmental disclosures as one size does not always fit all. This study investigated the relationship between board diversity attributes (using Blau index as the measure for diversity) and environmental disclosure (energy, water, emission, effluent and waste and compliance using GRI index) with institutional isomorphism as moderator using GCI index.

Keywords: *Blau Index, Board attributes, Institutional Isomorphism, GCI, Environmental Disclosure, Moderation.*

1.0 Introduction

Nigeria's environment is under increasing threat from human activities and natural disasters. There are already certain threatening problems with the environment and visible scars associated with the destruction of the natural resource base (land, water and air) upon which all life depends are being noted. The country's large population of about 200 million and its rapid growth rate of 2.8 percent are contributing to its environmental degradation. Admittedly, the key environmental issues facing Nigeria include land degradation, deforestation, and land, water and air pollution among others.

Although there have been many national efforts to tackle the problems, Nigeria continues to rank very low in terms of its environmental performance rating. In 2020, the country's Environmental Performance Index ranking (EPI) was 31.00, ranking it as number 151 out of 180 countries surveyed in the world. The low EPI figure puts the country behind many other African countries like Gabon (45.80), Mauritius (45.1) South Africa (43.1), Namibia (40.2) and Malawi (38.3) to mention a few. A value of 31.00 indicates that the country continues its poor environmental performance compared to some years back like 2014 (39.20). This shows that Nigeria still struggles to handle environmental problems and it has not been able to significantly reduce its high rate of environmental damages when compared with other OPEC member countries like Venezuela (50.3), Iran (48.0), Saudi Arabia (44.0) and Iraq (39.5).

Therefore, examining these issues and exploring the trade-offs between present and future environmental issues, provide the justification for this study as weak and fragmented environmental governance remains a major issue of environmental sustainability in the country. This study argues that, many of the institutions dealing with environmental issues have weak capacity and adopt sectoral, rather than integrated, approaches. They are generally under-funded and ineffective in their core functions to have meaningful impact on environmental sustainability. Weak enforcement of laws and weak implementation of policies remains a major issue of concern in Nigeria’s environment despite institutions in place like NESREA, DPR and SEC.

On the other end, there is also a limited private sector participation in environmental management. The private sector as a major player in the market forces must therefore be adequately involved in environmental management. Improving the level of private sector participation in environmental management to take economic responsibilities for damages done to the environment is critical. This would mean establishing a framework for proper environmental valuation of the activities of the private sector. The cost of environmental mitigation needs to be incorporated into the capital outlay as part of environmental responsibility of every private establishment, and be ethically disclosed for stakeholders’ consumption.

Although, there have been a lot of efforts put by Nigeria, since her independence in developing the right framework aimed at protecting the environment, including the marine and coastal environment, the conservation of natural resources, and the management of trans-boundary hazardous wastes (Evuti, 2018), issues of environmental issues still persist. Presently, there existed 33 Environmental Regulations cutting across virtually all sectors, developed and gazetted through NESREA to tackle environmental issues in Nigeria, but, environmental problems are still severe and diverse. In fact, some of these hazards are irreversible, and are resulting in loss of lives and means of livelihood of the local communities (Adedeji et al., 2018; Evuti, 2018; Hassan & Kouhy, 2014), hence, the motivation for this study.

Many studies have examined environmental disclosure issues like energy consumption, Greenhouse Gas (GHG) emissions, water consumption, waste and effluents, and emissions to air and water amongst others (Hassan & Kouhy, 2014; Oluseyi-sowunmi et al., 2020).
While others have investigated environmental performance practices such as energy efficiency, water efficiency, reduction in waste generated, environmental monitoring, redesigning of production processes (Gössling et al., 2012; Molina-Azorín et al., 2015) however, studies have paid less attention to the specific area of environmental disclosure in relation to institutional isomorphic factors especially in the developing nations (Alshbili & Elamer, 2019; Amoako et al., 2021; Kılıç et al., 2020). Specifically, studies that examined the moderating role of institutional isomorphism on the relationship between board attributes and environmental disclosure are lacking in developing nations and most specifically in Nigeria.

In Nigeria, despite the large number of firms impacting negatively on the environment (Hassan & Kouhy, 2014; Haladu & Salim, 2016; Oluseyi-sowunmi et al., 2020), researchers have paid less attention on studies in the aspect of environmental disclosure. This is because, the researcher could not find any study that examines the moderating role of institutional isomorphic factors on the relationship between board attributes and environmental disclosure, hence the justification for the research.

It is a common knowledge that an average human being tend to behave in certain way when they are force to do so. Hence, it is on this premise that institutional theorist posited that countries with certain type of law may likely have a different type of behaviour that others. For instance, countries with common law tend to have a better compliance indices than countries with civil law (Kılıç et al., 2020a; Martínez-ferrero & Sánchez, 2016; La Porta et al., 1996). Consistent with institutional theorists, the study examines the impact of Nigeria's institutional environment on the behaviour of the board in the aspect of environmental disclosure. Specifically, the research examines the moderating role of institutional isomorphic factors on the relationship between board attributes and environmental disclosure of listed companies in Nigeria.

The study utilises Global Competitiveness Index report published by World Economic Forum (WEF) annually as employed by Kılıç et al. (2020) to measure institutional isomorphic factors. Also, board attributes will be represented by board independence, board size, board meetings, board educational background, board gender, board nationality, multiple directorships, and board age (Guerrero-Villegas et al., 2018; SHALIK et al., 2020). While environmental disclosure will be measured by energy, water, emission, effluents and waste, and compliance disclosures consistent with Environmental Performance Index (EPI) (Kuehne+Nagel, 2020; Wendling et al., 2020) using GRI – (G4) guidelines. Consequently, the study sets to address the following questions:

i. What is the nature and extent of environmental disclosure of listed non-financial firms in Nigeria?
ii. To what extent board attributes (board size, board independence board meetings, board educational qualification, board gender, board nationality, multiple directorships, and board age) impact on the environmental disclosure of listed non-financial firms in Nigeria?
iii. To what extent institutional isomorphic factors moderate the relationship between board attributes and environmental disclosure of listed non-financial firms in Nigeria?

2.0 Literature Review

This section covers discussions on empirical findings on board attributes and environmental disclosure. Disclosure in the paper includes other forms of ethical reporting like CSR, GHG and voluntary disclosures. The sections also develop hypotheses guiding the study as extracted from the extant literature.

2.1 Empirical Review and Hypotheses Development

Rupley et al. (2012) indicate that the presence of independent directors assists companies in achieving strategic goals and provides perspectives that may affect a firm's willingness to publish transparent environmental information available to a wide range of stakeholders. For all these reasons, prior studies find that independent directors overall broader accountability to stakeholders is linked to the propensity of GHG disclosure (Liao et al., 2014), environmental disclosure (Baalouch et al., 2019; Guerrero-Villegas et al., 2018; Hillman & Dalziel, 2003; Issa et al., 2021; Nasiru, 2017; Odoemelam & Okafor, 2018; Ofoegbu et al., 2018; Peterson & Philpot, 2006; Pfeffer & Salancik, 2003; Rupley et al., 2012). Consequently, the research proposed that;

$H_0$1: the is a significant positive relationship between board independence and environmental disclosure.

Empirical evidence supporting larger board argument are Trireksani and Djajadikerta, (2016) who documents a significant positive association between the board size and the extent of environmental disclosure. Osazuwa et al. (2016) also found board size positively relates to the level of

environmental disclosure consistent with Akbas (2016), Guerrero-Villegas et al. (2018) and Haladu and Salim (2016). Nonetheless, some reported a negative relationship (Arcay & Vázquez, 2005; Ezhilarasi & Kabra, 2017) and others revealed insignificant result (Issa et al., 2021; Odoemelam & Okafor, 2018). Consequently, due to inconsistent findings empirically reported, the research proposed that;
$H_0$2: there is no significant relationship between board size and environmental disclosure.

Also, Ntim and Osei (2011) found board meetings has a positive relationship with environmental disclosure. This finding is also supported by some empirical studies who also found similar result (Chou et al., 2013; Liao et al., 2014; Nelson et al., 2010; Odoemelam & Okafor, 2018). On the other hand, Kantudu and Samaila (2015) reported negative association between board meetings and financial reporting quality of the Nigerian listed oil marketing firms. Also, Osazuwa et al. (2016) documents a negative relationship between board meetings and environmental disclosure. Consequently, due to inconsistent findings empirically reported, the research proposed that;

$H_0$3 there is no significant relationship between board meeting and environmental disclosure

Empirical studies in the extant literature have reported positive finding in respect of board educational qualification and environmental disclosure (Issa et al., 2021; Ma et al., 2019; Nasiru, 2017; Ramón-llorens et al., 2018; Rupley et al., 2012). While some revealed insignificant results (de Villiers et al., 2011). Therefore, the study proposes board educational qualification has no significant relationship with environmental disclosure.
$H_0$4 – there is no significant relationship between board educational qualification and environmental disclosure

Adams and Ferreira (2009) observed female directors usually pursue greater environmental reporting. In a related development, Setó-Pamies (2015) also posits high percentage of women on the board of directors are more socially responsible. Consistent with the above argument, Al-Shaer and Zaman, (2016) find a positive influence of female presence in the board on sustainability reporting quality. Also, Bear et al. (2010) provide evidence that, females on the boards positively influence the strength rating for CSR. Moreover, Ben Amar et al. (2015) note that female representation on the board enhances board effectiveness in stakeholders' management and promotes the adoption of sustainability initiatives related to reporting about climate change. A lot of literature have reported significant positive findings between board gender and environmental disclosure (Baalouch et al., 2019; Liao et al., 2014; Mcguinness et al., 2016; Peterson & Philpot, 2006; Pucheta-Martínez et al., 2017; Ramon-llorens et al., 2020; SHALIK et al., 2020). With few reporting inconsistent findings (Khan, 2010). Consequently, due to inconsistent findings empirically reported, the research proposed that;
$H_0$5 there is no significant relationship between board gender and environmental disclosure.

Furthermore, according to Ruigrok et al. (2007) foreign directors with strong networks, and without previous or current directorship experience on a particular board, may be able to introduce fresh ideas, and initiate new discussions from their diverse knowledge and expertise to the board. Richard (2000) posited that, foreign directors tend to be free from any type of relationship to a firm which guarantees their independence. Hence, they can provide another dimension of diversity and independence to the board. Consequently, the board will benefit from their international experience to improve the board's quality.

The importance of board nationality have been documented by some earlier empirical work supporting the board nationality view (Khan, 2010; Oxelheim & Randøy, 2003; Ruigrok et al., 2007;

Ujunwa, 2012) Emmanuel et. al. (2018) Ahmad and Nosakhare (2015). Nonetheless, insignificant findings have also been documented with environmental disclosure (Issa et al., 2021). Hence, do to inconsistent findings reported, the study hypothesizes:
$H_0$6 - there is no significant relationship between board nationality and environmental disclosure.

There exist empirical studies on multiple directorships and environmental disclosure among which some have reporting significant positive findings (Elsakit & Worthington, 2014; Haniffa & Cooke ,2005; Kathyayini & Carol, 2016; Ong & Djajadikerta, 2020). Conversely, there also insignificant findings documented (Ferris et al., 2003; Kiel & Nicholson, 2006). Consequently, due to inconsistent findings empirically reported, the research proposed that;
$H_0$7 – there is no significant relationship between multiple directorships and environmental disclosure.

Ma et al. (2019) examines top managers' influence on environmental information disclosure. The study used multiple regression analysis. Findings of the research show average board age positively affect environmental information disclosure. In related issue, Ntim and Soobaroyen (2013) investigates the extent to which South African listed corporations voluntarily disclose information on Black Economic Empowerment (BEE) and also found board age positively related to the extent of BEE disclosures. Also, Goergen et al. (2015) explored the gap and age dissimilarity between the chairman and the CEO. They argued that a high level of board age on the board improves board effectiveness and firm's performance. In related development, McIntyre et al. (2007) found that a moderate level of board age improves firm performance. Hence, the study hypothesizes that;
$H_0$8 – there is no significant relationship between multiple board age and environmental disclosure.

Kılıç et al. (2020) using institutional theory, reported that firms are motivated for more transparency in stakeholder-oriented and weakly regulated environment, revealing that, stakeholder pressure is more influential than shareholder interest in motivating or forcing firms to issue integrated reports. On the other end, Alshbili and Elamer (2019) uses interviews in relation to institutional environment and CSR disclosure and revealed that, managers perceive some coercive, mimetic and normative pressures interaction to influence CSR disclosure. Also, Nwobu et al. (2018) report corporate organisations perceived some coercive, mimetic, and normative influence to environmental disclosure. Consequently, drawing on institutional theory and stakeholder perspective, the study investigates environmental disclosure as it relates board attributes as moderated institutional isomorphism. This is motivated by the present development in environmental regulations in Nigeria and persistent stakeholders' pressure for firms to be more environmentally conscious and accountable. Hence, the study hypothesizes that;
$H_0$9. Institutional isomorphic factors significantly moderate the relationship between board attributes and environmental disclosure.

3.0 Methodology

The population of the current study consists of non-financial firms listed on the Nigerian Stock of Exchange (NSE) from which a sample of top 50 was selected based on market capitalisation using purposive sampling technique. The study contends that the selection of the top 50 companies is that, larger firms possess the resources and expertise required for the production and publication of financial accounts and reports to meet the diverse requirements of stakeholders (Al-Dhamari et al., 2017).

Table 1: Population and sample of the study

SN	Industry	Population	Sample
1	Agriculture	05	04
2	Conglomerates	05	03
3	Construction/Real Estate	07	01
4	Consumer Goods	20	13
5	Healthcare	08	04
6	Industrial Goods	12	07
7	ICT	10	03
8	Natural Resources	04	01
9	Oil and Gas	10	07
10	Services	25	07
	TOTAL	**106**	**50**

Source: Authors Computation (2022)

Consistent with Haladu and Bin-nashwan (2021) and Nwobu et al (2018), data for the study was extracted from the annual report and accounts and website of the sampled firms. While, data on institutional isomorphism – moderating variable was obtained from the Global Competitiveness Index report (GCI) published by World Economic Forum (WEF) annually (Kılıç et al., 2020).

3.1 Measurement of Variables

The dependent variables, which is environmental disclosure, is measured based on the GRI – G4 guideline using binary numbers of 1 for disclosure and 0 for otherwise (Haladu, 2017). Environmental disclosure is defined in this study in line with GRI – G4, as the disclosure of energy, water, emission, effluents and waste, and compliance disclosures in the sampled firms' annual reports and accounts. It is measured as the weighted disclosure index that is established in line with GRI – G4 to assess the disclosure content. Hence, total disclosure of 21 items across Energy, Water, Emission, Effluent and Waste, and Compliance (Nadeem et al., 2017) of the index is ascertained as the total disclosure score obtained from sampled firms' annual reports and accounts.

Table 2: Environmental Disclosure Index (EDI)

	Checklist	**Code**	**No. of items**
ENVIRONMENTAL DISCLOSURE	Energy	EN3	5
		EN4	
		EN5	
		EN6	
		EN7	
	Water	EN8	3
		EN9	
		EN10	
	Emission	EN15	7
		EN16	
		EN17	
		EN18	
		EN19	
		EN20	
		EN21	
	Effluent and Waste	EN22	5
		EN23	
		EN24	

		EN25	
		EN26	
	Compliance	EN29	1
	Total		**21**

Source: Wendling et al. (2020)

In a nutshell table 4 presents the summary of the measurements of the study variables. While table III presents the index of moderating variables as earlier discussed.

Table 3: Institutional Isomorphism

Variable	INDEX	SOURCE
Institutional Isomorphic Factors	Measured as average of six items of the institutions, one of the 12 pillars included in the GCI on scale 1-7 (Kılıç et al., 2020). The six items are: • Burden of government regulation, • Efficiency of legal framework in challenging regulations, • Transparency of government policymaking, • Ethical behaviour of firms, • Strength of auditing and reporting standards • Protection of minority shareholders' interests.	Global Competitiveness Report (WEF).

Source: Kılıç et al. (2020)

Table 4: Variables Measurement

Dependent Variable		
wevd	Dummy variable 0 and 1 for non-disclosure and disclosure respectively for each of five (5) aspects of environmental disclosure (GRI –G4).	(Nadeem et al., 2017; Wendling et al., 2020)
Independent Variables		
bi	Proportion of INEDs to total board members	(Issa et al., 2021; Odoemelam & Okafor, 2018)
bs	Total number of all board members	(Guerrero-Villegas et al., 2018; Haladu & Salim, 2016).
bm	Frequency of the yearly meetings	(Odoemelam & Okafor, 2018)
bdQ	Proportion of directors with educational background in Accounting, Business and/or Finance	(Rupley et al., 2012; Ujunwa, 2012; Ma et al., 2019)
fem	Proportion of female board members to total number of board members.	(Guerrero-Villegas et al., 2018; Issa et al., 2021; Ujunwa, 2012).
	Blau Index of Heterogeneity	(Nadeem et al., 2017).
frgd	Proportion of foreign directors to total number of board members	(Issa et al., 2021; Khan, 2010; Ujunwa, 2012).
mdn	Proportion of directors with multiples director roles to total number of board members	(Haniffa & Hudaib, 2006; Kathyayini & Carol, 2016)
ba	Average age of board members	(Khan et al., 2019)
Moderator Variable		
iis	Measured as average of six items of the institutions, one of the 12 pillars included in the GCI on scale 1-7.	(Kılıç et al., 2020)
Control Variables		
fsiz	Total value of assets (Logarithm)	(Kathyayini & Carol, 2016; Ujunwa, 2012)
roa	Profit before interest and tax over total asset	(Ezhilarasi & Kabra, 2017)
it	Dummy variable of 0 if the firms is in a less environmentally sensitive sectors and 1 if the firms is in environmentally sensitive	(Al-qahtani & Elgharbawy, 2019).

	sector.	
fa	is measured as the number of years since the company is incorporated	(Ujunwa, 2012)

Source: Authors Computation (2022)

3.2 Data Analysis

The models below are developed and used to investigate the relationship between board attributes and environmental disclosure as well as the moderating effect of institutional isomorphism on the relationship between board attributes and environmental disclosure. Thus,

$wevd_{IT}$ = ß0 + $ß_1bi_{IT}$ + $ß_2$ bs_{IT} + $ß_3$ bm_{IT} + $ß_4$ bdQ_{IT} + $ß_5$ fem_{IT} + $ß_6$ $frgd_{IT}$ + $ß_7$ mdn_{IT} + $ß_8$ ba_{IT} + B_9 $fsiz_{IT}$ + $ß_{10}$ roa_{IT} + $ß_{11}id_{IT}$ + $ß_{12}fa_{IT}$ + $Є_{IT}$...**(1)**

$wevd_{IT}$ = ß0 + $ß_1bi_{IT}$ + $ß_2$ bs_{IT} + $ß_3$ bm_{IT} + $ß_4$ bdQ_{IT} + $ß_5$ fem_{IT} + $ß_6$ $frgd_{IT}$ + $ß_7$ mdn_{IT} + $ß_8$ ba_{IT} +$ß_{10}$iis + B_{11} bi_{IT}×iis_{IT} + $ß_{12}$ bs_{IT}×iis_{IT} + $ß_{13}$ bm_{IT}×iis_{IT} + $ß_{14}$ bdQ_{IT}×iis_{IT} + $ß_{15}$ fem_{IT}×iis_{IT} + $ß_{16}$ $frgd_{IT}$×iis_{IT} + $ß_{17}$ mdn_{IT} X iis_{IT} + $ß_{18}$ ba_{IT} X iis_{IT} + B_{19} $fsiz_{IT}$ + $ß_{20}$ roa_{IT} + $ß_{21}it_{IT}$ + $ß_{22}$ fa_{IT} + $Є_{IT}$ **…………………………………………………………..…..(2)**

Where:

wevd = Environmental Disclosure
ß0 = Intercept;
$ß_1$ to $ß_{26}$ = Coefficient of the independent, moderating and control variables;
Є = Error term;
$_{IT}$ = Subscript for Panel Data;
bi = Board Independence;
bs = Board Size;
bm = Board Meetings;
bdQ = Board Educational Qualification;
fem = Board Gender;
frgd = Board Nationality;
mdn = Multiple Directorships;
ba = Board Age
iis = Institutional Isomorphic Factors;
bi×iis = Interacting term between Board Independence and Institutional Isomorphism
bs×iis = Interacting term between Board Size and Institutional Isomorphism;
bm×iis = Interacting term between Board Meetings and Institutional Isomorphism
bdQ×iis = Interacting term between Directors Qualifications and Institutional Isomorphism
fem×iis= Interacting term between Board Gender and Institutional Isomorphic Factors;
frgdxiis = Interacting term between Board Nationality and Institutional Isomorphism
mdnxiis = Interacting term between Multiple Directorship and Institutional Isomorphism
baxiis = Interaction term between Board Age and Institutional Isomorphic Factors;
fsiz = Firm Size;
roa = Profitability;
it = Industry dummy
fa = Firm Age

4.0 Results and Discussions

4.1 Descriptive Statistics

The dependent variable of the study is environmental disclosure represented in this study as (wevd), while the independent variables include board size (bs) board independence (bi), board meetings (bm), directors' educational qualifications (bdQ), female director (fem) foreign director (frgd), multiple directorships (mdn) and board age (ba). The moderating variable of the study is institutional isomorphism (iis) and the control variables are firm size (fsiz), firm age (fa), return on assets (roa) and industry dummy (it). Drawing from the table 5, it is clear that, the listed non-financial firms in Nigeria averagely disclose about 31% (mean = 0.3101; SD = .3519) of their environmental issues. Also, the standard deviation is close in value to the mean value of wevd signifying there is no significant disparity between the two. Hence, the wevd value can be relied upon as it has less risk of being false. However, with minimum and maximum value (0 and 1), the result shows that, there are firms with zero disclosure and full disclosure among the sampled firms.

Table 5. Descriptive statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
wevd	336	.310119	.3518624	0	1
bs	336	9.52381	2.74803	4	18
bi	336	.654375	.1717971	.08	.92
bm	336	4.755952	1.445516	2	13
bdQ	336	.3109524	.1357774	0	.5
fem	336	.2460714	.1587189	0	.5
frgd	336	.2114821	.2134755	0	.5
mdn	336	.3539583	.147784	0	.5
ba1	336	4.190476	1.968263	1	10
ba2	336	5.235119	2.043136	1	11
siz	336	10.39389	.8491299	7.7581	12.412
fa	336	42.375	20.31107	7	98
roa	336	.0431193	.0978942	-.1711	.2507
it	336	.7321429	.4435032	0	1
iis	336	3.523333	.0810872	3.45	3.7

Source: Stata 14

More so, analysis from the table in respect of the independent variables shows that, board size (bs) has the minimum and maximum of 4 and 18 respectively. This means that, there existed among the sampled firms, companies with only 4 board members and firms with 18 board members at a particular point in time. With the mean value of 9.524, the result revealed that, there are averagely 10 members on the board of the sampled firms in Nigeria, indicating proper compliance with the provision of the code (NCCG, 2018). Additionally, the result from table V revealed that on the average the board of the sampled firms are strongly independent. This is because, board independence (bi) revealed a mean value of 0.654 signifying that, on the average, about 65% of the board members are independent non-executive directors (INEDs). The table also revealed minimum and maximum board meetings of 2 and 13 meetings respectively. Meaning that, there existed a firm with about 13 meetings in a year among the sampled firms. However, the average board meetings stood at about 5 meetings (mean = 4.755).

Further analysis from table 5 revealed that, boards of the sampled firms are well diversified considering the mean (0.31, 0.25, 0.21 and 0.35) values of bdQ, fem, frgd and mdn respectively. These four variables are measured by blau index. The index has a maximum value of 0.5 signifying 100% diversified board. Hence, the closer the mean value to 0.5 the more diversified the board and vice versa. Therefore, from the analysis, it is clear that, the boards of the sampled firms are diversified as there are reasonable percentage of members with qualification in accounting and finance, adequate percentage of female board members, adequate percentage of foreigners on the board and higher number of directors with multiples director role in other entities. Their respective values of standard deviations revealed insignificant variation indicating the results could be relied upon due less risk of being incorrect. Lastly, institutional isomorphism (iis) which measured on seven Likert scale to portray the institutional strength. Table 5 revealed mean, minimum and maximum values of its as 3.52, 3.45 and 3.7 respectively, signifying moderate level of institutional isomorphism.

Table 6: Correlation matrix

	wevd	bs	bi	bm	bdq	fem	frgd	mdn	ba1	ba2	fsiz	fa	roa	it	iis
envd	1.0000														
bs	0.3030**	1.0000													
bi	-0.1275*	-0.1140	1.0000												
bm	0.2027*	0.0608	0.0216	1.0000											
bdQ	-0.0053	0.1634	-0.2668	-0.0295	1.0000										
fem	0.0599	-0.0973	0.0147	0.1869	0.0303	1.0000									
frgd	0.3590**	0.2607	-0.0960	0.1109	0.0766	-0.1047	1.0000								
mdn	-0.0433	0.1651	0.0540	0.0983	0.0958	0.0198	0.0900	1.0000							
ba1	0.1537*	0.6178	-0.1595	-0.0602	0.1669	-0.0731	0.0413	-0.0017	1.0000						
ba2	0.2663**	0.6213	-0.0508	0.1175	-0.0073	-0.0739	0.2455	0.1819	-0.1596	1.0000					
fsiz	0.5008	0.5166	-0.0036	0.2717	-0.0232	0.1061	0.4531	-0.0044	0.3920	0.2392	1.0000				
fa	0.2485	0.0482	-0.1753	0.1428	0.0377	0.0807	0.2925	-0.0397	-0.0330	0.0593	0.0799	1.0000			
roa	0.1733	-0.0523	-0.1136	0.0732	0.0835	0.1373	0.0919	-0.0623	-0.1059	0.0265	0.1212	-0.0655	1.0000		
it	0.2837	0.1449	-0.2114	0.1957	0.0657	0.0160	0.4410	-0.0120	-0.0269	0.2081	0.1603	0.4774	0.0532	1.0000	
iis	0.0115	0.0339	0.0354	0.0220	-0.0607	-0.1207	-0.0025	-0.0577	0.0099	0.0435	-0.0296	-0.0457	0.0343	-0.0000	1.0000

4.2 Correlation Matrix

From table 6, the correlation coefficient between wevd and bs is positive. This means that, wevd and bs are going in the same direction whereby as wevd is increasing, bs is also increasing even though is not in the same proportion. This is revealed from the sign of the coefficient of the correlation between the variables as seen in the table with a value of 0.3030. Since the value is going toward 0.5 in approximation, the correlation can be said to be strong as the correlation (r) ≥ 0.5 (Vargha et al., 2013). The significant value of the coefficient is 0.000 thus, is said to be strongly significant at 1% level of significant. In the same scenario, bm, frgd, and ba all revealed positive relationship with wevd. However, bi, bdQ and mdn revealed negative relationship wevd albeit insignificant.

On addressing the multicollinearity issue, table 7 contains the VIF values of the respective variables which ranges between 1.04 to 2.55 with the mean VIF of 1.56 indicating the absence of multicollinearity which pave way for regression analysis.

Table 7: VIF Table

Variable	VIF	1/VIF
bsd|	2.55	0.392491
ba2	2.35	0.425673
ba1	2.23	0.449347
fsiz	2.06	0.486518
frgd	1.73	0.577252
it	1.60	0.625049
fa	1.40	0.716088
bi	1.21	0.827114
bm	1.21	0.828507
fem	1.16	0.858576
bdQ	1.15	0.871179
roa	1.13	0.888619
mdn	1.11	0.904319
iis	1.04	0.961445
Mean VIF	**1.56**	

4.3 Regression Result

Table 8 presents the result of the Panel-Corrected Standard Errors (PCSE) model which includes all the parameters of the variables, their associated standard errors, z-statistics and the probability values of the model for considerations. This is in addition to the R-square value, Wald test value for joint significant, probability of the Wald test, the type of the panel and the type of correlation among the error terms of the model. The coefficients also have indication of the level of significance. Therefore, one star indicates 10% significant, two-star means is significant at 5% and finally, three stars means the parameter is significant at 1%.

Table 8: Regression Result (PCSE)

Group variable: firm	Number of obs = 336
Time variable: year	Number of groups = 56
Panels: correlated (balanced)	Obs per group:
Autocorrelation: no autocorrelation	min = 6
	avg = 6
	max = 6
Estimated covariances = 1596	R-squared = 0.3940
Estimated autocorrelations = 0	Wald chi2(23) = 20437.92
Estimated coefficients = 24	Prob > chi2 = 0.0000

Wevd	Coef.	Std. Err.	z	P>|z|	[95% Conf. Interval]	
bsd	-4.753617**	2.411946	-1.97	0.049	-9.480944	-.0262904
bi	-1.102478	2.065729	-0.53	0.594	-5.151232	2.946276
bm	-.110854	.3696473	-0.30	0.764	-.8353493	.6136414
bdQ	10.4657**	5.542033	1.89	0.059	-.396481	21.32789
fem	3.973792	6.057518	0.66	0.512	-7.898725	15.84631
frgd	3.203029	2.080788	1.54	0.124	-.8752397	7.281298
mdn	-4.956746	3.912557	-1.27	0.205	-12.62522	2.711726
ba1	.0855993	.2201655	0.39	0.697	-.3459171	.5171157
ba2	.5951071*	.3190967	1.86	0.062	-.0303109	1.220525
bsdiis	1.311992**	.6842214	1.92	0.055	-.0290575	2.653041
biiis	.2714212	.5823444	0.47	0.641	-.8699529	1.412795
bmiis	.0333352	.1059452	0.31	0.753	-.1743135	.240984
bdQiis	-3.005198*	1.598232	-1.88	0.060	-6.137676	.1272796
femiis	-1.131056	1.747	-0.65	0.517	-4.555113	2.293001
frgdiis	-.8803694	.5943725	-1.48	0.139	-2.045318	.2845793
mdniis	1.366353	1.108905	1.23	0.218	-.8070612	3.539767
baiiis	-.0165277	.0625621	-0.26	0.792	-.1391472	.1060918
ba2iis	-.1565016*	.0900289	-1.74	0.082	-.332955	.0199517
fsiz	.1621066	.0136594	11.87	0.000	.1353346	.1888785
fa	.0032741	.0004959	6.60	0.000	.0023021	.0042462
roa	.4323598	.1332522	3.24	0.001	.1711903	.6935293
it	.0309622	.0216438	1.43	0.153	-.011459	.0733833
iis	.6918855	.6838704	1.01	0.312	-.6484758	2.032247
_cons |	-4.136	2.43227	-1.70	0.089	-8.903161	.6311605

Source: Stata 14

On the overall, the regression result revealed about 39% R-square ($R^2 = 0.394$), which means the model is goodness of fit to explain variations between the dependent variable (wevd) and the independent variables (bs, bi, bm, bdQ, fem, frgd, mdn, and ba) including interaction with moderator variable (iis). The model as contained in table 8, is statistically significant at 1% level of confidence. This means that, all the independent variables could explain about 39% variation in environmental disclosure (wevd) at 1% level of confidence. However, on the individual level, going by the result obtained in table 8 only board size (bsd), board educational qualification (bdQ), and board age above 50 years (ba2) showed statistically significant relation with wevd. Firstly, bdQ revealed positive relation with wevd, which signifies that board members with educational qualification in accounting and finance influences more environmental disclosures (Ma et al., 2019; Nasiru, 2017; Ramón-llorens et al., 2018). Contrary to this finding are the work of de Villiers et al. (2011) who reported negative relationship between bdQ and wevd.

Secondly, board age (members above 50 years) also revealed a strong positive relationship with wevd. This indicate that aged members on the board influences more environmental disclosure. This finding is consistent with the earlier work of Ma et al. (2019) and Ntim and Soobaroyen (2013). On the other hand, bsd revealed a negatively significant relationship with wevd. Hence, the result signifies that smaller board are better monitors towards influencing more environmental disclosures (Arcay & Vázquez, 2005; Ezhilarasi & Kabra, 2017). This finding contradicts those who argued that larger boards influence more environmental disclosures (Guerrero-Villegas et al., 2018; Haladu & Salim, 2016; Trireksani & Djajadikerta, 2016). Lastly, the remaining variables are statistically insignificant. On moderation, institutional isomorphism (iis) moderates the relationships of bsd, bdQ and ba2 with wevd. The moderator variable moderated the direction of bsd and wevd, where it revealed that larger boards with pressures from relevant stakeholders' influence more environmental disclosures. This finding supports the argument that managers perceived institutional pressures towards adopting environmental disclosures (Alshbili & Elamer, 2019; Nwobu et al., 2018).

5.0 Conclusion and Recommendations

Drawing from the analysis, the study could conclude that environmental disclosures of listed non-financial firms in Nigeria is still low as majority of the firms did not embrace environmental reporting. Nonetheless, the study could also conclude that well-diversified board influence more environmental disclosures. Additionally, the study could argue that, pressure from the relevant stakeholders' influence boards' commitment towards environmental performance and disclosures. Also, larger boards do not always guarantee more environmental disclosures as one size does not always fit all. This because, larger boards sometimes lead to free rider scenario as some of the members might not contribute effectively in decisions of the entities (Ezhilarasi & Kabra, 2017). More so, with some degree of pressure from regulators (coercive pressure) and professional bodies, larger boards tend to be more serious on the environmental issues.

On the other hand, persistent pressure from the stakeholders for equal representation of female board members is more of political substance than purely operational and efficiency issues. The results obtain does not support the argument that female board members pursue more environmental disclosures. However, the overall analysis supports the argument that a well-diversified board could lead to more environmental disclosure. Therefore, the study could recommend that, a board selection should not at random. While larger boards could be effective for larger firms, smaller boards on the other hand could be more effective for smaller entities. This is because, larger board in smaller firms would lead to an increased agency cost due conflict of interest and higher salaries for less important board members instead of investment in other important issues like environmental performance.

Lastly, this study investigated the relationship between board diversity attributes (using Blau index as the measure for diversity) and environmental disclosure (energy, water, emission, effluent and waste and compliance using GRI index) with institutional isomorphism as moderator using GCI index. The study argued that, this is the first study in Nigeria to investigate such scenario using the measures as discussed. However, future studies could look into industry specific environmental disclosures. Also, questionnaires could be used to obtain information on institutional isomorphism.

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Determinants of Audit Fees of Listed Insurance Companies in Nigeria

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Abstract
This study examined the determinants of audit fees of listed Insurance Companies in Nigeria using correlational research design. The population of the study was made up of twenty-six listed insurance companies operating in Nigeria. Panel data were generated from secondary source through annual reports and accounts of the sampled insurance companies covering the periods of 2009 to 2018. Random effect Generalized Least Square (GLS) regression was used in testing the hypothesis and analyzing the data. The findings of the study revealed that the client size and audit firm size are the important factors determining audit fees of listed insurance companies in Nigeria. While client profitability, client complexity, client underwriting risk and client liquidity risk found to have an insignificant impact on audit fees of listed insurance companies in Nigeria. The study recommended that the auditors of Nigerian Insurance Companies should encourage their client companies to increase their total assets including their investments, which lead to the increase in the size of their businesses.

Keywords*: Audit Fees, Determinants, Insurance, Nigeria.*

1.0 Introduction

The primary role of accounting has been to measure and communicate all the economic transactions of an entity, with a view of satisfying the informational needs of several corporate stakeholders. Moreover, the corporate stakeholders are faced with the agency problems as a result of the separation of ownership from control. In which, the agents (managers) who are natural wealth maximizers control the affairs of a firm as management and who serve as the representatives of the principals (the owners), pursue their self-interest at the expense of the absentee owners. This called for assurances from third parties (auditors), to ensure that the performances and the financial position of an entity is true and fair, and hence, reflect the true transactions of the entity.

Accordingly, external auditors provide a monitoring role which is critical in promoting the quality of financial statements prepared by management. Audit services connote an independent verification of financial statements, with a view of adding credibility to accounting information. Financial statements audit minimizes information asymmetry and protect the interest of the principals, and other stakeholders, through provision of reasonable assurance that financial statements prepared by management are free from material misstatements (Otusanya & Lauwo, 2010). And as such, corporate stakeholders do not trust reported financial information without the assurances from an independent external auditor.

However, while external audit servi ces are critical to corporate stakeholders and capital markets, there is an increasing concern among researchers about the auditors' compensation. Moreover, audit fees paid by companies to their auditors are obviously of interest to both companies and auditors. While companies are statutorily required to have their financial statements audited, fees paid to auditors need to be reasonable, to ensure that the fees they charge are sufficient to enable a satisfactory service to be provided (Gist, 1992). In addition to that, the level of audit fees and how they are determined are significant matters to both national and international professional accounting bodies to indicate the basis on which audit fees should be determined, the costs which should be covered by the audit fees, and the factors which should be taken into account when determining the audit fees. The scale of professional fees is therefore designed to restrict auditors from charging their fees on a basis which might be incompatible with the ethical values associated with the audit profession.

Controversies had been raised among investors and other stakeholders of corporations why external auditors receive substantial amount as remuneration of the audit and non-audit services rendered to their clients. These fees had been charged in order to add credibility to the financial statements prepared by the management and also to protect the interest of the shareholder. A lot of problems occurred on what are such factors that actually determine (increases or decreases) the audit fees charged by external auditors. Audit fees determination is affected by audit firm attributes or by the client's company characteristics.

One of the most important sectors of the Nigerian economy is insurance industry, which absorbs the risk incurred by individuals and business within the economy. Insurance companies are similar to banks and capital markets as they serve the need of business units and private households in intermediation. The availability of insurance services is essential for the stability of the economy and can make the business participants accept aggravated risks (Adeyemi, 2005). Despite the importance of the insurance sector to the economy, it receives little attention by researchers.

Several studies on audit fees determinants have been undertaken in a number of countries. Most of these studies were conducted outside Nigeria, like the studies of Khasharmeh (2018); Otete (2018); Hong and My (2017); Musah (2017); Apadore & Letchumanan (2016); While few studies were conducted in Nigeria on audit fess determinants like Ohidoa and Okun (2018) and Ilaboya, Izevbekhai and Ohiokha (2017). However, these results are inconclusive and require more empirical work especially in the Nigerian insurance industry has little study in Nigerian context have isolated the insurance sector of the Nigeria Stock Exchange for a study of this nature. This study attempts to fill these gaps by examining the determining factors influencing audit fees of listed insurance companies in Nigeria. Based on the statement of the research problem and objectives of the study, the study hypothesis that client size, client profitability, client complexity, client underwriting risk, client liquidity risk and audit firm size have no significant impact on audit fees of listed insurance companies in Nigeria.

2. Literature Review

2.1 Theoretical Review

2.1.1 Theory of Inspired Confidence

The theory of inspired confidence addresses both the demand and the supply for audit services. The demand for audit services is the direct consequence of the participation of third parties in the company. These parties demand accountability from the management, in return for their investments in the company. Accountability is realized through the issuance of periodic financial reports. However, since this information provided by the management may be biased, and outside parties have no direct means of monitoring, an audit is required to assure the reliability of this information. With regard to the supply of audit assurance, the theory suggests that the auditor should always strive to meet the public expectations (Hayes et al., 2005).

Taking the main objective of the study into consideration which is aimed at examining the factors influencing audit fees, the theory of inspired confidence is used in underpinning the findings of this study. This is because the theory anchored auditors that policy holders and investors place a reliance on professional opinion regarding the truthfulness and fairness of the financial statements. The confidence placed by stakeholders of insurance business will not allow auditors to compromise their professional judgments and this will in turn allow them to produce a qualitative report and qualitative audit report is associated with higher audit fees.

2.2 Empirical Review

2.2.1 Client Size and Audit Fees

The client size was found to be the most important factor that influences audit fees and it is usually measured by total assets of the client (Simunic, 1980). The size of client has a direct impact on the auditors' work, and the time spent in the auditing process. Larger clients require more audit services than smaller clients, therefore more audit time is needed, and hence it would be expected that these large clients pay higher fees relative to smaller clients in the industry (Simon & Taylor, 2002).

In Bahrain, Khasharmeh (2018) investigates the factors influencing the pricing of audit services in Bahraini listed companies. A questionnaire was used in the study. The study concluded that corporate size is an important factor affecting pricing of audit services in listed companies in Bahrain. The reason for positive and significant relationship of audit fees with size of client's business is that labour usage and effort of auditor gets high as the size of company's business gets high. Otete (2018) also found that the client's annual income and total assets have a statistically significant influence on the auditor's remuneration in Uganda.

Additionally, Rusmanto and Waworuntu (2015) examine the factors influencing audit fee in Indonesian publicly listed companies which have applied Good Corporate Governance. This study uses a sample of data from companies listed on the Indonesia Stock Exchange LQ 45 during the year 2011 and 2012. Data is analyzed using multiple linear regression. The research found that assets (company size) significantly affect/determine audit fee paid by clients to audit firms. Other studies of Wahab & Zain (2013); Yaacob (2013) and Naser, Al- Mutairi, & Nuseibeh (2013), Fleischer (2012) found that there is a positive significant relationship between firm size and audit fees.

2.2.2 Client Profitability and Audit Fees

Client profitability is considered as an important indicator of management performance and its efficiency in allocating available resources. Companies reporting high levels of profits will be subject to precise audit testing of their revenues and expenses and this will result in higher audit fees (Joshi & Al-Bastaki, 2000). Khasharmeh (2018) investigates the impact of pricing of audit services in Bahraini listed companies. A questionnaire was used in the study. The study found that corporate profitability appeared to have no impact upon pricing of audit services. Similarly, Ohidoa and Okun (2018) examine the firms' characteristics and audit fees in Nigeria. Data used were gathered from annual financial statement of eighty-nine (89) sampled listed firms from 2013-2017. The study found that firm's profitability has no effect on audit fees. Also, Ling, Yee, Liang, Yee and San (2014) study found that there was no significant relationship between the profitability and audit fees. The analysis is based on a sample of 185 listed manufacturing companies covering a time period of 2009-2013. Contrary to other studies, Apadore and Letchumanan (2016) examine the determinants of audit fees among listed manufacturing companies in Malaysia. The analysis is based on a sample of public listed manufacturing companies covering a time period of 2009-2015. Secondary data collection method was employed in this study and analyzed using multiple regression analysis. The study found a significant relationship between profitability and audit fees.

2.2.3 Client Complexity and Audit Fees

Complexity is a measure of audit difficulty (Boon, Crowe, McKinnon, & Ross 2005). It is argued that the more complex the client firm is, the greater the number and the more diversified the subsidiaries and operations are. This necessitates more audit work and therefore, audit firms charge higher audit fees (Sandra & Patrick, 1996). A study conducted by Cohen (2013) of Greek market, for instance, presents evidence that auditors charge high fees for complex business. The study covers public sector of Greece. The author asserts that auditing of inventory and fixed asset is time consuming and therefore auditors do charge high fee which increases cost of audit. Similarly, Monsuru (2014) examines the determinants of audit pricing in Nigerian banking industry. Data were sourced from the annual reports and accounts of Fourteen (14) commercial banks for the year 2008 to year 2012 period. The fixed effect firm model estimations revealed that there is a positive association between complexity and audit fees.

However, In Bahrain, Amba and Al-Iiajeri (2013) examine the determinants of audit fees of companies listed on Bahrain market using data that was collected from 20 auditing firms and 30 non-audit firms in Bahrain through a survey questionnaire. The study found that volume of transactions that originates across subsidiaries with international presence of complexity of sophisticated Information Technology systems significantly contributes to higher audit fees. Soyemi and Olowookere (2013) also found that the number of branches used to operationalize complexities associated with bank audit display a negative and significant influence with audit fees in Nigeria. Nevertheless, a conflicting evidence regarding client complexity relationship and audit fees was established by Cantoni, D'silva, and Isaacs (2010) in their study of UK charity sector which found non-significant relationship of complexity with audit fees.

2.2.4 Client Underwriting Risk and Audit Fees

Insurance companies experiencing greater growth in premiums written should exhibit a higher level of underwriting risk to the extent that a higher level of underwriting risk translates into a higher level of systematic risk and/or total risk. The growth in premiums should be positively related to audit fees among insurance companies (Vaughan, 1992). A Ghanaian study by Musah (2017) examines the determinants of audit fees with empirical evidence from the Ghana stock exchange. Specifically, the study examines audit fees determinants which included the client size, profitability, client risk measured by debt ratio, YEAR (season) and MNC. Using the Simunic (1980) model, the results in study indicates that ignorance of risk factor by the auditors may pose serious threat to fame and reputation of audit firm along with indication of feeble legal regime in Ghana. Haq and Leghari (2015) also examine the determinants of audit fees in Pakistan using a single year data for analyses and found similar result as Musah (2017).

An empirical study by Koh and Tong (2012) investigate the impacts of clients' involvement in controversial corporate activities with audit pricing in United States and the result concludes that the clients involved in controversial activities will be charged higher audit fees. However, Stanley (2011) research shows that there is a significant negative relationship between audit fees and the client firms' business risk. Charles, Glover and Sharp (2010) point out that auditors usually assess the risk of client before conducting its audit. They posit that when auditors feel that risk of client is high then they increase the amount of evidences in doing audit work so the effort and cost of audit increases which is compensated by high fees.

2.2.5 Client Liquidity Risk and Audit Fees

Liquidity risk indicator measures a firm's ability to meet current obligations. A low ratio value may be an early warning indicator of an insurance company's financial difficulties to the extent that adverse changes in liquidity are associated with operational difficulties. However, high liquidity levels can lead to more aggressive investment and therefore to higher risk (Vaughan, 1992). In Brazil, Castro, Peleias and Silva (2015) investigate the determinants of audit fees in the Brazilian audit market using companies listed on the BM & FBOVESPA. Using data of sample companies for 2012, they found that risk perceived by the auditor demonstrated to affect the values of fees differently in larger and smaller clients. The study concludes that risk of the client demonstrated negative association with audit fees. Akinpelu, Omojola, Ogunseye and Bada (2013) investigate the determinants of audit fees in commercial banks in Nigeria and found that credit risk is positively related to audit fees but it is statistically non-significant.

In United States, Ellis and Booker (2011) investigate the determinants of audit fees in the Community Action Agency segment of the NPO sector of the audit market. Ordinary least square regression was used to test the model. The findings indicate that the model is highly significant and explains the majority of the cross-sectional variance in audit fees. Contrary to prior studies, a weak association was found between the proxies for risk and audit fees. Also, Xu (2011) investigate the factors which determine the audit fees in china, using data collected from 2010 annual report of 191 sample listed companies in China. The study employs multiple linear regression models of audit fees and found that the indicators which reflect the audit risk have no significant impact with audit fees.

2.2.6 Audit Firm Size and Audit Fees

Audit firm size is an important aspect that determines the audit fee. The audit firm size is frequently measured based on the audit firm assets, market share and/ or whether an audit firm is big four or not. The big four are the biggest audit firms in the world and due to their financial strength, international affiliation and expertise they have. They are therefore able to provide higher quality audit than other non-big four audit firms. This factor is expected to have a positive relationship with the audit fees (Butterworth & Houghton, 1995). Researches has shown mixed results regarding the assertion that audit firm size significantly determine auditors' remuneration or not.

Otete (2018) analyzes the determinants of external auditors' remuneration used a sample of 74 insurance players in Uganda based on selected data extracted from audited financial statements for the years 2014-2017. The study revealed that auditor's size (Big4 and small and medium audit firms) also had statistically significant influence on the auditor's remuneration. In Nigeria, Ilaboya, Izevbekhai and Ohiokha (2017) investigate the determinants of abnormal audit fees in Nigerian quoted companies base on a sample of 56 manufacturing companies quoted on the Nigerian Stock Exchange as at 31st December 2014. The study found a positive and statistically significant relationship between the interaction of big4 audit firms and the dependent variable of abnormal audit fees which implies that large firms using big4 audit firms tend to pay abnormal audit fees.
Also, Alanezi and Alfraih (2016) analyze the factors that influence audit fees in the Kuwait audit

market. A questionnaire was distributed to a number of audit firms operating in the Kuwaiti market and Kuwaiti companies listed on the Kuwait Stock Exchange (KSE). The results indicate that audit firm size significantly influence the audit fees. Similarly, a Kenyan scholar Kimeli (2016) also support a link between audit pricing and the big4 status of audit firm in Kenyan using data collected from 62 listed firms annual reports from 2008 to 2014.

The study of Siddiqui, Zaman, and Khan (2013) investigate whether big four affiliates earns audit fee premiums in Bangladesh. The study examines 122 companies listed on Dhaka Stock Exchange in 2005 and the result of the study reveals that big four affiliate firms are not positively related with audit fees. In contrast, a Brazilian study by Hallak and Silvar (2012) investigates the factors affecting auditing and consulting fees in Brazilian public companies and the result indicates that audit fees are positively related with the big four auditors.

3. Methodology

The purpose of this study is to examine the determinants of audit fees in the listed insurance companies in Nigeria. As a result, experimental-correlational research design was adopted. The population of this study includes all the twenty-six (26) insurance and assurance companies listed on the floor of Nigerian Stock Exchange (NSE) as at 30th September, 2019. A sample size of twelve (12) listed insurance companies was arrived at after using a 3 point filter criteria that, the companies must have been listed, have a complete annual report and be engaged in insurance business and not assurance business throughout the periods of study This study uses secondary sources of data which was extracted from the annual reports and accounts of listed insurance companies from 2009 to2018. The data were subjected to empirical test and statistical analysis. In order to evaluate the determining factors influencing audit fees of listed insurance companies in Nigeria, the study adopted with little modification the models used by Kimeli (2016); Urhoghide & Emeni (2014) and Hassan & Naser (2013).

$$Adfees_{it} = \beta o_{it} + \beta 1Size_{it} + \beta 2Profit_{it} + \beta 3Comp_{it} + \beta 4Undrisk_{it} + \beta_5 Liqrisk_{it} + \beta 6Big4_{it} + £$$

4.0 Result and Discussion

Data collected during the course of the study were presented and discussed in this section. The descriptive statistics, correlation matrix and inferential statistics are presented in this section.

Table 4.2: Descriptive Statistics of the Variables of the Study

Summary of the Variables					
Variables	**Obs**	**Mean**	**Std. Dev.**	**Min**	**Max**
AdFees	**120**	**9.441**	**0.646**	**8.006**	**11.277**
Size	**120**	**16.281**	**0.688**	**15.020**	**18.366**
Profit	**120**	**0.008**	**0.121**	**-0.783**	**0.223**
Comp	**120**	**1.108**	**0.933**	**0.003** .	0.442
Undrisk	**120**	**0.140**	**0.477**	**-0.891**	**4.462**
Liqrisk	**120**	**0.185**	**0.117**	**0.006**	**0.532**
Big4	**120**	**0.358**	**0.482**	**0**	**1**

Source: Generated by the Researcher from Annual Reports of the sampled Insurance Companies (2009-2018) Using STATA 15.0 Output.

From table 4.2, it can be seen that a total of 120 observations were recorded. The result shows that audit fees of the sampled companies have an average value of 9.441, with minimum and maximum values of 0.006 and 11.277 respectively. This signifies that there is a wide dispersion in audit fees payment by the sampled companies as portrayed by the standard deviation of 0.646. This means that the sampled insurance companies in Nigeria are highly varied in terms of audit fees payment.

The client size of the sampled companies has a mean of 16.281, with minimum and maximum values of 15.020 and 18.366 respectively. This implies that some of the sampled companies are bigger in terms of assets than others under the period of the study. With respect to profitability of the sampled companies, it has a mean of 8%, with minimum and maximum values of -78% and 22% respectively. This shows a high variation in profitability of the sampled companies as portrayed by the standard deviation of 12% which is much higher than the mean value. The negative minimum value indicates that, some sampled companies incurred loss at a particular period. The complexity of the sampled companies however, maintains an average value of 1.108, with minimum and maximum values of 0 and 3 respectively. The sampled companies have an average client underwriting risk of 0.140, with minimum and maximum values of -0.891 and 4.462 respectively. The negative minimum value indicates that, there is lag/ delay in the payment of premiums by some of the insured persons in one particular year or the other.

The sampled companies have an average client liquidity risk of 0.185, with minimum and maximum values of 0.006 and 0.532 respectively. The standard deviation of 0.117 shows that the sampled companies are within the same range in terms of liquidity risk. On average, 36% of the sampled companies are audited by big4, the minimum and maximum values are 0% and 1% respectively (0 = non big4 and 1 = big4). The standard deviation of 48% which is much higher than the mean value indicates a wide dispersion in the auditor size among the sampled companies.

	AdFees	**Size**	**Profit**	**Com**	**Undrisk**	**Liqrisk**	**Big4**	**VIF**
AdFees	**1.000**							
Size	**0.678**	**1.000**						**1.80**
Profit	**0.020**	**0.034**	**1.000**					**1.12**
Comp	**0.514**	**0.641**	**0.252**	**1.000**				**1.97**
Undrisk	**-0.061**	**-0.072**	**0.121**	**-0.010**	**1.000**			**1.03**
Liqrisk	**-0.080**	**-0.155**	**-0.020**	**-0.071**	**0.029**	**1.000**		**1.09**
Big4	**0.513**	**0.102**	**0.072**	**0.250**	**0.091**	**0.217**	**1.000**	**1.14**

Table 4.2 Correlation matrix Source: Generated by the Researcher from Annual Reports of the sampled Insurance Companies (2009-2018) Using STATA 15.0 Output.

It is clear from table 4.2 that client size, client profitability, client complexity and audit firm size have positive relationship with audit fees of the sampled companies with correlation coefficient values of 0.678, 0.020, 0.51 and 0.51 respectively. However, client underwriting and client liquidity risk shows a negative association with audit fees, with correlation coefficient values of-0.06 and -0.08 respectively. This is in consistent with the works of Musah. Table 2 also shows the association among the independent variables themselves. According to Gujarati (2004) a correlation coefficient between two independent variables above 0.80 is considered excessive. From the table above, it can be seen that all correlation coefficient between independent variables are below 0.80 which suggests the absence of harmful multicollinearity.

4.1 Robustness Tests

In this study to ensure that all the generated statistical data are valid for reliable conclusion, a robustness test for the explanatory and the dependent variables were conducted. In view of the trade-off between the efficiency of the random effect (RE) approach and the reliability of the fixed effect (FE) approach, a hausman specification test was carried out and the result of the model shows that the prob >chi^2 is 0.1238 which indicates that random effect is better than fixed effect. Thus, Breusch-pagan lagrangian multiplier tests for random effect is conducted in order to choose between Pooled OLS and random effect and the result reveals prob >chi^2 of 0.0000 indicating that random effect is more reliable and better aligned than Pooled OLS. This study also employs Variance Inflation Factor (VIF) to check whether the explanatory variables suffer from multicollinearity. The result of shows the VIF of each explanatory variable is less than the rule of thumb which is 10 which indicates the absence of multicollinearity. This study used Shapiro-wilk test for normality to check whether error terms are normally distributed. The result of the test shows prob >chi^2 of 0.00004, which indicates that errors are not normally distributed. Breusch-pagan test for heteroskedasticity is conducted to check whether the variability in error terms is constant or not. The result as evidenced by the significant prob >chi^2 of 0.0450 reveals that errors have no constant variance (heteroskedastic) in the model. This study therefore conducted GLS random effect model which serve as a recourse to the errors term to overcome both heteroskedasticity and abnormally issues. Thus, the Generalized Least Square (GLS**)** model is hereby presented and discussed next.

Generalized Least Square (GLS) Regression Result

Ad Fees	Coef.	Std. Error	Z	P> /Z/	
Size	0.556	0.168	3.32	0.001***	
Profit	-0.185	0.169	-1.09	0.274	
Comp	-0.037	0.078	-0.48	0.635	
Undrisk	-0.061	0.047	-1.30	0.193	k
Liqisk	-0.625	0.511	-1.22	0.221	
Rig4	0.301	0.148	2.03	0.042**	
Constant	0.453	2.685	0.17	0.866	
R Squared:	0.6098	Hettest	0.0450		
Wald Chi^2	35.01	Hausman 0.1238 0.1238	0.1238		
P-value	0.0000	Swilk	0.00004		
No of Observation	120				

Table 4.3: GLS Regression Result of the Variables of the Study
Source: Generated by the Researcher from Annual Reports of the sampled Insurance Companies (2009-2018) Using STATA 15.0 Output, ***, ** and * indicate 1%, 5% and 10% significant levels respectively.

From the result thus, the model of the study is:

$$Adfees_{it} = 0.453 + 0.556Size - 0.185Profit - 0.037Comp - 0.061Undrisk - 0.625Liqrisk + 0.301Big4$$

Table 4.3 presents GLS regression result of the dependent variable (audit fees) and independent variables (client size, client profitability client complexity, client underwriting risk, client liquidity risk and audit firm size). The result shows that the overall r coefficient of determination is 0.61. This means that 61% of the variations in audit fees are caused by explanatory variables of the study, while 39% of the variations are explained by other factors not covered by the study. Also, the probability of P-value of 0.0000 implied that the model is fit and significant at 5%, and the variables are appropriately selected.

From the result in table 4.3 above, client size has significant and positive impact on audit fees of listed insurance companies in Nigeria, with coefficient value of 0.556 and a p-value of 0.001. This implies that the higher the size of the sampled insurance companies in terms of assets value, the higher the audit fees. This result is consistent with the works of Musah (2017) and Kimeli (2016). The finding contradicts the works of Soyemi (2014) who find insignificant but positive impact.

The result shows that client profitability has insignificant and negative impact on audit fees of listed insurance companies in Nigeria, with coefficient value of -0.185 and a p-value of 0.274. This implies that increase in profitability does not lead to the increase in audit fees. This finding goes alongside with that of Hong & My (2017) and Kimeli (2016), but contrary to the results of Apadore & Letchumanan (2016) and Haq & Leghari (2015) who document significant and positive impact. Client complexity also has insignificant and negative impact on audit fees of listed insurance companies in Nigeria, with coefficient value of -0.037 and a p-value of 0.635. This implies that increase in the complexity of the client leads to the decrease in audit fees. This is in support of the findings of Musah (2017) and Haq & Leghari (2015) who also reported that complexity has insignificant and negative influence on audit fees. The finding is however, inconsistent with Ohidoa & Okun (2018), Hong & My (2017) and Kimeli (2016) whose findings are significant and positive.

Client underwriting risk has insignificant and negative impact on audit fees of listed insurance companies in Nigeria, with coefficient value of -0.061 and a p-value of 0.193. This implies that increase in client underwriting risk leads to the decrease in audit fees. This finding is in line with the findings of Akotey & Abor (2013) who also establish insignificant and negative impact. Client liquidity risk also has insignificant and negative impact on audit fees of listed insurance companies in Nigeria, with coefficient value of -0.625 and a p-value of 0.221. This implies that increase in client liquidity risk leads to the decrease in audit fees. This finding is in line with the findings of Akinpelu et al. (2013) who also establish insignificant and negative impact.

Audit firm size on the other hands, has significant and positive impact on audit fees of listed insurance companies in Nigeria, with coefficient value of 0.301 and a p-value of 0.042. This means that the bigger the audit firm size, the higher the audit fees and also implies that big4 firms charge extra ordinary audit fees to the listed insurance companies in Nigeria than non- big4. This finding is consistent with the findings of Ohidoa & Okun (2018) and Apadore & Letchumanan (2016), but different from that of Rusmanto & Waworuntu (2015) who report insignificant and negative impact.

5. Conclusion and Recommendations

This study examined the determining factors influencing audit fees of listed insurance companies in Nigeria. In order to examine this, we use a sample of twelve (12) insurance companies listed on Nigeria Stock Exchange using data extracted from their annual report from 2009 to 2018. The study used lending credibility theory and theory of inspired confidence as its theoretical basis Random effect GLS regression model was used in analyzing the data of the study using the Stata software version 15.0.

The findings of the study revealed that the client size and audit firm size are the important factors determining audit fees of listed insurance companies in Nigeria. Both client size and audit firm size has a significant positive impact on audit fees of listed insurance companies in Nigeria. While client profitability client complexity, client underwriting risk and client liquidity risk found to have an insignificant and negative impact on audit fees of listed insurance companies in Nigeria. The findings of this study give more understanding on the determinants of audit fee in emerging countries like Nigeria.

In spite of the importance of our finding, our research has some limitation like other empirical studies. The study limits its scope on the audit fees of insurance sector only; other sectors of the economy such as the entire financial sector, oil and gas and conglomerate require research efforts, especially as they are not covered in this work. Based on the empirical findings obtained in this study, we recommend that Auditors of Nigerian insurance companies should encourage their client companies to boost their investment which leads to the increase in the size of their businesses. This will boost the companies' financial performances and also increase the professional fees charged by auditors of such insurance companies in Nigeria. The National Insurance Commission (NAICOM) which serves as the major regulatory agency of insurance businesses in Nigeria should stipulate a law in ensuring that certain portion of the audit jobs are awarded to non-big four firms so as to boost the skills of the local audit firms in the Nigerian insurance industry.

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Promoting Financial Report Quality through Internal Audit Function: Evidence from Nigerian Listed Companies

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Abstract
This study aims to demonstrate the relationship between internal audit competencies, independence, quality of work performed, risk-based internal auditing, coordination between internal and external auditors, and financial reporting quality (FRQ) among publicly listed companies. This was a cross-sectional study based on a sample of 97 publicly listed companies in Nigeria. The study revealed no significant relationship between internal audit competency and internal audit independence on FRQ. However, the results show that both qualities of work performed, risk-based internal auditing and coordination between internal and external auditors, were significantly related to FRQ. The board of directors through audit committees should encourage investment to enhance internal audit function (IAF). Simultaneously, regulators and other accounting self-regulatory bodies should ensure that IAF is adequately resourced to attain competency and independence with no conflict of interest and institute structures that will strengthen internal auditors to perform toward better FRQ. The study contributes to the existing literature by presenting a more detailed measurement of FRQ based on qualitative and enhancing characteristics of financial reports, assessing the effect of risk-based internal auditing on achieving better FRQ and supporting the contention with regard to agency theory.

Keywords: *Internal audit, financial reporting quality, risk-based auditing, public listed compani*es

1.0 Introduction

According to the International Accounting Standards Board (IASB, 2018), FRQ depends on its relevance, faithful representation, comparability, understandability, timeliness, and verifiability, which can guide investors in making informed investment decisions. High-quality financial reporting provides information that is valuable to analysts in evaluating a company's performance and prospects (Biddle, Hilary, & Verdi, 2009; IASB, 2010), whereas low-quality financial reporting consists of misleading, incomplete, and inaccurate information (Jonas & Blanchet, 2000). FRQ is more important for publicly listed companies because they are open to intense competition for investment and global corporate integration, which results in the company's operations requiring more suitable and appropriate financing to keep their services running (Chan & Makino, 2007).

The increased lapses in FRQ have resulted in high-profile corporate and financial scandals that give rise to investors' losses and decreased confidence in the financial reporting system. The occurrence of corporate collapses, fraud, and financial scandals around the world such as Enron, WorldCom, HIH insurance, Arthur Andersen, Lehman Brothers, Transmile Group Berhad, is related to the incidence of compelling FRQ (Dibra, 2016; Toms, 2019). This result in the company's undertaking meaningful efforts to set up adequate FRQ institutive actions to curtail its progressively offensive effects (Barth, 2015; Ionascu, Ionascu, Sacarin, & Minu, 2018).

In Nigeria, studies have shown that FRQ is weak and even more pronounced in publicly listed companies (Adeyemi & Dabor, 2012; Kantudu & Samaila, 2015; ROSC, 2011). For example, a survey of various stakeholders in the financial reporting circle showed that management manipulates financial reports to reduce the tax burden, cover up anticipated losses, raise cash flow from operations, and influence share prices, all of which resulted in weak financial reporting (Iyoha, 2011). Furthermore, Hassan (2014) indicated that financial information quality remains low and lacks reliability which obstructs the growth of the Nigerian capital market.

Corporate governance consist of monitoring structures prepared to provide the proper management of companies and minimize agency conflicts. CG issues arise as devices of supervision and control to ensure that shareholders' concerns are preserved (Jensen & Meckling, 1976). Among the monitoring structures of CG was the IAF (IIA, 2013). Internal auditors undertake a series of activities within their companies, including an audit of financial statements (Asare, Davidson & Gramling, 2008; Gras-Gil, Marin-Hernandez, & Lema, 2012). Tip-top internal auditors suffice as a supplementary third-party overseer of management behavior toward financial reporting throughout the year (Prawitt, Smith, & Wood, 2009). However, IAF standing in Nigerian public listed companies is deficient as a result of a lack of competencies and independence (Ogundana, Ojeka, Ojua, & Nwaze, 2017). Furthermore, several internal auditors are carrying out internal audit pursuits outside the professional competency (Bello, Che-Ahmad, & Yusof, 2017).

The study has an important significance to the regulators of internal audit function and financial reporting quality and corporate governance in general in Nigeria. As the study cover all listed companies on the Nigerian Stock Exchange (NSE) for the period 2021. Based on this the following hypotheses are developed.

Hypothesis:
H: There is a positive relationship between IAF attributes of competency, independence, quality of work performed, risk-based internal auditing, internal-external auditor's coordination and FRQ in Nigerian listed organizations.

2.0. Literature Review

2.1 Internal Audit Function and Financial Reporting Process

Financial reporting quality depicts the magnitude to which financial accounts present accurate and impartial information concerning the company's financial position (FASB and IASB). Earlier studies provide that superior financial reporting can minimize information inequality and the cost of capital (Francis, Khurana, & Pereira, 2005) and improves resource allocation in the capital market (Bushman, Piotroski, & Smith, 2011), as well as providing access to finance during the financial crisis (Leuz, & Verrecchia, 2000). Reduce agency problems that might arise when companies extend their business across borders (Daske, Hail, Leuz, & Verdi, 2008) and enhance corporate governance (Bushman & Smith, 2001). Regardless of these, several national and international institutions have set IAF stipulations for financial reporting (Blue Ribbon Committee, 1999; COSO, 2006; IIA, 2003; SOX, 2002). Furthermore, the Panel on Audit Effectiveness (2000) highlighted the critical function IAF could play in enhancing FRQ.

Besides, prior studies have also presented the significant role internal auditors can play in the financial reporting process. For instance, Kabuye, Nkundabanyanga, Opiso, and Nakabuye (2017) indicates that internal audit competencies are essential predictors of fraud management. Gros et al. (2017) further confirmed that internal auditors with external certification and audit-related certifications contribute to higher FRQ and lower audit fees. Additionally, Prawitt et al. (2009), shows that IAF competency elements, such as certification and experience in internal auditing, are associated with a lower level of earnings management. However, Abbott et al. (2016) indicate a negative relationship between IAF competency as measured by average IAF resource expenditure per hour on a stand-alone basis and FRQ.

Furthermore, Johl et al. (2013) presented a negative relationship between IAF organizational independence and abnormal accruals. In addition, Ogundana et al. (2017) showed a negative correlation between internal auditor independence and accounting information quality. Likewise, Md Lisa and Mohd Iskandar (2010) indicated no significant relationship between IAF independence and financial management performance. On the contrary, Gros et al. (2017) findings suggest that IAF organizational status comprising supervision and reporting lines contributes to effective FRQ. Kubaye et al. (2017) show that IAF corporate status, measured in terms of independence, objectivity, and management support, is positively associated with fraud management. Alzeban (2018) found that IFRS implementation is more effective when the internal auditor reports to the audit committee rather than management in assessing the internal auditor's independence and compliance with IFRS.

Similarly, Johl et al. (2013) show that the financial focus of internal audit work performed and internal audit activities are related to a lower abnormal accrual. Further, Lin et al. (2011) indicate that the scope and nature of work executed and IAF activities are highly associated with disclosing material weaknesses. Moreover, Al-Thuneibat, Al-Angari, and Al-Saad (2016) highlight a small negative impact on discretionary accruals' IAF scope of work. The AICPA risk-based auditing (RBA) standards state that RBA aims to enhance the quality and effectiveness of audits by significantly changing auditing activities and providing increased strictness to auditing activities in several critical areas, including the assessment of financial reporting risks. RBA would enhance the adequacy of audit activities by demanding a more detailed knowledge of the organization and its surroundings to identify the risk of misstatement in the financial reports and an in-depth evaluation of the risks of material misstatement of financial statements (Messier Jr, 2014). Further he defined RBA as the central structure that guides the financial statement audit process.

Additionally, Gras-Gil et al. (2012) show that banks with higher quality financial reporting have greater coordination in annual audits between internal and external auditors. Further, Oussii and Boulila Taktak (2018) indicate that greater coordination between internal and external auditors leads to timelier financial reporting. Azzam, Alrabba, AlQudah, and Mansur (2020) results show that cooperation between internal and external auditors enhances FRQ by revealing a positive and significant effect of IAF objectivity in improving collaboration with the external auditors in a way that increases the level of financial reporting quality.

Review of the above literature showed that there is scant study on internal audit function and financial reporting quality in Nigerian context with the exemption of Ogundana et al, (2017) who examined IAF competency and independence on FRQ. The current study extend the previous study by examining th IAF competency, independence, quality of work performed, risk-based internal auditing and internal-external coordination and FRQ. In this study, agency theory outlook was employed to examine the contribution of IAF (competency, independence, quality of work performed, risk-based internal auditing, and coordination between internal and external auditors) to FRQ. Prior studies have suggested that agency theory may manifest not only the presence of IAF in companies but also FRQ (Adams, 1994; Fama & Jensen, 1983; Jensen & Meckling, 1976; Myllymaki, 2015). However, the significance and nature of the contribution probably to be made by each IAF attribute on FRQ stands as an empirical question from a developing country, specifically Nigeria. Therefore, this study aims to examine the relationship between internal audit function and financial reporting quality.

3.0 Methodology

3.1 Design, Population and Sample

The research design for this study was cross-sectional, primarily using primary data in the form of a questionnaire survey from February 2021 to December 2021 The study population comprises all publicly listed companies in Nigeria. The population consists of 175 companies from 13 leading subsectors of the market (manufacturing, building and construction, agriculture, transportation, banking and finance, petroleum products marketing, beverages and breweries, hotels and hospitality, health care and pharmaceuticals, ICT, packaging and containers, food products, and household durables). We used a random sampling approach to distribute the questionnaires. Out of 149 distributed questionnaires, 104 were returned (69.8%). Hence, out of 104 questionnaires, seven were deleted from the dataset after carrying out the outliers' assessment test, as this could distort the accuracy of the data analysis, leaving 97 usable questionnaires representing 65% for the final review. The unit of analysis for the study is that the companies were the head of the IAF, or any other person assigned by him in each of the sample companies were respondents. The respondent's line of work as an internal auditor and assurance provider on financial reporting to the board of directors through the AC was employed to ascertain the standard of being a respondent in the study.

3.2 Questionnaire and Variable Measurement

The questionnaire design was based on our scrutiny of related articles concerning IAF competency, independence, quality of work performed, risk-based internal auditing, coordination between internal and external auditors, and FRQ. The dependent variable FRQ with dimensions of relevance, faithful representation, comparability, understandability, timelines, and verifiability was measured using respondents' mean rank of 22 twenty-two items contained in the questionnaire as adopted with changes from the IASB (2010, 2018); Beest, Braam, and Boelens (2009); Tasios and Bekiaris (2012); Mbobo and Ekpo (2016). Internal audit competencies with attributes of training, knowledge, certification, and recruitment (Endaya & Hanefah, 2016; Kabuye et al., 2017; Schneider, 1984) were measured using respondents' mean rank of nine items covered in the questionnaire.

Similarly, internal audit independence with elements of authorization, budget, performance evaluation, audit approach, conflicting duties, and unrestricted access (Endaya & Hanefah, 2016; Kabuye et al., 2017; Prawitt et al., 2009) was analyzed using the respondents' mean rank of 11 items of the information entered in the questionnaire. The quality of work performed is measured using internal auditors' audit planning, audit findings, audit fieldwork, audit scope, post-audit assessment audit communication, and fieldwork quality review (Ahmad, 2013; Schneider, 1985). Hence, respondents were required to express their understanding of the quality of work performed by internal auditors using 12 items.

Finally, risk-based internal auditing activities measured by the internal auditor evaluation of risk exposure in financial reporting, risk exposure affecting the reliability and integrity of financial and operational information, potential material misstatement due to fraud in evaluating threats to the achievement of financial reporting objectives, risk exposure in the efficiency of operations, and significant risk exposure (Ackermann, 2015; Castanheira et al., 2010). We developed six items that are anchored on a questionnaire to obtain respondents' feelings about the adequacy of risk-based internal auditing activities. Coordination between internal and external auditors is measured using internal auditor periodic meetings with the external auditor, sharing of work schedule, audit planning, access to each other, and share a common understanding of audit approaches, techniques, and procedures (Gras-Gil et al., 2012; Ahmad, 2013; Schneider, 1984). The respondents were required to signify their viewpoint on the coordination of work between the two auditors using eight items. All the items are measured on a five point Likert scale (1= strongly disagree and 5= strongly agree).

4.0 Results and Discusions

4.1 Descriptive Statistics

In summary, in the data obtained, we presented the mean and standard deviations. Depending on the contentions of Saunders et al. (2007) and Kerlinger (1986), the mean depicts a summary of the data, and the standard deviations display the level to which the means symbolize the data. Table 1 summarises the mean, standard deviation, and variance. The mean values for the study constructs range between 4.03 and 4.38 in comparison to the values of the standard deviation ranging from 0.28 and 0.48 on a five-point Likert scale. Building on Saunders et al. (2007) and Kerlinger (1986), small standard deviations correspond to mean displays that the data point is near to means which demonstrates that the mean represents the data obtained.

Table 1. Descriptive Statistics

	Minimum	Maximum	Mean	Std. Deviation
Internal audit competency	2.78	4.78	4.18	0.31
Internal audit independence	2.64	5.09	4.03	0.48
Internal audit quality work performed	3.58	5.00	4.46	0.29
Risk-based internal auditing	2.50	5.00	4.27	0.37
Internal & external auditors' coordination	2.38	5.00	4.08	0.51
Financial reporting quality	3.50	5.00	4.38	0.28

4.2 Measurement Model Evaluation

As stated in the previous section, PLS-SEM 3.2.6 was used as an instrument for analysis because of the capability of PLS-SEM to handle reflective variables when running a small sample and filter the data of all the variables (Gefen, Rigdon, & Straub, 2011; Hair, Anderson, & Tatham, 2010). The measurement establishes the dependability of the measurement scales employed in the study and treats the goodness of fit of the model to be able to determine global relevance (Ramayah, 2014). As shown in Table 2, the results of the factor loadings, average variance extracted (AVE), and composite reliability (CR) estimated indicate that AVE scores range from 0.500 to 0.58, with compatible CR scores varying from 0.763 to 0.891. Thus, it is clear that the items engaged in the study measure the variable and demonstrate convergent validity. As a result, factor loadings, AVE, and CR are appropriate based on the suggestion of Hair et al. (2010).

Furthermore, analysis of discriminant validity shows the magnitude to which the variable measures are associated with each other, as shown in Table 3. To achieve the square root of AVE for individual variables was considered along with the crosswise scores, which were higher than the scores that were below the crosswise. Thus, this validates the appropriateness of discriminant validity. Therefore, this means that the loadings above are higher than the loadings below and cross-loadings.

Table 2. Measurement Model: Loadings, Average Variance Extracted and Composite Reliability

Constructs	Items	Loadings	AVE	CR
Financial reporting quality	FRQ10	0.760	0.503	0.858
	FRQ11	0.761		
	FRQ13	0.686		
	FRQ14	0.714		
	FRQ15	0.635		
	FRQ22	0.691		
Internal audit competency	IAC1	0.643	0.500	0.796
	IAC2	0.539		
	IAC6	0.797		
	IAC7	0.814		
Internal audit independence	IAI1	0.722	0.518	0.763
	IAI6	0.711		
	IAI8	0.726		
Internal audit work performed	IAW10	0.816	0.561	0.789
	IAW11	0.834		
	IAW4	0.568		
Internal and external auditors coordination	IEA1	0.805	0.581	0.891
	IEA2	0.747		
	IEA5	0.745		
	IEA6	0.594		
	IEA7	0.838		
	IEA8	0.817		
Risk-based internal auditing	RBA2	0.605	0.501	0.833
	RBA3	0.687		
	RBA4	0.685		
	RBA5	0.794		
	RBA6	0.755		

4.3 Statistical Results for the Hypothesis

In evaluating the structural model, this section discusses the hypotheses testing, R^2, size, and relevance of the model. In this study, a decision on the significance or non-significance of the predictions is based on t- values at a 5 per cent level of significance (2-tail). To test the hypotheses, SEM-PLS was employed. The results in Table 3 indicate that internal audit competency and FRQ are negative and not significantly related to each other (β = .001, t- values =.016, p < 987); thus, not significant. This indicates that internal audit competencies such as in-house training, knowledge of current audit practices, continuing professional training, and induction procedures for new internal auditors are not adequate to bring significant changes in financial reporting quality. The results for internal audit independence, which predict a positive relationship between internal audit independence and financial reporting quality", conveys that does not back up the statement (β = .087, t- values = 1.056, p < 292); thus, is not supported. Therefore, internal audit independence shows a weak relationship with the FRQ. To demonstrate the relationship between internal audit quality of work performed and FRQ. The findings in Table 3 show a positive and significant relationship between the quality of work performed by the internal auditor and FRQ (β = 0.148, t-values = 2.712, p < 007); thus, is significant and signifies that appropriate internal audit work is significantly associated with higher FRQ.

To examine the relationship between risk-based internal auditing and FRQ. The results showed a significant positive relationship between risk-based internal auditing and FRQ (β = 0.216, t –values =

3.633, p < 000); hence, the findings was supported. This indicates that risk-based internal auditing activities are associated with positive changes in the FRQ. To establish the relationship between internal and external auditors' coordination and financial reporting quality. The results in Table 3 indicate that coordination between the two auditors and financial reporting quality are positively related, and the association is statistically significant ($\beta = 0.401$, t- values = 5.865, $p < .000$); hence, the result was supported. Thus, coordination between internal and external auditors is associated with positive changes in financial reporting quality. The result conveys that coordination in the area between the auditors in the area of the periodic meeting, preparation of annual audit, area of work schedule and audit coverage, and shared understanding of audit approach improve FRQ.

Table 3. Path Coefficient of Hypotheses Testing

Variables	beta	stdev	t-statistics	p-value
Internal audit competency	-0.001	0.078	0.016	0.987
Internal audit independence	0.087	0.082	1.056	0.292
Internal audit work performed.	0.148	0.055	2.712**	0.007
Risk-based internal auditing	0.216	0.059	3.633**	0.000
Internal and external auditor coordination	0.401	0.068	5.865**	0.000

Note: ***p < 0.01; **p< 0.05; *p< 0.10

4.4 Assessment of Effect Size (f^2)

Having attained the coefficient of determination of R^2 (independent and dependent variables), the next step is to evaluate the effect size (f^2), as suggested by Hair et al. (2010). Cohen (1988) explains that (f^2) scores of 0.02, 0.15, and 0.35 present's small, medium, and large effects, respectively. At the same time, Chin et al. (2003) emphasised that the smallest strength of (f^2) of independent variables on the dependent variable should be considered as an effect. Thus, the effect size for independent variables was estimated using the formula below (Cohen, 1988; Selya, Rose, Dierker, Hedeker, & Mermelstein, 2012). Table 5 presents the effect size scores for the variables.

$$\text{Effect size: } f^2 = \frac{R^2 \text{ included} - R^2 \text{ excluded}}{1 - R^2 \text{ excluded}}$$

Where,

F2 is the score that ascertains the effect size of the independent variables on the dependent variable. R^2 is the R^2 score of the dependent variable before removing a particular independent variable. While R^2 Excluded indicates a change in the R^2 score of the independent variable after removing a specific independent variable from the model.

Table 4. Assessment of Effect Size F^2 between IVs and DV

Constructs	***R^2 Included***	***R^2 Excluded***	***F^2***	Effect Size
IAC	0.54	0.54	0.00	None
IAI	0.54	0.53	0.02	Small
IAW	0.54	0.54	0.00	None
RBA	0.54	0.56	0.06	Small
IEA	0.54	0.44	0.23	Medium

4.5 Assessment of Predictive Relevance

We evaluated the predictive relevance of the model through a blindfolding process to establish how the values were put together around the model. The result of cross-validation redundancy was used to analyze the adequacy of the model to express the independent variables. It assumes that any model above "0" has predictive relevance and the capability to conclude a relationship, and if the value is "0" and below its signals, the model has no predictive significance (Geisser, 1974; Stone, 1974). From Table 6, Q^2 indicates an excellent relevance of 0.226 for the dependent variable FRQ. Hence, depending on Stone (1974), Chin (1998), and Geisser (1974), the model achieved medium predictive relevance.

Table 5. Predictive Relevance for Q^2

Total	SS0	SSE	Q^2 (=1-SSE/SS0)
FRQ	1.164.000	901	0.226

Note: SSO (sum of square root observations) SSE (sum of square root predictive errors)

4.6 Discussion

The underlying argument stemming from this study is that the FRQ of publicly listed companies in Nigeria is more reliable and improved by IAF through its competency, independence, quality of work performed, risk-based internal auditing, and coordination between internal and external auditors. Thus, agency theory is more appropriate to demonstrate the internal governance mechanisms and FRQ since the theory could better establish several principal-agency relationships among internal stakeholders of the companies (Agrawal, & Knoeber, 1996; Hoitash, Udi, Hoistash, & Bedard, 2009; Myllymaki, 2015). Gros et al. (2017) found that internal audit competency attributes, such as internal auditing-related certification and external certification of IAF employees, contribute to improving FRQ. Kabuye et al. (2017) establish that internal audit competencies, such as knowledge experience and skills, are useful predictors of fraud management. In this study, internal audit competencies such as in-house training, knowledge of the company's policies, operations, procedures, professional certification, and continuing professional training were not significantly associated with FRQ.

This absence of a significant relationship could be a result of the premier institution that regulates IAF activities that IIA in Nigeria is at an embryonic stage which might limit the institute's ability to oversee the recruitment and training of internal auditors, which could result in companies employing incompetent staff based on political and personal relationships rather than competency. However, our study confirmed the previous studies of Ogundana et al. (2017) and Abbott et al. (2016), who established no significant relationship between internal audit competencies and FRQ on a stand-alone basis. However, they found that the influence of IAF on FRQ rests on the combined efforts of competencies and independence of IAF.

Next, we analysed the effects of internal audit independence comprising internal audit budget, performance evaluation, remuneration, and a private meeting with an audit committee on FRQ. Our results showed a negative and insignificant relationship. This lack of independence might be attributable to internal auditors in the sample companies reporting to top management as opposed to the best practice with functionally reporting to the audit committee, and the auditors are on the company's payroll. Our findings are consistent with the results of Ogundana et al. (2017), who found no statistically significant difference between internal audit independence and accounting information quality. Johl et al. (2013) show no statistical significance between internal audit organisational independence elements such as internal auditor reporting line, budget, remuneration and evaluation, and abnormal accruals measure as

FRQ. However, our study contradicts that of Kabuye et al. (2017), who show that when internal auditors report functionally to the audit committee and administratively to executive management, there is a likelihood of enhancing fraud management. Prawitt et al. (2009) indicate that internal audit independence elements consisting of a Chief audit executive reporting line are associated with moderation in the level of earnings management. Similarly, Gros et al. (2017) findings show that IAF organisational status, including the CAE reporting line, supervision, and evaluation, are associated with FRQ.

The results further suggest that the contribution of quality work, expressed as preparation of annual audit, fieldwork findings are recorded in the audit working papers, and proper job descriptions for internal auditors are significant and positively associated with FRQ. Internal auditors' quality of work commits to the level and ability of IAF to provide meaningful suggestions (Mihert & Yismaw, 2007). Our findings confirm the results of Johl et al. (2013), who indicate that financial work performed by internal auditors is associated with a lower level of abnormal accruals. Lin et al. (2011) found that disclosure of material weaknesses reduces with financial work and the degree to which the IAF scope of work includes the financial reporting process. Further, Al-Thuneibat et al. (2016) highlight a small negative effect on the IAF scope of work on discretionary accruals.

We establish that risk-based internal auditing elements consisting of assessment of risk exposure affecting the reliability and integrity of financial information, detailed understanding of risk practices of the company, and the knowledge of risks that can prevent the achievement of financial reporting objectives are positively associated with improved FRQ. Risk-based internal auditing enhances the value of the audit system and identifies the risks of material misstatements in financial reports (Messier Jr, 2014). Our findings provide support for the appropriateness of the recent regulatory guidance in the FRC Code of Corporate Governance 2016, which requires all publicly listed companies in Nigeria to establish and maintain IAF with a focus on risk-based internal auditing.

Finally, we also document that coordination between internal and external auditors in terms of holding a periodic meeting, preparation of annual audit, area of work schedule and audit coverage, and common understanding of audit techniques and procedures are positively related to FRQ. Our finding is in line with Gras-Gil et al. (2012), who indicate that banks with higher coordination between internal and external auditors in the area of collaboration in annual audits, sharing of audit information, and periodic meetings have greater FRQ in Spain. Azzam et al. (2020) show that cooperation between internal and external auditors enhances FRQ by revealing a positive and significant effect of IAF objectivity in improving the level of collaboration with external auditors in a way that increases the level of FRQ. Further, Oussii and Boulila Taktak (2018) indicate that greater coordination between internal and external auditors leads to timelier financial reporting. Pizzini et al. (2014) findings show that audit delay is lower when the IAF contributes to an external audit by independently conducting relevant work. Accordingly, the results support the regulatory adequacy guidance that requires IEA to use the work of others (FRC, 2016).

5.0 Conclusion and Implication

The purpose of this study was to demonstrate the relationship between internal audit competencies, independence, quality of work performed, risk-based internal auditing, coordination between internal and external auditors, and FRQ among publicly listed companies in Nigeria. The current study assesses and analyses data from 97 publicly listed companies. We find that internal audit competency and independence do not make a significant contribution to FRQ. We also find that both qualities of work performed, risk-based internal auditing and coordination between internal and external auditors, significantly enhanced sound FRQ. The present study's findings have significant implications: First, it contributes to the methodological point of view by presenting a more detailed measurement of FRQ based on qualitative and enhancing characteristics of financial reports. Second, the study contributes to the literature by assessing the effect of risk-based internal auditing on achieving better FRQ. Third, our study findings support the contention with regard to agency theory: the board, through the audit committee and management, should support the effective operation of the IAF to attain better FRQ because internal auditors are associated with sound FRQ.

Furthermore, as this study identifies certain aspects as significant drivers of FRQ, the board directors of publicly listed companies should advocate more investment toward improving internal audit competency and independence over financial reporting. Regulators in collaboration with other stakeholders, such as the Institute of Chartered Accountants of Nigeria (ICAN), the Association of National Accountants (ANAN), and the Institute of Internal Auditors (IIA) of Nigeria. Should build up strategies that will enhance IAF continuing professional training, knowledge of the company's operation, policies and procedures, knowledge of the current internal auditing practices, reporting relationships with the audit committee, and private meetings with the audit committee to discuss audit findings. With the new take-up of the IIA to regulate internal audit practices in both the private and public sectors, the structure of the IAF should be taken into consideration to enhance function competency and independence. The IIA, in partnership with FRC, ICAN, and ANAN, should be committed to training internal auditors on issues related to competencies and independence to achieve high-quality financial reporting.

Specifically, the main limitation of this study was the cross-sectional design, in which information was obtained in a single period from listed companies in Nigeria. As a result, care should be exercised when drawing causal inferences. The participants in the survey may not always be stimulated to respond to the questions correctly. Hence, the answer provided may not always measure the study variables. Thus, it will be of interest if future studies may take this limitation by employing a longitudinal survey that collects information for several periods. Therefore, a comparison can be made to draw causal inferences accurately or combine qualitative and quantitative approaches to conduct a detailed investigation of IAF and FRQ.

Additionally, the focus of this study was on publicly listed companies, and these companies are under a higher regulatory regime to establish and maintain internal audit function over financial reporting than non-listed companies, public institutions, government ministries, and agencies. Thus, the findings of this study may not be generalizable to these institutions and agencies because they have different regulations. Therefore, future studies should consider these.

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Relationship between Stock Returns and Inflation in the Era of COVID-19 in Nigeria: Test of Fisher's Hypothesis

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Abstract
The study examined the relationship between stock returns and inflation in Nigeria. It also put to test, the applicability of Fisher's hypothesis during the COVID-19 pandemic. Weekly time series data that covered the period between 27th February 2020 and 26th February 2021 were used for the analyses. A unit root test was conducted and results revealed that the variables are of different orders of integration. This justified the use of the ARDL estimation technique. The ARDL bound test confirmed the existence of a long-run relationship among the variables. Findings revealed that despite the COVID-19 pandemic in Nigeria, inflation has a positive and significant relationship with stock returns in the long run. The import of this is that inflation can be used as a hedge against stock returns in Nigeria; hence, the study affirmed the relevance of Fisher's hypothesis despite the COVID-19 pandemic. It was therefore recommended that investors should put their investible funds in the Nigerian stock market with or without the COVID-19 pandemic.

Keywords: *COVID-19 Pandemic, Stock Return, Inflation, Fisher's hypothesis*

1.0 Introduction

Amidst contradicting research outcomes on the relationship between stock returns and inflation, the world experienced the upsurge of the novel coronavirus commonly called COVID-19. The outburst of the virus was first experienced in Wuhan, China around December 2019 and its spread was as low as around 50 on the 20th of January, 2020 (Gurmeet & Muneer, 2021). This was not initially taken seriously until it started spreading to other countries and after a while across continents makes World Health Organization (WHO) declared it as a pandemic precisely on the 30th of January, 2020. The confirmed cases reached almost 16 million and more than 640,000 deaths were recorded by July 2020 (WHO, 2020). The virus affects the respiratory system and causes mild symptoms like headache, and temperature and could be severe sickness in some cases which could lead to death in little time. As of 15th March 2021, the global confirmed cases were 119,220,681 while the global death cases stood at 2,642,826. This was about a 45% increase in confirmed cases and a 46% increase in death cases compared to 81,947,503 confirmed cases and 1,808,041 death cases on the 2nd of January, 2021.

The persistent increase in the number of cases arising from COVID-19 has caused a lot of havoc to the global economy in which the equity market is not an exception. To curb the severity of its impact, governments of several countries came up with various measures to cushion the negative effect. As described by Abu et al. (2021), some developed countries and blue-chip organizations supported the less privileged nations with aids, aiming at minimizing the spread of the virus and the economic hardship attached to it. The implication of the COVID-19 pandemic cut across every aspect of the economy. It affected the prices of commodities especially food (Ehsan, Deniz& Soledad, 2020), decreased the pricing of assets, and affected import, export, businesses, and economic activities in general (Yousef, 2020). Consequently, the impact is generally felt on global demand and supply functions which in other words has led to economic recession and high inflation across the world.

The persistent increase in prices of goods and services caused by COVID-19 has been making investors think otherwise about their investments as they are really scared of losing the value of their investment in the future. This has therefore been a topic of debate by various scholars like Jelilov, Iorember, Usman, and Yua (2020) and Mukolu and Ilugbemi (2020) as to whether equity return could help in hedging against inflation so that investors would still have an added value to their investment despite the recurring inflation.

Fisher (1930) opined that stock returns should be able to hedge against recurring inflation and afterward several research outcomes like that of Ang, Chua, and Desai (1979); Fama (1981); Kaul (1987); Adrangi, Chatrath, and Sanvicente (2000) and Berument and Jelassi (2002) have been conflicting on whether the relationship between stock returns and inflation is positive or otherwise. However, to ensure that investors' funds are safe by ensuring that they invest in a more secure investment like stock, it is pertinent to confirm if the relationship between stock return and inflation is in line with Fisher's hypothesis during the COVID-19 pandemic. The main objective of the study is therefore to examine the spillover effect of COVID-19 on the relationship between Stock Returns and Inflation and this will further affirm the applicability of Fisher's hypothesis during COVID-19.

2.0 Literature Review

The major aim of investors is to maximize return on their investment which is said to be jeopardized by the COVID-19 pandemic as it reduces the value of investment (Yousef, 2020). However, the stock has been identified by researchers as a hedging instrument against itself. In order words, if this is maintained during COVID-19, it will be a reliable investment during this period. Stock returns which are the return on investment in shares of companies have been fluctuating over time, especially during the COVID-19 period. In the same vein, the pandemic has also led to persistent increases in prices of goods and services which is referred to as Inflation.

Moreover, stock return has not been stable since the inception of COVID-19. It had an All Share Index point of 26,808.24 on the 27th of February when coronavirus was first discovered in Nigeria and this dropped to 26,216.46 points the following day and this keeps fluctuating till date. The weekly average of the return increased to 25287.18 points by week 15 (31st May 2020 to 6th June 2020) but remained unstable till it reached its peak by week 50 (24th January 2021 to 30th January 2021) with 41979.32 points as revealed in figure 1 (Nigerian Stock Exchange, 2021). On the other hand, inflation as shown in Figure 2 has not been stable and increasing at an increasing rate since February 2020 when the first COVID-19 case was recorded in Nigeria. It started with 12.13% in January 2020 which moved a little bit higher to 12.2% in February. The increased change in inflation continued and rose to 13.22 in August 2020. The impact of this was seriously felt as the cost of goods and services increased but the real value worth less. The inflation rate increased to 13.72% in September and even to 14.23 and 14.89 in October and November respectively. As the second wave of COVID-19 was identified, the inflation rate kept increasing. 15.75%, was recorded in December 2020 which moved to 16.47% and 17.33% in January and February 2021 respectively. Nigeria experienced a 42% increase in the inflation rate between February 2020 and February 2021, that is, the inflation rate had increased by 42% within the COVID-19 period (CBN, 2021).

Consequently, the rate of COVID-19 cases has been increasing since February 2020 when it was first discovered in Nigeria. it started with 1 on the first week and nothing was recorded in the second and third week until 4th week when 15 was recorded and keeps increasing as revealed in Figure 3. On a 7-day average, it increased to an average of 610 in week 19 (28th June 2020 to 4th July 2020) which later dropped to 363 in week 24 (2nd August 2020 to 8th August 2020). The figure keeps fluctuating till it drops to a weekly average of 99 in week 35 (11th October 2020 to 17th October 2020). The number of recorded cases during this period was minimal until it increased to 1,267 in week 46 (27 December 2020 to 2nd January 2021) which was associated with the second wave of the virus. The increase persists and the peak was reached at week 48 (10th January 2021 to 16th January 2021) with confirmed cases of 1,661 daily for that week and this has been unstable since then. The total number of confirmed cases in Nigeria as of 16th March 2021 is 161,074 while 2,018 deaths have been recorded as of that date. As revealed in Figure 4, the first five states with the highest number of cases are Lagos, FCT, Plateau, Kaduna, and Rivers states with 57,081, 19,490, 8,995, 8,825, and 6,831 respectively (Nigeria Centre for Disease Control, 2021). It is however important to study how the spread of COVID-19 has affected the relationship between stock returns and inflation in Nigeria.

Fisher's hypothesis and Fama's proxy hypothesis are the major theories of stock returns and inflation relationship. Fisher (1930) opined that the relationship between the interest rate and the expected inflation rate is positive, and as such, the nominal rate of interest is a combination of the real interest rate and the expected inflation rate which makes the nominal interest rate differ from the real interest rate by the expected rate of inflation (Humphrey, 1983; Cooray, 2002; Omotor, 2010 &Uwubanmwen&Egbosa, 2015). In other words, Fisher proposed that stock returns could hedge against inflation. on the other hand, Fama (1981) explained that the negative relationship that exists between equity returns and inflation is induced by an existing negative relationship between inflation and real activity which is also explained as a result of money demand theory and the quantity theory of money. However, Fama's stand is that the relationship between stock return and inflation is negative and therefore cannot be used to hedge against inflation. Several researchers like Emenike and Nwankwegu (2013), Manasseh and Omeje (2016), and Gurmeet and Muneer (2021) among others

The question of Does stock returns protect investors against inflation in Nigeria. was evaluated by Emenike and Nwankwegu (2013). The study was analyzed with the use of the Engle and Granger two-step cointegration model while monthly data of the All-share Index (proxy of stock returns) and monthly consumer price index (proxy of inflation) between January 1985 and March 2011. Though a low speed of adjustment was found, there is evidence of a long-run relationship between stock returns and inflation. It was therefore concluded that stock could hedge against inflation in Nigeria.

Kumari (2011) conducted an empirical analysis of stock returns and inflation in India between the last quarter of 1991 and the third quarter of 2009. The study deployed the Granger causality test and regression analysis while Vector Autoregressive (VAR) was used to test for results robustness. As confirmed by the Granger causality test, no relationship was found between stock returns and inflation in India. This was also ascertained from the regression result. Hence in the case of India, stock returns cannot serve as a hedge against inflation. Moores-Pitt and Strydom (2017) also empirically examined equities as a hedge against inflation in South Africa. The extracted data on stock returns from the Johannesburg Stock Exchange between 1980 and 2015 and analyzed the data with Autoregressive Distributed Lag Model (ARDL) and Vector Error Correction Model (VECM). They therefore found a strong and positive relationship between equity returns and inflation which means that equity returns do act as a hedge against inflation in South Africa.
The short-term impact of COVID-19 on global stock market indices was investigated by Gurmeet and Muneer (2021). The study which covers between January 2020 and March 2020 adopted two categories of data. The data used are the daily closing prices of the indices of the healthcare, Pharma, Hotel and Leisure, Information Technology, and Airline as well as the daily closing price of the Morgan Stanley

Capital International All Country World Index (MSCI ACWI), Morgan Stanley Capital International (MSCI) and Morgan Stanley Capital International Emerging Market Index. They also considered the daily closing price and volume of stock market indices of 23 developed and 26 developing economies and the adopted event study analysis revealed that there is a significant effect of COVID-19 on global stock market indices and this was said to vary for developed and developing economies. Abu et al. (2021) employed Autoregressive Distributed Lag (ARDL), Canonical Co-Integration Regression (CCR), Dynamic Ordinary Least Square (DOLS), and Fully Modified Ordinary Least Square (FMOLS) to examine how COVID-19 confirmed cases and deaths affected stock markets in Nigeria. The study extracted data that ranged from 23rd of March to 11th of September, 2020. The ARDL bound tests found a long-run relationship between COVID-19 and the Nigeria Stock market. COVID-19 cases are revealed to be negative and significant to stock market performance. However, COVID-19 death is positive and significant to stock market performance while oil price and exchange rate have a significant effect on stock market performance in the long run. Consequently, Yousef (2020) also assessed the spillover of COVID-19: impact on stock market volatility for G7 countries. The period of study was from 2000 to 2020 with emphasis on COVID-19 daily new cases, cases growth rate, and stock market volatility. The adopted GARCH technique revealed that COVID-19 represented by a dummy variable, the number of new cases of COVID-19 as well as its growth rate had a positive and significant effect on the volatility of the G7 stock market.

The nexus between stock market returns and inflation in Nigeria was tested by Jelilov et al. (2020) to confirm if the effect of the COVID-19 pandemic matters. To achieve this, they make use of daily data on COVID-19 and stock returns between 27 February 2020 and 30 April 2020. The deployed GARCH model identified that COVID-19 has actually increased the volatility of the stock market and not only that, it has also distorted the existing positive relationship between inflation and stock market returns. In order words, a negative stock return and inflation relationship was established. Taking cognizance of the empirical literature reviewed, it is glaring that some literature has focused on the relationship between stock returns and COVID-19 while some dwell on the relationship between stock returns and inflation. Meanwhile, the literature on the effect of COVID-19 on the relationship between stock return and inflation is rarely available which is the gap this study tends to fill is.

3.0 Methodology

The variables considered in the study are stock returns, inflation, and COVID-19. The stock return is measured with the Nigeria Stock Exchange (NSE) All Share Index (ASI) as used in the work of Adegboyega, Odusanya, and Popoola (2013); Owolabi, and Adegbite (2013); Akani, and Uzobor (2015) as well Jelilov et al. (2020). Inflation is proxied by inflation rate (INF) as adopted in the study of Yaya and Shittu (2010); Uwubanmwen and Egbosa (2015); Sokpo, Iorember, and Usar (2017) as well as Raghutla, Sampath and Vadivel (2019) while COVID-19 is measured with coronavirus confirmed cases (CVD) as used by Ashraf (2020) and Abu et al. (2021). The study is a time series study as data collected and used for analysis are weekly data of ASI, INF, and COVID-19 which range from 27th February 2020 to 26th February 2021 making 53 weeks in total. 27 February 2020 was the first day COVID-19 case was recorded in Nigeria and the data collection stopped on 26 February because of the availability of data.

The Nigerian Stock Exchange trades for five days a week excluding weekends and public holidays. So, the study adopted a 5-day weekly average of ASI collected from NSE. The weekly data was calculated by dividing all ASI values between Monday and Friday by the number of the trading period in a week (that is, 5) and this is done for all the weeks under study. The inflation rate data used is a weekly inflation rate decomposed from the monthly inflation rate published by CBN as used in the work of

Jelilov et al. (2020). The COVID-19 (CVD) index was calculated from the daily data published by the Nigeria Centre for Disease Control (NCDC). The weekly data used for analysis was calculated using a 7-day weekly data. The confirmed cases were collected from Sunday to Monday divided by 7 and this was done for all the weeks under study.

The model as revealed in equation 1 was built to examine the relationship between stock returns and inflation during COVID-19 in Nigeria. The model is adapted from the hypothesis of Fisher (1930) to confirm if the theory still holds with the pandemic of COVID-19 intervening in the relationship between stock returns and inflation. Fisher's hypothesis considered only inflation and stock returns while this study includes COVID-19 as an intervening variable. However, the Ordinary Least Square (OLS) model in equation 1 serves as the basis for Autoregressive Distributed Lag (ARDL) used for estimation as shown in equation 2 below. The ARDL model was developed by Pesaran and Shin (1999). ARDL is adopted because it aids disentanglement between the short-run relationship and long-run effect of the variables, enhances the selection of optimal lag length and helps to avoid spurious regression issues that could be caused by non-stationarity (Ghouse, Khan &Rehman, 2018).

$$SR = f(INF, CVD)$$

$SR = \alpha + \beta_1 INF + \beta_2 CVD + e$ ……………………………………………………………1

ARDL for Bound Test

$\Delta SR = \beta_0 + \sum_{i=1}^{n} \beta_1 \Delta SR_{t-1} + \sum_{i=1}^{n} \beta_2 \Delta INF_{t-1} + \sum_{i=1}^{n} \beta_3 \Delta CVD_{t-1} + \delta_1 SR_{t-1} + \delta_2 INF_{t-1} + \delta_3 CVD_{t-1} + e_t$ ……………………………………………………………..…..equation 2

Where:
SR = Stock returns
INF = Inflation rate
CV = Corona Virus index
α = Constant Parameter
β_1 = Parameter to be estimated
e = Error Term

4.0 Results and Discussions

4.1 Unit Root Tests

Methodological technique(s) to be adopted for time series research analysis especially regression depends on the level of stationarity of the variables involved. This makes it essential to first consider the unit root test of each variables. As explained by Datta and Kumar (2011) as well as Iskenderoglu and Akdag (2020), variables that are using for regression must be stationary, that is, they must not have a unit root in order to avoid spurious results. However, to ensure that the variables are stationary and suitable for regression analysis, unit root tests are carried out and the results of both Augmented Dickey-Fuller and Phillips-Perron as well as their order of integration are revealed in table 1 below.

Table 1: **Unit Root Tests Results**

	Augmented Dickey-Fuller		**Phillips-Perron**		**Order of Integration**
Variables	Level	First Diff.	Level	First Diff.	
SR	-2.92	-2.92**	-2.92	-2.92**	*I* (1)
INF	-3.51	-3.50**	-3.50	-3.50**	*I* (1)
CVD	-2.92**	N/A	-2.92**	N/A	*I* (0)

Note: ** connotes that the variable is significant at not more than 5%
Source: Extracted from E-view version 10

Augmented Dickey-Fuller and Phillips-Perron results as shown in table 1 revealed that both stock returns and inflation have unit root at level but are stationary at first difference. COVID-19 confirmed cases however have no unit root and in other word, the variable (CVD) is stationary at level using Augmented Dickey-Fuller and this is confirmed by Phillips-Perron technique. Therefore, stock returns and inflation are stationary at first difference (*I* (1)) while COVID-19 case is stationary at level (*I* (1)). Having found that the variables are stationary at both level and first difference (mixture of order of integration), no variable is stationary at order 2 and specifically the dependent variable (stock returns) is stationary at first difference; the requirements of ARDL are thereby satisfied and can therefore be used for estimation.

4.2 Lag Length Selection

The optimum lag length for ARDL estimation was selected using the various lag length criteria of the lag structure. Table 2 showed that only Schwarz information (SC) criterion selected lag 1 as the best lag length while all other criteria (LR, FPE, AIC and HQ) adopted lag 4 as the best lag length. Considering the majority of the selection criteria, lag 4 is therefore selected as the optimum lag length for ARDL estimation.

Table 2: Lag Length Selection

Lag	**LogL**	**LR**	**FPE**	**AIC**	**SC**	**HQ**
0	172.24	N/A	2.01e-07	-6.91	-6.79	-6.86
1	364.86	353.78	1.12e-10	-14.40	-13.94*	-14.23
2	375.01	17.40	1.07e-10	-14.45	-13.64	-14.14
3	382.02	11.5	1.18e-10	-14.37	-13.21	-13.93
4	405.39	34.35*	6.68e-11*	-14.95*	-13.45	-14.38*

Note: * denotes the order of lag selected by criterion

Source: Extracted from E-view version 10
LR: sequential modified Likelihood Ratio test statistic (each test at 5% level)
FPE: Final prediction error
AIC: Akaike information criterion
SC: Schwarz information criterion
HQ: Hannan-Quinn information criterion

4.3 ARDL Bounds Test

Having revealed that the series data adopted are stationary at both level I (0) and first difference I (1), ARDL is suitable for the study estimation. However, as described by Pesaran and Shin (1999) and strengthened by Peseran et al. (2001), one of the justification of choosing ARDL is its ability to determine both short run and long run estimates of the model which is achievable through ARDL bounds test. The bound test hypothesis stated that H_o: $\beta_{1i} = \beta_{2i} = \beta_{3i} = 0$ while H_1: $\beta_{1i} = \beta_{2i} = \beta_{3i} \neq 0$. In other word, the null hypothesis emphasized that there is no long run relationship between the variables while the alternate hypothesis stated otherwise.

ARDL bounds test was conducted to determine if co-integration exist in the long run or not. The result has shown in table 3 revealed that the F- statistics value of 4.29 is above both the lower bound and upper value of 3.1 and 3.87 respectively at 5% significance level. The null hypothesis of no existence of co-integration is thereby rejected which implied that there is an indication of the existence of long run relationship among the variables. This therefore justify the use of ARDL method for long run and short run dynamics estimation.

Table 3: ARDL Bounds Test

Test Statistics	Value	k
F-Statistics	4.292201	2
Critical Value Bounds		
Significance level	I (0) Bound	I(1) Bound
10%	2.63	3.35
5%	3.1	3.87
2.5%	3.55	4.38
1%	4.13	5

Source:Extracted from E-view version 10

4.4 ARDL Co-Integration Test and Long Run Result

Having confirmed the existence of long run relationship between the variables within the model, the estimation of the short run dynamics as well as long run relationship of the variables were carried out using the ARDL model estimated in equation 2 above. The result as shown in table 4a explains if COVID-19 has effect on the relationship between stock returns and inflation in Nigeria in the long run while ‘b’ part of table 4 described the effect of COVID-19 on the relationship between stock returns and inflation in Nigeria within a short period of time. The fact that the value of the Error Correction Mechanism’s (ECM) coefficient is negative and significance, clearly depict an indication of co-integration among the studied variables. The ECM’s coefficient of -0.28 explained that about 28% of the prior year disequilibrium is adjusted in the present year which therefore indicates the level at which ECM is rapidly adjusted to changes in the long run.

Considering the values and signs of the variables’ coefficients, the result in table 4b revealed that stock returns lagged by one year is positive and significant to itself, and its coefficient of 0.42 indicated that a unit increase in stock returns will lead to 0.42 unit of itself in the short run. Moreover, COVID-19 which is measured with number of confirmed cases of COVID-19 revealed a positive and significant relationship with stock returns. Its’ coefficient of 0.019 indicated a low impact as it implies that a unit increase in COVID-19 will yield 0.02 increase in stock returns in the short run while in the long run the effect of COVID-19 is also positive but not significant with stock returns with coefficient value of

0.022. the implication of this is that stock returns will also increase by 0.02 with a unit increase in COVID-19 but not significant. This is confirmed by the study of Bhagavatula and Acharya (2020) and Yousef (2020) but in contrary with the work of Abu et al. (2020) and Jelilov, Iorember, Usman and Yua (2020). Bhagavatula and Acharya (2020) revealed that there is a positive relationship between stock returns and COVID-19 but only in the short run while Yousef (2020) also supported that the COVID-19 has positive effect on the variance of stock indices studied. Abu et al. (2020) on the other hand, argued that though COVID-19 is significant to stock returns in the long run but negatively while Jelilov et al. (2020) and Abu et al. (2021) also found a negative impact of COVID-19 on stock returns while Jelilov et al. (2020) could only confirm it in the short run Abu et al. argued that the relationship extends to the long run.

The result in table 4 affirms the existence of a positive relationship between inflation and stock returns in Nigeria even in the presence of COVID-19. However, relationship is not significant in the short run unlike in the long run. In the short run, inflation has a coefficient of 0.20 which implies that in the short run, a unit increase in inflation will increase stock return by 20% while amazingly, a unit increase in inflation will resulted into about 174% increase in stock return in the long run as shown by its coefficient value of 1.736 in the long run revealed in table 4a. This is supported by the study of Omotor (2010); Akinlo (2013) as well as Lawal (2016) while otherwise, it contradicts the result of Owolabi and Adegbite (2013), Akani and Uzobor (2015), Uwubanmwen and Egbosa (2015) as well as Manasseh and Omeje (2016).

Table 4: ARDL Long run and short run relationship

Variables	Coefficient	t-statistics	Prob.
(a) Long-run Relationship			
INF	1.736810	11.665530	0.0000
CVD	0.022631	1.772963	0.0829
C	2.422446	15.328874	0.0000
(b) Short-run Relationship			
D(SR(-1))	0.423802	3.971557	0.0002
D(CVD)	0.019982	2.239784	0.0300
D(INF)	0.204110	0.966062	0.3391
CointEq (-1)	-0.282878	-4.906782	0.0000

Source: **Extracted from E-view version 10**

5.0 Conclusion and Recommendations

The study examined the relationship between stock returns and inflation in Nigeria to confirm if Fisher's Hypothesis still holds despite the COVID-19 pandemic. The study which is time series was carried out with the aid of weekly data on the inflation rate, All Share Index, and COVID-19 number of confirmed cases in Nigeria between 27th February 2020 and 26th February 2021. Trend analysis of inflation rate, stock returns, and COVID-19 cases within the study period was carried and the used data were subjected to a unit root test. ARDL was adopted for estimation after the unit root, lag length selection criteria, and bound test requirements had been met and followed by post-estimation and stability tests which are all in favor of the estimated model.

However, the study found that there is a positive and significant relationship between stock return and its lag 1 period in the short run and that the relationship between COVID-19 and stock return is positive

and significant but weak in the short run. It was also revealed that COVID-19 has a weak and positive relationship with stock return in the long run but is not significant while inflation is not significant but has a positive relationship with stock return in the short run. At the same time, inflation was found to be positively and significantly related to stock return in the long run. The study therefore concluded that despite COVID-19, inflation has a positive and significant relationship with stock return. That is, inflation could hedge against stock return, hence, the study upholds Fisher's hypothesis despite COVID-19. The study therefore recommended that investors should put their investible funds in stock with or without COVID-19 in Nigeria.

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SECTION TWO

ROLE OF BUSINESS MANAGEMENT IN SUSTAINABLE TRANSFORMATION IN THE DIGITAL AGE

Digital Technology and Sustainable Business Development: Nigeria in Focus

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Abstract
The fourth Industrial Revolution has been identified as a major contributor to the era of digitalization, and its implications for sustainable development have gained widespread attention from various perspectives and paradigms across the globe. The objective of this paper, therefore, is to examine the nexus between digital technology and sustainable business development, with Nigeria in focus. The methodology adopted by the paper is systematic review of twenty three (23) prior empirical studies in the area with a view to understanding and integrating their findings on the relationship between digital technology and sustainable business development. The findings of the paper shows that digital technology (as measured by ICT, Industry 4.0, internet of things, artificial intelligence, smart technologies, cloud computing, big data, cyber-physical systems and blockchain technology, among others) has significant positive impact on the performance of business firms and the attainment of Sustainable Development (SD) from the Triple Bottom Line (TBL) of economic, social and environmental dimensions. The paper concludes that adoption of technology alone by business firms in Nigeria will not be enough to bring about SD, as restoration of peace and security, improve access to electricity and internet, provision of necessary digital technology infrastructure and going green are necessary if SD is to be attained. Finally, the paper recommends that Nigerian firms, big or small, should be committed to achieving sustainability and should adopt technology to drive their business operations to ensure sustainable business development in the country.

***Keywords**: Digital Technology, Sustainable Business Models, Sustainable Development, Triple Bottom Line*

1.0 Introduction

Technology is dramatically transforming every aspect of life, thereby bringing about radical rethink on long-entrenched ways of doing things and traditional paths to development (WBG, 2020). Business models, work processes and procedure, business strategy, knowledge management, financial administration and services, accounting and reporting, transportation, production and agriculture among others have remarkable and radically changed due to digital innovation. Technology has become a critical success factor and modern business organizations should see it as an integral part of their business strategy.

The fourth industrial revolution brought about digital transformation through the development of digital technologies (WBG, 2020; & Khan et al, 2021) that can generate, store and process data (Johnson, 2021). Digital transformation is seen as an evolutionary process that leverages digital capabilities and technologies to enable business models, operating processes and customer experiences to create value (Morakanyane, Grace and O'Reilly, 2017). Digital transformation resulting from the "digitalization" of processes, tasks and activities, is leading to faster processing and enhancing easy access to data in computable "digital" forms, allowing for greater analysis, faster information sharing and informed and efficient decisions (WBG, 2020).

Digital technologies have ha d profound effect on business models and strategies over the last decade, and the pace of change and level of impact is continually increasing. Technology was first used as a means of enhancing speed, effectiveness and reducing errors of many routine processes, through centralization and automation (Hamid, 2014a). But now, in the fourth industrial revolution, it is characterised by the fusion of the digital, biological and physical worlds, as well as growing utilization of new and advanced wireless technologies to change the way companies manufacture, improve and distribute their products and services (Philbeck et al, 2018).

Business firms across the globe are increasingly taking advantage of digital technologies such as internet of things (IoT), artificial intelligence, machine learning, deep learning, augmented virtual reality, autonomous vehicles, drones and robotics, digital currencies and block chain technologies, biotechnology, Fintech and Regtech facilities to increase efficiency, enhance performance and ensure sustainable business development (WBG, 2020; Codibly, 2022**;** Philbin, Viswanathan & Telukdarie, 2022). Others digital technologies including big data, data analytics, cloud computing technology, digital connectivity, crowdfunding and crowdsourcing facilities and nanotechnology among others are impacting and will continue to impact on sustainable business development. Digital technology enables the generation of more reliable data to support business decisions (forecasting, production, quality control, pricing of goods and services and products customization, among others), enhance monitoring and evaluation, and optimize firms' operations (WBG, 2020; Codibly, 2022**;** Philbin et al, 2022). It is therefore critical for businesses to engage in digital transformation through digitalizing their existing business processes to enhance sustainability, customization of products and services, gain competitive advantage, as well as, achieve innovation-driven growth (Quinton et al., 2018; Matt, Modrák & Zsifkovits, 2020; Philbin, et al, 2022).

The Brundtland Report (1987) provides a well-known broad definition of SD as 'development that meets the needs of the present without compromising the ability of future generations to meet their own needs' (Diesendorf, 2000; Emas, 2015; UNESCO, 2015). Even though business revolves around profit-driven approach, changing dynamics brought about the concept of sustainability, which is the need to focus attention on economic, environmental and social objectives thereby changing the way modern business is done (Johnson & Schaltegger, 2016).

Digital technologies, therefore contribute to the attainment of SD by adding significant value in terms of optimizing operations, improving efficiency and effectiveness, lowering operating costs, reducing the amount of resources used in production, minimizing energy consumption, reducing the amount of waste, limiting carbon and water footprint, lowering emissions, reducing pollution, minimizing the time needed to complete a process and enhancing overall performance of business firms (Moica et al., 2018; Codibly, 2022). It enables the development of efficacious business models capable of ensuring business growth and attaining economic, social and environmental objectives (Gomez-Trujillo & Gonzalez-Perez, 2021; Philbin et al, 2022), thereby achieving SD. To advance SD globally, digitalization and the application of digital technologies, in an open, interoperable and integrated manner is critical (WBG, 2020).

The extant literature document a number of studies on digital technologies and SD. A carefully perusal shows that the studies focused on the need to incorporate sustainability into business operations (Lawrence et al., 2006; Falle et al., 2016; Masocha, 2018; Burlea-Schiopoiu & Mihai, 2019; Eikelenboom & De-Jong, 2019), the nexus between digital technologies (or Industry 4.0) and the Triple Bottom Line (TBL) of sustainability (Müller and Voigt, 2018: Khan et al 2021), the impact of digital technology in enhancing sustainable performance of business firms (Philbin, Viswanathan & Telukdarie, 2022), relationship between digital technologies and SD (WBG, 2020) and the role of digital technologies in achieving UN SD Goals (SDGs). This paper focused on the nexus between digital technology, business operations and SD. This is done through review of related prior studies in the area and integrating their findings in order to understanding how business firms can adopt digital technologies to reinvigorate their business models and strategies with a view to achieving sustainable business development.

The rest of the paper is organized in to four sections. The next section, which is section two, focused on the review of related literature on the subject matter of the study. Section three highlights the methodological approach adopted for the study. Section four focused on the discussions of findings of related prior empirical studies, with a view to understanding the nature, extent and scope of inter-relationship between digital technology, business operation and sustainable development. While section five rounded-up the paper by way of summary and conclusion.

2. Literature Review

2.1 Development of Technology and Stages of Industrial Revolutions

The word technology is said to have been derived from the Greek word *techne* which means "craft" and *logy* which means "scientific study of". So technology means the "scientific study of craft." Craft in this case, means any method or invention that allows humans to control or adapt to their environment. Inventions and tool making have been around since when mankind walked on the surface of the earth. But modern technology began since when scientific thought (philosophy), astronomy and mathematics began to blend together sometimes after the 15th century. Technology, therefore, is comprised of the products and processes created by engineers to meet human needs and wants (Hamid, 2014a) and throughout history, the world has always been dependent on technology, using it to make lives, processes and work much easier and better (IED, 2019).

Technical advances has change the way humans produce things. The step into new technology, which was significantly different from the past is called industrial revolution (DIT, 2022). So far, the world has witnessed four industrial revolutions (IED, 2019). These are the 1st Industrial Revolution, which is referred to as the Mechanical Age (or Industry 1.0), the 2nd Industrial Revolution, referred to as the Electrical Age (or Industry 2.0), the 3rd Industrial Revolution, referred to as the Computer Age (or Industry 3.0) and finally, the 4th Industrial Revolution, which is referred to as the Digital Age (or Industry 4.0) (IED, 2019).

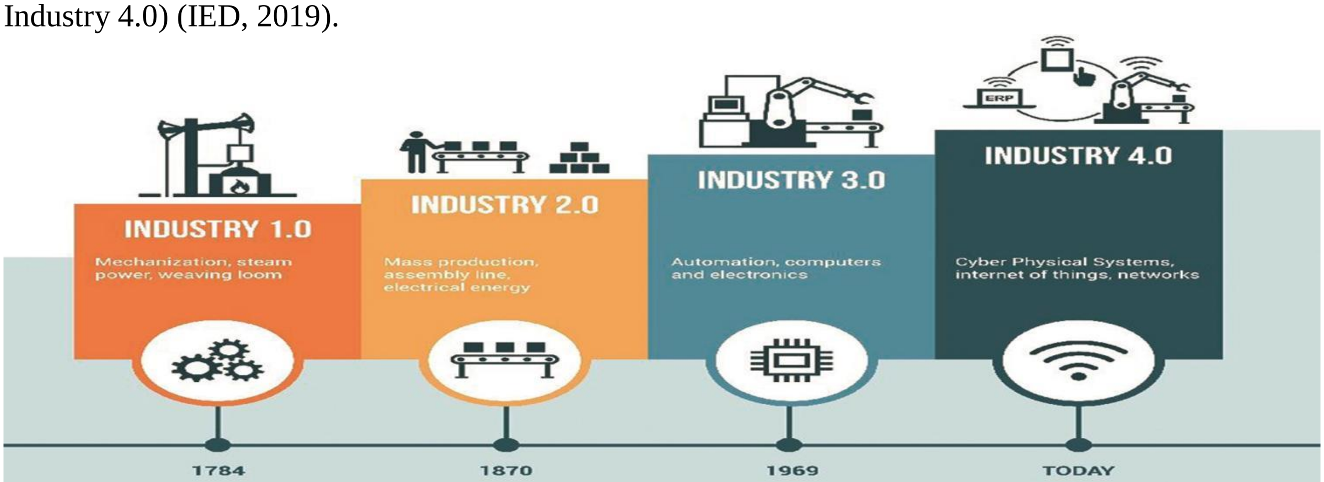

Figure I: Stages of Industrial Revolution

Source: Adepetun, A. (2018) In: The Guardian Nigeria News.

The 1st Industrial Revolution (1784) started at the end of the 18th century to the beginning of the 19th century (IED, 2019), through the use of steam power and mechanization of production, which increased human productivity. This era is associated with massive extraction of coal and invention of steam-powered locomotive that enabled human and goods to move great distance in fewer hours (DIT, 2022). Some of the major inventors of this era include James Watt 1736-1819 and Samuel Morey 1762-1843 (Steam Engine) and George Stephenson 1781-1848 (father of railways) and Richard Trevithick 1771-1833 (Steam Locomotive) (Encyclopedia Britannica, 2009; Wikipedia, 2022).

The second industrial revolution (1870) began almost a century after the first through the discovery of electricity, gas, oil and assembly line production (IED, 2019: and DIT, 2022). It started at the end of the 19th century and ended at the end of the 20th century. There were the invention of internal combustion engine, telegraph, telephone, automobiles and plane and the development of steel demand, chemical synthesis (IED, 2019). Henry Ford (1863-1947) took the idea of mass production from a slaughterhouse into automobile production, which significantly altered its process making it significantly faster and cheaper (DIT, 2022). Some of the major investors of this era include Michael Faraday 1791- 1867 and Benjamin Franklin 1706-1790 (electricity), Edwin Drake 1819-1880 (oil drilling), Nikolas Otto 1832-1891 (internal combustion engine), Samuel Morse 1791-1872 (telegraph) Alexander Graham Bell 1847-1922 (telephone), Kar Benz 1844-1929 (automobiles), Orville Wright 1871-1948 and Wilbur Wright 1867-1912, generally called the Wright brothers (plane) (Encyclopedia Britannica, 2009; Wikipedia, 2022).

The third industrial revolution (1969) began in the second half of the 20th century through partial automation using memory-programmable controls and computers. It brought about the use of electronics, telecommunications, robotics and automation of entire production process (IED, 2019: and DIT, 2022). It also opened the doors for space expeditions and biotechnology (IED, 2019). Some of the major investors of this era include Charles Babbage 1791-1871 (computers), Augusta Ada King 1815-1852 (computer program), John Ambrose Fleming 1849-1945 (electronics), Guglielmo Marconi 1874–1937 (telecommunications), George C. Devol 1912-2011 (robotics), Yuri Gagarin 1934-1968 (space expeditions) and Karoly Ereky 1878-1952 (biotechnology) (Encyclopedia Britannica, 2009; Wikipedia, 2022).

Finally, the present era which is the fourth industrial revolution began in early 2000s. The name fourth industrial revolution, was said to have been coined by Klaus Schwab, the founder and executive chairman of the World Economic Forum. This era is also called Industry 4.0 or 14.0 or 14. The term ‘I4.0’ was coined by German researchers to help shape the future of the German economy. I4.0 uses fundamental technologies, such as CPSs and IoT, to connect humans, machines, and other resources, as well as products and services in real world (Khan et al, 2021).

The Fourth Industrial Revolution started with the invention of the internet (by Vinton Cerf 1943-Date and Bob Kahn 1938-Date), the development of the World Wide Web (WWW) (by Tim Berners-Lee 1955-Date) and virtual reality world and the application of ICT to industry (IED, 2019: and DIT, 2022). It builds on the development of the third industrial revolution, and already computerized production systems were expanded with network connection and made digital with internet connectivity, thus allowing machines to communicate among themselves, leading to cyber-physical production systems and smart factories. This has resulted in machines which can predict failures and trigger maintenance processes autonomously, with a more flexible methods of getting the right information to the right person at the right place, in a timelier manner and at the point of use (DIT, 2022). Johnson (2021) explains that American engineers started creating digital technologies in the mid-20th century based on the mathematical concepts recommended in the 17th century by German Mathematician, Gottfried Wilhelm Leibniz, who suggested a system of binary computing.

Despite advancement in digital technology in the world, there exist vast differential in the extent, quality and versatility of ICT infrastructure and networking capability between the industrial world and the developing world. This differential (which is generally referred to as digital divide) exists not only between nations, but also within regions and countries, and even within cities and local communities, and between industries (Hamid, 2014b).

2.2 Conceptual Literature Review

The literature reviewed in this section covers the concepts of digital technology, business and sustainable development. The review is presented as follows:

2.2.1 The Concept of Digital Technology

WBG (2020) is of the view that "digital" is just *another name for ICT that combine voice, text and multimedia capabilities onto a single device* by leveraging the internet and other communication technologies. It comprised of *electronic tools, automatic systems, technological devices and resources that generate, store and process data* (Johnson, 2021). The following are some of the examples of the major digital technologies that drives development and transform economies with unprecedented speed and scale (FSB, 2017; Fisher, 2018; and Johnson, 2021; khan et al 2021).

Artificial Intelligence (AI): This is simulation of human intelligence processes by a computer system or a robot controlled by a computer to do tasks that normally require human intelligence (Fisher, 2018) by obtaining and using knowledge without explicit intervention of the programmer (FSB, 2017). AI is a science devoted to making machines think and act like humans. Examples of application of AI in business include credit decisions, facial/finger recognition banking apps, security surveillance, predicting consumer behavior and product suggestions, robots that deliver food, dynamic price optimization and customer service using a chatbot and voice assistant, among others.

Machine Learning (ML): ML is a subfield of AI, is about computers being able to think and act with less human intervention using structured data (that may be been arranged into rows and columns). Application of ML in business include generating and sending warnings about suspicions transactions on a customer's account by a bank, recommendation to customers based on their past purchases, regtech, suptech, Know Your Custome (KYC), and credit scoring, among others (FSB, 2017; Deloitte, 2018; and Johnson, 2021).

Deep Learning (DL): This is a subset of ML, and is about computers learning to think using structures modeled on the human brain through neural network. DL introduce an extremely sophisticated approach to machine learning and can analyze images, videos, and unstructured data in ways machine learning cannot easily do. Examples of application of DL in business include customer relationship management, investment modelling, predictive machine maintenance to reduce system downtime, oil drilling, quality control, and bank lending, among others (FSB, 2017; Deloitte, 2018; and Johnson, 2021).

Big Data (BD): BD refers to data sets that are too large or complex to be dealt with by traditional data-processing application software, because of its *volume*, *variety*, *velocity*, *veracity* and heterogeneity (unstructured, semi-structured, and structured) *(*Breur, 2016; Cappa et al, 2021; Edureka, 2021). According to Forbes, about 2.5 quintillion bytes of data is generated every day, thus justifying the need for big data analysis (Edureka, 2021). Examples of application of BD in business include enterprise risk management, personalized product offering, improving administrative efficiency, and fraud prevention, among others.

Blockchain Technology: This is a framework that *stores the track records of transactions*, referred to as *the block*, of the general public *in various records, called the chain*, in a s*ystem joined through peer-to-peer knots*. Every transaction in the ledger is *certified by the digital signature of the holder*, which verifies the transaction and protect it from damage, thereby making the data *extremely safe.* Application of BT in business include supply chain management, accounting record keeping, voting at meetings/AGMs and portfolio/ management, among others IED, 2019: WBG, 2020; Johnson, 2021).

Cloud Computing Technology: This is a technology that *enable users to record, store and access data and programs on other processors and retrieved them through their* internet-connected devices (computers, smartphones, tablets, and wearables) instead of on a local storage unit such as a hard drive of the end users (IED, 2019: WBG, 2020; Johnson, 2021; Salesforce, 2022). This enables businesses of any size to harness powerful software and IT infrastructure, and stay at the forefront of technology without having to make large investments in purchasing, maintaining, and servicing equipment themselves (Salesforce, 2022). Public cloud (servicing many different companies), private cloud (serving a single organization), community cloud (serving companies with similar needs, incorporating more specialized settings and requirements) and hybrid clouds (composed of two or more different cloud structures) are the four types of cloud computing structure (Salesforce, 2022). Application of cloud computing in business include file storage, data backup, disaster recovery and data protection, among others

Cyber-Physical Systems (CPSs): This is an intelligent computer system that integrates sensing, computation, control and networking into physical objects and infrastructure, connecting them to the Internet and to each other (IED, 2019: WBG, 2020; Johnson, 2021). The application of CPSs in business include planes that automatically fly in a controlled airspace, game theory and business strategy formulation, machine learning and use of wearables in factories, among others.

Internet of Things (IoT) and Industrial Internet of Things (IIoT): IoT and IIoT refers to systems where *embedded sensors are integrated with physical objects along with the software and integration capabilities to support real-time monitoring* and data exchange across distributed networks. They can be viewed as a *global infrastructure for the information society*, enabling advanced services by *interconnecting physical and virtual things* based on existing and evolving interoperable ICTs (Johnson, 2021). Some of the application of IoT in business include environmental monitoring (quality of air, water and soil), smart buildings (energy efficient, safe, secured and comfortable), and smart factories among others (IED, 2019: WBG, 2020; Johnson, 2021; Khan et al, 2021; **Codibly, 2022;** Philbin et al, 2022).

Smart Technology: This is a self-monitoring, analysis, and reporting technology that uses AI, ML, and BD analysis to provide cognitive awareness to appropriate objects and actors in a system (IED, 2019: WBG, 2020; Johnson, 2021). Application of smart technology in business include IoT devices (smart agriculture, smart cities, and smart factories), smart connected devices (smart security cameras, smart bulbs, smartphones) and smart devices (smart coffeemakers for example).

Others DTs include fintech, ATM, social media facilities, crypto-currency technology, website, online buying and selling technology, video streaming facilities (Skype &YouTube), geo-location devise, self-scan equipment, digital cars, gadgets and voice interfaces or chat-bots facilities. Others are robotics, drones, biometrics devices, 5G Data facilities, 3-D Printing device and data analytics technology, among others (IED, 2019: WBG, 2020; Johnson, 2021; **Codibly, 2022;** Philbin, Viswanathan & Telukdarie, 2022).

2.2.2 The Concept of Business

A business is defined as an organization or enterprising entity engaged in commercial, industrial or professional activities, ranging from limited liability companies, sole proprietorships, partnerships and joint ventures. The purpose of a business is to organize some sort of economic activities aimed at production and/or selling of goods and services with a view to making profit (Hayes, 2022).

2.2.3 The Concept of Sustainable Development

According to Shi et al (2019) the theory of SD has gone through three periods. The embryonic period (before 1972), the molding period (1972-1987) and the developing period (1987-Date). The Brundtland Report (1987) provides a well-known broad definition of SD as 'development that meets the needs of the present without compromising the ability of future generations to meet their own needs' (Diesendorf, 2000; UNESCO, 2015). The concept is concerned with maintaining a balance between economic, social and environmental considerations – the three pillars of sustainability. It is, in actual fact, about the long-term survival of the planet earth for continued habitation of living organisms that form its ecosystem (BRL, 2021).

From an industrial perspective, this means that firms need to be responsible and take account of resource usage (Kleindorfer et al., 2009), preventing the depletion of natural resources (Axelsson et al., 2011) and addresses issues pertaining to biodiversity, conservation and ecological integrity (Ramakrishnan, 2001) and the subsequent environmental pollution that are created (due to activities such as production and use of natural resources) as well as, judiciously act to maintain employee health and safety and the quality of life of the external community and ensure liquidly and profit for the firm (Gimenez et al., 2012; Khan et al, 2021; and George & Schillebeeckx, 2022).

According to Elkington (1998), sustainability consists of three pillars economic sustainability, which aims to secure liquidity and ensure profit (Schulz and Flanigan, 2016); social sustainability, which contributes to the development of human and societal capital; and environmental sustainability, which refers to the consumption of those resources that can be reproduced from living and non-living things (Norman et al., 2004; Hubbard, 2009; Khan, et al 2021; Philbin et al, 2022).

Social Sustainability and Inclusion focuses on the need to "put people first" in development processes. It promotes social inclusion of the poor and vulnerable by empowering people, building cohesive and resilient societies, and making institutions accessible and accountable to citizens. Environmental sustainability is the responsibility to conserve natural resources and protect global ecosystems to support health and wellbeing, now and in the future. While, economic sustainability refers to practices that support long-term economic growth without negatively impacting social, environmental, and cultural aspects of the community.

The goal of SD evolves from pursuing the single goal of sustainable use of natural resources, to Millennium Development Goals (MDGs), and now to more comprehensive and universal Sustainable

Development Goals (SDGs) and business sustainability. Sustainability has now become a fundamental strategy to guide the world economic, social and environmental transformation (Shi, Han, Yang and Gao, 2019). This means that the current progression of sustainability requires a shift from homogenic systems of 'doing things better' towards holistic systems of 'doing better things' (Sterling, 2004; McKibben, 2007).

The SD process demands systemic change and innovation in products, lifestyles, ecologies, processes and structures (Smith et al., 2012), which suggests that an integrated SD system must include the TBL, sustainable environmental mindset and SBMs correspondingly (Khan, et al, 2021). While, Philbin et al (2022) contends that SMEs need access to the necessary skills and knowledge to pursue a pathway towards sustainable development.

2.3 Review of Empirical Literature

The extant literature document details of prior empirical studies that are related to DTs and SD. A careful review of the literature shows that publications in the area employed different methodologies, including conceptual method, case study, surveys (questionnaire and interviews), Delphi technique, simulations, experiments and mixed methods (*Nwabueze* and Ozioko, 2011; Akinwale et al, 2017; Durowoju, 2017; Okey-Colbert and Ukandu, 2019; Khan, et al 2021; Shi et al, 2019; Oduntan and Isere, 2022; Omoyele et al, 2022; Philbin et al, 2022).

Similarly, the extant literature shows that most of the prior studies in the area that were published in Scopus, ISI Web of Science (WOS), IEEE Explore and ProQuest in the last 10 years were focused on other parts of the world including New Zealand (Lawrence et al., 2006), Austria (Falle et al., 2016), Netherlands (Eikelenboom & De-Jong, 2019) Romania (Burlea-Schiopoiu & Mihai, 2019), Spain, India, Brazil, Italy, UK, USA, Germany, Norway, China, France and Iran. Other studies focused on Thailand, Indonesia, Taiwan, Czech Republic, South Korea, Malaysia, Poland, Slovakia, Belgium, Canada, Croatia, Denmark, Hungry, Mexico, Oman, Saudi Arabia and South Africa (Masocha, 2018) among others (Shi et al, 2019; Khan, et al 2021; and Philbin et al, 2022). Sequel to this, Philbin et al (2022) assert that there was little to no research in the area in low-income countries and particularly the African continent.

However, a further more in-depth review of the literature shows that there are actually a number of studies in low-income countries, particularly the African continent. For example in Nigeria a sample of those studies include that of *Nwabueze* and Ozioko (2011), Akinwale et al (2017), Durowoju (2017), Okey-Colbert and Ukandu (2019), Oduntan and Isere (2022), Omoyele et al (2022) among many others. However, most of those studies were not noticeable because they were published in the locally domiciled journals, thereby making authors from others parts of the world like Shi et al, (2019), Khan, et al (2021) and Philbin et al (2022) to overlooked them.

Similarly, the extant literature shows that some of the prior studies focused on ICT as a whole, Fourth Industrial Revolution or Industry 4.0 (or 14.0 or 14 as it is called in Germany), where others focused on more specific digital technologies including Internet of Things (IoT) and Industrial Internet of Things (IIoT), Big Data, Cyber-Physical Systems (CPS), cloud computing technology, smart technology, Artificial Intelligence (AI) and additive manufacturing or 3-D Printing, among others (*Nwabueze* and Ozioko, 2011; Akinwale et al, 2017; Durowoju, 2017; Okey-Colbert and Ukandu, 2019; Khan, et al 2021; Shi et al, 2019; Oduntan and Isere, 2022; Omoyele et al, 2022; Philbin et al, 2022).

The major studies in the area that this paper focused on were those of *Nwabueze* & Ozioko (2011), Akinwale et al (2017), Durowoju (2017), Okey-Colbert & Ukandu (2019), Khan, et al (2021), Shi et al (2019), Oduntan & Isere (2022), Omoyele et al (2022) and Philbin et al (2022). Among them the Nigerian studies were those of *Nwabueze* and Ozioko (2011), Akinwale et al (2017), Durowoju (2017), Okey-Colbert and Ukandu (2019), Oduntan and Isere (2022). and Omoyele et al (2022).

Nwabueze and Ozioko (2011) assess the impact of Information and Communication Technology (ICT) on sustainable development in Nigeria. They find that the application of ICT to various sectors in Nigeria has the potential of bringing about sporadic and sustainable development. Similarly, Akinwale et al (2017) examined the impact of product and process innovations on the financial performance of small and medium enterprises (SMEs) in the manufacturing industry in Nigeria through a survey of 1,000 SMEs. The data generated for the study which was analyzed using least squares method shows that product and process innovation has significant impacts on the firm's performance.

Furthermore, Durowoju (2017) assesses the impact of technological change on the financial performance of small and medium enterprises in Lagos State, using descriptive survey research with a sample of 153 respondents made up of managers and owners of small and medium enterprises within the Lagos metropolis. The data generated for the study was analyzed using linear regression technique. The result of the study shows that technological change has a positive and significant impact on SMEs performance in Lagos State. In another study, Okey-Colbert and Ukandu (2019) assess the impact of ICT on sustainable development in Nigeria using literature review method. The study finds that deployment of ICT brings about cost competitiveness among nations and can affect all stakeholders if deployed correctly.

In the same vein, Shi et al (2019) reviewed studies in ISI Web of Science (WOS) from 2000 to 2011, selected 1,942 articles that focused on SD theory and SD practice and analyzed them using Cite Space software. The results show that the theory of SD has gone through three periods: the embryonic period (before 1972), the molding period (1972–1987), and the developing period (1987–present), and is gradually implemented into a global action beyond pursuing the single goal of sustainable use of natural resources to broader all-encompassing global goals focusing on economic, social and environmental sustainability.

Oduntan and Isere (2022) investigate the impact of digital technologies on business sustainability in Nigeria over the period 1990 to 2020. The data generated for the study were analyzed using OLS technique, and the result of the analysis shows that cellular subscriptions have significant positive impact on SMEs contribution to GDP. While on the other hand, SME output was found to have insignificant negative impact on SMEs contribution to GDP. On his part, Omoyele et al (2022) investigate the effect of digital entrepreneurship on sustainable business models in small and medium enterprises in Lagos State, using a survey method, involving 387 small and medium enterprises. The data for the study which were analyzed using regression analysis, show that digital technologies provide unique combinations of sustainable business model components such as integrated value proposition and multifaceted value creation.

In another study, Khan, et al (2021) carried out a systematic lierature mapping review by searching four data bases (namely Scopus, Web of Science, IEEE Explore and ProQuest) for relevant articles published between January 1, 2012 and April 17, 2020. The search yielded 4, 291 published articles related to I4.0 (i.e. Industry 4.0) and a combination of either sustainability, (Triple Bottom Line (TBL), Circular

Economy (CE) and/or Sustainable Business Models (SBMs). Out of the 4, 291 articles, 81 were selected and used for the study. The findings of the study include the following: First, digital technologies enhance SD in various ramifications including resource efficiency, overall improvement of organizational structure, organizational skills, improvement in employee well-being and firm's value. Second, TBL aligns all the three pillars of sustainability with respect to social, economic, and environmental objectives, while CE (Circular Economy i.e. sustainability conscious mindset) complements by providing tools such as 6Rs (Reduce, Reuse, Recycle, Recover, Redesign & Remanufacture) to reach those objectives. Third, combining efforts to achieve TBL and CE objectives at the same time improve decision making, energy efficiency, fair distribution of costs (Ghobakhloo, 2020) and eco-design, which provide the basis to develop sustainable-oriented business models (Ejsmont et al., 2020) based on innovation and novelty (Ghobakhloo, 2020) in the ecosystem. Fourth, digital technology principle of connectivity and CE principle of resource integration results in information driven business models which lead to traceable and transparent product service systems that ultimately bring knowledge for value creation.

Finally, Philbin et al (2022) carried out a bibliometric analysis of 64 articles, which were selected from 1,300 identified articles in Scopus database from 2016-2020 with a view to understanding from the results of those studies how digital transformation enable SMEs to achieve sustainable development from the TBL (i.e. economic, social and environmental dimensions of sustainability). The findings of the study include the following. First, ICT adoption enhances economic performance of SMEs business sustainability by creating new business models, products and services, and higher value. Second, organizational culture and innovative strategies with an aptitude towards technology adoption and subsequent data management are critical foundations for SMEs to undergo digital transformation. Third, innovation, skills and management are essential drivers for effective technology transformation in a firm.

2.4 Theoretical Framework

A number of theories were used to guide digital technologies and sustainable development studies. These include social theories, active-network theory, structuration theory, systems theory, activity theory, group theories, social presence theory, media richness theory (Okey-Colbert and Ukandu, 2019). Others are resource dependence theory, sustainability theory, theory of change and diffusion of innovation (DOI) theory among others. However, this paper hinges on the diffusion of innovation theory, as it best explains the variables of the study (digital innovation, sustainable business models and improved performance), in addition to being the most elegant in terms of predictive scope, predicative accuracy, simplicity, falsiability (or absence of ambiguity) and aesthetic appeal.

BU (2021) explains that the diffusion of innovation theory was developed by E.M. Rogers in 1962. It is one of the oldest social science theories that originated in communication to explain how over time an idea or innovation gain momentum and diffuses (or spread) through a specific population or social system. The end result being people adopt the new idea or innovation by doing something differently than how they were doing it previously. The key to adoption is perception of the idea or innovation, through which diffusion occurs. However, adoption does not happen simultaneously in a social system, as some people are more apt to adopt the innovation than others, due to differences in characteristics (BU, 2021). Hence, it is important to understand the characteristics that facilitate or hinder adoption of innovation. Figure II gives a snapshot synopsis of the theory of diffusion of innovation.

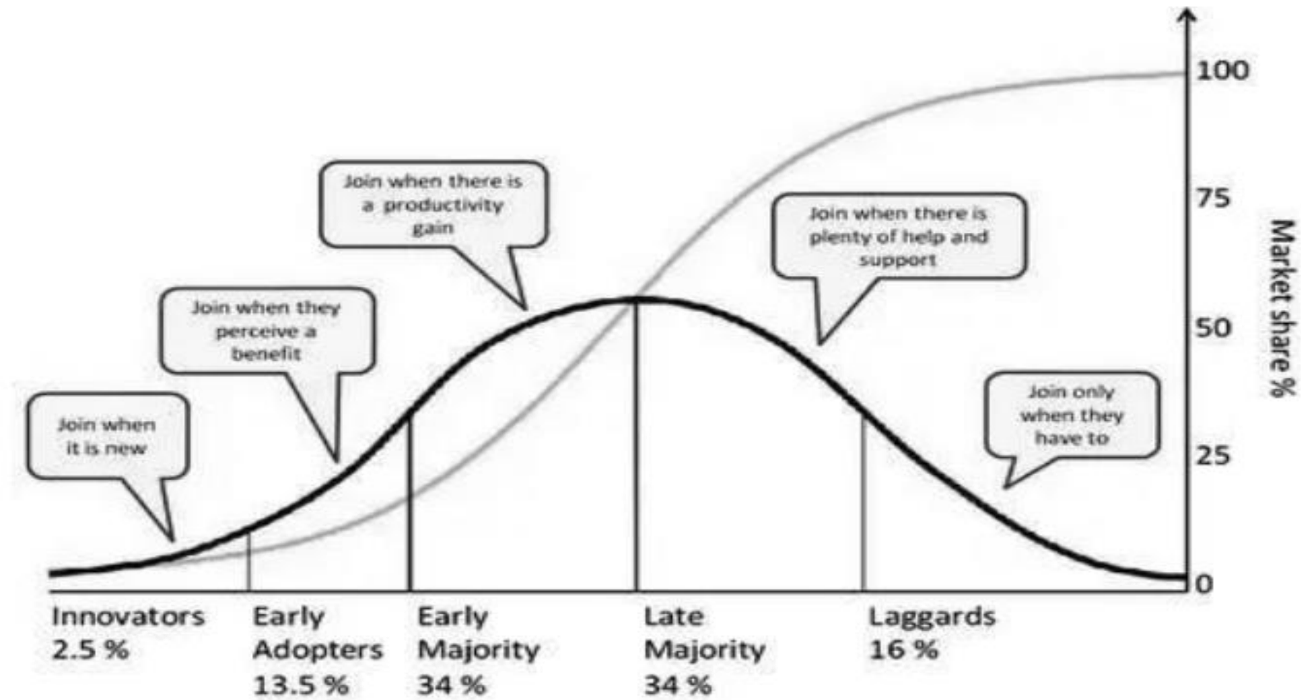

Figure II: Diffusion of Innovation Theory
Source: Wikipedia, 2022-https://www.google.com/url?sa=i&url=https%3A%2F%2Ftheintactone.com

According to Rogers, there are five established adopter categories, and majority of the general population tend to fall in the middle categories. The First category are the innovators (those who want to be the first to try the innovation willingly on their own, and very little, if anything at all, needs to be done to appeal to them). The second category are the early adopters (those who are very comfortable adopting the new idea, but who need manual and information to implement the change, and who not need to be convinced to change) (BU, 2021).

The third category are early majority (those who really need to see evidence that the innovation works before they are willing to adopt it). The strategies to be used to appeal to this category include given them success stories and evidence of the innovation effectiveness/efficacy. The forth category are the late majority. These are people who are skeptical of change and will only adopt an innovation after it has been tried by others and adopted successfully. The fifth category are the laggards, who are bound to tradition and are very conservative. They are very skeptical of change and they need statistics, fear-appeal and pressure from people in the other adopter group, for them to adopt the innovation (BU, 2021).

Similarly, Rogers explain that there are five main factors that influence adoption of an innovation. These are relative advantage (seen to be better than the idea it replaces), compatibility (the innovation is in congruence with the needs of the potential adopter), complexity (difficulty in understanding and using the innovation), triability (the extent to which the innovation can be tested or experimented before adoption), and observability (the extent to which the innovation provides tangible results). Figure II gives snapshot synopsis of the factors influencing adoption of innovation.

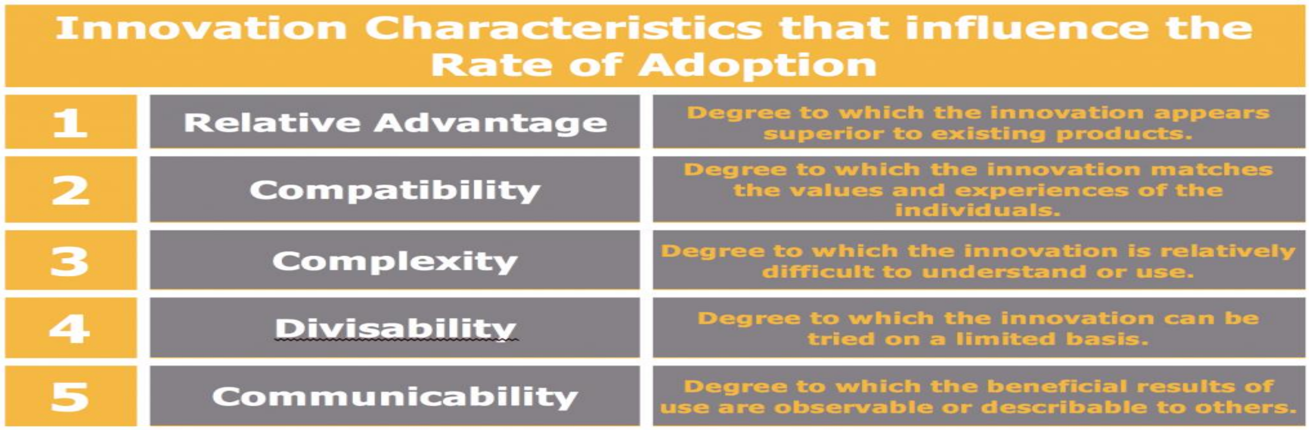

Figure III: Characteristics/ Factors Influencing the Rate of Adoption of Innovation
Source: https://www.google.com/url?sa=i&url=https%3A%2F%2Fmarketing-insider.eu%2Ffactors-influencing-the-adoption-process

Scholars have documented some limitations of this theory. However, the major limitations within the context of this paper are the following. First, it does not take into account an entity's resources or social support to adopt the new innovation, which could be seen as critical factor in adoption of digital technologies by business firms more especially in developing economies, like Nigeria. Second, it does not take into account the privacy and risks associated with adoption of innovation, like new technologies. Third, it does not look at access, expertise/skills and availability of human capital at the disposal of the adoptor. Fourth, it does not look at existence of adoption architecture, access to infrastructure (like internet, electricity in the case of adoption of digital technologies).

2.5 Conceptual Framework

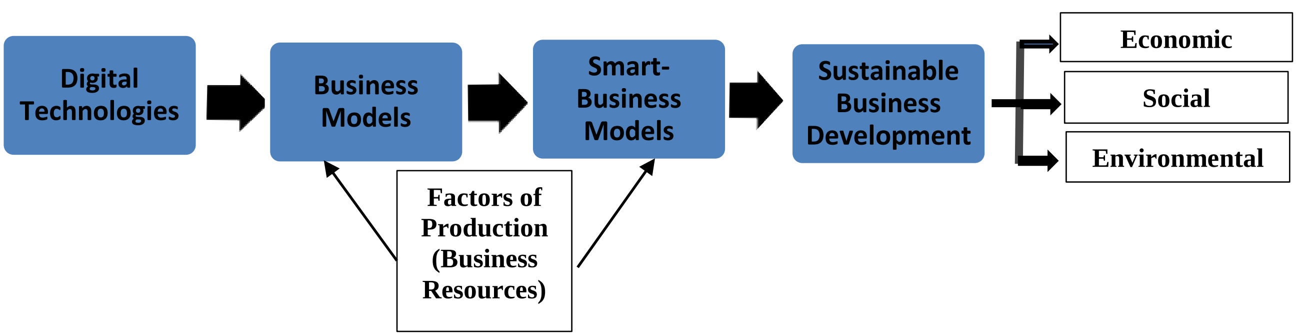

Figure IV: Conceptual Framework
Source: Developed by the Author from Literature Review

In this model digital technology is seen as the enabler (i.e. input to a business transformation process), business model is seen as the processor, being acted upon by factors of production (land, labour, capital & entrepreneur) and business resources (men, machine, materials & money). Adoption of digital technologies will then result in transformation of the Business Models (BM) into Smart Business Models (SBMs), resulting in sustainable development, which is seen as the outcome (i.e. output from the transformation process), which comes in three dimension in terms of economic, social and environmental sustainability, thereby aligning with the Triple Bottom Line (TBL) of sustainability.

3. Methodology

Taking inspiration from the work of Morakanyane et al. (2017), Müller (2019), Shi, Han, Yang and Gao, (2019), Williams and Lang (2019), Khan et al (2021) and Philbin et al (2022), the paper adopts the literature mapping survey method described by Kitchenham et al. (2011) as used by Khan et al (2021) to understand the impact of adoption of digital technologies on the sustainable development. Literature mapping review aimed at identifying and classifying studies related to the area to enable thematic clustering and integration of the findings of the prior studies to enhance understanding of the topic at hand, in line with Khan et al (2021).

The systematic mapping review process consisted of three phases, namely planning, conducting and documenting as explained by Khan et al (2021). First, the major objects (i.e. domain topic) and boundaries of the study was defined and clarified, which were DTs, business firms, sustainable business development or sustainable development. Second, was the conduct of the literature search and obtainig relevant articles with particular reference to the application area and the intervention or exposure to 'sustainability/SD' as explained by Khan et al (2021). These articles were selected from the ones available online in the internet. The articles were first downloaded and filtered and the relevant ones selected. Thereafter, a snowball technique was adopted using the references of the articles to identify additional relavant articles that should be searched for from the internet. This lead to the selection of three (3) 1st major studies by Shi et al (2019), Khan, et al (2021) and Philbin et al (2022), and six (6) 2nd major articles by *Nwabueze* & Ozioko (2011), Akinwale et al (2017), Durowoju (2017), Okey-Colbert & Ukandu (2019), Oduntan & Isere (2022) and Omoyele et al (2022). The 2nd major articles were all Nigerian-based. To supplement the nine major articles, fourteen (14) supplementary articles were selected. These were Hubbard (2009), Gimenez, et al (2012), Boons & Lüdeke-Freund (2013), Johnson & Schaltegger (2016), Schulz, & Flanigan (2016), Fisher, et al (2018), Müller, et al (2018), Eikelenboom & Jong (2019), Chouki, et al (2020), Ejsmont, et al (2020), Ghobakhloo, (2020), Chauhan et al (2021), Gomez-Trujillo & Gonzalez-Perez (2021), and **Codibly (2022).** This make a total of twenty (23) articles. Third, the nine major articles were read completely from the beginning to the end, while the fourteen (14) supplementary articles were glanced at focusing attention on some specific sections. The results of the review conducted were documented and reported.

4. Discussions and Syntheses of Prior Research Findings

This section presents the results from the analysis of 23 studies selected, as explained in the methodology. Synthesis of the findings of the 1st three major prior studies by Shi et al (2019), Khan, et al (2021) and Philbin et al (2022) that were reviewed significantly formed the bedrock of the results of this study. *This was followed by the findings of 2nd major prior Nigerian based studies by Nwabueze* and Ozioko (2011), Akinwale et al (2017), Durowoju (2017), Okey-Colbert and Ukandu (2019), Oduntan and Isere (2022) and Omoyele et al (2022). And, then the finding of the fourteen (14) supplementary studies by Hubbard (2009), Gimenez, et al (2012), Boons & Lüdeke-Freund (2013), Johnson & Schaltegger (2016), Schulz, & Flanigan (2016), Fisher, et al (2018), Müller, et al (2018), Eikelenboom & Jong (2019), Chouki, et al (2020), Ejsmont, et al (2020), Ghobakhloo, (2020), Chauhan et al (2021), Gomez-Trujillo & Gonzalez-Perez (2021), and **Codibly (2022).**

In summary, the results of the studies can be grouped into three streams. First, those on the concept of sustainable development. Second, those on the impact of digital technologies on firm's financial performance or countries' GDP. Third, those on the interconnection between digital technology and sustainable business development.

First, on the concept of SD, from the analysis of 1,942 selected articles, Shi et al (2019) find that there has been refinement and advancement in the concept of SD from a single goal of sustainable use of natural resources to broader all-encompassing global goals focusing on economic, social and environmental dimensions of sustainability (Shi et al, 2019).

Secondly, to buttress the impact of digital technologies on business performance or GDP, prior studies have established that product and process innovation have significant impact on the firm's financial performance (Akinwale et al, 2017), technological change has a positive and significant impact on SMEs performance (Durowoju, 2017), adoption of ICT create cost competitiveness among nations and affect all stakeholders if deployed correctly (Okey-Colbert and Ukandu, 2019), adoption of technology significantly and positively impact on businesses contribution to GDP (Oduntan and Isere, 2022) and digital technologies provide unique combinations of sustainable business model components such as integrated value proposition, and multifaceted value creation (Omoyele et al, 2022).

On the interconnection between digital technology and sustainable business development, Khan et al (2021) from a systematic mapping review of 81 articles from four data bases (namely Scopus, Web of Science, IEEE Explore and ProQuest) selected from 4, 291 published articles, find that digital technologies enhance SD in various ramifications including resource efficiency, overall improvement of organizational structure, organizational skills, improvement in employee well-being and firm's value. Similarly, Philbin, Viswanathan & Telukdarie (2022), from analysis of 64 articles, which were selected from 1,300 identified articles, in Scopus database find that ICT adoption enhances economic performance of SMEs business sustainability by creating new business models, products and services, and higher value. In another study, *Nwabueze* and Ozioko (2011) find that the application of ICT to various sectors in Nigeria has the potential of bringing about sporadic sustainable development. The integrated results of the studies reviewed is depicted in Figure V.

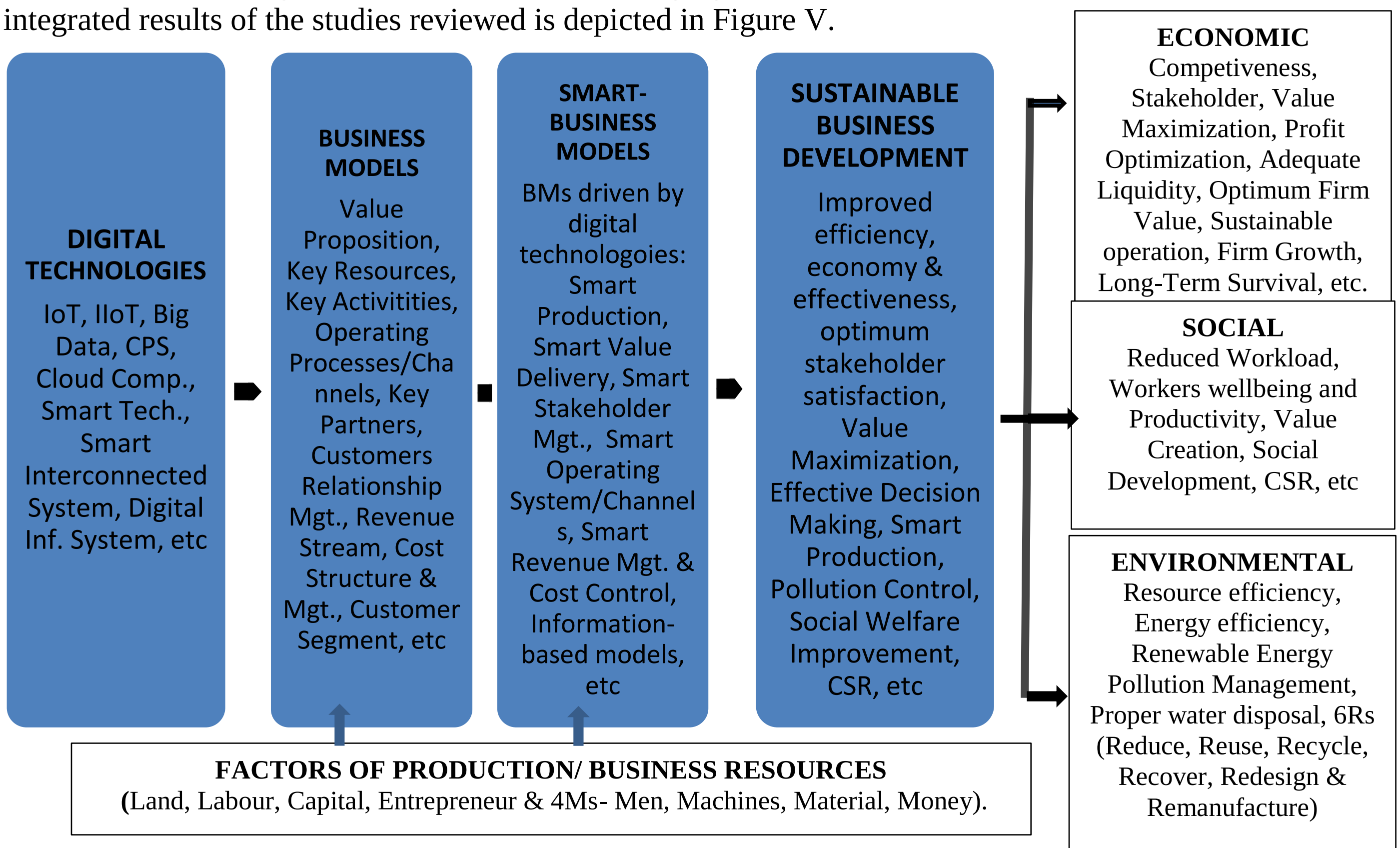

Figure V: Interconnection between Digital Technology, Business and Sustainable Development
Source: Developed by the Author from Findings of Prior Studies in the Literature

It can be seen from the results of prior studies that adoption of digital technologies by businesses lead to SBMs and attainment of SD from economic, social and environmental dimension of sustainability. Digital technologies can be integrated with value chains by collecting and actively sharing data to provide real-time information about machines, productions, operations and component flows; this helps managers track, monitor and make sustainable decisions about post-consumption product recoveries. These recovery-based approaches replace the traditional linear 'take, make, use and dispose' philosophy with sustainability conscious mindset that benefits organizations and supply chains socially, economically, and environmentally (Geissdoerfer et al., 2017) boarding on 6Rs (reduce, reuse, recycle, recover, redesign & remanufacture).

Boons and Lüdeke-Freund (2013) and Khan et al (2021) explain that SBMs are tools that maintain a balance between social, environmental and economic needs while still preserving value proposition in terms of creating new jobs, saving costs and reducing adverse environmental impacts of business operations. Similarly, Khan et al (2021) find that SD in the industry 4.0 contributes to the attainment of social, economic and environmental benefits, through sustainable supply chains, smart and sustainable cities and smart factories. This leads to remarkable attainment of sustainable industrial value creation across social, economic and environmental dimensions by improving resource efficiency.

Sustainability and technology, both of which are mutually reinforcing, are now the most significant sources of revenue growth for businesses worldwide. They have created demand for new kinds of products and services, and are driving innovations across all sectors of the economy and society (BRL, 2021). However, Philbin et al (2022) contends that some of the inhibiting factors to adoption of digital technology are lack of access, lack of expertise/skills, lack of finance and lack of human capital. While Chouki et al. (2020) and Chauhan et al. (2021) identified resistance, lack of standard architecture, lack of internet access, privacy and security issues, regulatory issues, while Oduntan and Isere (2022) identified lack of electricity as the inhibiting factor affecting the adoption of technology by firms in Nigeria.

Thus, to benefit from synergies between DTs, SBMs, SD (TBL), they should be viewed as a policy-driven holistic approach that focuses on the use of Digital Technology (DT) to achieve sustainable business development. In line with this, Khan et al (2021) opines that a well-planned DT implementation strategy, followed by innovative policies in a diffused social and institutional environment, should include the quintuple bottom line (social, economic, environmental, technological and organisational) instead of TBL and the quintuple helix (industry, government, university, environment and society) instead of Triple Helix. This therefore appeared as a gap that need to be explored by future researchers.

5.0 Summary and Conclusion

Adoption of DTs by business firms is a critical success factor for the attainment of sustainable development in Nigeria. Nigerian firms, therefore, big or small, should factor adoption of DTs into their business strategies and should be committed to sustainability from the perspective of the TBL. This is necessary to transform the economy, and allow the present generation to meet their own needs without compromising the ability of future generations to meet their own needs.

Business firms in Nigeria also need to have sustainability mindset, what Khan et al (2021) called circular economy, which will ensure a shift from the linear model of 'take, make, use and dispose/waste' to the circular model of 'reduce, reuse, recycle, recover, remanufacture and redesign'. This is critical for the attainment of sustainable business development. To mitigate the privacy and risks issues associated with the adoption of digital technology by business firms in Nigeria, the National Identity Card Management Agency should develop code similar to the BVN to track all digital based transactions in the country.

Adoption of Technology alone will not be enough to achieve SD in Nigeria. Restoration of peace and security, improve access to an interrupted electric power supply, provision of necessary digital technology infrastructure, making broadband internet more available, becoming eco-friendly by going green and using clean energy are necessary towards creating a future that is prosperous and socially and environmentally sustainable.

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Role of Innovation in Entrepreneurship in Katsina Metropolis

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Abstract
The role of innovation in entrepreneurship is the main aim of this study. Much had been written about entrepreneurship and innovation under different tittles. In addition to the different writings on the subject matter, this study critically examined innovation and entrepreneurship in Katsina State Metropolis and the nature of entrepreneurship, they are into, using a sample size of 397 entrepreneurs, from a purposive sampling technique. Seven specific objectives, and seven hypotheses were used to guide the Study. A 62 item questionnaire was administered on the respondents, which was elaborate and exhaustive to include relevant aspects of the topic under study. Also, descriptive statistics such as frequencies, percentages, tables and inferential statistics (multiply regression analysis and Pearson Moment Correlation Method), were used for analyzing the primary data collected. The study used cross-sectional design. Major findings indicated that innovation enhances the nature, creativity and design thinking of process of the entrepreneur giving unique idea or solution to social problems, from the reviewed literatures. It was also found out that the type of entrepreneurs basically in Katsina are the hustlers with 26.38%, innovators with 21.82% while imitators with 19.87%. More males than females with a 51.14% are into entrepreneurship, in the metropolis, 25.08% have tertiary education, and 27.36% are young single entrepreneurs, from the descriptive analysis. The study also revealed that product, service, process, marketing, organisational and human innovations are significant while only eco innovations, showed an insignificant correlation. The study recommends that more orientation be given to the entrepreneurs in the metropolis to apply eco innovation and it would be also valuable, to study the connection between a person's personal values and innovativeness, have a data for entrepreneurs in the state and ***centres*** *for entrepreneurship development, training, information and research, to help boost and sustain ventures, and replicating same research in the same metropolis and other states in Nigeria, using dimensions of innovation will increase reliability for generalization of results and findings.*

Keywords: *Innovation, entrepreneurship for SMES, Opportunity-based theory and Schumpeter's Theory 1934*

1.0 Introduction

The entire ecosystem in the whole world is evolving, making it difficult to still adopt old ways of doing things, this has affected the way entrepreneurship is handled as a result of constant change in human taste, technology and all other aspects of human endeavors. In order to keep with the pace of the change and remain competitive, definitely new ideas and improvement in every aspect of the entrepreneurs businesses need to change too, backed up by proper implementation.

The rising competition across all facets of human endeavor, businesses also pushed entrepreneurs into innovation to remain relevant so that such entrepreneurs, possess the ability to come up with innovative products and services to meet the market trend and demands (Mitzkus, 2022).

Innovation is the practical implementation of idea that result in the introduction of new goods or services (Schumpeter, 1983). The International Organisation for standardization defined innovation as a new entity or changed entity realizing or redistributing value. In another definition, (Bereghe,2009), sees innovation as a multistage process whereby organisations transform ideas into new or improved products, services or process, in order to advance, compete and differentiate themselves successfully in their market place. Innovation has a common element of a focus on newness, improvement and spread of ideas or the application of technologies in its definition.

Entrepreneurship is as old as human existences which was conducted informally anyway. Entrepreneurs play a key role in any given society and nation. It is viewed as change, generally entailing risk beyond what is normally encountered in commencing a business, which may include other values than simply economic ones. It could be looked at as the process of designing, launching and running a new business, which is often similar to a small business, or as the capacity and willingness to develop, organize and manage a business venture along with any of its risk to make profit or have a societal impact.

Entrepreneurship started in Nigeria, at the point where people in the villages and farming communities produced more products than they needed, as such they had to exchange those surpluses with the people that needed them within their immediate and communities neighbouring them (Oyelola, Ajiboshin, Raheem &Igwe,2013). As businesses are on the rise and the taste of customers tastes are changing, this has led to the introduction of all forms of technology and new ideas in other to remain competitive and meet up with entrepreneurial challenges, the government of Nigeria introduced digital economy, through the ministry of communications and digital economy, is an innovation to aid for businesses thrive.

It is interesting to know, that the beginning of entrepreneurship is innovation and there is a risk component in entrepreneurship that is not in innovation, innovation is the backbone of every organisation, with the rising competition across all facets of human endeavors, business entrepreneurs need innovation to remain relevant and thereby innovation is important for entrepreneurship, as it enhances creative development, reinforcing your brand, persistent improvement, responding to trends and competition, making the best of your existing products, having a unique selling point and the use of social media (Mitzkus,2022). Despite the establishment of technology, most of the entrepreneurs in the State of study, still witness a high rate of transacting businesses locally. To remain competitive and survive in business, demands that one remains innovative, at every point in time.

Review of empirical studies reveled that scanty study was conducted on the area of study innovation and entrepreneurs in Katsina State metropolis, considering especially the variables under study. Which creates a gap in knowledge that needs to be filled and this is what this study has explored. The broad objectives of this study is integrate innovation (product, service, process, marketing, organisational, human and eco) into entrepreneurship and assess the effect on entrepreneurs in Katsina State. While innovation has been studied in other environments, the attention of academic and practitioners have centered on innovation as a form of competitive differential and as a way of generating value for customers.

Therefore, the aim of this paper is to examine the role of innovation in entrepreneurship, Katsina State Metropolis. Hence, based on the previous reasoning, we hypothesized that; there is no significant relationship between (product, service, process, market, organisational, human and eco innovations) and entrepreneurship.

2.0 Literature Review

This section covers the concept innovation, entrepreneurship empirical studies and theoretical underpinning.

2.1 The Concept of Innovation

The process of innovation is the practice of re-engineering and improving internal operations of a business process (Colombo, Cumming&Vismara, 2016). Organisational innovation is defined as changes in firm structure or management methods that are intended to improve a firm's use of knowledge, the quality of goods and services, or the efficiency of work flows (Haned,Mothe, &Nguyen-Thi, 2014). It can also be viewed as the implementation of a new organisational method in the undertaking's business practices, workplace organisation or external relations.

The Oslo Manual. The Organisation for Economic Cooperation and Development (OECD, 2020) for measuring innovation defines four types of innovation. Product, process, marketing and organisational. **Product innovation:** is about a good service that is new or significantly improved. This includes significant improvements in technical specifications, components and materials, software in the product, user friendliness or other functional characteristics, Service innovation is **Service innovation:** service innovation (TEKES,2006,2010), as a new or significantly improved service concept that is taken into practice, which can be for example a new customer interaction channel, a distribution system or a technological concept or a combination of them.it includes replica elements that can be identified and systematically reproduced in other cases or environment. **Process innovation:** A new or significantly improved production or delivery method. This includes significant changes in techniques, equipment and/software.

Marketing innovation: a new marketing method involving significant changes in product design or packaging, product placement, product promotion or pricing.

Organisational innovation: A new organisational method in business practices, workplace organisation or external relations. While **Human innovation:** Most organisations may not pay attention to this kind of innovation. It is an innovation that develops solution to problems by involving the human perspective, people in all steps of the problem –solving process. **Eco- innovation as** an effort of reducing the impacts of our production modes on the environment, improving nature's resilience to environmental stress, or achieving a larger efficient and responsible use of natural resources ISLO Manual (2020).

Innovation strategy is the act of developing new services and products and models of business that change the orientation of businesses and produce significant new value for customers and the corporation itself (Esator, 2020). Technological innovation is the knowledge process, tools, methods and systems employed in the creation of goods and improving in services, this leads to providing sustainable completive advantage (Protogerou, Caloghirou &Vonortas, 2017). The Organisation for Economic Cooperation and Development (OECD) Manual's definition of innovation is the production or adoption, assimilation, and exploitation of value added novelty in economic and social spheres; renewal and enlargement of products, services, and markets; development of new methods of production and establishment of new management systems, for both process and outcome.

The mandate of innovation as a tool to disrupting patterns of poverty has gained momentum since the commencement of the mid-2000s among major international development actors, such as DFID (Jonathan Wong, 2010). Investment fund have been established to identify and catalyze innovations in developing countries, such as DFID'S global innovation fund.

2.1.2 Developing Innovative Mindset

Innovative orientation (IO) is a useful to describing how innovative an organisation is and results suggest that such an orientation provides a context for the implementation of p-based proactive growth strategies.

2.2 The Concept of Entrepreneurship

(Drucker, 2002) defined an entrepreneur as one who always searches for change, responds to it and exploits it as an opportunity. (Croci, 2016), defined entrepreneurship as a discipline. (Schumpeter,2003) defined an entrepreneur as an individual who carries out new combines of means of production by which there occurs disequilibrium or opined that nothing should be left to chance I the development of entrepreneurship especially in this global recession driven21st Centaury. According to the Oxford Dictionary an entrepreneur is a person who sets up a business or businesses, taking on financial risk in the hope of profit. According to the International Encyclopedia, an entrepreneur is an individual who bears the risk of operating a business in the face of uncertainty about the future condition. Richard Cantillon sees an entrepreneur as a person who pays certain price for a product to resell it at an uncertain price thereby making decision about obtaining and using resources while assuming the risk of enterprise. David McClelland (1961) an entrepreneur is an energetic, moderate risk-taker; while according to Peter Drucker (1970) an entrepreneur maximizes opportunities. Despite the significant contribution to innovation and economic growth, entrepreneurship is relatively under researched, this for lack of data until recently the Global Entrepreneurship databases were developed and making the vital role (Alano and Quising, 2022). (Hessels, 2019) described entrepreneurship as the intersection to the development economics. He concluded that entrepreneurship is closely linked to opportunity recognition and emphasizes the importance of knowledge and skill as the basic entrepreneurial ability, which will bring innovation.

2.2.1 Entrepreneurship Development

Entrepreneurship development is a process of enhancing skills and knowledge through structural training and institution-building prgrams.it aims at enlarging the base of entrepreneurs to speed up the pace at which new ventures are created. Entrepreneurial development is the means of enhancing the knowledge and skills of entrepreneurs through several classes, couching and prepares and them for the future. The above is showing entrepreneurship as a process towards Economic Development.

Innovation is the unique tool of entrepreneurs, the means by which they exploit change as an opportunity for a different business or service. People go into entrepreneurship because they are curious, can't get a job, don't want a boss, cannot fit into the corporate environment, are ambitious, want fame, want money, want to change the world, having flexible hours and can work from anywhere.

Some people like Mark Zuckerberg who created several products before building Facebook. He created an instant messaging tool that his father used in his density practice to communicate with his receptionist. He created also a music software that Microsoft and AOL were interested in buying, even though he was only a teenager. Today Mark Zuckerberg has a net worth of $68.3billion. Wait Disney became one of the most well- known names in the world. He was known from the wait Disney Company and theme parks like Disneyland and Waite Disney world. His brand started with the Mickey Mouse character and eventually expand to include thousands of characters and whimsical fantasy worlds.

Dez Stephens of Radiant Health institute shares of" his own one piece of advice, saying, I would give someone who wants to be an entrepreneur is to start your business with no debt and no overhead. That is how I started my company six years ago and it greatly increased my inevitable success.

The Keval Baxi of Codal inc. said "one piece of advice that I would give to someone who wants to be an entrepreneur is to be reliable. If you say you are going to do something, do it. Leaders and managers that do not follow through fail to gain the respect of their team, and do not encourage accountability. Make sure that your team knows you will be there when you are needed (Google scholar, 2022). And our own Nigerian Alico Dangote, who created solutions to some f Nigerian problems, through entrepreneurship and innovation.

Therefore, The main difference between innovation and entrepreneurship is that innovation is the process of coming up with powerful ideas and implementing them to make new products ,services, markets and processes, better humans, organisations and friendly environment in the ecosystem, while entrepreneurship is the process of starting and building businesses using innovative ideas that solve problems faced in the society. The question is that, what have we created, what have we solved and what opportunities are around us that are untapped? What do we do, embrace innovation for entrepreneurs in Nigeria.

2.2.2 The importance of Entrepreneurs

Entrepreneurs are important to the economy of a nation as they can act as the wheels of economic growth of the country, through creating new products and services which in turn stimulate employment that can ultimately result in the acceleration of economic development. They are people who fuel social change, provide more alternative goods to people, increase productivity, encourages innovation and creativity, by doing something differently (Sokon, 2020).

2.2.3 Sustainable Entrepreneurship

Sustainable entrepreneurship is been defined as an innovative ,market oriented and personality driven form of value creation by environmentally or socially beneficial innovations and products exceeding the start- up phase of a company(Schaltegger&Wagner,2008), it is a business creation process that links entrepreneurial activities to the achievement of sustainable value related social and environmental goals. (O'Neill et al., 2009).

2.2.4 Research Model

Independent Variables **Dependent Variable**

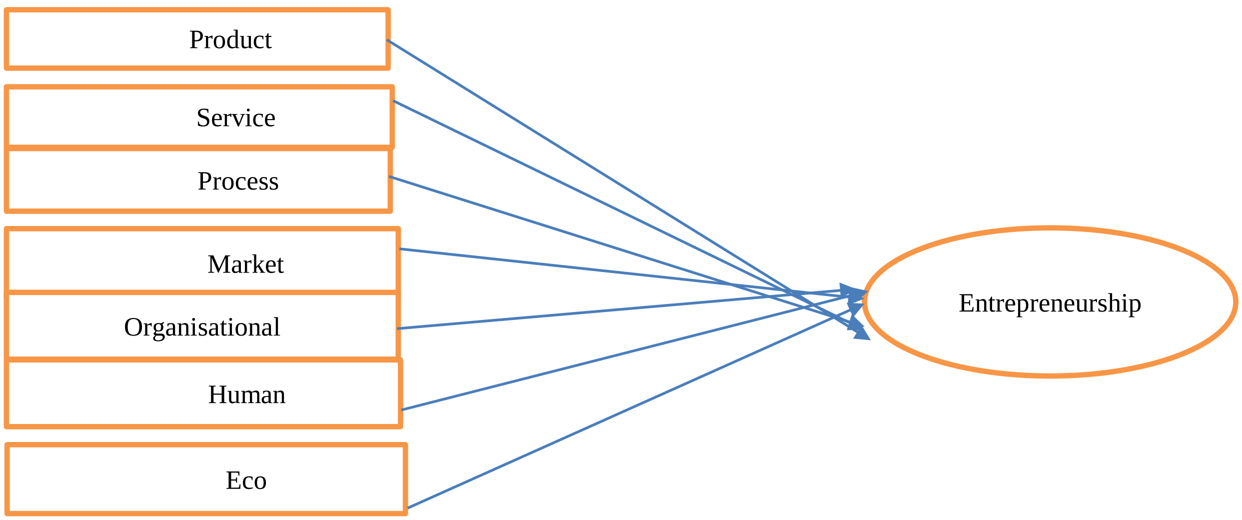

Fig.1: IE Model
Source: Designed by Researchers (2022)

2.3 Empirical Evidence

Findings from (Obioma,2019), indicated that innovativeness led to improved customer satisfaction, growth and social performance of small and medium scale enterprises(SMES) in Rivers and Bayelsa states, as results revealed positive and significant relationship between innovativeness and SMES performance and therefore, recommended that SMES should apply and adopt innovativeness in the operation of their businesses to improve performance. A study carried out by (Ndesaulwa and Kikula, 2016), reveal that no consistent result on whether the innovations altogether influence SMES performance and concluded that the study might not be generally viable and suggested the need to replicate such studies especially in Africa, where the research fissure is widely observed, to assess the impact of innovation on SMES in Africa and Tanzania in particular, where studies of this nature are rarely found.

(Edison et al., 2014), in their review of literature on innovation management found 232 innovation metrics. They categorized these measures along five dimensions which are inputs to innovation process, output from the innovation, effect of the innovation output, measures to access the activities in an innovation process and availability of factors that facilitate such a process. (O'Sullivan, 2002), wrote that causes of failure within the innovation process in most organisations can be distilled in five types; poor goal definition, poor alignment of actions to goals, poor participation in lea, poor monitoring of results, and poor communication and access to information.

2.4 Theoretical Underpinning

The complicated interaction between innovations and entrepreneurship development may not be adequately explained by any single hypothesis. The theory of Opportunity-based theory and Schumpeter's Theory 1934, both which demonstrates how an entrepreneur takes advantage of available opportunities, not allowing same to deter growth and survival while innovation identified by Schumpeter's are key components in forecasting for entrepreneurs.

Schumpeter Theory (1934), identified innovation as a function specific to all entrepreneurs. The theory opined that economic activities occur through a dynamic process of the business cycle. The supply of entrepreneurship, according to this theory is a function of the rate of profit and the social climate, which is to say that a vibrant profitable economy encourages entrepreneurship, while a depressed economy discourages entrepreneurship.

The opportunity based theory is anchored by Peter Drunker and Howard Steven. An opportunity based approach provides a wide-ranging conceptual framework for entrepreneurship research (Fiet, 2002; Shane, 2002). Entrepreneurs do not cause change (as claimed by some school of thoughts), but take the advantages of the change that has occurred and exploit the opportunities that have been created in technology, consumer preferences, disaster, trend, and population explosion and a lot more. (Drunker,1985),goes further to define entrepreneur as and entrepreneurship as one who searches for change and responds to it, exploits it as an opportunity. That is to say, entrepreneurs have eye more for possibilities created by change than problems.

3.0 Methodology

This study was conducted in Katsina metropolis, Katsina Local Government Area using a cross-sectional research design. The target population for the study comprised of entrepreneurs/small scale businesses operating in Katsina metropolis, Katsina state. The population of the study includes all entrepreneurs in Katsina State metropolis, Katsina State, evenly distributed and a sample size of 397 using purposive sampling technique. Questionnaires were distributed to male and female entrepreneurs, with different age brackets, type of entrepreneurship, academic qualifications of the respondents for the study. The questionnaires were closed ended questions on a five point likert scale ranging from 1 (strongly agreed) to 5 (strongly disagree). Multiple linear regression on statistical package for the Social Sciences (SPSS) and Pearson Moment Correlation Model were used to determine the significance of the relationship between the dependent variable and independent variable, which are: entrepreneurship for the dependent variable and product, service, process, market, organisational, human and eco innovations, for the independent variables. Hence, the functional relationship between the two variables is:

E= f (PDI, SI, PRI, MI, OI, HI, EI)

Where:

E = Entrepreneurship

PDI = Product innovation

SI = Service innovation

PI = Process innovation

MI = Market innovation

OI = Organisational innovation

HI = human innovation

EI = eco innovation

Entrepreneurship was regressed on (PDI) Product innovation, (SI) Service innovation, (PRI) Process Innovation, (MI) Market Innovation, (OI) Organisational Innovation, (HI) Human Innovation and (EI) Eco Innovation

$E=\alpha+\beta 1PDI + \beta 2SI +\beta 3PRI+\beta 4MI+\beta 5OI+\beta 6HI+\beta 7EI$

Where:

α = intercept

$\beta 1, \beta 2, \beta 3, \beta 4, \beta 5, \beta 6, \beta 7$ =parameters of the regression model

e= Error term
From the total of 397 respondents, a total of 332 being 83.62% questionnaires were retrieved and 307 were retained, being 77.33% response rate.

The process of gathering data for this researcher was through the use of Google forms distributed using emails. Clear instruction accompanied the emails forms and contact details of the researcher were included on the questionnaire and the objective of the study were clearly stated also on the questionnaire. This was to support also the application of innovations in entrepreneurship. Using a sample size of 397, the questionnaires were filled and returned distributed across different types of entrepreneurs in Katsina Metropolis.

Measurement for all the study variables were taken from establish sources, which are reliable and valid. The details of the measurement are presented below. All variables were measured using a five point Likert Scale, ISLO Manual (product, process, marketing organisational, human and eco, while TEKES 2010 for service innovation and entrepreneurship using Hessels (2019) and Croci 2016). The test of hypothesis, we used a sample of 397 entrepreneurship businesses operating in Katsina State because of the heterogeneous nature of target population. A survey method was used to collect primary data from respondents.

4.0 Results and Discussions of Findings

4.1 Reliability Test

Cronbach alpha reliability was performed and the result shows that the measurement reached average to high reliability coefficient of 0.87, although the coefficient of 0.60 can be considered average, whilst 0.70 could be regarded as high reliability coefficient (Hair et al, 2006, Nunnally, 1978; sekaran & Bougie, 2010, sekaran, 2003). The variables and their Cronbach alpha coefficients are presented in Table1

Table1: Internal consistency test

Variables	**Cronbach's Alpha**	**Cronbach's Alpha based on standardized item**	**Number of Items**
Entrepreneurship	.671	.670	9
Product Innovation	.705	.694	8
Process Innovation	.842	.829	8
Market Innovation	.757	.751	6
Organizational Innovation	.891	.888	7
Service Innovation	.851	.850	7
Human Innovation	.651	.642	9
Eco Innovation	.771	.773	8

Source: Computation using SPSS v.24 (2022)

Table 1 above shows that the reliability test measurement for all variables range 0.6 to 0.8 above which is considered minimum reliability coefficient. Entrepreneurship and human innovation reached a reliability level of 0.6 which is considered average while production innovation, market innovation, process innovation, organizational innovation, service innovation, and eco innovation reached a reliability level of 0.7 and above which is considered highly reliable. Thus, the variables are stable and consistent capable of measuring greater extent without error.

4.2 Descriptive Result of Demographic Data

In this section, the descriptive analyses of the demographic makeup of the respondents are presented using frequency tables, minimum values, mean and simple percentages.
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Table2. Demographic Data

Valid		**Frequencies**	**Percentage (%)**
Sex	Male	157	51.14
	Female	150	48.86
Age	18-24years	86	28.01
	25-30years	82	26.71
	31-40years	69	22.48
	41-50years	46	14.98
	51 and above	24	7.82
Marital Status	Single	84	27.36
	Married	80	26.06
	Divorced	66	21.50
	Separated	52	16.94
	Widowed	25	8.14
Educational Qualification	Non-Formal Education	26	8.47
	Primary Education	29	9.45
	Secondary Education	43	14.01
	Vocational Education	69	22.48
	Tertiary Education	77	25.08
	Post-graduate Education	63	20.52
Type of Entrepreneurship	Social	20	6.51
	Serial	21	6.84
	Scale up	23	7.49
	Large company	34	11.07
	Innovative	67	21.82
	Hustler	81	26.38
	Imitator	61	19.87

Source: Fieldwork, 2022.

The descriptive result for the demographic information of the respondent in the above Table1 indicates that 157 respondents accounting for 51.4 percent of the respondents are male, while the remaining 48.86% are female. It also shows that 86 respondents are within the age of 18-24years; 82 or 26.71% are in the age bracket of 25-30years, whereas 69, 46 and 24 respondents fall within the age bracket of 31-40years 41-years and 50years and above respectively. The table depicts that 84 respondents or 27.36% are single, 80 respondents married, 66 are divorced, 52 are separated and lastly 25 respondents are widowed. The Educational qualification responses indicates that 77 respondents attained tertiary education, 43 attained secondary education, 69 attained vocational education, 63 respondents attained post-graduate while 29 and 26 attained Primary and Non-formal education respectively. Majority or 53% of the respondents are staffs in their current organization, 29 respondents are markets, and 27 are managers while 16 are chief executive officers of the organization. The entrepreneurship type section from the table reveals that majority or 26.38% of the respondents are hustlers, 20 or 6.51% of the respondents are social entrepreneurs, 21 respondents are serial entrepreneurs, 23 are scale up entrepreneurs, while 34, 67 and 61 are large company entrepreneurs, innovative entrepreneurs and imitators respectively.

4.3 Collinearity Diagnosis

It is required in linear regression model that high relationship should NOT exists among the independent variables, otherwise, marginal effect of each of the independent variable on the dependent variable could not be determined (Gujarati, 2007). The occurrence of multicollinearity may render the regression result fallacious. There is a divergence of opinion as to what constitute a higher correlation. However, Swain (2008) and Tabachnick and Fidell (2007) are in agreement that a correlation coefficient of 0.9 and above between two variables could be considered high and may signal the existence of multicollinearity. Thus, correlation matrix and variance inflation factor as well as tolerance are employed in this study.

Table 3: Correlation Matrix

Variables		**E**	**PDI**	**PI**	**MI**	**OI**	**SI**	**HI**	**EI**
Entrepreneurship €	Pearson Correlation	1	.143	.088	.128	.229	.168	.187	.123
	Sig.(2-tailed)		.006	.062	.012	.000	.002	.000	.015
Product_Inn (PDI)	Pearson Correlation	.143	1	-.058	.097	-.008	.063	.068	.121
	Sig.(2-tailed)	.006		.156	.044	.446	.135	.117	.017
Process_Inn (PI)	Pearson Correlation	.088	-.058	1	-.006	.001	.068	.054	.116
	Sig.(2-tailed)	.062	.156		.462	.491	.116	.173	.021
Market_Inn (MI)	Pearson Correlation	.128	.097	-.006	1	.050	.131	.149	.142
	Sig.(2-tailed)	.012	.044	.462		.193	.011	.005	.007
Org_Innovation (OI)	Pearson Correlation	.229	-.008	.001	.050	1	.112	-.050	.176
	Sig.(2-tailed)	.000	.446	.491	.193		.024	.192	.001
Service_Inn (SI)	Pearson Correlation	.168	.063	.068	.131	.112	1	.183	.069
	Sig.(2-tailed)	.002	.135	.116	.011	.024		.001	.114
Human_Inn (HI)	Pearson Correlation	.187	.068	.054	.149	-.050	.183	1	-.030
	Sig.(2-tailed)	.000	.117	.173	.005	.192	.001		.301
Eco_Innovation (EI)	Pearson Correlation	.123	.121	.116	.142	.176	.069	-0.30	1
	Sig.(2-tailed)	.015	.017	.021	.007	.001	.114	.301	

Source: Researchers' Computation Using SPSS v.24 (2022)

Table 2 above shows correlation between research variables with some variables having significant correlation with each other while other shows insignificant to no correlation with each other. Pairwise correlation among independent variables might be high (in absolute value) to show collinearity issues. In accordance with the rule of thumb, if correlation between variables is above 0.8 then severe multicollinearity may be present. However, the correlation matrix above shows no two independent variables having a correlation coefficient above 0.8, implying the absence of multicollinearity in the model.

Table 4: VIF and Tolerance Values of the Independent Variables

Independent Variables	Tolerance	VIF
Product Innovation	.967	1.034
Process Innovation	.973	1.028
Market Innovation	.942	1.062
Organizational Innovation	.953	1.050
Service Innovation	.936	1.069
Human Innovation	.938	1.067
Eco Innovation	.921	1.086

Source: Researcher's Computation Using SPSS v.24

The variance inflation factor (VIF) and tolerance are measures of multicollinearity in a multiple regression model. The VIF of a predictor variable is a measure of how much the variance of the estimated regression coefficient of that variable is inflated due to multicollinearity. A high VIF indicates that there is a high degree of multicollinearity between the predictor and other predictors in the model, which can result in unstable and unreliable coefficient estimates.

On the other hand, tolerance is the reciprocal of VIF, and it indicates the proportion of variance in a predictor that is not explained by the other predictors in the model. A low tolerance value indicates a high degree of multicollinearity.

Garson (2006) suggest the rule of thumb is that when VIF is greater than 4.0, multi-collinearity is a problem. However, more lenient cut-off of points was used in application, for instance, Dielman (2001) use 10 as the cut off points. O'Brien (2007) indicate the most common rule of thumb for a VIF is 10, which is regarded by many researchers as a sign of severe or serious multicollinearity problems (O'Brien, 2007). Myers (1990) also shared the similar view that if average VIF is greater than 10, then multicollinearity may be affecting the least-squares estimates of the regression coefficient, Conversely, VIF values below 10 indicate that multicollinearity is not a problem (Myers, 1990).

Condition Index Garson (2007) suggests a condition index which uses square roots of the ratio of the largest eigenvalues to each other eigenvalue as an alternative approach to assess multicollinearity in data. Many researchers suggest condition indices over 15 indicate possible multicollinearity problems and over 30 indicate serious multicollinearity problems (Amiama, Bueno, and Álvarez, 2008; Garson, 2007; Joshua, 2008). However, Belsley, Kuh and Welsch (1980) argue that condition index values greater than 30 do not necessarily indicate problematic multicollinearity. William (2008) argued there is still no clear cutoff criterion for condition index to evaluate multicollinearity. Therefore, it is suggested to consider a condition index as a reference (William, 2008).

Similarly, you can use the following guidelines to interpret tolerance values: A tolerance of 0.1 or less indicates a high degree of multicollinearity, between 0.1 and 0.2 indicates moderate multicollinearity, tolerance between 0.2 and 0.5 indicates low multicollinearity, tolerance greater than 0.5 indicates that there is no multicollinearity.

Thus, from the above table it was revealed that VIF values are less than 10 while the tolerance values are more than .10 indicating the absence of multicollinearity among independent variables.

4.4 Regression Results

Table 5: Regression Coefficient Table

Dependent Variable: Entrepreneurship

	Unstandardized Coefficients		Standardized Coefficients	t-statistic	Sig.
	B	Std. Error	Beta		
(Constant)	.951	.284		3.350	.001
Product Innovation	.128	.059	.119	2.180	.030
Process Innovation	.068	.050	.074	1.356	.176
Market Innovation	.050	.044	.063	1.131	.259
Organizational Innovation	.203	.052	.216	3.906	.000
Service Innovation	.071	.044	.090	1.618	.107
Human Innovation	.170	.059	.162	2.911	.004
Eco Innovation	.045	.048	.052	.932	.352
Entrepreneurship					

Source: Researcher's Computation using SPSS v.24

The result revealed that, holding the other explanatory variables constant, entrepreneurship on average will be 0.951. However, the result shows that product innovation has a positive and statistically significant impact on entrepreneurship, with corresponding p-value coefficient ($p<.05$), the coefficient of product innovation of .128 indicates that a 1 percent increase in level of product innovation is positively associated with 12.8% percent increase in entrepreneurship. The result also shows that there is a positive and statistically significant impact of organizational innovation and human innovation on entrepreneurship with the corresponding p-value <0.05 i.e. 0.000 and 0.004 respectively. The result indicates process innovation has positive but statistically insignificant impact on entrepreneurship with corresponding statistical significant p- value >0.5 i.e. 0.176. It is also shown that market innovation, service innovation and eco innovation have positive but statistically insignificant effect on entrepreneurship with a corresponding p value above 0.05 i.e. 0.259, 0.107 and 0.352 .

The implication of this findings is that promotion market innovation, process innovation, and service innovation will not significantly impact entrepreneurship, however a unit increase in product innovation, organizational innovation and human innovation will reflect positively on entrepreneurship.

Table 6: Model Summary

Model	R	R Square	Adjusted R Square	F	Sig	Durbin-Watson
1	.365[a]	.133	.113	6.547	.000[b]	0.837

Source: Researcher's Computation using SPSS v.24

a. Predictors: (Constant), Eco Innovation, Human Innovation, Process Innovation, Product Innovation, Organizational Innovation, Market Innovation, Service innovation.
b. Dependent Variable: Entrepreneurship

The coefficient of determination R^2 reads 0.133 indicating a small explanatory power of the explanatory variables on the dependent variable. This implies that 13.3% variance of the dependent variable

(Entrepreneurship) being studied is explained by the variance of the independent variables (Eco Innovation, Human Innovation, Process Innovation, Product Innovation, Organizational Innovation, Market Innovation, and Service innovation). The value of F-statistic reads 6.547 indicating that overall model is statistically significant as revealed also by its probability value =0.0000 ($p<0.05$).

More so, the Durbin-Watson (D-W) statistic test tells us the autocorrelation in the residuals from a statistical model. According to Kenton (2021) a value range around 2.0 indicates absence of autocorrelation in the sample. Table above shows a D-W test value of 0.837 implying absence of autocorrelation among residuals.

4.5 Discussions of Findings

Studies around the world the world demonstrate that increased innovation and small business play an important role in rapid job creation, entrepreneurial activities, increasing the nation's GDP growth as well as long term productivity. The results from the findings revealed that innovation played a vital role in the promotion and development of entrepreneurship. In line with Edison (2014), Joseph (2019) and Shehu (2019). The study reported that that product innovation and process innovations have positive and statistically significant impact on entrepreneurship. However, it contradicts Okafor (2015) who reported process innovation with a positive but statistically insignificant impact on entrepreneurship. More so, the study shows that market innovation have positive effect on entrepreneurship, this conform with the findings of Mousin (2020), that increasing market innovation will invariably lead to an increase in entrepreneurship. also, service innovation and organisational innovations were reported to have statistically significant positive effects on entrepreneurship in Katsina state Metropolis, this contradicts the study of Olaniyaan(2017),Grace(2017) and Adejo (2020), that omits service innovation as part of dimension innovation which impact entrepreneurship positively and significantly. In accordance with Adejo (2020) and in conflict with Shehu (2019). The result implies that one unit increase in human innovation will significantly increase entrepreneurship. These are indeed true because small improvements made to enhance and extend the established product, process, market, organisation, service and human, will promote human action undertaken in order to generate value through creation or expansion of economic activity.

Furthermore, the study revealed that eco innovation is insignificantly related to entrepreneurship. This result contradicts with that of Moushin (2020), Olaniyan (2017), Shehu (2017 and Okafor (2015),whom have all revealed that eco innovation have a positive and statistically significant effect on entrepreneurship.

5.0 Conclusions and Recommendations

The empirical study has explored the role and application of innovation in entrepreneurship and the synergies between entrepreneurship and innovation through a primary study in his field and questionnaire administration to entrepreneurial and innovative individuals within Katsina metropolis. The study revealed that there is a positive and statistically significant relationship between products innovation and entrepreneurship with a coefficient of 12.8,service innovation has a critical role in entrepreneurship development as such one unit increase in service innovation will significantly increase entrepreneurship by 7.1%. It is also shown when process innovation and organisational innovation were found to have positive and statistically significant relationship with entrepreneurship, which implies that when market or organisational innovation is increased, entrepreneurship will also increase significantly. Human innovation was found to have a positive and statistically significant relationship with entrepreneurship with a coefficient of 17%.however, eco innovation was found with no significant effect on entrepreneurship. Conclusively, almost all of the Innovation elements in this study were found with a positive and statistically significant relationship with entrepreneurship, thus innovation has a significant role to play in the development of entrepreneurship.

Entrepreneurship and innovation should be regarded as ongoing, everyday practice in organisations, and this paper has contributed enlightening the role of innovation in entrepreneurship. It is also apparent that cultural issues should be addressed when examining the level of entrepreneurship and innovation. Based on the above findings, I t is suggested that business expand their business in an innovative way to achieve sustainable entrepreneurial growth. Also, with the help of digital assistance, entrepreneur can trying to expand the business and will get to see substantial growth in the business. Moreover, more systematic and comprehensive studies are required in the future to study how innovation culture might influence firms ‘performance.

In further studies, it would be valuable to study the connection between a person’s personal values and innovativeness. Doing so could provide a more accurate understanding of how certain personal values influence various aspects on innovativeness. A bootstrapping analysis and he multiple regression analysis, would be a useful tools for examining these relationships in a comprehensive way. Additionally, it would be interesting to investigate the overall impact of a range of personal values on innovativeness, potentially by different lists of values and each state in Nigeria, should have a data bank, for their entrepreneurs, establish centres for entrepreneurship training, development information and research, for addressing issues bedeviling entrepreneurship development and sustainability, by channeling resources and information to the right entrepreneurs and replicate same study in other state or Katsina, using the dimensions of entrepreneurship and measuring the role of innovation in Entrepreneurship, may also be useful.

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Implications of Materials Supply Chain Management on Project Completion Time

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Abstract
Studies have shown that project delay is a common scenario and has been consistently occurring at an alarming rate. Most projects are delayed because the critical activities of the project were delayed. Therefore, the causes of project delays can be identified through an examination of the causes that produce these delayed start times or extended durations. Hence, the objectives of the study are to examine the relationship between supply chain management and timely project completion, and to identify the factors affecting timely completion of projects through supply chain management. The methodology involved a structured questionnaire administered to construction industry practitioners in FCT, Abuja. A total of 250 questionnaires was administered, out of which 204 (81.6% return rate) was returned, and was analyzed using SPSS. Findings revealed that their exits a positive relationship between supply chain management and timely project completion. Additionally, results showed that cost escalation of construction materials, supply chain orientation, information flow, and supply chain integration are the most significant factors affecting timely completion of projects. Hence, the study recommends effective supply chain management, as well as developing cost estimation techniques to consider price variation.

Keywords: *Material Management, Project Completion Time, Supply chain Management.*

1.0 Introduction

The construction industry is a basic and important sector for the world-wide economy; however, it is known as a complicated and often underperforming segment. The industry is regarded as high fragmentation, low productivity, cost and time consumption, and conflicts. Many construction projects are recorded with overdue schedules, overrun budgets, and poor quality, which pave the way for problems to plague in the industry (Aloini *et al.,* 2012). Al-Rifai and Amoudi (2016) stated that the construction industry has numerous problems because of its complicated nature of operation. In construction networks, clients, consultants, contractors, designers, subcontractors, and suppliers are key nodes that are connected by interfaces embracing knowledge transfer, information exchange, financial, and contractual relationships. Yet, these networks are noted with inefficient collaborations; for instance, the splitting up design and construction, absence of integration and coordination between different functional disciplines, as well as poor communication The Nigerian construction industry has continued to occupy an important position in the nation's economy even though its contribution to the global construction business is going to be the next preferred destination as stated by the report of the Global Construction Perspectives and Oxford Economics (Betts *et al.*, 2013). The inefficiencies associated with the practice of manually tracking materials, equipment and tradesmen in the construction setting often gives rise to problems of unsuccessful completion of projects (Equere & Tang, 2011). The fragmented state of the construction industry is a direct consequence of the poor state of information and goal

sharing among the supply chain partners, separ ation of the design and construction, poor coordination and integration amongst various functional units, lack of adequate communication, sole dependency of main contractors on suppliers and subcontractors (Amade, 2016). Additionally, Amade (2016) opined that most construction firms in Nigeria rely on the purchasing and supply principles and rule-of-thumb without exploring the immense benefits of supply chain management. As a result of this, the key parameters of supply chain management are not properly deployed for the effective coordination of information and goal sharing among the supply chain partners. Recent studies have considered the importance, benefits and effects of supply chain management on project delivery in the construction industry. However, there have been few researches on the implications of materials supply chain management on project completion time. This research intends to address the research gap through the following objectives:
(Behera *et al.*, 2015).

i. to examine the relationship between supply chain management and project time completion
ii. to identify the factors affecting timely completion of project through supply chain management

2.0 Literature Review

The concept of Supply Chain Management (SCM) has been increasingly applied to many industrial sectors to improve business performance such as faster response to the variety of customer demands, lower cost, and better quality. In construction, the application of SCM concepts is frequently used to guide project managers in strategic planning to achieve partnerships with suppliers, and obtain more efficiency in operational construction (Olasupo *et al.,* 2018). Consequently, the need for supply chain management cannot be emphasized. The supply chain (SC) has been defined as 'the network of organizations that are involved, through upstream and downstream linkages, in the different processes and activities that produce value in the form of products and services in the hands of the ultimate customer' (Tiwari *et al.,* 2014). Xue, Li, Sheng and Wang (2005) opined that supply chain management can be considered as the coordination of distributed decision making of organizations or participants on material flow, information flow, human flow, cash flow in supply chain from a systems perspective. Saad *et al.* (2002) in their own view stated that supply chain management can be seen as an example of evolutionary and cumulative innovation that is always seen to have emanated from internal programmes that are aimed at improving overall effectiveness.

According to a study by Amade *et al* (2016) on supply chain management and project delivery, the study specifically indentified and evaluated factors constraining the application of SCM in the Nigerian construction industry. The study findings revealed that out of the twenty four (24) factors identified as constraints to the application of SCM in the Nigerian construction industry. The followings were identified as the most significant constraints; Lack of the understanding of SCM concept, unclear strategic benefits, dearth of trust within and outside an organization, lack of a common standard for collaboration and failure to broaden the SC vision beyond procurement or product distribution. Actual construction practices in the construction business does not only fail in addressing the issues associated with supply chain, but rather it follows principles which makes the performance of supply chain worse. There is a reduction in workload if all teams share knowledge and information and making use of their teammate's knowledge. Most of the important knowledge are shared during informal setups by the project management team normally (Wang and Motlhagodi, 2017).

Mwilu, (2013) in his research identified logistics, lean suppliers, and information technology to have sturdy statistically important relationships with performance. At the early stages of the 21st century, due to improved technology, SCM has developed rapidly. Technology is becoming more affordable and accessible in helping companies benefit from Supply Chain (SC) strategies. Due to the competitive challenges faced by companies, the use of SC strategies is key for creating cooperation with partners in the SC for the purpose of prospering and to thrive globally (Chapman *et.al*, 2000). Saka and Mudi (2007) undertook a study, evaluating the challenges of SCM by building contracting firms in the Lagos metropolitan area. The result of the findings shows that most building contractors in the study area source for their materials locally and there are no formal relationship existing between suppliers. Other key findings show the absence of using information and communication technology (ICT) for tracking suppliers and in inventory management. And finally, the major problems of material SC includes; import tariff and security, foreign exchange, sharp practices, and late delivery, bad roads and freight cost amongst others.

Finally, Moneke *et al.* (2016) submitted that SCM involves challenges such as developing trust and collaboration among supply chain patterns; identify best practices that can facilitate SC process alignment and incorporation and successful implementation of the latest collaborative shared information systems and internet technologies that drive efficiency and performance through the supply chain. The following comprises of most challenges being faced in the application of supply chain practices in Nigerian construction industry: Lack of skilled or competent persons involved to ensure implementation and handle inconsistencies; Organizational resistance to change, ignorance; Ineffective communication: lack of knowledge of downstream agents about upstream agents' decisions; Diverse objectives: several layers of subcontracting; Inadequate investment in IT; Unfair risk allocation; Temporary nature of relationship between parties with myopic mindset; Lack of trust within and outside organization; and Lack of guidance and suitable integration of organizational internal procedures (Olaniyan, *et al.*, 2015, Moneke *et al.*, 2016).

3.0 Methodology

The methodology involved a descriptive survey with a structured questionnaire administered to construction industry practitioners in FCT, Abuja. A total of 250 questionnaires was administered, out of which 204 (81.6% response rate) was returned. The questionnaire was divided into three parts: the first part was dedicated to the respondents' background; the second part was related to questions used to establish and examine the relationship between supply chain management and project completion time; while the third part was related to questions used to identify the factors affecting timely completion of projects through supply chain management. A five-point likert scale was used with each point representing different levels of agreement and disagreement and was analyzed using Statistical Package for Social Science (SPSS). The mean score was used to analyze the findings among the factors affecting timely completion of project and the rankings of each factor was based on the mean scores associated with standard deviation. Pearson correlation was used to analyze the relationship between supply chain management and project completion time.

4.0 Discussion of Results

4.1 Background Data of Respondents

The data analysis was based on 204 valid questionnaires (81.6% return rate) retrieved from 250 administered questionnaires. The background data of respondents is presented in Table 4.1. The results of the educational qualifications showed that 4.9% had NCE/ND, 61.8% had a first degree and its equivalent, 26% had a master's degree and 7.4% had PhD. The respondents were further distributed as Project Managers (22.1%), Engineers (16.2%), Architect (14.2%), Quantity Surveyor (18.6%), Builder (12.3%), Contractor (9.8%) and others (6.9%). About 29.9% of the respondents had experience spanning

16 – 20 years while 12.7% had the least experience of 1 – 5 years. This result implies that construction professionals are experienced in their various fields; as a result, the data obtained is reliable, valid and suitable.

Table 4.1: Background Data of Respondents

Profile	Frequency	Percentage (%)
Educational Qualification		
NCE/ND	10	4.9
HND/BSC	126	61.8
MBA/MSC/M.Eng	53	26.0
PhD	15	7.4
Industry Professionals		
Project Manager	45	22.1
Engineer	33	16.2
Architect	29	14.2
Quantity Surveyor	38	18.6
Builder	25	12.3
Contractor	20	9.8
Others	14	6.9
Years of Experience		
1 – 5	26	12.7
6 – 10	30	14.7
11 – 15	56	27.5
16 – 20	61	29.9
0ver 20	31	15.2

4.2 Objective One: To examine the relationship between supply chain management and timely project completion

The Pearson's correlation was used in this section to examine the relationship between Supply Chain Management (SCM) and Timely Project Completion (CT). The result of the correlations is presented in Table 4.2. Four main Supply Chain Management activities were identified from literature namely: Supply Chain Performance Measurement (SCP), Supply Base Management (SBM), Supply Chain Orientation (SCO) and Relationship Management & Trust Building (RTB).

Table 4.2: Relationship between Supply Chain Management and Project Completion Time

Predictor Variables		CT	SCP	SBM	SCO	RTB
CT	Correlation	1				
	Sig. (2-tailed)					
SCP	Correlation	.672**	1			
	Sig.	.000				
SBM	Correlation	.682**				
	Sig.	.000	.000	.230**		
SCO	Correlation	.718**	.251**	.265**	1	
	Sig.	.000	.000	.000		
RTB	Correlation	.753**	.201**	.264**	.220**	1
	Sig.	.000	.000	.000	.000	

***. Correlation is significant at the 0.01 level (2-tailed).*

According to the result, there is a significant, strong and positive relationship between Supply Chain Performance Measurement (SCP) and Project Completion Time ($r = 0.672, p < 0.01$), there is a significant, strong and positive relationship between Supply Base Management (SBM) and Project Completion Time ($r = 0.682, p < 0.01$), there is a significant, strong and positive relationship between Supply Chain Orientation (SCO) and Project Completion Time ($r =0.718, p < 0.01$) and there is also a significant, strong and positive relationship between Relationship Management & Trust Building (RTB) and Project Completion Time ($r = 0.753, p < 0.01$). These indicate that there is a positive and strong relationship between supply chain management and project completion time. This further implies that an improvement in supply chain management activities will cause construction projects to be completed and delivered on time.

4.3 Objective Two: To identify the factors affecting timely completion of projects through supply chain management

Ten factors affecting timely completion of projects through supply chain management were identified from consisting of information flow, supply chain orientation, cost escalation of construction materials, supply chain integration, supply base management, strong financial flow, changes in design, collaborative commitment, information technology and earned value management metrics. The result is presented in Table 4.3.

Table 4.3: Factors Affecting Timely Completion of Projects

Factors	Mean	Std. Dev	Rank
Cost escalation of construction materials	4.72	.423	1
Supply Chain Orientation	4.67	.433	2
Information Flow	4.65	.512	3
Supply Chain Integration	4.64	.575	4
Strong Financial Flow	4.63	.635	5
Supply Base Management	4.63	.745	5
Changes in design	4.57	.659	7
Use of Information Technology (IT)	4.56	.712	8
Collaborative Commitment	4.52	.866	9
Earned Value Management Metrics	4.50	.731	10

Source: Field Survey

The respondents were asked to indicate their opinion on the level of their agreement with the identified factors affecting timely completion of projects through supply management based on their experience in their organizations/fields. The results presented in Table 4.3 indicates that the most significant factors affecting timely completion of project are cost of escalation of construction materials, supply chain orientation, information flow, supply chain integration, strong financial flow and supply base management with a mean value of 4.72, 4.67, 4.65, 4.64, 4.63 and 4.63 respectively.

5.0 Conclusion and Recommendation

Findings revealed that their exits a positive relationship between supply chain management and timely project completion. This further implies that an improvement in supply chain management activities will cause construction projects to be completed and delivered on time. Additionally, results showed that cost escalation of construction materials, supply chain orientation, information flow, and supply chain integration are the most significant factors affecting timely completion of projects. Hence, the study recommends effective supply chain management, as well as developing cost estimation techniques to consider price variation.

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Effects of Perceived Organizational Support on Organizational Citizenship Behavior: The Role of Task Performance and Employee Commitment in Manufacturing Firms in Nigeria

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Abstract
The growth of globalization, the emergence of flexible production, where the structure and relationships among employees are more complex, fragmented and intense, necessitate need for employees exhibiting extra role behaviors appear to be essential in the workplace. The main objective of this study is to explore extant studies on OCB and its influence on firm survival specifically in the Nigerian manufacturing sector, and to describe the role defined by task performance and employee commitment for the relationship between perceived organizational support (POS) and organizational citizenship behavior (OCB). This study would provide bases for improving effective functioning of the employees from Nigerian manufacturing firms, particularly in Northeastern part. The model of this study would guide stakeholders within the manufacturing sector to understand the various organizational support that help to improve employee's positive attitudes such as OCBs.

Keywords: *Employee Commitment, Organizational Citizenship Behavior, Perceived Organizational Support, Task Performance, Social Exchange Theory.*

1.0 Introduction

The world of business today is filled up with dynamic environment, which characterized with global capitalism that has been unpredictable and complex which made manufacturing firms face fragile challenges that have both internal and external complexities. Companies that want to be on top most drive for adaptive, sustainable and competitive advantage in order to breakeven above other firms. For an organization to meet up with such dynamic environment, employees ought to play an important role both within and outside the organization. This is because, employees that are motivated are aerate long term competitive advantages to organization and also add value to self and the organizational performance with effectiveness. However, lack of organizational fair treatment, poor supervisory support, inadequate organizational rewards, unfavorable leadership usually render productivity of the individuals or employees and the organization to be low and reduction of efficiency and effectiveness as well (Ogunyemi, 2014).

The practices of organizational citizenship behaviour (OCB) enhance cooperative activities through capacity development, self-sacrifice, problem shared among members at work, promote unity at work, team spirit, conflict management, and also promote efficiency at work. Such practices generally allows employees' extra-roles outsides the confines of his descriptive roles, such as mentoring junior or new workers, guiding other workers to accomplish a difficult task (altruism behaviour), obeying the rules and regulations, not taking extra-break, working extra-long days (conscientiousness behaviour), avoidance of complaining and petty grievances, tolerating the inevitable inconveniences (sportsmanship behaviour), giving prior notice of work schedule to someone, consulting others before taking any actions that would affect them (courtesy behaviour), expressing opinions, attending meetings and reading organizational communications such as email (civic virture behaviour) and other helping behaviour that are functions available to achieve team efficiency and effectiveness (Podaskoff & Mackenzie, 2000).

Moreover, OCB constitutes various forms of behaviors such as helping others and the organization itself, participating in the organization's events, voluntarily performing additional roles in the organization, showing tolerance to discomfort at work and so on (Organ et al., 2006). These forms of behavior or performance called organizational citizenship behavior (OCB), are recognized in research and practice alike as one of the main drivers of a functioning organization and its employees (Bilgen & Ulku, 2020; Mukherjee, 2020).

OCB is almost applicable in most of the sectors and manufacturing industry is also inclusive. The behaviour of some workers in manufacturing organizations in Nigeria has become so worrisome to managers in these organizations. The study of Olajide Omer (2013); Olajide (2014) revealed that lack of courtesy among employees in any organization makes employee job environment difficult to operate as in case of Nigeria. Poor attitudes in manufacturing sectors in Nigeria has led to high rate of frustrations: lack of commitment by the employees, poor performance, which has resulted into poor discretionary efforts as OCB (Akinyemi, 2013). Many Nigerian workers have cultivated the habit of coming to work late and when they arrive at work, they often show lukewarm attitudes to work which resulting in low productivity (Ajala ,2015). A close observation shows that many workers in manufacturing companies do not exhibit good behaviour such as OCB, organizational commitment and regular work attendance (Opara, 2020). There is a high level of work absenteeism among workers while those who regularly report to work often resume late at their duty post resulting in low productivity.

Furthermore, there also a common impression that Nigerian workers are reluctant to act, feel unconcerned and deceitful in their approach to work. Such workers are said to lack the zeal to work, lack spirit of altruism, conscientiousness, sportsmanship, civic virture, courtesy, commitment and dedication to work (Opara, 2020). These are the major issues facing contemporary manufacturing organizations in northeastern part of Nigeria, as observed by the study conducted by Abdu and Jibir (2018); Abiante, (2018); Ganiyu et al. (2020).

Such impolite and unethical behaviors can negatively affect the performance level and competitiveness of their organizations (Igudia & Ohue, 2018). It is important for employees to display OCB behaviour as a way of promoting their organization's effectiveness (Organ, 2018). And for the sustainability of any organization in the 21st century, OCB play a vital role due to its potential outcomes that include increased productivity and organizational efficiency (Lau et al., 2020; Manalo et al., 2020; Oluwatunmise et al., 2019), OCB enhance individual and organizational effectiveness (Ahmed et al., 2019; DeClercq et al., 2017; and Yan et al., 2018), enhance employee performance, organizational effectiveness and their survival (Aderibigbe et al., 2019; Cesário & Chambel, 2017; Christiansen & Chandan, 2017; Nguyen & Ngo, 2020; Organ, 2018).

There are number of studies conducted in relation to various dimensions of POS, towards OCB, which reported inconsistent findings. Among the studies reported positive associations between the two constructs (POS & OCB): Asgari et al. (2020); Andriyanti and Supartha (2021); Belinda Khalili (2017); Lee et al. (2018); Mekpor and Dartey-Baah (2017); Van-Schaijk (2018). Similarly, studies reported a negative and insignificant association between POS and OCB are Claudia (2018). However, Claudia (2018) recommended the inclusion of additional variables such as employee's level of performance (task performance) and effectiveness that may potentially moderates the relationship between POS and OCB constructs and such construct should incorporate in the existing model. This also in line with Baron and Kenny's (1986) assumption; Zhao et al. (2010); and Waheed (2016) criteria, where there is inconsistent relationship between a predictor and a criterion variable reported by previous findings, then there is the possibility of moderation between the independent variable (IV) and dependent variable (DV).

Studies by Harini et al., (2020); Kara et al. (2021) conducted to establish the relationship between of POS and task performance and reported a significant and positive association between the constructs. Similarly, the relationship between POS and employee commitment appeared to be positive and significant relationship between the two constructs as reported by Mabaso (2017); and Ravichandran et al. (2018). Moreover, OCB and task performance relationship reported a significant and positive as established by Bekele, M. B (2021); and Wright et al. (2005). Viswesvaran viewed OCB and task performance as two distinct facets of overall job performance (Viswesvaran & Ones, 2000). However, a meta-analyses study conducted by Shahjehan et al. (2019) confirmed a positive and significant relationship between employee commitment and OCB. Bases on review of several studies, a researcher is unable to establish any local study, which incorporated such variables (POS, OCB, task performance & employee commitment) in a single framework, using employees from manufacturing firms in Northeastern Nigeria.

In this context, it is important to explore how employees' OCB can be encouraged beyond task performance and how leaders can promote employees' OCB in the manufacturing sector in Nigeria (Banwo & Du, 2018; Sani & Ekowati, 2019). Therefore, the present study aimed at examined the distinct contributions of four conceptually important antecedents of POS developed by Rhoades and Eisenberger (2002): fairness, supervisor support, organizational rewards, and leadership on OCB, and by exploring the moderating effect of task performance and employee commitment in manufacturing industry in Northeastern Nigeria.

2.0 Literature Review

2.1 Organizational Citizenship Behavior (OCB)

Katz and Kahn (1966) conducted the earlier work on OCB, and later Bateman and Organ (1983), where the concept defined as a behavior beyond role requirements that is organizationally functional. Organ (1997) as a behavior that contributes to the maintenance and enhancement of the social and psychological context that supports task performance. Organ (1988) included five aspects as part of such phenomenon: altruism (i.e. voluntary contribution to others, sacrifice, peace, hope, moral and prevention of work-related events). Conscientiousness (i.e. behavior that guide a person in performing the duties above the expected level; such as punctuality in performing tasks). Sportsmanship (i.e., tolerating complications and inevitable problems of work without objection). Civic virtue (i.e., responsible partnership and commitment to the life of the organization). In addition, courtesy (i.e., polite behaviors that prevent workplace problems such as helping other to prevent problems or action to reduce others' problems). Manalo et al. (2020) referred OCBs as an uncharacteristic extra job activity that facilitates an organization's success and productivity. Thus, in such behaviors in OCB not ordinarily rewarded and its omission not understood as punishable (Onyishi et al., 2020).

Moreover, OCB is necessary because it improves the resource's utilization and reduces the need for more formal control mechanisms, and does not require a lot of expense (Claudia, 2018). An organization's fulfillment of employees' basic needs by contributing to social cohesion and quality of life in society and offering employees an inspirational, stimulating, and supportive work environment should positively affect employees' willingness to improve their work skills, motivation, general initiative, and proactive behavior (Meynhardt et al., 2018).

Employees who engage in OCB have a positive experience toward themselves and their work, which creates a spillover effect onto overall life satisfaction (Meynhardt et al., 2018; Ghavifekr & Mugat, 2018). Employee with an OCB act beyond their duty and express their efforts, energy and insight to flourish their abilities for the benefit of the organization (Asqari et al., 2020). Whereas, organizations that are not able to develop their effectiveness without the willingness of volunteers to collaborate (Asqari et al., 2020).

2.2 Perceived Organizational Support (POS)

Perceived organization support (POS) is simply referred to as employee perception regarding the extent to which the organization give support to its employees, and the extent of the organizations readiness to provide assistance when needed (Pack, 2005). POS is the general feeling and belief of individuals in this regard that the organization values cooperation, the support of its members and is concerned about their prosperity and future (Lamastro, 1999). POS refers to the employees' perceptions regarding the extent, to which the organizations assess their contribution and care about their welfare (Rhoades & Eisenberger, 2002).

According to Claudia (2018) if employee received a high level of POS, then the employee will absolutely absorb their membership of the organization into their identities and then develop a relationship and more positive perception about their organization. When this anticipated, the interchange cycle will continue to grow whereas when the organizations deal with their employees with a good deal of interest and focus on them, they mostly convey the massages that the organization values them, so that the employees will be profitable (Shahi et al., 2017). Employee's perception of how an origination values his or her may be vitae foe determining if any attitudes or behavior benefiting the organization emerge from the social exchange relation (Umar & Abubakar, 2017). POS increases employees' felt obligation to help the organization in achieving its goals, their affective commitment, and their expectation of reward for improved performance (Akhtar1 et al., 2021).

2.2.1 Fairness

Therefore, organizational fairness is widely considered as fundamental aspect of employees' experience that makes an important contribution to POS (Rhoades & Eisenberger, 2002). This idea equally supported by the work of Kurtessis et al. (2017) which, found that fairness made a strong unique contribution to POS. Fairness provides a reference for which employees make judgments about one's standing and worth in the organization (Tyler & Blader, 2000).

There are numerous reasons why fairness perceptions matter within an organization. One reason is that perceived fairness provide motivation to engage in positive behaviors without the use of instrumental control mechanisms (discipline sanctions). A second important reason is that fairness judgments used to evaluate one's status within a group or organization that linked to employee satisfaction and individual behaviors and attitudes (Tyler, 2011). The perception of fairness influenced by three relationship factors: one's standing with an authority figure (e.g., one's supervisor) and the quality of interpersonal treatment that one receives; benevolence, which refers to the perception that authorities take into consideration the employees' views and how decisions will impact employees; the neutrality of the decisions; in other words, no one receives special treatment.

2.2.2 Supervisor Support

Supervisory support defined as employee's general views about the degree to which their supervisors value their contribution and care about their well-being (Casper et al., 2011). Supervisor support, defined as a supervisor's positive valuation of the employees' contributions and care about the employees' well-being (Rhoades & Eisenberger, 2001). Supervisor support refers to employees' view that their supervisor values their contributions and cares about their well-being (Eisenberger et al., 2002). Supervisor support characterized as a general perspective of subordinates regarding the extent to which supervisors give importance to their contribution, think about their prosperity, and give instrumental and enthusiastic help (Florence & Christian, 2003).

Since supervisors' act as agents of the organization, who have responsibility for directing and evaluating subordinates' performance, employees would view their supervisor's favorable or unfavorable treatment toward them as an indication of the organization's level of support (Eisenberger et al., 1986). Supervisor support correlated positively with so many antecedents such as affective commitment as previous findings suggesting links between employee commitment and supportive supervisory treatment such as leader consideration (Bycio et al., 1995), high quality leader-member exchanges (Wayne et al., 1997), leader communication and satisfaction with supervision (Mathieu & Zajac, 1990). Meyer and Allen (1997) offer the explanation that beneficial treatment by supervisors should increase commitment and performance by strengthening employees' sense of belonging and identification with the organization.

2.2.3 Organizational Rewards

According to Malhotra et al., (2007), organizational rewards include all monetary or non-monetary benefits paid to the employees based on their contributions to the organization. Employees conceived that the recognition, organization's wages, and promotion opportunities would affect employee certain behaviors. Human resource practice showed that rewarding the employee for his work performance should have a positive impact on the POS (Shore & Shore, 1995). Shore and Shore, (1995) identified two key types of human resources practices that related to POS. The first concerns discretionary practices that imply investment by the organization in the employee.

Signaling theory proposes that early job assignments, promotions, and other organizational experiences based on human resources decisions serve as signals about an employee's potential (Sheridan et al., 1990). Employees will possibly view these human resources decisions as valued indicators of the organization's favorable valuation of their contributions and concern for their well-being as they perceive links between the decisions and valued rewards. An array of human resources practices have been studied in relation to POS, including recognition, pay, promotions, job security, autonomy, role stressors, and training (Rhoades & Eisenberger, 2002). Employees rated not only the favorableness of particular job conditions, but also the degree of discretion they perceived the organization had to deliver such job conditions. Employees believe favorable opportunities for rewards convey a positive valuation of employees' contributions and therefore contribute to POS.

2.2.4 Leadership

Leadership phenomenon encompasses an individual's ability to motivate, influence and support followers in the achievement of goals, contribute towards organizational success and effectiveness (House et al., 1999). Thousands of definitions of leadership have added in literature since the concept of leadership came into debate. Due to the complexity of concept, there is no consensus among scholars on the unified definition of leadership (Reiche et al., 2017). Likewise, scholars have also taken leadership from different perspectives as it has become more challengeable in the global context and diversified business environment. Conventionally, leadership was considered as an individual phenomenon (including leader's traits, skills, abilities etc.), but recent studies concluded that the concept of leadership is not limited to the individual rather it is a process based on the social interactions of leader and the stakeholders (Billington & Ellersgaard, 2017).

Leadership refers to the ability of managers to influence their employees by directing, motivating and guiding them to attain their target towards organizational success (Andriani et al., 2018). According to Armstrong (2014) started that leadership also involves motivating, influencing and enabling employees to deliver towards organizational success. The establishment of employees' discretionary behavior depends on the approach used by the manager since employees do respect and adore their leader making it easy for him or her to influence them (Tresna, 2016). Leadership plays a key role in retaining employees because they have a positive effect on job satisfaction and performances of employee (Parzinger et al., 2012). When leaders support, challenge and inspire employees, they are more likely to trust each other, engage in the learning process and activities and demonstrate OCB to support colleagues.

2.3 Task Performance

Task performance can be defined as the effectiveness with which job incumbents perform activities that contribute to the organization's technical core either directly by implementing a part of its technological process, or indirectly by providing it with needed materials or services (Borman & Motowidlo, 1993). Employee task performance, seen as the frequent activities' employees carry out to accomplish organizational goals, sustain improvement towards the goals and make adjustments to achieve those goals effectively and efficiently (Richard, 2019). Task performance is one of the most important concerns for any organization and received much attention (Brown & Peterson, 1993). Employee performance measured by the completion of employee's task including helpfulness, quality of results, timeliness of results, attendance at work, and supportive behavior at workplace (Jabeena & Rahima, 2021)

Task performance is one of the most discussed issues in the organization and by researchers holding to the important contribution employee brings to the workplace. Performance of the employee usually translates into good service delivery and interaction that affects their area at the organization. According to Bernadrdin and Russell (2008) performance is the records of outcomes produced on a specified job function or activity during a specified period. To achieved this, therefore, organization need to make certain policies that will encourage employee performance. Agbaeze et al. (2019) opined that employee task performance is the assigned tasks target reached by employee within particular period or in the other words, is function of sets of outcomes produced during a certain period. Agbaeze et al. (2019) stated that performance is not only related to action but also involve judgment and evaluation. Therefore, in line with the above assertions, organization needs high performing employees to meet its goal and be able to achieve competitive advantage (Agbaeze et al., 2019).

Generally, OCB and task performance broadly recognized as two distinct facets of overall job performance (Viswesvaran & Ones, 2000). Task performance encompasses behavior that bears directly on an organization's technical core (Motowidlo & Van Scotter, 1994), whereas OCB defined as "contributions to the maintenance and enhancement of the social and psychological context that support task performance" (Organ, 1997, p. 91). Thus, conceptually, OCB supports the execution of task activities, and indeed, a great deal of empirical evidence (Podsakoff et al. 2009) indicates that OCB is positively associated with a range of performance outcomes, including task performance.

Moreover, another stream of research suggests that OCB are be considered separately from work performance, thus obviating the problem of distinguishing between "role" and "extra-role" performances (Graham, 1991). Even though distinguishing between "role" and "extra-role" performance can be difficult, owing to several factors. First, managerial and employee perceptions of the employees' performance and responsibilities do not necessarily correspond. Second, employees' perception of their responsibilities and performance influenced by their satisfaction in the workplace (Morrison, 1996). Therefore, for the purpose of this study, OCB are to be conceive as a global concept that includes all relevant positive behaviors of individuals within an organization.

2.4 Employee Commitment

Meyer and Allen (1991) defined organizational commitment as a psychological state that characterizes the employee 's relationship with the organization, and has implications for the decision to continue membership in the organization. Employee commitment can equally define as the degree of an employee's emotional state of attachment and distribution to the organization's goals and values through active involvement (Bez, 2010). Employee commitment also defined as a process in which people identify themselves and interact with their company without any intention to quit (Jameel et al., 2020). Employee commitment represents the characteristics of the collaboration among organizational staff and the firm itself that influence the retention of their membership in the organization (Karem, et al., 2019; Jameel et al., 2020). Employee commitment reflects attitudes and feeling beyond the typical organizational rule and procedures of the organization in regards to duties and performance (Fazriyah, et al., 2018).

Commitment can enable employees to release their creativity and to contribute towards organizational development initiatives (Walton, 1985). According to Morrow (1993), committed members are normally achievement and innovation oriented with the ultimate aim of engaging in and improving performance. Employee commitment in an organization always associated with certain positive effect feelings of affiliation, attachment and citizenship behavior, which tend to improve organizational efficiency and effectiveness (Williams & Anderson, 1991). Commitment can instigate an employee to be motivated so much as to offer more effort into performing their tasks. However, employees quite often than not, cease to exhibit discretionary behavior when the psychological contract with the organization seems to breached (Igudia & Ohue, 2018). Several scholars proved the moderating effect of employee commitment. Study by Öztürk et al. (2017) reveal that employee commitment moderated the relationship between job insecurity and emotional exhaustion. Another study in the context of telecommunication companies showed that the relationship between job satisfaction and turnover intention is moderated employee commitment (Wazir & Jan, 2020).

2.5 Social Exchange Theory (SET)

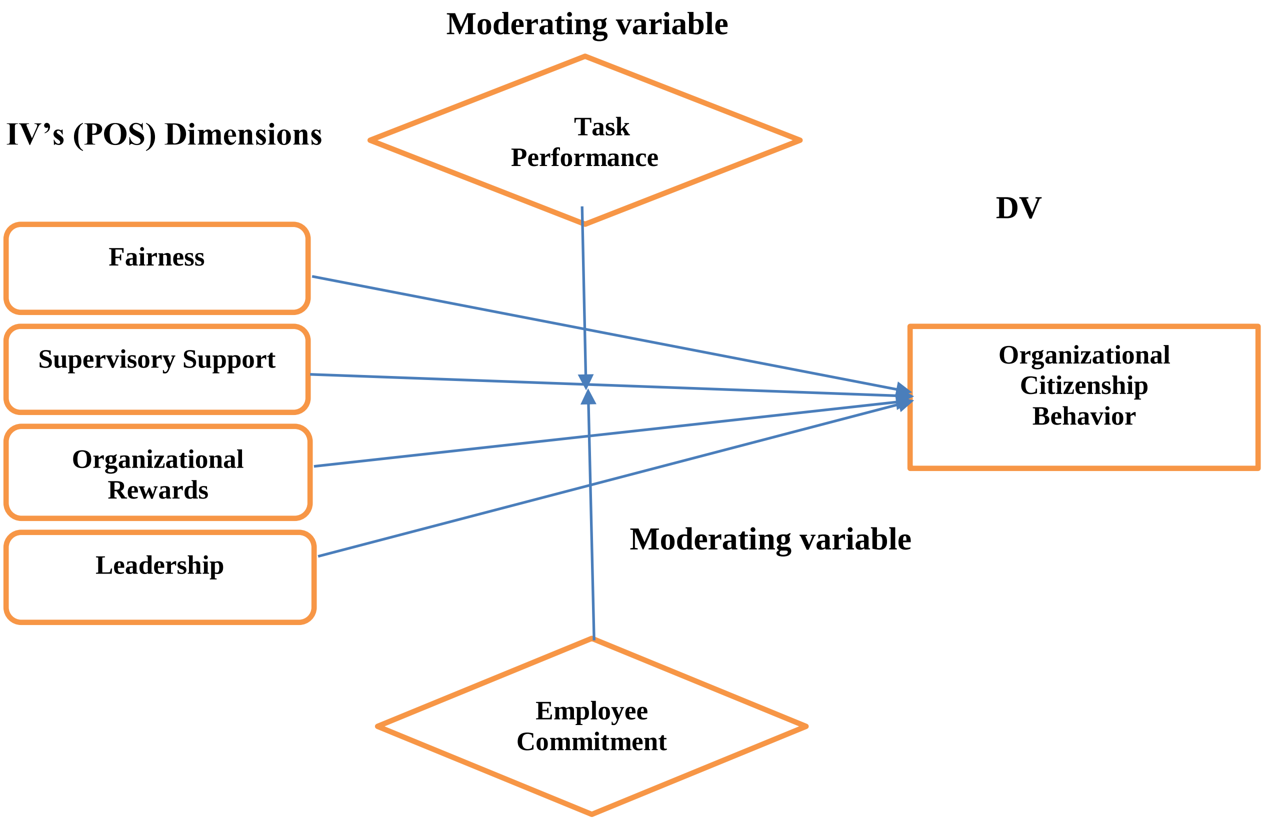
Social exchange theory (SET) was propounded by Homans (1958; 1961); where he introduced social exchange theory and referred to as "Social Behavior" in his work "Exchange". Homans (1961) defined social exchange as the exchange of activity, tangible or intangible, and more or less rewarding or costly, between at least two persons. The orientation of the theory based on earlier philosophical and psychological orientations deriving from utilitarianism on the one hand and behaviorism on the other. Homans' primary focus was the social behavior that emerged because of the social processes of mutual reinforcement (and the lack of it). Relations could also terminate based on the failure of reinforcement (Burrell & Morgan, 2017). Likewise, Blau (1964) defined social exchange "voluntary actions of individuals that are motivated by the returns, they are expected to bring and typically do in fact bring from others." Blau (1964) viewed social exchange as a process of central significance in social life and as underlying the relations between groups as well as between individuals. Where he also focused primarily on the reciprocal exchange of extrinsic benefits and the forms of association and emergent social structures that this kind of social interaction created. Social exchange theory (SET) claims that social relationships are based on the trust that gestures of goodwill will be reciprocated (Blau, 1964). In fact, the remnants of both of these theoretical foundations remain evident in the versions of exchange theory that are current today.

Social exchange theory has applied in much of organizational research. For example, a recent meta-analysis of 25 years of organizational justice research indicates that SET variables such as trust, organizational commitment, OCB, and leader–member exchange are important to relations among justice, task performance, and OCB (Colquitt et al., 2013). Based on the principle of reciprocity, individuals have the responsibility and obligation to respond to the positive treatment of the other party. In the organization, employees will reciprocate the organization by adopting attitudes and behaviors expected by the organization and being committed to the organization when they feel the support and commitment from the organization. That is to say exchanges based on initiated and voluntary actions by either employer or employee and the expectation that the other party will eventually reciprocate these actions.

OCB is one of the core outcomes of social exchanges in employment relationship because of its discretionary nature (Bankins, 2015). Employees generally will withhold discretionary behaviors if they feel unfairly treated or choose to engage in OCB to reciprocate good or fair treatment from the organization (Macey et al., 2011). This implies that OCB develops as an effect of social exchanges between employees and their employers and therefore organizations. As the attitudes of organizational managers towards their employees in term of rewards (tangible or intangible) and expect the employees to reciprocate by exhibiting the attitude of OCB. Thus, individual OCB occurs based on the social exchange principles or reciprocity otherwise known as social exchange theory (Pickford & Joy, 2016). In this regard, organizations that need to benefit from OCB should have in place policies and programs that will encourage and foster manager-subordinate relationship and other such organizational policies.

Therefore, is conclude that, the social exchange theory (Blau, 1964) was the most accepted explanation provided by scholars whose research focused around this theory. And also, a strength of this research work that describe the relationship of the employees and the organization based on contract of employment that stipulate the terms and conditions of all their parties. Where the theory holds that individuals always have the tendency to try to reciprocate their actions to others as they have done to them. At any point in time an organization makes its employees happy, they will try to reciprocate goodness to the organization by exhibiting OCBs.

3.0 Conceptual Framework



Source: Survey Literature (2021).

4.0 Conclusion

The manufacturing sector is the bedrock of development. Having highlighted the harsh situations under which the employees of the Nigerian manufacturing sector operate. Such firms can only realize its level of achievement with strong and dynamic employees that can go beyond their normal job requirements. The OCB is essential for the sustainability of any organization in the 21st century due to its potential outcomes that include increased productivity and organizational efficiency. The extent literatures revealed that, POS's dimensions, such as: fair treatment from the organizational management, adequate support received from supervisors, good organizational rewards and suitable leadership are expected to create positive and significant impact towards employee task performance and the employee commitment by at large influence the level if employees OCB in manufacturing firms.

5.0 Recommendations

The importance of OCB should not be neglected or underemphasized by managers and organizations since assert that organizations must encourage and retain employees that perform their duties that surpass the formal stipulated roles. Employees must also display new and creative behaviors that are beyond role requirements for the realization of organizational objectives as equally suggested by Chen, 2016; Organ, 2018; and Ojebola et al., 2020. Therefore, the future study is also required to establish empirical evidence on the relationship between POS and OCB through the moderating mechanism of task performance and employee commitment.

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Strategic Human Resource Management and Digital Transformation for Sustainable Development

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Abstract
The role of strategic human resource management (SHRM) on performance in an educational organization. in North West Geopolitical Zone of Nigeria. Two research questions were raised to guide the study, while two hypotheses were also formulated and tested at 0.05 level of significance. The design of the study was the descriptive survey design. The population of the study was all the 13,784 academic staff and non-academic senior administrative staff in both the Federal and State Universities in the study area. The sample of the study consisted of 1,379 University staff. Data were collected using a researcher-made structured questionnaire title, "Strategic Human Resource Questionnaire (SHRMQ)". Mean and standard deviation was used to answer the research questions while chi-square (X^2) test of goodness was used to test the hypotheses. The purpose of this paper is to explore and elaborate on the contemporary position and the changing function of HRM in light of digital transformation., a comprehensive analysis of available literature has been conducted addressing the domains of HR planning, employee relations, as well as their change under the influence of digital transformation. Challenges where discuss. It was recommended that digitalization, i.e., digital transformation, strongly affects HR practices and procedures specifically by using human resources information systems, the role of HR in contributing to the digitization strategy is not sufficiently emphasized. However, it can be argued that the results of this research represent a valuable contribution to future research and can certainly be an important benchmark for organizations when preparing strategies to respond to the challenges of the digital age.

Keywords: *Strategic Human Resource Management, Digital Transformation Sustainable Development.*

1.0 Introduction

Organizations are strongly affected by digital "revolution" in many different ways and on multiple levels. The effects of digitalization directly impact on all the processes in an organization internally and in relation to external stakeholders (Su, 2015). In that sense, digitalization is a process of utmost importance for economies and societies which started a long time ago, receiving forceful acceleration by development and adoption of newest technologies such as data mining. According to previous research, digitalization has been studied mainly in the light of its influence and consequences of its adoption on customer preferences, buying behavior, marketing, and business performance, while research on how it affects an organization's internal processes and behavior especially in terms of implication to human resources management was fairly seldom (Allen, 2016). Rapid development and adoption of technologies such as Cloud Computing, Edge Computing, Mobile Apps, Social, Big Data Analytics and IoT help organizations to exploit characteristics of such transformative technologies in terms of improving agility, accelerating innovation and transforming educational processes, and introducing new models (Armstrong, 2016).

The adoption of new technologies and digitalization of organizational processes have forced the rapid evolution of HRM practices, requiring the development and adoption of new HR competencies, new forms of employment, and agile HR processes (Kagermann, 2015; Horváth et al., 2019). In that respect and to enable and accommodate rapid technological change and development, organizations are expected to develop procedures and establish practices for a continuous reappraisal of staff competencies, and also to introduce new forms of work organization (Sakellaridis et al., 2011; Götz et al., 2020). Most of today's HR practices are developed stable and long-lasting employment forms and it can be challenging for an organization to apply those practices to new forms of employment such as permanently changing conditions of contracts based on project principles).

Given the impact of digital transformation on organizational processes and therefore the ability of organizations to adopt more flexible working arrangements for renewal and further development of organizational culture will be a top priority for human resource management. Cultural transformation as a consequence of digital transformation is an uncharacteristic challenge for modern HRM practice and requires the integration of HRM strategy with organizational strategy and goals, as well as the development of procedures and standards that support staff operating in changing working conditions and customer requirements (Selmer et al., 2004; Marler et al., 2016; Branca et al., 2020). The existing organizational culture must find answers related to the shift towards a hybrid work model that takes advantage of remote and office work (Ancarani et al., 2018; Am et al., 2020). Different working conditions such as reduced face-to-face interaction and increasing dispersion of the workforce will lead to a change in social dynamics among workers (Bajer, 2017; Götz et al., 2020). The introduction of remote working has dramatically changed the way we work, and some staff might undergo the need for additional learning to achieve the same level of efficiency. Furthermore, due to the effects of digital transformation, the HRM function can introduce a performance management system based on the results achieved, where staff performance is measured exclusively based on their performance and not on time spent at work (Ulrich et al., 2013. In that sense, digital transformation allows organizations to introduce performance monitoring technology to track employee work performance and results achieved (Nivlouei, 2014; Li, 2018).

Adoption of new technologies enables HRM function in the organization to develop sound succession planning strategies by identifying and rethinking critical roles and establishing contingency plans using scenario-based planning instead of traditional HR planning (Selmer et al., 2004; Sakellaridis et al., 2011; Bajer, 2017). The key success element of this process is effective communication to ensure employee readiness. The increasing use and growth of remote working have enabled the emergence of alternative employment strategies such as the application of a virtual environment in the process of planning, searching, evaluating, selecting, and hiring of talents (Marler et al., 2016; Rashid, 2017; Cortellazzo et al., 2019). Digital transformation of HRM function is driven by the implementation of technologies such as Artificial Intelligence (AI), Virtual Reality (VR), Augmented Reality (AR), and Blockchain complemented with data science, at the same time enabling the establishment of a decision-making system at the level of the entire organization free from bias (Ancarani et al., 2018; Sima et al., 2020; Zehir et al., 2020; Kurek, 2021).

These technologies may be used to improve all HR functions. Using data science and AI applications, organizations can reduce costs and time by using automated CV screening processes in hiring cycles Big data and data analytics may be used to improve the recruitment process by helping to identify top talent and assess workforce performance and capacity requirements (Sakellaridis et al., 2011; Manuti et al., 2018; Am et al., 2020). AR and VR technology may be used to improve the orientation process through virtual office tours, without requiring new employees to be physically present. Using virtual and digital learning platforms will enable organizations to accelerate and make re-skilling and up-skilling processes more efficient without investing in the infrastructure and logistics required for hands-on training Some studies have reported also some critical aspects of the implementation of digital technologies. Digital transformation does not only bring positive effects, having particularly negative impacts on low-skilled works and repetitive tasks (Manuti et al., 2018; Fenech et al., 2019; Gong et al., 2021). Despite all the positive perspectives of digital transformation, human experience cannot be replaced. However, to realize all the opportunities provided by the digital transformation, the organization needs to ensure the development of knowledge, skills, and abilities of the workforce to maintain the required level of competitiveness and organizational performance.

Digital transformation on organizational processes are important inputs of the university system. The ability of university staff to meet the demands of digital transformation on organizational processes could influence staff performance in the university system. Concerns have been expressed by relevant stakeholders of university education, particularly the staff, students and parents, on the non-integration and implementation of digitals policy into the university system of education in universities in the North-West Nigeria. It has been thus argued that this may have lowered the standard of staff performance in the universities. It is also perceived by the stakeholders that non-integration of ICT policy into the university system such as the provision of internet services, laptops, e-mail and e-learning, power point, learning platforms, animations, e-library and overhead projectors particularly in universities in the North-West Nigeria, may be responsible for poor staff performance.

The researcher observed that if this is not properly addressed, it may have consequent result on the flow of information as well as poor capacity to assess current, useful information and research activities. This has been observed by the researcher perhaps to be responsible for the ineffective, inefficient and unsatisfactory performance by staff of universities in North-West Nigeria. This is evident from grievances among staff regarding non- provision of ICT facilities like internet services, provision of computers and laptops or ipads, slide boards, projectors, e-learning, e-mail services, audio-visual sound, learning platforms and e-libraries, delay in compilation of examination results, reduced levels of research, publication and exploitation of students through exorbitant charges by cyber café operators within and outside the university premises. This could make staff unproductive in their various duty schedules. The problem of this study therefore, put in the question form is: what will be the impact of digital transformation on organizational processes on the performance of staff of Universities in the North-West geopolitical Zone in Nigeria.

Specifically, the study sought to:

i. Find out the influence of impact of digital transformation on organizational processes on staff performance in universities in the North-West geopolitical zone of Nigeria.
ii. Find out the influence of use of laptop on staff performance in universities in the North-West geopolitical zone of Nigeria.

Hypotheses

The following null hypotheses were formulated and tested at 0.05 level of significance:

i. Digital transformation on organizational processes have no significant influence on staff performance in universities in the North-West geopolitical zone of Nigeria.
ii. Use of Laptops has no significant influence on staff performance in universities.

2.0 Literature Review

2.1 Digital Transformation

The digital transformation is the crucial facet of the current radical changes in the functioning of modern economies. The emergence and rapid development of digital technologies such as Big Data, Machine Learning (ML), Artificial Intelligence (AI), Internet-of-Things (IoT), Internet-of-Services, Mechatronics, and Advanced Robotics, Cloud Computing, Cyber security, Additive Manufacturing, Digital Twin, and Machine to Machine (M2M) communication enable organizations to develop new business models and new employee skills and competencies resulting in achieving efficient product optimization and improving overall organizational performance and competitiveness (Sakellaridis et al., 2011; Bajer, 2017; Demartini et al., 2018; Branca et al., 2020; Zehir et al., 2020). The concept of digital transformation is widely used to depict various processes of digitization or digitalization of processes and practices within organizations, but there is no consensus regarding a unified definition of it (Li, 2018; Burchardt et al., 2019; Gong et al., 2021). It is defined and described as a strategy (Legner et al., 2017; Schwanholz et al., 2018; Rachinger et al., 2019), a process (Kagermann, 2015; Gong et al., 2021), or a business model (Sakellaridis et al., 2011; Parida et al., 2019; Horváth et al., 2019; Ritter et al., 2020).

In general, digital transformation is described as “the use of new digital technologies (..) to enable major business improvements” (Fitzgerald et al., 2014). It is important to point out that digital transformation is not defined as unique technology, but rather it is viewed as a set of significant change interventions based on a “combination of information, computing, communication, and connectivity technologies” (Bharadwaj et al., 2013). Another definition describes the concept of digital transformation as “a fusion of advanced technologies” that are integrating physical and digital systems (Li, 2018; Burchardt et al., 2019; Cichosz et al., 2020). The key effect of digital transformation is value creation in terms of operational effectiveness, successful business model, organizational performance, and competitive advantage (Legner et al., 2017; Branca et al., 2020; Gong et al., 2021). It includes also superior customer experience, better relationships with stakeholders, significant cost reduction, and enhanced strategic differentiation (Götz et al., 2020). Digital transformation also implies new concepts and rules of business at both, internal and external levels (Nivlouei, 2014; Demartini et al., 2018; Rachinger et al., 2019).

The digital transformation is considered as a set of ongoing processes affected in great measure with organizational readiness and digital maturity (Rachinger et al., 2019), where under the term digital maturity is understood (a) digital capabilities, which indicate the intensity of digital initiatives (Nivlouei, 2014; Horváth et al., 2019; Mirković et al., 2019) and (b) transformation management capabilities in terms of leadership, culture, change management, governance (Cichosz, 2018; Parida et al., 2019; Gong et al., 2021). As research results indicate, the implementation of digital transformation processes is a very complex and demanding activity that can be slowed down or stopped by various obstacles that can affect its success.

2.2 Staff Performance in Universities

Performance can be described in various ways. It could be an act of accomplishing or executing a given task (Robert & Tim, 2006). It could also be described as the ability to combine skillfully the right behavior towards the achievement of organizational goals and objectives (Olaniyan & Lucas, 2008). Lecturers' job performance can be described as the duties performed by a lecturer at a particular period in the university system towards achieving any university's goals (Hartoy, Boselie & Paauwe, 2008). Edwards and Rees (2006) describe staff job performance as the ability of teachers to combine relevant skills for the enhancement of teaching and learning processes. Hwang (2011) argues that staff job performance is determined by the workers' level of participation in the day to day running of a university.

3.0Methodology

The study the adopted the descriptive survey designs. According to Emaikwu (2013), descriptive survey design is one in which a group of people or items are studied by collecting and, analyzing data from group of people considered to be representative sample of the entire population.

The population of the study comprised 13,784 academic and senior administrative staff of Universities in the North-West Zone of Nigeria making up a total of 9,708 academic staff from federal universities and a total of 4,076 academic staff from state universities in the zone. The sample of the study was 1,379 respondents chosen from seven federal and six states universities in the zone. The respondents consisted of 971 or 10% of the nine thousand, seven hundred and eight (9,708) staff of the federal universities staff and 408 or 10% of the population of the state university staff.

The two instruments that were used for data collection were the structured questionnaire and interview schedule. The questionnaire was titled "strategic human resource on Staff Performance Questionnaire (SHRMQ)". It questionnaire was developed by the researcher through personal experience and review of related literature on the variables of the study. The SHRMQ was divided into two sections A and B. Section A contained information on the personal data of the respondents while Section B was divided into two clusters namely clusters A and B with items on strategic human resource questionnaire and Staff job performance. Quantitative data was analyze using descriptive statistics of mean and standard deviation to answer the research questions. Hypotheses were tested using chi-square statistics at 0.05 level of significance.

4.0 Results

A total of 1,379 copies of the questionnaire were taken to the field and administered to academic and administrative staff of federal and state universities in the North-West Zone of Nigeria. A total of 1362 copies representing 98.76 % were returned answered. This means that 17 or 1.24% copies were damaged or lost.

Research Question 1: To what extent do digital transformation on organizational processes influence staff performance in universities in the North-West Zone of Nigeria?

Table 1: ***Mean Ratings and Standard Deviation of respondents of the Influence of Internet Services on Staff Performance in Universities***

Item No	Item Description	N	VHE	HE	LE	VLE	$\bar{X}$	SD	Decision
1.	Internet services in my university system enhance quality learning opportunities.	1362	491	701	151	19	3.22	0.69	HE
2.	Internet services allow greater flexibility in working hours.	1362	661	621	57	23	3.30	0.76	HE
3.	Internet services in my university enhance daily routine programme especially updating records.	1362	593	734	17	18	3.40	0.59	HE
4.	Internet services in my university help in lecture note preparation.	1362	499	785	22	56	3.27	0.69	HE
5.	Internet services in my university assist staff in the management of the curriculum and instruction.	1362	613	677	44	28	3.38	0.65	HE
6.	The internet services in my university can be accessed anywhere by mobile phones, data cards.	1362	536	519	204	103	3.09	0.92	HE
7.	Internet software applications in my university handle information.	1362	632	601	71	58	3.33	0.76	HE
	Cluster mean and Standard Deviation						**3.28**	**0.72**	**HE**

Source: Field Survey

Table 1 shows that items 1-7 had mean scores of 3.22, 3.30, 3.40, 3.27, 3.38, 3.09 and 3.33 with corresponding standard deviation of 0.69, 0.76, 0.59, 0.69, 0.65, 0.92 and 0.76 respectively. Based on the boundary criteria for decision making, it means all the mean scores for the items were rated above the cut-off point of 2.50. This means that respondents agreed that internet services in their university system enhance quality learning opportunities. They agreed with the statement that digital transformation on organizational processes allow greater flexibility in working hours and internet services in their university enhance daily routine programme especially updating of records. They also agreed with the statement that internet services in their university help in lecture note preparation. Digital transformation on organizational processes in their university assist staff in the management of the curriculum and instruction. The internet services in their university can be accessed anywhere by mobile phones and data cards. Furthermore, they agreed with the statement that internet software applications in their university handle information. The cluster mean of 3.28 with standard deviation of 0.72 was also above the cut-off point of 2.50. This implies that internet services influence staff performance in universities in North-West Zone of Nigeria.

Research Question 2: What is the extent do the use of laptops influence on staff performance in universities?

Table 2: ***Mean Ratings and Standard Deviation of Respondents of the Influence of Laptops on Staff Performance Universities***

Item No	Item Description	N	VHE	HE	LE	VLE	X	SD	Decision
8.	Access to laptops in my university facilitates different kinds of teaching and learning	1362	612	651	58	41	3.35	0.70	HE
9.	Laptop computers in my university provide staff with multiple sources of research materials on topics	1362	719	546	64	33	3.43	0.70	HE
10.	Availability of laptops enhances administrative responsibilities in my university.	1362	589	614	88	71	3.26	0.80	HE
11.	Unrealistic time deadline which put staff under pressure and stress are controlled in the university with use of laptops.	1362	711	518	88	45	3.39	0.75	HE
12.	Computer laptops networking in my university facilitates collaborative/team work.	1362	632	615	54	61	3.33	0.76	HE
13.	Computer laptops in my university influence on reports and communication	1362	783	520	42	17	3.52	0.62	HE
14.	Computer laptops in your university amplify what is already taking place through projecting.	1362	680	522	94	66	3.33	0.81	HE
	Cluster mean and Standard Deviation						**3.37**	**0.73**	**HE**

Source: Field Survey

Table 2 show that items 8-14 had mean scores of 3.35, 3.43, 3.26, 3.39, 3.33, 3.52 and 3.33 with corresponding standard deviations of 0.70, 0.70, 0.80, 0.75, 0.76, 0.62 and 0.81 respectively. Based on the boundary criteria for decision making, it means that all the mean scores for the items were rated above the cut-off point of 2.50. This means that respondents agreed that access to laptops in their university facilitates different kinds of teaching and learning. They agreed with the statement that laptop computers in their university provide staff with multiple sources of research materials on various topics. Availability of laptops enhances administrative duty. Unrealistic time deadline which put staff under pressure and stress are controlled in the university with use of laptops. Computer laptop networking in their university facilitates collaborative/team work. Computer laptops in their university influence the production of reports and communication. In addition, they agreed with the statement that computer laptops in universities system amplify what is already taking place through projecting/animation. The cluster mean of 3.37 with standard deviation of 0.73 was also above the cut-off point of 2.50. This implies that laptops have influence on staff job performance in universities.

Hypotheses Testing

Hypothesis 1: Internet services have no significant influence on staff performance in public universities in North-West Zone of Nigeria.

Table 3: Chi-square test of the Influence of Internet Services on Staff Job Performance in Public Universities

Opinions	Observed F	Expected F	Residual	Level of Sig.	df	$\chi^{2\text{-cal}}$	P-value	Decision
VLE	56	340.5	-284.5	0.05	3	898.54	0.00	Sig.
LE	73	340.5	-267.5					
HE	640	340.5	299.5					
VHE	593	340.5	252.5					

a. 0 cells (.0%) have expected frequencies less than 5. The minimum expected cell frequency is 340.5.

Source: Field Survey

Table 3 reveals that χ^2 =898.54; df =3 and p = 0.00. Since p-value of 0.00< 0.05 checked at 3 degrees of freedom, the null hypothesis which states that there is no significant influence of internet services on staff performance in public universities in North-West Zone of Nigeria was, therefore, rejected. This implies that internet services have significant positive influence on staff job performance in public universities in North-West Zone of Nigeria.

Hypothesis 2: Use of laptops has no significant influence on staff performance in public universities.

Table 4: Chi-square test of the Influence of Laptops on Staff Job Performance in Public Universities

Opinions	Observed F	Expected F	Residual	Level of Sig.	df	$\chi^{2\text{-cal}}$	P-value	Decision
VLE	45	340.5	-295.5	0.05	3	960.51	0.00	Sig.
LE	70	340.5	-270.5					
HE	567	340.5	226.5					
VHE	680	340.5	339.5					

a. 0 cells (.0%) have expected frequencies less than 5. The minimum expected cell frequency is 340.5.

Source: Field Survey

Table 4 reveals that χ^2 = 960.51; df =3 and p = 0.00. Since p-value of 0.00< 0.05 checked at 3 degrees of freedom, the null hypothesis which states that use laptops has significant influence on staff job performance in public universities was thus, rejected. The implication is that use of laptops has significant positive influence on staff job performance in public universities.

4.1 Discussion of Findings

Based on the results of the analysis and testing of the eight hypotheses posited for this study, the following findings are organized and discussed for ease of understanding.

The first finding of the study revealed that internet services have significant positive influence on staff job performance in universities in North-West Nigeria. This finding is in consonance with Babalola and Idowu (2014) who found that internet services provided adequate information as well as saved time of the users. Moreover, the finding supports Uhamber (2014) who found that academic staff awareness of internet services like www, internet telephony, e-.mail, data transfer significantly impacts on their overall performance in North west University, . The researcher observed that through e-internets, staff access teaching materials easily, send and receive information at ease and also enhance mastery of teaching. It also builds confidence in staff as they use internet materials that are up to date to teach students.

The second finding of the study showed that laptops has significant positive influence on staff performance in universities. The finding is in line with Righi (2012) who reported that laptop computers had a positive influence on students' learning behaviors, produced higher quality work, and had improved communication with their teachers when they had access to them. Scherer and Cator (2010) also found that access to laptop computers influences the learning behaviors of staff specifically their engagement level and depth of their completed assignment. They are more engaged in the learning process because of the personalization that laptop computers offer. Because learning experiences are personal, staff and students take ownership in their learning and produce quality work that they can take pride in as students collaborate with one another on projects. As they explain their work to their staff, their communication skills and classroom relationships strengthen. The researcher discovered that staff use laptop for projecting information during teaching, storage and retrieval of information.

5. 0 Conclusion and Recommendations

As research results indicate, the implementation of digital transformation processes is a very complex and demanding activity that can be slowed down or stopped by various obstacles that can affect its success. Therefore, the identification of obstacles and understanding their nature and assessment of the probability of their occurrence is an important element of successful adoption of the concept of digital transformation (Horváth et al., 2019; Cichosz et al., 2020). Among numerous possible obstacles, various studies identified employees as the biggest challenge and key factor of success for digital transformation emphasizing employee's competency traps, difficulties with changing employee's mindsets and beliefs and employee's knowledge, skills, and capabilities. Establishing an organizational digital transformation strategy creates a framework for an organization to leverage all the possibilities and features of available new technologies.

Based on the findings of the study, the following recommendations were made:

i. Universities governing councils should, as a matter of importance make policies that ensure the provision and utilization of internet services in all schools, faculties and departments in the universities within the study area.
ii. Digital transformation facilities such as laptops should be provided at a subsidies rate to all staff of universities to enable them access internet services for effective incorporation in the university system.

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Effect of Social Media Marketing Capabilities on the Performance of Women-Owned Homecare Businesses

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Abstract
This paper investigates the effect of social media marketing capabilities on the performance of women-owned homecare businesses. The study used a cross-sectional survey research design on a convenient sample of 200 women ex-apprentice of Development Exchange Commission (DEC). The survey was conducted using KoboCollect™ Application in two provinces of Nigeria. The responses were analysed using IBM SPSS Statistics 26 and SmartPLS 3. The output of path analysis shows that social media pricing capability had positive and significant effect on the performance of women-owned homecare businesses. Social media planning capability had negative and significant effect on the performance of women-owned homecare businesses. However, social media marketing communication capability, social media product development capability, and social media market implementation capability do not have effect on the performance of women-owned homecare businesses. Based on this finding, it was concluded that social media marketing capabilities on the performance of women-owned homecare businesses. The paper offers recommendations and directions for future research.

Keywords*: social media marketing, women-owned homecare business, SmartPLS 3*

1.0 Introduction

This study identifies the outcomes of using social networking sites in promoting women home-care business. In this paper, we intend to further know how to convenient and effective on the part of female entrepreneurs to use social networking sites as their tool for advertising and marketing their goods and services.

To identify the relationship between social media marketing planning capability and performance of business and also social media marketing implementation, social media product development, social media and pricing capability and social media communication capability and their influence on the performance of women owned home care business. As a result, of some female entrepreneurs not being aware of the opportunities social media offers in terms of reducing the cost of firms advertising campaigns, increasing of sales, finding of new customers and sustaining e-commerce globally. The desire to undertake this paper to probe further into this untapped avenue of social media, hence, this paper will explore the social media capabilities of female entrepreneurs.

2.0 Literature Review

2.1 Performance of Women-owned Home Care Businesses

Measuring business performance in today's economic environment is a critical issue for academic scholars and practicing managers. In general, business performance is defined as "the operational ability to satisfy the desires of the company's major shareholders" (Smith & Reece, 1999, p. 153), and it must be assessed to measure an organisation's accomplishment. Many studies examine the relationship of organisational practice and processes to affect the "bottom line", and vice versa (Wall et al., 2004). Attempts to examine the relationship between strategy and performance have been made for more than 20 years; many current studies also focus on this aspect. Scholars have examined the importance of performance evaluation and practices for an organisation (Dess & Robinson, 1984; Sapienza et al., 1988; McGrath et al., 1995; Song et al., 2005; Gruber et al., 2010). Much research also focuses on the performance of small firms and, more recently, medium firms as well (Pelham & Wilson, 1996; Jarvis et al., 2000; Alasadi & Abdelrahim, 2008; Thomas et al., 2008).

Regular indicators used in measuring business performance are profit, return on investment (ROI), turnover or number of customers (Wood, 2006), design quality and product improvement (Laura et al., 1996). However, Mann and Kehoe (1994) and Franco-Santos et al. (2007) recommend measuring business performance through the business performance measurement (BPM) system, as it is an important tool within many research areas, particularly in business and social science studies. This system analyses and investigates each quality that affects a firm's business performance, categorizing business performance into two broad areas: operational business performance (OBP) and strategic business performance (SBP).

It is important to link this trait with the performance of WOB. Likewise, education is the main factor that focuses women's attention on entrepreneurship (Siwan & Jennifer, 2013). Uncertain results have been found regarding education and performance such as some studies have found a positive relationship between education and performance (Hampel-Milagrosa et al., 2015). Women entrepreneurs' formal education is highly associated with their business performance (Kimosop et al.,2016). Aterido and Hallward-Driemeier (2011) suggesting that there is a gender gap in some factors, but both men and women receive the same benefits from their education and management skills. However, Pakistani women entrepreneurs face barriers to development in an entrepreneurial capacity, such as lack of education and training (Roomi & Harrison, 2010).

A positive relationship was found between managerial skills and the performance of WOB (Mari et al., 2016). Lerner and Almor (2002) included the strategic capabilities and management skills of women entrepreneurs to the model and empirically concluded that marketing, financial, and managerial skills contribute more to performance. On the contrary, some studies found no such relationship (Kimosop et al., 2016; Rey-Martí et al., 2015).

2.2 Social Media Marketing Capabilities

Social media marketing capability is conceptualized based on the marketing capability Frame work proposed by Day (1994). According to Day (1994), marketing capabilities can be categorized into three dimensions based on the orientation and organization process. The first dimension is "outside-in capabilities," which include the skills and capabilities of firms to understand market changes as well as to enable firms to compete in the market more effectively. This includes capabilities related to market sensing, customer relationships and channel bonding.

The second dimension is "inside-out capabilities," which include a firm's internal resources and capabilities such as manufacturing, human resource management, technological capability, logistics and other transformation activities. The third dimension is "spanning capabilities," which include the integration of outside-in and inside-out capabilities (Day, 1994; Hooley *et al.*, 1999). According to Day (1994), spanning capabilities include activities such as strategy development, new product development, pricing, customer order fulfillment, customer service delivery and purchasing. Chahal and Kaur (2014) further purposed three dimensions of spanning capabilities consisting of advertising skills; pricing skills; and product and service skills. Vorhies and Morgan (2005) added that spanning capabilities comprise activities including product development, pricing, marketing communications, selling, marketing planning and marketing implementation. As spanning capabilities are based on the integration of inside-out and outside-in capabilities, they were selected for this study to represent key social media marketing capabilities of firms that determine firm performance in social media businesses.

2.2.1 Social Media Marketing Planning Capability

Slotegraaf and Dickson (2004) defined strategic marketing planning capability as follows: The ability to anticipate and respond to the market environment in order to direct a firm's resources and actions in ways that align the firm with the environment and achieve the firm's financial goals. Morgan *et al.* (2003) viewed marketing planning capability as the ability to formulate marketing strategies by effectively matching a firm's resources and the marketplace and allocating a firm's resources such as financial resources, manpower and other resources among divisions to carry out planned actions. In a social media context, social media marketing planning capability can refer to a firm's ability to develop social media marketing strategies' fit with the environment by allocating appropriate resources for social media marketing activities. In particular, firms with high levels of social media marketing planning are more effectively able to create social media marketing programs in response to a competitor's actions and environmental changes (Schultz, 2010).

2.2.2 Social Media Marketing Implementation Capability

White *et al.* (2003) defined marketing implementation capability as "the organization's competence in executing, controlling, and evaluating its marketing strategy" (p. 115). Typically, the effective marketing strategy implementation requires the ability to acquire, and to coordinate, different resources (such as budget, human resources and technologies) as well as to deploy such resources effectively for implementing a marketing strategy. Based on these perspectives, social media marketing implementation capability can refer to the ability of a firm to translate social media marketing strategies into action by allocating a firm's resources effectively to achieve social media marketing goals and respond to a competitive environment. Also, this capability includes the ability to evaluate the performance of social media marketing initiatives as well as the effectiveness of social media marketing execution.

2.2.3 Social Media Product Development Capability

Product development capability refers to "the capability to develop new products and services, ensuring constant adaptation to market needs" (Santos-Vijande et al., 2012). This capability is viewed as the ability of firms to create a new value offering through a firm's new products and services for the target market (Ramaswami *et al.*, 2009). Product development capability in a social media marketing context can refer to the ability of firms to apply social media applications to the product development process, which is the process of developing and launching new products and services to satisfy customers' needs. According to Tuten and Solomon (2013), social media marketing can be used as a tool for businesses to develop new product ideas. This capability covers activities such as acquiring information from customers, marketing testing and new product introduction. Also, companies apply social media marketing to interact with customers not only for the gathering of new product ideas, but also to evaluate the actual design of the current products (Ramaswami *et al.*, 2009).

2.2.4 Social Media Pricing Capability

First, pricing capability refers to the ability to price the firm's products or services competitively as well as to monitor competitors' pricing strategies and pricing changes in the market (Afzal, 2009). According to Dutta *et al.* (2003), pricing capability also includes a price-setting capability consisting of identifying competitor prices, setting pricing strategy, translating from pricing strategy to retail price, convincing customers on the price-change logic and negotiating price changes with major customers.With the emergence of various social media platforms, marketers can easily access competitors' pricing information and also monitor customers' online conversations to monitor customer value perceptions on the pricing of products and services. For example, firms can reach and analyze online conversations between customers through social media channels such as discussion boards and product/service review sites to understand how they view product price and a firm's pricing strategy, as well as a competitor's actions on pricing (Schweidel and Moe, 2014). Firms can also rely on data mining to identify such instances. Further, firms can use social media as a tool to communicate and convince customers on pricing change, thereby allowing firms to develop appropriate pricing strategies and respond quickly to market changes.

2.2.5 Social Media Marketing Communication Capability

Marketing communication capability is defined as the ability of firms to manage customer value perception (Ritter, 2006). Santos-Vijande *et al.* (2012) suggested that marketing communication helps businesses to manage customer expectations with the firm's perceived image and perceived value. In particular, this study views marketing communication capability in the context of social media as the firm's ability to manage customer value perceptions by effectively using social media applications for marketing communication activities such as advertising, sales promotions, public relations, direct marketing and personal selling. The conversation through social media channels is considered as the efficient way to raise brand awareness, brand recognition and brand loyalty (Gunelius, 2011). Further, socialmedia allows businesses to share information and change customers' perceptions about a product, brand or company (Sasatanun and Charoensukmongkol, 2016). In terms of promotion, firms can provide special discounts exclusively to specific customers to make them feel special through the various forms of social media (Gunelius, 2011). Marketers can also use social media to announce a sale or share a coupon for sales promotion activities. Also, firms can create interesting content on social media for brand building and communicating with customers (Tuten and Solomon, 2013).

2.3 Social Media Marketing and Performance

2.3.1 Social Media Marketing Planning Capability and Performance

Previous studies have revealed the relationship between Social Media Marketing capability and Performance of Women Owned home-care businesses (Charoensukmongkol & Tarsakoo, 2014) In their study Dimensions of social media marketing capabilities and their contribution to business performance of firms in Thailand, 364 sample. Their result reveal that among five aspects of social media marketing capability, social media product development capabilities and social media marketing implementation capability were positively and significantly related to customer relationship performance and financial performance; social media marketing communication capability had a significantly positive relationship only with customer relationship performance, whereas social media planning capability was found to have a significantly positive relationship only with financial performance. However, the analysis did not

find the significant relationship between social media pricing capability and the two aspects of firm performance. Hence, the following hypothesis:
H1: Social Media Marketing Planning Capability has positive and significant effect on performance of women owned home care businesses.

2.3.2 Social Media Marketing Implementation Capability and Performance

The Studying on Social Adoption and Firm Performance by Ahmad et al, (2018) in United Arab Emirate using 144 SMEs. However, the study reveal that Social media adoption had no effect on SMEs' performance. There findings could help managers and decision makers in the SME sector to try to keep pace with research on social media innovations, and enable them to benefit from social commerce as it becomes more ubiquitous.
Hence, the following hypothesis:
H2: Social Media Marketing Implementation Capability has positive and significant influence on performance of women home care businesses.

2.3.3 Social Product Development Capability and Performance

the findings of Hossain and Rahman (2018) in their study, Social Media and Women Entrepreneurs in Bangladesh with 108 respondents. Interestingly, the study has identified that almost all the exploratory variables, namely Technical Adaptability, Work-life Balance, Network Building, Access to information, and Cost Efficiency have significant influence on the dependent variable, that is, Entrepreneurial Opportunity. However, two of the factors, which are Product Improvement & Development and Promotion, are found to have no significant relationship with the dependent variable. Hence, the following hypothesis:
H3: Social Product Development Capability has a positive and significant influence on the performance of women owned home care businesses.

2.3.4 Social Media Pricing Capability and Performance

However, the outcome of analysis in Charoensukmongkol and Tarsakoo (2014) study carried out in Thailand with 364 sample did not revealed the significant relationship between social media pricing capability and the two aspects of firm performance. Hence, we developed the following hypothesis:
H4: Social Media Pricing Capability has a positive and significant influence on the performance of women owned home care businesses.

2.3.5 Social Media Marketing Communication Capability and Performance

In the study of Shabbir et al. (2016) examined Social Media Application and Business Performance in Pakistan using SMEs as respondents Based on theories and laws it is clear that if small businesses use social media tools with right approach and clear goals they can easily reach to their target customers and by using in right approach social media helps to build a long term relationship with business and customer. Hence, we put forward the following hypothesis:
H5: Social Media Marketing Communication Capability has a positive and significant influence on the performance of women owned home care businesses.

2.4 Theroretical Framework

2.4.1 The Social Presence Theory

Relates to how much intimacy we can achieve using technology. Fulk (1990) argues basically that the more physical contact we have the greater the presence. Greater presence causes greater intimacy. The less the personal communication, the less social value it has. Examples email, text messaging, chat rooms interaction will have less value than phone which has less value than sitting across the table from someone.

2.4.2 Resource-based view of firm

Regarding the theoretical background, the resource-based view (RBV) proposed by Barney (1991) is a theoretical foundation to explain the contribution of social media capability on firm performance. RBV focuses on the relationship between a firm's internal characteristics and its performance (Makadok, 2001). The theory predicts that a firm's performance depends on the possession of superior resources (Barney, 1991).

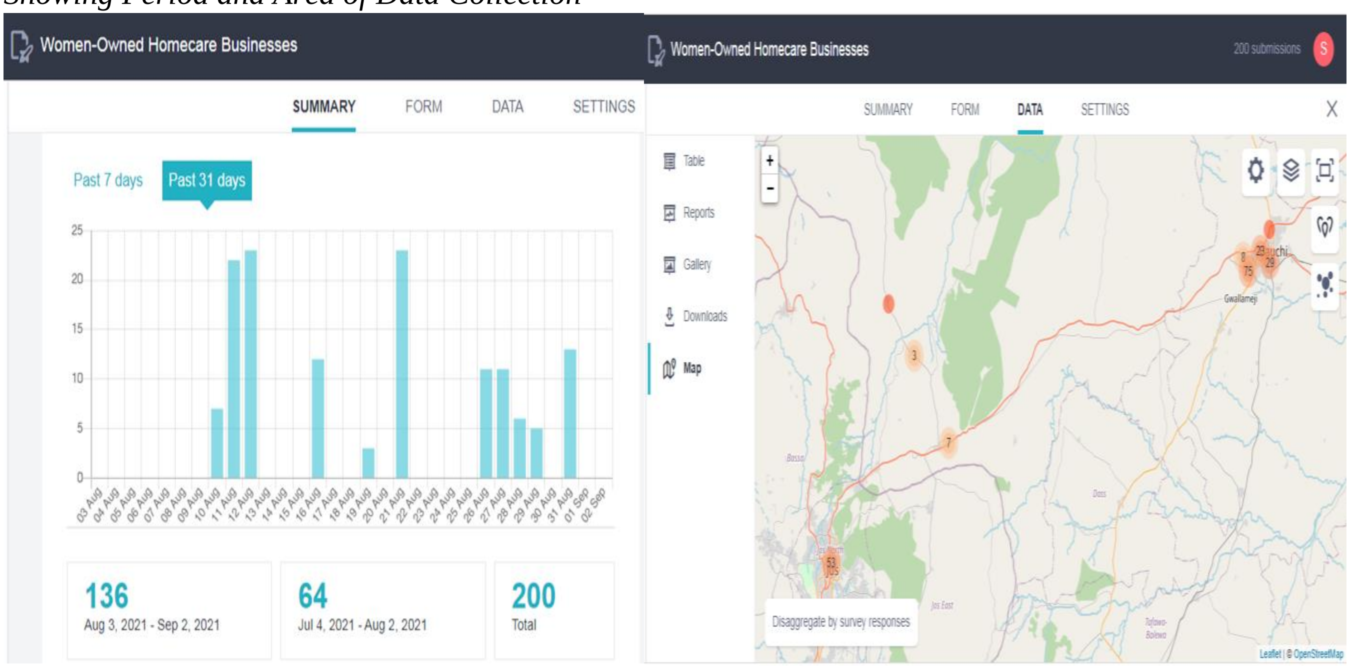
However, possession of resources that meet four characteristics does not necessarily lead to a sustainable competitive advantage because a firm's ability to achieve a competitive advantage (Rodriguez et al., 2012), rather, depends on the firm's capability to acquire, integrate and deploy valuable resources (Morgan et al., 2009). Generally, firms that have such capabilities can use their processed resources to implement strategic actions more effectively than their competitors (Sirmon et al., 2007).

3.0 Methodology

The study used descriptive survey, population of the study constitutes 8893 of ex-apprentice of Development Exchange Commission (DEC) in Jos and Bauchi state.

Figure 1

Showing Period and Area of Data Collection



Sample size was obtained using Gpower calculator with five independent variable and minimum effect size of 0.15 with 95% statistical power. The minimum sample size was 138. E survey instrument was used to collect data from 200 women owned home care businesses (see figure 1).

4. Discussion of Result

We run series of PLS algorithm and all the measurement model were satisfactory, as shown in table 1, Composite reliability of all construct is above 0.7. This shown evidence of internal consistency reliability of the constructs also all the AVE are above 0.5, this further shows evidence of convergent validity. In addition, The HTMT value shown in table 2 were less than the threshold of 0.9. This is further substituted with the confidence values. Hence, discriminant validity was achieved.

Table 1

Construct's Reliability and Convergent Validity

	Cronbach's Alpha	rho_A	Composite Reliability	Average Variance Extracted (AVE)
Market Communication Capability	0.860	0.955	0.932	0.873
Marketing Implementation Capability	0.921	0.931	0.941	0.760
Performance of women-owned homecare business	0.811	0.829	0.868	0.572
Planning Capability	0.757	0.770	0.891	0.803
Pricing Capability	0.834	0.892	0.881	0.601
Product Development Capability	0.855	0.882	0.896	0.635

Table 2

Construct Discriminant Validity

	HTMT	Bias	5.00%	95.00%
Marketing Implementation Capability -> Market Communication Capability	0.622	0.002	0.478	0.739
Performance of women-owned homecare business -> Market Communication Capability	0.242	0.017	0.116	0.398
Performance of women-owned homecare business -> Marketing Implementation Capability	0.291	0.009	0.155	0.462
Planning Capability -> Market Communication Capability	0.892	0.003	0.774	0.99
Planning Capability -> Marketing Implementation Capability	0.832	0.000	0.74	0.902
Planning Capability -> Performance of women-owned homecare business	0.168	0.041	0.076	0.249
Pricing Capability -> Market Communication Capability	0.724	0.001	0.612	0.815
Pricing Capability -> Marketing Implementation Capability	0.711	0.003	0.613	0.79
Pricing Capability -> Performance of women-owned homecare business	0.490	0.002	0.352	0.609
Pricing Capability -> Planning Capability	0.752	0.002	0.643	0.844
Product Development Capability -> Market Communication Capability	0.587	0.002	0.439	0.715
Product Development Capability -> Marketing Implementation Capability	0.857	0.002	0.788	0.914
Product Development Capability -> Performance of women-owned homecare business	0.299	0.015	0.166	0.46
Product Development Capability -> Planning Capability	0.756	0.002	0.657	0.843
Product Development Capability -> Pricing Capability	0.844	0.002	0.744	0.917

We also run PLS bootstrapping with 5,000 sub sample as shown in figure 2, the R2 value 22.2 variance in business performance. Also, in Table 3, the variance inflation factor was all less than the threshold of 5.

Figure 2

Final Measurement Model

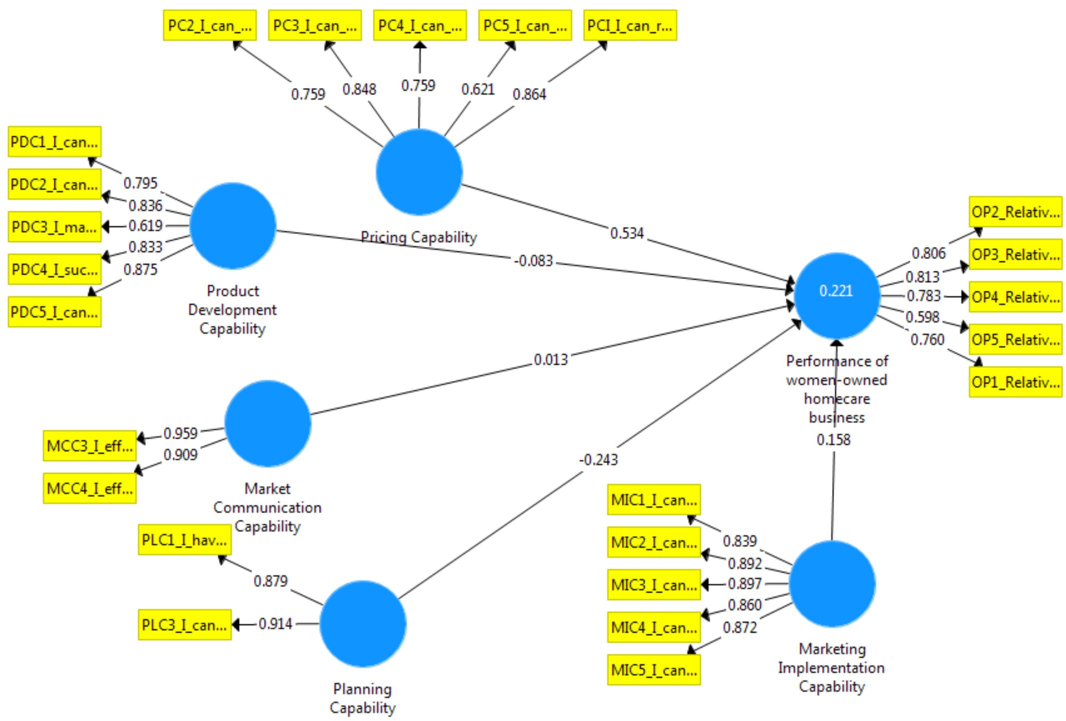


Table 3

Collinearity Statistics (VIF)

	VIF
Market Communication Capability	2.326
Marketing Implementation Capability	3.174
Planning Capability	2.849
Pricing Capability	2.339
Product Development Capability	3.112

Table 4

Path Analysis

	Beta value	Standard error	T-value	P Values
Market Communication Capability -> Performance of women-owned homecare business	0.013	0.126	0.104	0.458
Marketing Implementation Capability -> Performance of women-owned homecare business	0.158	0.131	1.208	0.113
Planning Capability -> Performance of women-owned homecare business	-0.243	0.133	1.826	0.034
Pricing Capability -> Performance of women-owned homecare business	0.534	0.118	4.51	0.000
Product Development Capability -> Performance of women-owned homecare business	-0.083	0.132	0.628	0.265

From the result of our path analysis, the relationship between social media planning capability and performance of women owned home care businesses was negative but statistically significant at 5% as such we reject our H1 which says social media planning capability has positive and significant influence on women owned home care businesses. The path between social media implementation capability and performance of women owned home care businesses was statistically insignificant at 5% as such we rejected our H2 which says social media planning capability has positive and significant influence on women owned home. The path analysis between social product development capability and women owned home care businesses was insignificant at 5% significant level. Therefore, this does not support our hypothesis H3 that says social product development has a positive and significant influence on women owned home care businesses. The path between social media pricing capability and women owned home care businesses was statistically significant at 5% significant level. This provide support from our H4 that says social media pricing capability has positive and significant influence on the performance of women owned home care businesses. That is to say with one-unit increase in social media pricing capability, the performance of women owned home care businesses will increase by 53.4% and vice versa. The path between social media marketing communication capability and women owned home care businesses was insignificant at 5%. Thus, we reject our H5 which says social media marketing communication capability has positive and significant influence of performance of women owned home care businesses.

5.0 Conclusion and Recommendations

This paper set out to investigate the effect of social media marketing capability of the performance of women owned home care businesses based on the findings from the study, it was concluded that social media marketing capabilities have effect on the performance of women owned home care businesses.
We found social media pricing capability to have effect on performance of women owned home care businesses. Its recommended that women owned home care businesses should be train on how to improve their pricing on social media.

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Systematic Review of Sustainable Risks and Supply Chain Management in Petrol Stations

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Abstract
The downstream sector Petrol stations in Nigeria are one of the largest employers of the working population. They are therefore a major contribution to national income and employment. This notwithstanding, entrepreneurs who have ventured into this field have failed to upgrade the industry to meet global sustainability standards. This paper is an abstract examination of the entire industry with a view of pointing out sustainability challenges associated with risks and supply chain management in the industry. A precarious evaluation through a critical review of related literature of the concept of sustainability risks and supply chain management were made. Likewise, the challenges in terms of risks, transportation, distribution, storage, and supply of petroleum products were scrutinized. In particular, risk and supply chain management problems associated with petrol stations range from fire outbreak, fume inhalation, customers' confrontation to health hazards like skin problems, headaches, coughs, dizziness, nausea, etc. It is therefore highly endorsed that firms in the industry acquire and use safety gears like gloves, overalls, googles, etc. during their operations. Moreover, it is desirable for management to seek outsourcing services as a way-out and an opportunity in sustainability risks and supply chain management.

Key words: *Sustainable Risk, Sustainable Supply chain, Downstream Sector, Risk Management, Supply Chain Management*

1.0 Introduction

In a landmark report in 1987, the World Commission on Environment and Development (WCED) came out with the term "Sustainable Development" which it defines as "development that meets the needs of the present generation without compromising the ability of future generations to meet their needs" (Haladu, 2017). A term that laid the foundation for modern day corporate governance and sustainability practices by companies. There is therefore, the need to properly manage environmental and social risks associated with products of petrol stations (Fabriyanti, 2021).

Environmental issues are currently the most contemporary issues in the world (Aniefor & Ekwueme, 2021; Ardillah & Chandra, 2021; Awwad, 2022). In recent years, the world has witnessed several disasters directly or indirectly connected with environmental hazards and climate change. The Ida typhoon that destroys most of Louisiana and New York and the flooding around the globe in places like Germany in Western Europe and China are good examples. All occurring between July and August 2021. The British Broadcasting Corporation (BBC) reported that over 60 people lost their lives due to the severe winter in December 2022 in New York alone. Onoja et al.[1] (2021) and Onoja et al.[2] (2021), observed that here in Nigeria we have serious environmental problems in the Oil mining states in the form of Oil spillage, erosion and gas flaring. In northern Nigeria, there are instances of desert encroachment which has led to serious land crises leading to many communal and social conflicts, prominent among which are farmers and herdsmen clashes in the Middle Belt Region of the country. Of greater significant is the fact that the petroleum industry is responsible for one the most devastating environmental hazards in Nigeria. As the country derived over 90% of foreign exchange and government revenue from Petroleum, past governments have laid emphasis on Oil & Gas exploitation at the expense of local communities and the environment (Adebayo & Ezejiofor, 2021). The impact on local communities has been tragically devastating (Onoja et al., 2021).

The Oil and Gas industry is divided into three categories: upstream, middle-stream and downstream according to the Petroleum Industry Act (2015 & 2021). The downstream section is dominated by distribution and marketing and it has a nationwide spread. The major environmental risks in this section are fire hazard as many petrol filling stations are exposed to customers of different types and the public. There is also environmental hazard with petrol stations located in residential areas. Their products range from refine petrol, diesel, kerosene, cooking gas, lubricants, insecticides, etc. All these products are ingredients of flammable environmental risks.

Similarly, the general role of the petroleum industry within a sustainable society has been questioned due to the environmental impacts of its activities and products. The boom in global demand and the inflexibility involved in the petroleum industry's supply chain has made its management more complex and more challenging (Awwad, 2022). Sustainable Supply Chain Management (SSCM) practices can contribute in helping the industry tackle this issue as it assimilates the Triple Bottom Line (TBL) dimensions of sustainability. That is, economic, environmental and social, in the supervision of key business processes of an organization and its supply chain. The downstream supply chain of the petroleum industry is both simpler and more complex than other industries. This is because the products here are highly flammable and considerable risks are involved during transportation activities due to the great distance between supply sources and consumer markets. Modifications and monitoring are therefore, needed to supply chain resolutions that are widely used in other businesses for it to work for the Oil & Gas downstream activities. Generally, the different stages of the petroleum supply chain which, can be incorporated into the TBL dimensions of sustainable development (Aslama, 2021) include strategic supplier partnership, customer relationship, information sharing, outsourcing, postponement, lean practice, supply chain integration and collaboration practices.

The downstream business of Oil & Gas industry involves decisions such as crude procurement, supply planning, logistics scheduling, storage scheduling and customers' supply. In some countries, what is referred to as the "Olympic Green Supply Chain" (OGSC) concept has been introduced. It aims at ensuring that all resources used during refining operations result in five zeros of waste or emissions. This include zero emissions (air, soil, and water), zero wastage of resources, zero waste in administrative activities, zero use of toxics and zero waste in product life cycle.

To be able to efficiently manage the supply chain, petrol stations should engage in refining, storage and retail activities. Their operations covered aspects of getting refined products (in Nigeria at present most of which is imported), transporting refined products, proper storage and effective dispersion. Thus:

Refinery $\longrightarrow$ Storage $\longrightarrow$ Retail

Hence, logistics for refining, marketing and consumers in petrol stations include: good transportation network, proper storage facilities, and convenient sales environment. To realize sustainable goals, companies should move beyond their traditional concern, which is profit maximization; and take proper steps to safeguard the environment and stakeholders' interests. In this vein, companies must adopt new strategies to achieve joint optimization of these sustainability aspects. The integration of the supply chain can be considered to be a force trying to uplift the relationships between all the segment in the supply chain to enable better decision-making by providing conspicuousness and lay emphasis on loopholes and weaknesses in the supply chain.

This presentation is therefore, meant to shed more light on sustainable risks and supply chain management. A critical examination has been done on the challenges and opportunities associated both with the physical and social environment as well as individual workers. Attention has been focused on processes that saved petrol stations millions of naira but are being ignored. Key among such practices is Sustainable Risk and Supply Chain Management (SRSCM).

2.0 Literature Review

This section covers the concept of sustainable risk management and supply chain management and the challenges associated with them.

2.0 Literature Review

2.1 The Concept of Sustainable Risk Management

Sustainable risk is primarily made up of environmental risks. Environmental risk is the likelihood and consequence of an undesirable accident. Due to paucities in waste management, waste transportation, and waste handling and disposal, several contaminants are released into the environment, which cause serious threats to human health along their way. Risk management is the act of identifying, evaluating, planning for and then ultimately responding to threats to the business. The goal is to be well-prepared for what may happen and have a plan in place to respond suitably. In order words, prevention is better than cure. Environmental and Social Risk Management (ESRM) can be defined as the conscious and synchronized effort in evaluating the probable and/or prevailing influence of various industrious activities on their environment and society.

The purpose of risk management is to increase establishments' ability to achieve objectives and help manage threats, adverse situations and take advantage of any opportunity that may increase that capability (Hanic et. al., 2021). The opportunities are identified through environmental aspects. The benefits of environmental and social risks management are enormous. They include: It improves the connection between communities and stakeholders. It can lead to increase in business revenue/sales. ESRM can respond to new trends in sustainable finance. There is also the reduction of overall environmental and social risks. It can improve brand value and reputation. Offers new business products and services. It can also lead to sustainable business growth and overall development. It identifies environmental business opportunities. It adds value to clients and investees and aids in the implementation of government policy.

2.2 What is Sustainable Supply Chain Management (SSCM)?

There are several definitions of SSCM. A look at some of them reveals the following.
According to the Council of Supply Chain Management Professionals (CSCMP), supply chain management is based on two fundamental approaches (Aslama, 2021): Planning, implementing, and controlling the principal activities and conveying value for the eventual customers and the combination and coordination of consistent business processes within as well as across the company.

Furthermore, sustainable supply chain management can be defined as the formation, coordination and uninterrupted improvement of a sequentially organized set of operations with the aim of providing efficient and effective customer service (Chima, 2007). Husain *et al*. (2006), defined supply chain management as "the strategic, transparent integration and achievement of an organization's social, environmental, and economic goals in the systemic coordination of key organizational business processes for improving the long-term economic performance of the individual company and its supply chains."

Again, sustainable supply chain management is "the management of material, information and capital flows, as well as cooperation among companies along the supply chain while taking goals from all three dimensions of sustainable development, i.e., economic, environmental and social, into account which are derived from customer and stakeholder requirements" (Ahmad et al., 2017). In a nutshell, sustainable supply chain management is the managerial judgements and behaviors designed to guarantee that a supply chain performs well in the TBL dimensions to create a truly sustainable supply chain.

These definitions imply that managerial decisions and behaviors should be directed at ensuring that individual companies and their supply chain as a whole perform well economically, environmentally and socially, through a strategic integration of key business processes in the management of resources and the delivery of products and services.

2.3 Petrol Stations Environmental and Social Risk Causes

These could be classified into three main risk factors as shown on Table 2.1.

Table 2.1

Risk Factors to Attendants in Nigeria Petrol Stations

S/N	RISK FACTOR	PERCENTAGE
	HAZARDS	
1.	Inhalation of Petroleum Fumes	67.4
2.	Confrontation from customers	52.1
3.		45.6
	HEALTH PROBLEMS	
4.	Headache	53.6
5.	Low back pain	33.3
6.	Eye irritation	29.5
7.	Dizziness	24.6
8.	Cough	18.6
9.	Nausea	18.6
	OTHER RISKS	
10.	Fuel on skins	85.2
11.	Fuel splash into the eyes	40.6
12.	Collusion of attendant	10.2
13.	Fire explosion	Not Available
14.	Flammable materials	Not Available
15.	Cigarettes	Not Available
16.	Handsets	Not Available
17.	Fuel and oil spillage	Not Available
18.	Slippery grounds (raining season)	Not Available
19.	Trip or fall injuries	Not Available

Source: Johnson & Umoren (2018)

2.4 The Steps to Risk Management in Petrol Stations

The five steps of the risk management process as adopted from Garter's Risk Management Process Primer for 2020 Report are the identification, assessment, mitigation, monitoring, and reporting of risks. By following the steps outlined below, a manager would be able to create a basic risk management plan.

Risk Identification involves the listing out of any and all events that would have a negative impact on the business (Rahmatika, 2021). Risks should be added over the days or weeks worked and at the same time the General Manager or Managing Director should expect that he/she cannot think of all the possible risks. Other mangers or subordinates should also be involved in this process. The risk plan should be holistic and comprehensive. Questions to be raised include: Are there any new or newly updated legal and/or compliance laws to be prepared for? Does the risk have an impact on other parts of the business? What are the events that are likely to catch us off guard?

Risk Assessment assesses the likelihood of the event happening and the level of impact. Doing this risk examination helps determine the important levels of each risk so as not to over or under-allocate funds for mitigation. For each identified risk, a manager should determine both the possibility of it occurring and the level of negative impact it would have on the business.

Risk Mitigation about creating and beginning the implementation of the plan for the best way to reduce the likelihood and/or impact of each risk. It may be difficult to come up with a mitigation plan for each and every risk, but it's important to try to identify what could be adjusted in the current processes to reduce risk. Here are some questions to consider for drafting a mitigation plan. How can the implementation of mitigation measures into the business system and process be done? Is the plan comprehensive enough to enable anyone in the business to understand what action needs to be taken for each risk event? Is the action plan an appropriate level of response for this risk?

Risk Monitoring is to monitor for both the effectiveness of the plan and the occurrence of risk events. Monitoring the status of risks, monitoring the effectiveness of mitigation plans implemented, and consulting with key stakeholders are all parts of the risk-monitoring step. Risk monitoring should happen throughout the risk management process. During monitoring, managers should ask: How to involve other department leaders in the monitoring process? How should the monitoring team be empowered to identify and escalate risk incidents? Have thebeen any variations where a risk previously assessed as a high threat should be moved to lower or vice versa?

Risk Reporting is the final stage and it involves documentation, analyses, and sharing of the progress of risk management plan. Reporting on risks serves two key purposes which are to help analyze and evaluate risk management plans and helps keep stakeholders engaged in mitigating risks by sharing the progress made (Schaltegger et. al., 2021; Ismail & Basiruddin, 2021). Using risk management software (highly recommended) really helps to gather all the data points and create an easy-to-read dashboard. Some questions that help when reporting risks include: Does the report help in understanding the progress of the plan? What is the best way to distribute risk reports so that stakeholders or other participants are informed but not overwhelmed with the data? How often should reports be shared (quarterly, bi-annually or annually)?

2.5 Safety Measures to Petroleum Station Hazards

In order to ensure the safety of station attendants the management should provide but not limit itself to the following protective gears that include Boots, Overall, Facemasks, Gloves, Googles, Hood, Wash Room, First Aid kits, Water and Fire Extinguisher.

3.0 Methodology

This presentation is not an empirical study but a theoretical and conceptual analyses of effective sustainable risk and supply chain management in Nigeria filling stations. The review is done primarily through the use of journals, online materials and other secondary sources (Haladu & Salim, 2016). Critical evaluation was made of the steps in sustainable risk and supply chain management and the challenges pose in petrol station environment. Towards the end, the paper recommended some safety measures for petrol station attendant in Nigeria so as to at least comply with international sustainability standards.

4.0 Evaluation of Risk and Supply Chain Management

4.1 Supply Chain Links in the Oil & Gas Industry

Figure 4.1
Supply Chain Links for SSCM
(Source: Chima, 2007)

Petrol stations are however, concern with only refining, marketing and consumption.

4.2 Logistic Factors for SSCM

The major logistic factors for SSCM include demand management, efficient distribution, better transportation, warehouse management and Quality coordination.

4.3 Local Competition in Kano State (Multi-Nationals, A. A. Rano, Shaffa Group and Aliko Petrol Stations).

Perfect competition amongst Petrol dealers in Kano State are threatened by obstacles to entrance (cutthroat competition) such as supplier power, buyer power, availability of substitutes and competitive rivalry. These are being dominated by bigger companies that control the market. Among the powerful ones are Multinationals like Total, Royal Dutch/Shell and Exxon-Mobil. Others are indigenous companies like Azman Petrol, A. A. Rano, Shaffa Group and Aliko Petrol stations.

4.4 Challenges and Opportunities in the Supply Chain Management for Petrol Stations

4.4.1 Challenges

In Nigeria, the downstream supply chain of petrol stations starts at the refinery or the seaport (for imported fuel), where the crude oil has been processed into consumable products. The downstream supply chain involves the process of forecasting, production, and the logistics management of delivering the crude oil derivatives to customers around the country. Many challenges and opportunities exist in downstream supply chains management.

To begin with, Logistical Challenges of petrol stations is highly intransigent, which arises long transportation lead-times and the limitations of modes of transportation. Every stage in the network, therefore, epitomizes a major challenge. Most petrol stations in the country have nation-wide spread or regional or state spread as a result, these commodities and products are transferred between locations that are farther apart. The distance between supply chain partners and slow modes of transportation bring not only high transportation costs and in-transit inventory, but also high inventory carrying costs. Such restrictions on transportation means in this type of industry induce long lead-times from the refining point to the final customers' location likened to other industries. Hence considering the amount of inflexibility involved, meeting the broadening prospect of demand for fuel and its byproducts while preserving high service-levels and efficiency is a major challenge for petrol stations.

Underdevelopment is another challenge. Despite the prominence of supply chain management and its mounting complications, the petroleum industry in Nigeria is still in the development stage of efficiently managing their supply chains. This shows the level of underdevelopment that is plaguing the industry at this level of world development.

There are also problems of political instability and insecurity. Political instability in the South-South Geo-Political Region of Nigeria, which is the largest oil producing region in the country and to some extent the South-East, has become highly volatile. Oil and Petrochemicals companies located in these regions are compel to conserve higher safety stocks and search for alternative sources of supplies. Closely related with political instability is insecurity. Petrol station attendants are at the clemency of armed gangs and kidnappers especially those located in rural or isolated areas.

Inflexibility is another of the checks involved along the supply chain, such as long lead-times, manufacturing capacity, and limited means of transportation, that are hard to change. Commodities such as refined oil, gas, and petrochemicals require specific modes of transportation such as pipelines, vessels or tankers, and very good railway network. These commodities are produced in the oil and gas regions but are demanded all over the country but modern means of transporting them is lacking. The pipelines are under constant attack from hoodlums and vandalizers.

Transportation costs also has to be taken seriously. Most businesses believe that the supply chain in which they participate as customers and suppliers is what creates competition and not individual companies. These factors are responsible for petroleum companies to either engross the upsurge in costs or pass the costs on to customers who are already facing increasing prices. Companies therefore have known that improved supply chain efficiencies represent a huge area for cost savings. It is reported that in the logistics zone transportation cost is estimated to be on average between 10 and 20 percent of total revenue.

Integrated management process, information systems and information sharing, organizational restructuring, and traditional reorientation are equally important. The need for integrated processes all the way from procurement of refined products to the delivery of the final product is crucial for a company's accomplishment. While manufacturing efficiency alone does not ensure competitive advantage anymore, petrol stations need to cut down cost in areas of administration as well. Most petrol station lags behind in using integrated planning across the supply chain. With globalization now a reality, petrol stations needs sophisticated information technology as an indispensable part for smooth information. It has been posited that Companies' relationships in supply chain networks are directly related to the effective use of information technology.

4.4.2 Opportunities/Way-outs in the Supply Chain Management

Outsourcing for logistics is one area of opportunity being overlooked by petrol stations. In an effort to manage their supply chain and reduce costs, petrol stations should outsource their logistics functions. Outsourcing takes place when an organization transfers the ownership of a business process to a supplier reliant on the services of third-party logistics companies for managing their supply chains. One best way petrol stations could outsource is to ally and cooperate with rivals in the industry. However, despite the significant advantages this practice has produced for companies, a defined model for making such decisions does not exist.

Just-in-Time production techniques could be a welcome development. The Just-in-Time (JIT) system has its origins with Toyota Motor Company in Japan in the 1950's. There are two aspects of JIT. They include (Haladu & Beri, 2010) Just-in-Time Production and Just-in-Time Purchasing. Under JIT production petrol stations should store enough but not too much raw materials in the store after passing through the inspection department. When refined products arrived, they are kept in the stores waiting for buyer. The philosophy behind this is that the exact quantities of refine products needed arrives at the right place in the right quantity just at the time the need for it arises.

The mission of JIT purchasing is the delivery of the required quantity of refined products by easily accessible suppliers (through telephone, e-mail, etc.) just at the time the product is needed for production. If the customer can rely on the right supplier to do his own part of the job (i.e., supply the exact quantity needed at the right quality and the right time) the products can be brought directly to the customer for immediate use. This therefore, eliminates not only the cost of inspection but also the cost of storage. For such working relationship to exist in the long-run, the customer will have to deal with only few tested and trusted supplier and ensure the few selected suppliers that the working relationship is for a long period of time, so that they can plan well ahead to meet such regular demand. In addition, the supplier should be given fair prices that allow reasonable profit margin. If there is any need for price change, such should be accommodated by the customer who should also ensure prompt payment for refined products supplied.

Just-in-Time system helps to cut down cost along the supply chain and has other advantages, among which are: Elimination of the cost of providing storage facilities for refined products. The carrying costs of stock including cost of obsolesce since there is a move towards zero or low stock. The cost of wastage because of emphasis on improved quality.

This notwithstanding, in the event of failure there will be total breakdown in the supply chain. Furthermore, the security that the supplier has in supplying the goods may make him relaxed. Again, JIT system is against the principles of free and fair trade since competitors (suppliers) are eliminated.

There is also the danger of the customers being supplied with low quality products. This is evident from economies like China and the newly developing economies of the Far East (Association of South East Asia Nations – ASEAN).

Vendor Managed Inventory is a supply chain strategy whereby the vendor or supplier is given the responsibility of managing the customer's stock. The vendor is given access to its customer's inventory and demand information for reasons of monitoring the customer's inventory level. Furthermore, the vendor has the authority and the responsibility to replenish the customer's stock according to jointly agreed inventory control principles and objectives. In the conventional business model, suppliers will bill their customers once shipment is made, depending on the agreed payment terms. However, in some VMI, payment will only be made based on what the manufacturers have pulled from the hub.

5.0 Summary, Conclusion and Recommendations

This paper has discussed the concepts of sustainable risks and supply chain management in petrol stations. While sustainable risk is the probability and consequence of an unwanted accident due to deficiencies in waste or product management, sustainable supply chain management is about managerial judgement and behaviors designed to guarantee that a supply chain performs well in the TBL dimensions. Classified under the downstream sector of the Petroleum Industry Act (2021), petrol stations in Nigeria needs proper risks management to increase their capability and curb threats and adverse situations. This no doubt improves relationships with local communities and stakeholders. Proper management of environmental risks involve risk identification, assessment, mitigation, monitoring and reporting. This should be done in conjunction with the acquisition of safety implements like boots, overalls, facemasks, gloves, googles, etc.

To efficiently manage the supply chain, petrol stations should consequently, engaged in refining, transportation, storage and retail activities. Good product demand management, efficient distribution, and excellent transport network are some of the logistic factors challenges of the sustainable supply chain management. This can help reduce challenges in terms of storage facilities, state-of-the-art equipment, etc. Opportunities for development in the supply chain management could arise from outsourcing services, just-in-time and vendor managed inventory.

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Leadership Style, Organizational Culture and Employees' Motivation to Perform in Nigerian Revenue Generating Agencies

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Abstract
A would-be effective organisation (be it public or private) must strive to blend its organizational culture with its leadership style. When the so-called blend is achieved, boundless opportunities exist for both the organisation and its workers. In attempt to establish this trend in FIRS, Gombe, this study investigated the effect of leadership style and organizational culture on employees' motivation. Using a questionnaire as the instrument for generating the primary data while secondary data were collected from nominal roll and other records of the organization. The population of the study was all the staff of Federal Inland Revenue Service Gombe of 107 staff. Data gathered were presented and analysed using frequency table with Average Weighted Mean (AWM). The study found that FIRS, Gombe adopted a democratic leadership styles while the values/culture of the organisation revolved around Fairness; meritocracy; creativity; motivation and dedication/commitment. Having used the generated data to test the pre-set hypothesis, it was concluded that leadership style and Organizational culture in FIRS, Gombe are not just compatible but they both facilitate the enhancement of workers' motivation. The paper thus recommends the maintenance of the statuesque while efforts be geared towards strengthening the system.

Keywords*: Leadership Style; Organizational Culture; Motivation; Employees; Revenue.*

1.0 Introduction

Employees are key success factor in any organizational structure as dissatisfied and unhappy employees can mar the productivity level, boost the turnover rate, facilitate waste and disrupt industrial harmony, all at the detriment of the organisation. To prevent the likelihood of creating a set of disgruntled employees therefore, organizational managers (who has weighed the cost of motivating employees and that of solving all problems created by dissatisfied workforce) have decided to take the cheaper course of action. This course required that employees be motivated through the adaptation of an acceptable leadership style and organizational culture. Leaders are the ones to control and take charge of the operation of an organization and good leaders are able to set optimistic goals and objectives while steering the operation of the organization towards those goals using effective strategies. Other than that, good leaders can also influence their employees and motivate them by strengthening a positive

organization culture and through employees' engagement in strategic decision making made possible by an encompassing leadership style.
A number of literatures indicated that the level of employees' motivation in Nigerian public organization is low and this problem is as a result of the leadership style in adopted in many organizations (Babalola and Nwalo, 2013). The symptoms of the declining motivation are evident in the increasing rate of absenteeism; lateness to work, low productivity and an unstable industrial relation noticeable in many public organizations in Nigeria. The Federal Inland Revenue Service, Gombe as a revenue generating agency of the government is most concerned in this discuss as maintaining a highly motivated staff is strategic to the realization of her objective as the failure to observe this may promote corruption, diversion of public revenue, under remittance of generated funds among several other actions detrimental to the reason for establishing the outfit.

The performance of workers at Federal Inland Revenue Service, Gombe has left much to be desired, and it is on this note that this study seeks to examine the leadership styles and organizational culture that is practiced in Federal Inland Revenue Service, Gombe and the effect of the duo on workers' motivation from 2014-2020. The paper will thus test a hypothesis on whether there is a significant relationship between leadership style/organizational culture and employees' motivation in Federal Inland Revenue Service, Gombe. The findings will serve as guidelines for the management of these organizations especially the Federal Inland Revenue Service to improve on their leadership style and organizational culture as means of maintaining a stable industrial harmony. It will also help in shedding lights on the effect of leadership style and organizational culture on workers' motivation in our society at large.

2.0 Literature Review

In an attempt to identify literature gap, concepts amplifying the variables of the study will be paraded and critically examined in the light of methodology, conclusion and environmental variability.

2.1 Motivation

The importance of workers' motivation in an organization can never be overemphasized as according to Ogunrombi and Elogie (2015), motivation is what pushes workers to perform by satisfying or appealing to their needs. They further pointed out that several definitions of motivation have some words in common such as desire, want, wishes, aims, goals, needs, incentives among others. Motivation can also be defined as the readiness to use higher levels of effort toward organisational goals, and at the same time achieving individual needs. Motivation as a concept, is concerned with the facet of person's life that energies propel and stimulate human beings to change their behaviour for the accomplishment of an organizational goals/objectives, so as to achieve higher productivity and satisfaction of employees (Amaanda, 2011; Saka & Salman, 2014). In an organizational aspect, motivation has been defined as "the sum of the processes that influence the arousal, direction, and maintenance of behaviours relevant to work settings". Employee motivation at work is considered as an essential drive as it generates effort and action towards work-related activities, for example, employee's willingness to spend the energy to achieve a common goal or reward. When an employee is motivated, he or she shows enthusiasm and eagerness towards the work and a strong determination to implement and accomplish the work tasks (Moran 2013).

According to Azar and Shafighi (2013), motivation is an internal state and strength, which encourages individuals to take certain actions. Furthermore, Shahzadi, Javed, Pirzada, Nasreen, and Khanam (2014) define motivation basically as a means of facilitating behaviour change. Fachreza, Musnad, and Majid (2018) show that work motivation has a significant and positive effects on employee performance.

Motivation refers to a decision-making process enabling individuals to choose their desired outcomes, consequently setting in motion the desired behaviours to acquire those valued outcomes (Chen 2019; Ryan and Deci, 2017). Motivation includes the behavioural process that converts sparks into actions to accomplish goals and better life (Chen, 2019). Several theories have defined and analysed the motivation concept quite extensively e.g., Maslow and Herzberg's theory considered the human perspective of motivation. The intrinsic motivation (i.e. internal motivation) of individuals comes within-person by his/her derived force of inner satisfaction. It impacts directly to achieve the allocated obligations. The inner satisfaction enhances individual(s) attributes of personality (Liu, Fan, Fu, and Liu, 2018).

External factors of extrinsic motivation such as praise, bonuses, rewards, and others play a key role in achieving extrinsic motivation. For example, in order to derive the potential results at the workplace, the managers and/or supervisors provide a decent evaluation of subordinates' work which is often less relegated through extrinsic motivation (Rajput and Talan, 2017). Extrinsic motivation can build the basis for intrinsic motivation and without achieving intrinsic motivation the work environment remains subdued and/or loses track of work. Characteristics of inspiration are underpinned by the stimulus of extraneous feelings towards work itself (Locke and Schattke, 2018).

Suttikun, Chang and Bicksler (2018) show that employees will have increased motivation if they believe their hard work will produce the desired results. If the desired results are met, the motivation cycle continues and job satisfaction increases. Motivation is an essential part of success and business prosperity in the existing dynamic and competitive market. It comprises of an individual's internal characteristics and the external factors that include job factors, individual differences and organizational practices (Gopal and Chowdhury, 2014). When an individual is doing a task, he wants freedom in decision making as well as the fulfilment of psychological needs. When a person feels that he can control his decision and is master of his destiny, he feels motivated. This phenomenon is recognized as the need for autonomy (Ryan and Deci, 2019). When an individual want to improve his skills and abilities and is motivated to do something new in a certain environment, then there is a need for fulfilling competence. In order to achieve personal desires, individuals focus on additional learning resources (Ryan and Deci, 2017).

2.2 Organizational Leadership

Organizations all over the world, in both the public and private sectors, are established primarily to accomplish predetermined set goals and objectives. In achieving these goals and objectives, the role of the human elements (employees) cannot be overemphasized (Gberevbie, 2017; Mokgolo and Modiba, 2012; Mottoh, 2015). This is simply because organizations, irrespective of other resources (financial, land, technological) at their disposal, cannot achieve anything meaningful in terms of attaining its set goals, without the human resources galvanizing all other resources (Gberevbie, Joshua, Excellence-Oluye, and Oyeyemi, 2017; Jain and Duggal, 2015) Dynamic leaders are adaptive leaders, who find opportunities in obstacles, take effective action during difficult times and take risks (Pershing Yoakley and Associates, 2014). Dynamic leadership is an important resource for organizations that must operate in a highly competitive and dynamic business environment. Such leaders need to be both adaptive and flexible to operate according to the changing business environment (Wiesenthal et al., 2015).

Sharma and Jain (2013) state that leadership is a process in which someone influences others to achieve goals and direct them in ways that make them more cohesive and coherent. Furthermore, Yusuf-Habeeb and Ibrahim (2017) stated that leadership is a process of social influence that seeks to gain cooperation and individual support for the actualization of several objectives. Whereas according to Gharibvand (2012) defining leadership as how leaders communicate in general and relate to people, the way leaders motivate and train subordinates and the way leaders provide direction to their teams to carry out their duties. Sharma and Jain (2013) state that leadership is a process in which someone influences others to achieve goals and direct them in ways that make them more cohesive and coherent. Furthermore, Yusuf-Habeeb and Ibrahim (2017) stated that leadership is a process of social influence that seeks to gain cooperation and individual support for the actualization of several objectives.

Employees are motivated by the role their leaders play in an organization. Leadership and their workforce underneath are bridged by the level of performance (Bass, Avolio, Jung and Berson, 2012). According to Belonio (2010), leadership styles can either motivate or discourage employees which can cause the employees' increase or decrease in their level of performance.

2.3 Organizational Culture

It is important for managers to emerge as leaders so that they understand team members' needs and expectations, which drive the organization's culture. It is reported by scholars, such as (Omoankhan, Oloda and Ajanake (2014); Bellary, Sadlapur and Naik, (2015), that organizational culture is a powerful force that influences both employee dispositions and institutional success. It is the pattern of shared basic assumptions which is invented, discovered or developed by a given group or an organization as a method of doing things which have worked well enough to be considered valid, and to be inculcated into new members of the organization as the correct way to perceive, think, feel and do things in that particular organization (Emerson, 2013). That is, a particular style of leadership has a direct influence or effect on the productivity of an employee or employees.

Like every other social science concept, defining organizational culture has been a bit challenging for researchers in view of its contextual dynamism. To a layman, organizational culture will be the blending of the meanings of organization and culture together. That is, the way of life of the organisation. In an academic context, it has received varied definitions prominent among which are those of Blake & Mouton (1985) and Schein (2010). To Blake & Mouton, organizational culture is the routinized ways of doing things that people accept and live by. Organisations have norms and values that influence how members conduct themselves. These norms may prevent members from applying a maximum effort or may encourage them to do so. To Schein, it is a pattern of shared basic assumptions that the group learned as it solved its problems of external adaptation and internal integration that had worked well enough to be considered valid, and therefore, to be taught to new members as the correct way to perceive, think and feel in relation to those problems. However, this paper will adopt a simpler definition of Park et al. (2004) describes it as "the ways things are done in an organisation".

2.4 Leadership style and Organizational Culture in Public Organizations

Leadership enables organizations to be more productive and profitable, but the extent of success depends on the style of the leader and the resultant environment created for employees to function well (i.e. organizational culture). Asrar-ul-Haq and Kuchinke (2016) is of the view that the kind of leadership style exhibited by managers to a large extent influences organizational valued outcome such as low employee turnover, reduced absenteeism, customer satisfaction and organizational effectiveness. Similarly, leadership style controls interpersonal, reward and punishment that shapes employee behaviour, motivation and attitude which impact on organizational performance (Pufi, 2014). Lipman (2014) discusses on how to motivate employees in two ways, that is growth and advancement; Advancement as a motivator indicates the opportunities of being promoted to higher position, having higher salary and more benefits in the organization. Not all employees share the same advancement motivation, therefore understanding each employee's needs and assisting them to reach the satisfied drivers is also a way to motivating employees (Lipman). Growth motivation is quite similar to advancement motivation since it is one of the motivators that helps retain the employees. However, the definition is broader and it is not only just about career promotion or better salary and benefits. Good employees are enthusiastic, eager, determined, and above all, ambitious. They are always looking for better opportunities to grow, to acquire more knowledge, to learn new skills, to widen their network, and to challenge themselves with different positions and more importantly, to lead or be part of leading. Providing and stimulating employees' growth motivation is essential method of increasing the level of motivation. Public service motivation is likely a key aspect of job satisfaction within governmental agencies. Dabke (2016) found transformational leadership as a positive predictor of leadership behaviour and on job effectiveness. He argued that transformational leadership plays a significant role in leadership effectiveness and the perception of leadership effectiveness on the part of employees.

Leaders have some control over the level of employee motivation whether they are managers, team leaders, or heads of departments, and because leaders have the power, they are responsible to use it (Sarros et al., 2014). Equally important is the work atmosphere where the leader operates. This is referred to as the organizational culture. Organisational culture has the most significant impact in effective leadership as it determines values, beliefs, and work systems that encourage or hinder followership and motivation (Janz & Prasarnphanich, 2003). When leaders fail to become effective in this way, employees are likely to become disenchanted. Akhtar, Aziz, Hussain, Ali, and Salman (2014) described the following managerial errors that lead to and exacerbate employee disenchantment: establishing an unsatisfactory salary plan for employees, ignoring employees' concerns and complaints, failure to provide employees with career advancement opportunities, and failure to provide employees with feedback on their performance. Employees may become motivated and take interest in their work for either intrinsic and extrinsic reasons, the former stemming from their understanding of and belief in the value of their work, and the latter being the result of incentives such as increased wages or being praised in front of co-workers by their managers.

Kushalappas and Pakkeerappa (2014) suggested that leadership and the other aspects of management must go hand in hand because they are both necessary for an organization. Employees not only expect managers to assign tasks to them; they also expect managers to explain the purposes of such tasks and inspire them to perform them effectively. Geller (2016) noted that managers hold people accountable for performing desirable behaviour and avoiding undesirable behaviour, while leaders inspire people to hold themselves accountable to do the right thing and to follow a certain protocol. Geller also mentioned that managers direct and motivate behaviour with an external accountability system, whereas leaders facilitate self-direction and self-motivation by influencing person-states that facilitate self-motivation.

3.0 Methodology

A survey research design was adopted for this study where data was collected from the 107 staff of the Federal Inland Revenue Service Gombe.

Table 1: Number of staff in FIRS Gombe office

S/N	**Units**	**Number of staff**
1	Micro and Small Tax Office (MSTO)	41
2	Government Business Tax Office (GBTO)	18
3	State Coordination	22
4	Stamp Duties	10
5	Tax Audit	16
	Total	**107**

Source: *FIRS, Gombe Nominal Roll, 2020*

Due to the relatively manageable size of the population, the entire 107 staff of the service was adopted for the study. In collecting the required primary data, a close-end questionnaire (5 points Linkert scale) was adopted while secondary data were sourced from the nominal roll of the service. The data gotten from the field were presented using frequency table while the analysis was conducted using Chi-square. In addition, the researcher made use of the Average Weighted Mean (AWM) that is self-explanatory. As for the AWM, the cut-off point was 2.5 where this indicated that if the mean value of a statement is greater than 2.5, respondents have positive perception towards this statement, but if the value is 2.5 or less than that, they have a negative perception towards the statement.

4.0 Results and Discussions

The response rate was 87% where 93 questionnaires were adequately filled and returned out of the 107 questionnaires administered.

Table 2: Personal information of the respondents

Variable: Age Distribution	**Frequency**	**Percentage (%)**
20-29	27	29%
30-39	53	57%
40-49	13	14%
50 and Above	0	0%
Total	**93**	**100%**
Variable: Gender		
Male	77	83%
Female	16	17%
Total	**93**	**100%**
Variable: Educational qualification		
ND/NCE	3	3%
Degree/HND	71	76%
2nd Degree	19	21%
PhD		0%
Total	**93**	**100%**
Variable: Marital status		
Single	37	40%
Married	56	60%
Divorce	0	0%
Total	**93**	**100%**
Variable: Working years with FIRS		
Below 5 years	38	41%
5 to 10 years	44	47%
11 to 15	9	10%
16 and above	2	2%
Total	**93**	**100%**
Variable: Category of Staff		
Senior Staff	62	67%
Junior Staff	31	33%
Total	**93**	**100%**
Variable: Working experience		
Below 3 years	25	27%
3 to 6 years	50	54%
6 and above	18	19%
Total	**93**	**100%**

Source: *Field work (2021)*

Table 2 presented the personal information of the respondents. The age distribution is as follows: 20-29 years has 29%, 30-39 (57%), 40-49 (14%) while 50 and above has 0%. The gender distribution shows majority of the respondents are male as it has 83% while the female gender has 17%. Educational qualification of the respondents shows ND/NCE (3%), Degree/HND (76%), 2nd Degree (21%) and PhD (0%). On the marital status, single (40%), married (60%) and divorce (0%). According to the responses of the staff, 41% were employed in less than 5 years, 47% were 5-10 years, 11-15 years has 10% while 16 and above years has 2%. The category of employees shows that respondents are categorised into two, that is senior and junior staff. Senior staff are 62 which is 67% and junior staff are 31represent 33%. Federal Inland Revenue Service Gombe, 27% of the respondents have less than 3 years' experience, 54% of them have 3-6 years while 19% have 6 years and above experience.

Given that the questions have measured according to a 5 point Linkert-scale. Analytical weighted mean was employed. The analytic weights are weights that are inversely proportional to the variance of an observation. Typically, the observations represent averages and the weights are the number of elements that gave rise to the average. In the analysis, weighted mean which is 2.5 was consider as the cut-off point, this however indicated that if the mean value of a statement is greater than 2.5, respondents have positive perceptions towards the statement. In other words, they have agreed, but if the mean value of a statement is 2.5 or less than that, respondents have negative perception towards the statement (disagreed). Mean score close to 5 indicate strongly agreed while mean score to 1 indicate strongly disagreed.

Table 3: The leadership style adopted in Federal Inland Revenue Service, Gombe.

S/N	Option	SD	D	N	A	SA	Mean
8	Leadership style in Federal Inland Revenue Service Gombe supervises employees closely, otherwise they are likely not to do their work	28	27	15	18	5	2.4
9	Leadership style in Federal Inland Revenue Service Gombe does involves employees in decision-making process.	10	15	20	28	20	3.3
10	Leadership style in Federal Inland Revenue Service Gombe focuses on the development of value system of employees, their motivational level and moralities with the development of their skills	3	3	17	48	22	3.8
11	Leadership style in Federal Inland Revenue Service Gombe makes most of the employees feel their job is not secured.	28	27	15	18	5	2.4
12	Leadership style in Federal Inland Revenue Service Gombe encourages employees or subordinates to function in response outside outlined assignments given, they are push to thing outside the box	7	13	20	28	25	3.5

Source: *Field work (2021)*

Table 3 shows that the opinions of the employees on whether the leadership style in Federal Inland Revenue Service Gombe supervises employees closely, otherwise they are likely not to do their work. Respondents had agreed (with AWM of 2.4) that employees do their work without being supervised, they also agreed (with AWM of 3.3) that leadership style in Federal Inland Revenue Service Gombe does involves employees in decision-making process. Leadership style in Federal Inland Revenue Service Gombe focuses on the development of value system of employees, their motivational level and moralities with the development of their skills which is agreed (with AWM of 3.8).

Opinions of the respondents (with AWN of 2.4) indicate that leadership style in Federal Inland Revenue Service Gombe does not involve exchange of either rewards or punishment for assignments outlined to subordinates by the leader; that is, when commendable results are achieved the employees are not rewarded as well as failure to achieve result does not attract punishment. The perceptions of respondents also indicate (with AWM of 3.8) that leadership style in Federal Inland Revenue Service Gombe encourages employees or subordinates to function in response outside outlined assignments given, they are push to thing outside the box.

Note: *The indices adopted in the study for measuring organizational culture in FIRS, Gombe were: Fairness; meritocracy; creativity; motivation and dedication/commitment.*

Table 4: The nexus between leadership style and organizational culture in Federal Inland Revenue Service, Gombe

S/N	Options	SD	D	N	A	SA	Mean
13	Leadership style in Federal Inland Revenue Service Gombe does not show discrimination	5	8	17	23	40	3.9
14	Leadership style in Federal Inland Revenue Service Gombe, allows merit to rule in promotion and other benefits	0	3	10	38	42	4.2
15	Leadership style in Federal Inland Revenue Service Gombe allows employees to express their feelings about the organization	2	3	25	38	25	3.8
16	Leadership style in Federal Inland Revenue Service Gombe gives fringe benefits to it employees	2	8	40	20	23	3.5
17	Leadership style in Federal Inland Revenue Service Gombe encourages dedication and commitment	0	0	18	28	47	4.3

Source: ***field work (2021)***

Table 4 presents the opinion of respondents on whether the leadership style in Federal Inland Revenue Service Gombe does not show discrimination among the employees. It is agreed (with the AWM of 3.9) that there is no discrimination among the staff of Federal Inland Revenue Service Gombe and also agreed (with the AWM of 4.2) that the leadership style in Federal Inland Revenue Service Gombe, allows merit to rule in promotion and other benefits. It is agreed (with the AWM of 3.8) that leadership style in Federal Inland Revenue Service Gombe allows employees to express their feelings about the organization. The leadership style in Federal Inland Revenue Service Gombe gives fringe benefits to it employees was also agreed (with the AWM of 3.5), and also on the issue of whether the leadership style in Federal Inland Revenue Service Gombe encourage dedication and commitment by the employees was agreed (with the AWM of 4.3).

Test of hypothesis

H_o: Leadership style and Organizational culture has no significant effect on employee motivation in FIRS, Gombe.

Chi-Square analysis

Fo	Fe	Fo-fe	$(Fo\text{-}Fe)^2$	$\frac{(fo-fe)^2}{fe}$
2.6	3	0.4	0.16	0.05
4.5	3	1.5	2.25	0.75
10.4	10	0.4	0.16	0.01
14.4	13	1.4	1.96	0.15
25.5	33	-7.5	56.25	1.70
1.2	2	-0.8	0.64	0.32
2.2	5	-2.8	7.84	1.56
5.1	7	-1.9	3.61	0.61
7.0	10	-3	9	0.9
12.5	7	5.5	30.25	4.32
				$\mathbf{X^2 = 10.37}$

The degree of freedom
(C-1) (R-1)
which is (5-1) (2-1)
= (4) (1)
= 4 and alpha of 0.5,
the table value is **9.488**

The calculated $\mathbf{X^2 = 10.37}$ is greater than the table value **9.488** @ alpha 0.05 percent. The result is to reject null hypothesis and accept alternate hypothesis that leadership style and Organizational culture in FIRS, Gombe are not only compatible but they both facilitate the enhancement of workers' motivation.

5.0 Conclusion and Recommendations

The relevance of ensuring the deployment of an acceptable and effective leadership style in an organisation cannot be over emphasized as it brings about a harmonious working environment for both the employees and the employers while promoting the actualization of organizational objectives. In ensuring this requires that a befitting operation environment be created for the leader and this falls back to the need to strengthen organizational culture. Emanating from the study findings are the fact that both leadership style and organizational culture of FIRS, Gombe interfaced to bring about employees' motivation. The paper thus recommends the maintenance of the statuesque while efforts be geared towards strengthening the system.

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Effect of Management Development Programmes on Employee Performance in Nigeria Public Sector: A Study of Securities and Exchange Commission Abuja

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Abstract
The study examined the effect of management development programmes on employee performance in Nigeria public sector using securities and exchange commission Abuja as a focal point. Four research questions and hypotheses were formulated for the purpose of study. The study adopted the descriptive survey research design, thereby making questionnaire the main instrument of data collection. The data was first coded in computer based statistical package for social science (SPSS). The data was analyzed with use of multiple linear regressions. From the data analysis, the study revealed that job rotation, job coaching, job enrichment and induction has positive and significant effect on employee performance in securities and exchange commission Abuja. It is therefore recommended that job rotation should be done once in a while to curtail monotony and should be based on the skills and experience of the employee. Senior employees should be given a manageable number of junior employees that he/she can effectively mentor or coach within a given period of time. This would enable the coach control the mentees. Employees should be given challenging, interesting and skills stretching assignments. This would further enrich the job and improve their performance. The study further recommends that a reasonable time for orientation should be allocated.

Keywords: *Management Development Programmes, Employee Performance, Public Sector and Securities & Exchange Commission*

1.0 Introduction

The Securities and Exchange Commission (SEC) is a government agency mandated to regulate and develop the Nigeria capital market. Generally speaking, employees (including those in SEC) are complicated, dynamic, and eccentric human beings. They have unexpected reasoning styles and are challenging to understand and handle in a professional setting. They now have more demanding wants and objectives specific to themselves. The management of the organization's rules and regulations set some limitations on what the employees may and may not do. In order to achieve organizational goals, effective human capital development policies must be developed and implemented by qualified human resource professionals (Koko, 2005 cited in Mbah et al., 2021).

This supports the idea that the goal of every organization's human resource policy should ultimately be to improve employee performance, which is reflected in organizational performance. Any human capital development strategy, no matter how great it may be, will be for naught if it ultimately fails to raise employee productivity. The performance of employees is crucial since they form the basis of organizational operations. As a result, the effectiveness of organizational actions greatly depends on it. Employees who work for companies like the SEC are significant and of utmost importance since they contribute information, skills, and intrinsic abilities to the company as well as the personal drive to convert resources. They are regarded as the organization's producing heart and as capital assets. All the individuals who carry out an organization's tasks are considered its human resource. The group of employees who make up an organization's workforce is known as its human resources. Human capital (Mbah et al., 2021) is a word sometimes used interchangeably with human resources to describe to the practices, social and personality traits, and expertise that people bring to a company. The human resource/capital of the organization consists of the personnel who are described in terms of their education, experience, judgment, intelligence, relationships, and insight (Maduagwu & Nwogu, 2006 in Mbah et al., 2021).

Every component of an organization involves human involvement, and those efforts help the organization succeed. Employees are a company's most valuable asset, so it is important to train and develop them in accordance with both organizational and personal demands (Amegayibor, 2021). Even with the most cutting-edge tools, resources, and finances, nothing gets done without human labour. Lifelong learning is an essential coping technique, particularly in light of the always shifting organizational environment. Organizational settings change over time, making it necessary for staff to continue receiving training and developing their capacities in order to improve work performance, growth, and the institution's ability to quickly adjust to shifting economic conditions in order to remain competitive (Amin et al., 2013).

Human resources, which are essential to organizational functioning, have been overlooked as the most precious asset that can generate income, according to Mbah et al. (2021). Nevertheless, organizational administrators have recently expressed serious concerns about the growth of their human capital. Nowadays, people are viewed as the means of achieving organizational goals. Among the human capital management elements that can be used to achieve organizational goals are staff planning and development, staff training, staff induction/orientation, and staff supervision.

The process of taking an inventory of the staff's demographics, including number of employees, credentials, capability, experience, skills, and others, falls under the purview of the human resources planning component. Although one of the main managerial tasks is planning, it is sometimes claimed that "failing to plan is preparing to fail" (Okoroma, 2008 cited in Mbah et al., 2021). Staff actions need to be carefully planned out in order to accomplish organizational goals. Employee training refers to initiatives that give staff members access to knowledge, new skills, or specific growth possibilities (Elnaga & Imran, 2013). Training is the process of providing workers with the most up-to-date technical, requisite, and skill knowledge for optimal performance.

Workers' performance can be well mapped in service firms like SEC by setting up training programs for them, which in turn motivates them and boosts their self-confidence and job performance. When a person is trained and retrained, the goal is for him or her to be knowledgeable about the most recent realities, fashions, and skills that may be applied to the manufacturing process. The productivity of a worker who does not go through this is frequently negatively impacted by the employment of antiquated techniques and procedures. Since the world and its conditions, as well as knowledge, production methods, and the quality of goods and services, are always changing, it is crucial for organizations to invest in educating their employees. The acquisition of information, skills, and behaviours that enhance an employee's capacity to satisfy shifting job requirements and client needs is referred to as development. It has to do with giving organizational employees the skills they need for better, more effective job performance. The main goal of development programs is to get workers ready for managerial responsibilities. The necessity to create development programs derives from the fact that a staff member who has undergone formal training is likely to perform better than his counterpart who has not.

According to Rajasekar and Khan (2013), public sector personnel training and development is essential for any nation since it influences the effectiveness of its bureaucracy and policymaking as well as the representativeness of its administrative systems (Maor & Stevens, 1997 cited in Rajasekar & Khan, 2013) and in a few nations, the governments concerned face difficulties due to employment in the public sector (Mohammed & Ingo, 2012). The public sector, whose employees must be trained to handle the new challenges and pressures for innovation created by the current climate of increased globalization, places a similar emphasis on training as does the private sector. Due to the fact that the public sector typically produces a majority of intangible services that are impossible to quantify, one could argue that training and development are even more crucial (Kee & Black, 1985 in Rajasekar &Khan, 2013).

It seems that organizations in Nigeria do not adequately support training programs despite the impact of training and human resource development on employee productivity and organizational performance (SEC inclusive). These organizations view the money they will spend on training programs as a cost rather than an investment. They do not anticipate how important it is for their staff to have ongoing training and development in order to increase the productivity and effectiveness of their businesses. As a result, training at those firms is more or less random and ad hoc, rather than planned and methodical as is the case with those who seek to provide training for their staff. This viewpoint was supported by Obi-Anike and Ekwe (2014), who argued that despite numerous government interventions and initiatives, the Nigerian public sector's performance and efficiency have remained subpar. Given the crucial role that training and development have played in elevating the Nigerian public service to an admirable level, there would unquestionably be a problem if people responsible for carrying out governmental programs and managing public affairs were not properly educated and trained. Of course, their ability to accomplish the goals for which they were used may suffer. It is against this backdrop that this study assesses the effect of management development programmes on employee performance of Securities and Exchange Commission (SEC) Abuja.

It is expected that this study would be of immense benefit to the management and employees of SEC and other organizations as well as the government, policy makers, academics, consultants, and other researchers in the field of human resources management in Nigeria. For instance, this study would provide vital information to administrators in the sector that would encourage employee motivation and job satisfaction. It would also be relevant to the human resource development department in the formulation of policies relating to training and development of personnel that would help to develop and maintain a quality work life, which would enhance employee job satisfaction and self-actualization. As part national planning strategy, this study would assist the government to identify those areas where it can be of assistance to corporate bodies in Nigeria with respect to human capital development. Consultants to SEC on human resources management would also find this study useful as a good reference material. Above all, this study would assist in expanding the scope of existing literature on employee productivity and organizational performance in Nigeria.

This study is delimited to assessing the effect of management development programmes on employee performance of securities and exchange commission, Abuja. Only staff of the commission at the headquarters was used in this study. Based on the foregoing, the specific objectives are to:

(i) examine the effects of job rotation on employee performance in securities and exchange commission, Abuja;
(ii) evaluate the effects of job coaching on employee performance in securities and exchange commission, Abuja;
(iii) assess the effects of job enrichment on employee performance in securities and exchange commission, Abuja; and
(iv) ascertain the effects of induction on employee performance in securities and exchange commission, Abuja.

In line with the specific objectives stated above, four null hypotheses are advanced in order to provide answers to the questions raised above:

$\mathbf{H_{0:1}}$ Job rotation does not have significant effect on employee performance in securities and exchange commission, Abuja.

$\mathbf{H_{0:2}}$ Job coaching does not have significant effect on employee performance in securities and exchange commission, Abuja.

$\mathbf{H_{0:3}}$ Job enrichment does not have significant effect on employee performance in securities and exchange commission, Abuja.

$\mathbf{H_{0:4}}$ Induction does not have significant effect on employee performance in securities and exchange commission, Abuja.

2.0 Literature Review

This section draws out a model that guided the study. The model links independent variables with the dependent variable as shown in the diagram below.

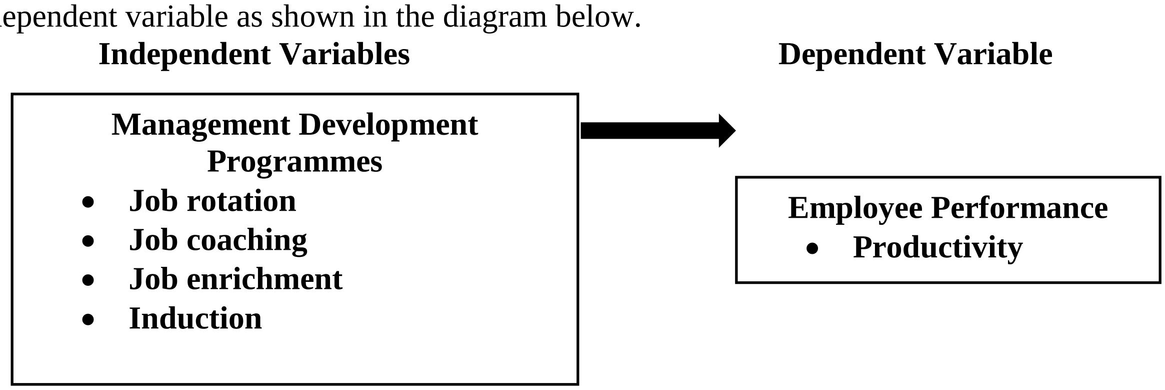

Figure 1: Proposed Model for the Study
Source: Adapted from Musa and Abdiwali (2019); Elnaga and Imran (2013).

2.1 Training and Development

Training and development are complementary parts of the same process (Obi-Anike & Ekwe, 2014). Employee's training refers to programme that offer workers with information, new skills, or specialized development opportunities (Elnaga & Imran, 2013). In the same vein, Sikula (1976) cited in Inalegwu (2011) defines training as a short-term educational process, utilizing a systematic and organized procedure by which non-managerial personnel gain technical knowledge and skill for a particular purpose. Gansberghe, (2003) defines development as a long-term process designed to enhance the potential and the effectiveness. Development is a long-term educational process utilizing a systematic and organized procedure by which managerial personnel gain conceptual and theoretical knowledge for general purpose (Sikula, 1976 in Inalegwu, 2011). Diamantidis and Chatzoglou (2014) stated that, skills, abilities and knowledge which are required in performing a job are provided for employees through training and development.

2.2 Job Rotation

In order to lessen employee discomfort and unhappiness, organisations who have job assignments that demand repetitive, boring, or high frequency work may try to adopt job rotation. The purpose of job rotation is to allow employees to gain new skills, talents, and information by moving them from one job, task, assignment, or department to another after a period of time (Oparanma & Nwaeke, 2015).

2.3 Job Coaching

One of the training methods that enables an individual participant to gain the strategic capabilities and core competences required to complete a task effectively is job coaching (Kehinde & Oladayo, 2007 in James & Kwabe, 2019). Job coaching is frequently regarded as the most efficient method of fostering employee productivity and progress in an organization through the conscious evaluation of subordinates by their immediate supervisor (James & Kwabe, 2019). Coaching is described as a consistent sequence of training sessions in which an experienced worker with extensive knowledge mentors a trainee (Bwengi, 2015).

Giving staff more duties inspire them, which boosts their morale and productivity (Franklin, 2000). Lenhardt (2004) contends that coaching is a component of a learning process that has an impact on every individual living in today's society which is consistent with these ideas. Individuals who receive coaching find it easier to manage their own judgments and accept responsibility. This could raise their self-esteem and help them learn to pay attention to their own needs.

2.4 Job Enrichment

The word "enrichment" refers to the process of raising something's standards or value. Job enrichment is a technique used in job design to motivate workers by giving them more responsibility and variety (Aditya & Rahul, 2022). A job that has been made more fulfilling by adding tasks that give the employee more power or responsibility includes aspects like task importance, task identity, and skill variety. The idea was inspired by psychologist Herzberg's 1968 Harvard Business Review article "One More Time: How Do You Motivate Employees?"

When developing the well-known "Two factor theory," sometimes referred to as the Motivation-Hygiene theory, American psychologist Fredrick Herzberg coined the phrase "job enrichment." He asserts that the phrase "job enrichment" refers to the early stages of a movement and distinguishes it from "job enlargement" in that the former allows for an employee's psychological development, whilst the latter just increases the size of a work structurally.

2.5 Induction

One approach to on-the-job training is induction, which entails educating and acclimating new hires to their new roles within an organization (Nassazi, 2013). They are exposed to a variety of duties throughout this process, including as the nature of their new employment, how to carry out their assigned tasks and responsibilities, and what is often expected of the employees by the company. Additionally, they receive a basic review of the organizational working environment, which may include working systems, technology, office layout, as well as information on the current organizational culture, health and safety concerns, working conditions, and processes and procedures (Nassazi, 2013). Induction, according to Kumar and Siddika (2017), is a different method of training and development. These includes introducing and preparing new hires for their new positions inside a company. They are exposed to the details of their new job during this process.

2.6 Employee Performance

Employee performance has been extensively used in social science research as a variable that is dependent on a multitude of factors. For instance, Farooq and Khan (2011) relate employee performance to training and feedback. They insisted on the need to arrange and adopt more effective employee training programs and techniques as well as providing feedback in order to enhance employee performance. Mohammad et al., (2014) refers to employee's performance as the use of knowledge, skills, experiences and abilities, to effectively and efficiently perform the assigned task required. Employee performance is normally looked at in terms of outcomes.

3.0 Methodology

The study utilized the descriptive survey research design where primary data would be collected through the aid of structured questionnaire. The reason for adopting survey research approach is because, numerous questions can be asked about a particular subject, giving extensive flexibility in data analysis. The study was carried out in the Nigeria's federal capital territory (FCT), Abuja. The study is domiciled at the securities and exchange commission Abuja with a population of 544 (The Guardian Newspaper, 2021). The choice of the area was premise on the ground that most management development programmes are decided at the headquarters. The sample size for this study is 217 using Krejcie and Morgan (as cited in Kenpro, 2012). Simple random sampling was employed in the study. This gives every staff of the commission equal opportunity of participation. Distribution of questionnaire was random; each selected staff was given a copy of the questionnaire which was completed by him/her and in most cases. The data for the study was collected through a well-structured questionnaire. The questionnaire was made up of two sections; Section "A" contained items which were designed to elicit personal information about the respondents such as present position of staff, years of work experience and educational qualification. While section "B" was designed to carefully assess the effect of management development programmes on employee performance. This questionnaire was self-administered using closed-ended statements utilizing a 5-Likert scale rating, ranging from strongly agree to strongly disagree was employed for the purpose of the current study. A test-retest method was used to assess the reliability of the questionnaire. Using Cronbach's Alpha coefficient test to measure the internal consistency of the study variables was confirmed. The recommended coefficient value for Cronbach's Alpha test score is set at 0.7 (Hair et al., 2006).

Selected parameters were used to analyze the application of management development programmes of the securities and exchange commission. The data was first coded in computer based Statistical Package for Social Science (SPSS). The technique for data analyses was multiple linear regressions. The following linear regression model has been formulated to guide the researcher in the investigation;

(ODJ a MD) = f (EP)

ODJaMD in the equation stands for management development, management development programmes are measured in terms of: job rotation, job coaching, job enrichment and induction. The acronyms representing them are stated below:

JR = job rotation
JC = job coaching
JE = job enrichment
ID = induction

Meanwhile, management development is the function of employee performance, but employee performance is measured in terms of productivity as shown below:

PROD= Productivity

PROD = f (JR+ JC + JE + ID) ………………(i)

Therefore, EP= PROD

EP = f (JR+ JC + JE + ID) …………………..(ii)

The model proposed that management willingness for management development would lead to employees' skills enhancement, extensive knowledge about the job and ability to think and respond fast to the assigned task. This arises as any given organization's success depends on how well her employees are able to handle needs of various stakeholders.

4.0 Results and Discussions

4.1 Correlation Analysis

Correlation analysis using Pearson rank correlation coefficient technique was used to establish the relationships between the study variables. The results were summarized in the table 1.

Table 1: Correlation Matrix

Correlations

		PRO	JR	JC	JE	ID
PRO	Pearson Correlation	1				
	Sig. (2-tailed)					
	N	168				
JR	Pearson Correlation	.672**	1			
	Sig. (2-tailed)	.000				
	N	168	168			
JC	Pearson Correlation	.659**	.663**	1		
	Sig. (2-tailed)	.000	.000			
	N	168	168	168		
JE	Pearson Correlation	.679**	.670**	.891**	1	
	Sig. (2-tailed)	.000	.000	.000		
	N	168	168	168	168	

ID	Pearson Correlation	.525**	.572**	.674**	.458**	1
	Sig. (2-tailed)	.000	.000	.000	.000	
	N	168	168	168	168	168

**. Correlation is significant at the 0.01 level (2-tailed).

Source: Field Survey, (2023).

The results in table 1 shows that the relationship between employee performance (PRO) and job rotation (JR) was positive and statistically significant with correlation coefficient of r = 0.672 and p value of 0.000. Similarly, the relationship between employee performance (PRO) and job coaching (JC) was a positive and statistically significant with correlation coefficient of r = 0.659 and p-value = 0.000. More so, the relationship between employee performance (PRO) and job enrichment (JE) was a positive and statistically significant with correlation coefficient of r = 0.679 and p-value = 0.000. Lastly, the relationship between employee performance (PRO) and induction (ID) was positive and statistically significant with correlation coefficient of r = 0.525 and p-value = 0.000.

4.2 Regression Analysis

A Multiple regression analysis was conducted to investigate the effect of management development programmes on employee performance in Nigerian public sector: A study of securities and exchange commission, Abuja and to establish the statistical significance of the respective hypotheses using multiple regressions analysis at 95% confidence level and 5% level of significance. The output results were as indicated in the tables 2.

Table 2: Model Summary

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.874[a]	.848	.847	.60611

a. Predictors: (Constant), ID, JE, JR, JC

Source: Field Survey, (2023).

The model summary in table 2 above shows that there is positive linear relationship between management development programmes and employee performance in Nigerian public sector with correlation coefficient of R = 0.874. This implies that an increase in on-the-job training and management development programmes will lead to an increase in employee performance, and management development programmes decreases, employee performance decreases. The R Square value of 0.848 indicates that 85% of the changes in employee performance can be attributed to management development programmes. While the remaining 15% of the changes in employee performance can be attributed to other factor(s) outside management development programmes. This clearly shows that management development programmes have significant impact on employee performance in Nigerian public sector which in-turn contributes positively to overall performance of the firms. The adjusted R square envisaged that the model can still absorb additional variables and the R square will not fall below 0.847.

Table 3 Regression Analysis

Coefficients[a]

Model		Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	T	Sig.
1	(Constant)	-1.105	.510		-2.165	.032
	JR	1.063	.029	.966	36.677	.000
	JC	.242	.058	.038	4.172	.012
	JE	.433	.054	.028	8.019	.003
	ID	.080	.035	.065	2.281	.024

a. Dependent Variable: PRO

Source: Field Survey, (2023).

Table 3 shows that job rotation (JR) has positive and significant effect on employee performance at 5% level of significant with t-value = 36.677 and p-value of 0.000 or 0% which is less than the 5% level of significant. Therefore, a unit increase in job rotation (JR) would lead to 1.063 increase in employee performance and a unit decrease in job rotation (JR) will lead to 1.063 decrease in the employee performance.

Table 3 shows that job coaching (JC) has positive and significant effect on employee performance at 5% level of significant with t-value = 4.172 and p-value of 0.012 or 1% which is less than the 5% level of significant. Therefore, a unit increase in job coaching (JC) would lead to 0.242 increase in employee performance and a unit decrease in job coaching (JC) would lead to 0.242 decrease in the employee performance.

Table 3 also shows that job enrichment (JE) has positive and significant effect on employee performance at 5% level of significant with t-value = 8.019 and p-value of 0.003 or 0% which is less than the 5% level of significant. Therefore, a unit increase in job enrichment (JE) would lead to 0.433 increase in employee performance and a unit decrease in job enrichment (JE) would lead to 0.433 decrease in the employee performance.

Table3 finally shows that induction (ID) has positive and significant effect on employee performance at 5% level of significant with t-value = 2.281 and p-value of 0.024or 2% which is less than the 5% level of significant. Therefore, a unit increase in induction (ID) will lead to 0.080 increase in employee performance and a unit decrease in induction (ID) will lead to 0.080 decrease in the employee performance.

4.3 Discussion of Results

The study investigates the effect of management development programmes on employee performance in Nigeria public sector using securities and exchange commission as a focal point. The descriptive and statistical analysis conducted in this study revealed that job rotation (JR) has positive and significant effect on employee performance at 5% level of significant with t-value = 36.677 and p-value of 0.000 or

0% which is less than the 5% level of significant. Therefore, a unit increase in job rotation (JR) will lead to 1.063 increase in employee performance and a unit decrease in job rotation (JR) will lead to 1.063 decrease in the employee performance. This finding is in agreement with that of Amegayibor (2021) who discovered a positive significant relationship between job rotation and organizational performance. Similarly, the finding equally aligns with that of Musa and Abdiwali (2019) that a statistically significant positive relationship exists between job rotation and employee performance. The implication of this findings is that, my moving an employee from one sector of the organization to another, such employee can learn new skills to improve his productivity on the job. The social learning theory equally renders credence to this finding. This is because, the organization where training and development take place is a social system with people that interact with themselves, regardless of their cultural affiliation, religion, status in terms of wealth or educational background. They all learn from each other in traditional classroom, in a formal or an informal method, on-the-job or off-the-job training and development.

The finding further shows that job coaching (JC) has positive and significant effect on employee performance at 5% level of significant with t-value = 4.172 and p-value of 0.012 or 1% which is less than the 5% level of significant. Therefore, a unit increase in job coaching (JC) would lead to 0.242 increase in employee performance and a unit decrease in job coaching (JC) would lead to 0.242 decrease in the employee performance. This finding is in consonance with that of Musa and Abdiwali (2019) that a statistically significant positive relationship exists between job coaching and employee performance. This implies that, by coaching employees by senior colleagues, the tendency to improve performance is increased. The social learning theory also supports this finding. This is because, the organization where training and development take place is a social system with people that interact with themselves, regardless of their cultural affiliation, religion, status in terms of wealth or educational background. They all learn from each other in traditional classroom, in a formal or an informal method, on-the-job or off-the-job training and development.

It was also revealed that job enrichment (JE) has positive and significant effect on employee performance at 5% level of significant with t-value = 8.019 and p-value of 0.003 or 0% which is less than the 5% level of significant. Therefore, a unit increase in job enrichment (JE) will lead to 0.433 increase in employee performance and a unit decrease in job enrichment (JE) will lead to 0.433 decrease in the employee performance. This finding is supported by that of Aditya and Rahul (2022) that job enrichment significantly and positively influences employees’ performance in terms of productivity. The finding is equally in agreement with those of Ozigbo and Daniel (2020) that a significant positive relationship exists between job depth, job training and core job dimensions’ elements of job enrichment and organizational performance. The social learning theory and human capital theory equally support this finding. This implies that workers learn more when they are given more and challenging tasks and by developing employees through training, the organization reaps the benefit in form of improved productivity and efficiency.

Finally, it was revealed that induction (ID) has positive and significant effect on employee performance at 5% level of significant with t-value = 2.281 and p-value of 0.024or 2% which is less than the 5% level of significant. Therefore, a unit increase in induction (ID) will lead to 0.080 increase in employee performance and a unit decrease in induction (ID) will lead to 0.080 decrease in the employee performance. This finding is in alignment with those of Amegayibor (2021) and Musa and Abdiwali (2019) that induction training positively and significantly influences employee performance. Both the social learning theory and human capital theory support this finding. The social learning theory opines that the organization where training and development take place is a social system with people interact with themselves, regardless of their cultural affiliation, religion, status in terms of wealth or educational background. They all learn from each other in traditional classroom, in a formal or an informal method, on-the-job or off-the-job training and development. This helps to improve their performance. From the human capital theory, it would be noted that since the acquired human skills; knowledge and dexterity of staff of the Securities and Exchange Commission (SEC) increases their productivity and hence their income-earning prospects and job performance, it is considered a good investment. Consequently, any expenditure or resource out-lay meant to create, develop or improve on human productive qualities constitute an investment in human capital.

5.0 Conclusion and Recommendations

The importance of management development programmes in the life of corporate establishments has been highlighted in the extant literature. The findings presented in this study suggest that management development programmes have ultimate contribution to employees' performance and subsequently, organizational performance with regards, securities and exchange commission. This result is broadly consistent with prior management literature with respect to management development programmes.

Arising from the study findings, it can be concluded that the securities and exchange commission certainly has well-established training and development programmes which directly contribute to employees' improved performance and consequently organizational performance. It can be concluded that organization that trains and develops systematically her employees ensures that their corporate value develops more favourably than in other establishments. The performance of employees depends on different factors but training is most important because it enhances capabilities, skills and competencies of the employees. Thus, efforts must be made by securities and exchange commission to ensure that employees' skills and knowledge are fully utilized through adequate and timely training design and implementation of policies.

Based on the above findings, the following recommendations are suggested:

i. Job rotation should be done once in a while to curtail monotony and should be based on the skills and experience of the employee. The employee would feel happy and perform better if taken to sections that he/she has skill and the necessary experience.
ii. Senior employees should be given a manageable number of junior employees that he/she can effectively mentor or coach within a given period of time. This would enable the coach control the mentees.
iii. Employees should be given challenging, interesting and skills stretching assignments. This would further enrich the job and improve their performance.
iv. The study further recommends that a reasonable time for orientation should be allocated. Single-day training seems to be insufficient. Induction training should be a process rather than a few days' affair. This would enable newly employed staff to learn the job, policies and programmes of the organization.

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Moderating Role of Job Security on the Relationship between Human Resource Management Practices and Turnover Intention among Public Secondary Schools Teachers in Bauchi State

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Abstract
This conceptual study aims to examine the moderating role of employee Job Security on HRM practices (training and development, compensation practice, career growth, performance appraisal and promotion) on turnover intention among Public Secondary Schools Teachers in Bauchi State, Nigeria.. Specifically, this paper adopts literature review as basis of conceptual framework development and evaluating the role of employee Job Security on the effectiveness of HRM practices in the determination of turnover intention among public secondary school teachers. Based on literature, it was found that HRM practices had a significant effect on turnover intention and job security could moderate the relationship between HRM practices and turnover intention. This research will help organizational management and government to understand the effect of HRM practices with employee job security as factors that affect turnover intention among public secondary school teachers.

Keywords: *Employee Job Security, HRM practices, Turnover Intention*

1.0 Introduction

Turnover intention is a global phenomenon as it has become common in many organizations. It is considered as a serious issue especially in the field of human resources management (Hassan, 2014). A report from the United State of America (USA), Bureau of Labor Statistic (2021) has shown that the total employees turnover has increased with 4.1percent and within the separations voluntary turnover caries 2.9 percent, involuntary turnover (discharged) 0.9 percent and other factors includes retirement, death, disability and transfer caries 0.3 percent. This is an indication that turnover is increasing day by day and is detrimental to both individual and organization. Similarly, another research conducted by Carver-Thomas and Darling-Hammond (2019) on the trouble with teachers turnover indicated that in the United State of America annual teachers demand is accounting for close to 90 Percent as a result of teachers turnover, which in turn cause teachers shortage nationally, and further stated that, it was only one-third of the teachers shortage caused by retirements. These shortages of teachers are projected to continue and even worsen in the future as demand increases and supply decreases (Sutcher et al., 2019).

Furthermore, Jiru and Tadesse (2019) conducted a study and found that lack of proper recruitment and selection process, training and development practices, compensation and work place environment are the some of the reason why employee leave their job in Ethiopia. These problem need to be given more attention in order to reduce turnover intention. In a similar research conducted by Muhangi et al. (2019) contended that, teachers career growth and development, teachers compensation practices and demographic factors are some of the challenges facing teaching profession in Mbarara district of Uganda. In addition, Chepkemboi et al. (2013) reported that 57 percent of teachers in teachers service commission (TSC) in West Pokot Kenya.

In a similar vein, Oyetoro et al. (2018) conducted a study on pre-service teachers turnover intention in Southwestern Nigeria and found that, for every 400 teachers trainee candidates only 29 percent are likely to end up in the teaching profession. In addition, Ajayi and Olatunji (2017) stated that demographic factors like teachers' age, qualification, work status and experience influence teachers turnover intention in Nigeria for example teachers aged between 36-45 years are least willing to quit, teachers aged 55 years and above, and those aged below 35 years are most willing to quit. Furthermore, Abolo and Nwokonko (2020) found that, informal selection of teachers, unsatisfactory compensation practices, age and gender are the main cause of teachers intention to quite in district II Lagos State Nigeria.

In particular, Bauchi State student students teacher ratio is 65 students per teacher which violated the Federal Ministry of Education (FME) national benchmark of 35 pupils per 1teacher, this is an indication that Bauchi State is lacking sufficient number of teachers in the school as reported by United State Agency for International Development (USAID 2015). This is most probably the reason why only 7,434 Bauchi State Secondary School Teachers officially registered with the Teachers Registration Council of Nigeria (TRCN) (2019-2020) indicating that, Bauchi State is second to the last in the whole country, while the report also showed that on the other hand, 24,470 primary school teachers of Bauchi State registered with the Council which is more than 3 times the number of secondary school teachers in the State. This is signaling the shortage of secondary school teachers in the state. Yet, on the 10th of may 2018 His Excellency Barr. Muhammad Abdullah Abubakar, the Executive Governor of Bauchi State approved the transfer of service of 98 teachers from different secondary schools to tertiary institution (College of Education, Azare) hence increasing turnover among secondary school teachers in the State.

Furthermore, statistics has shown that there were only 26,000 secondary school teachers in Bauchi State, which is grossly inadequate to cover the number of schools we have in the State (Agency Report, 2018). Also, Nigerian Union of Teachers (NUT 2018) Bauchi State Chairman Danjuma Sale who asserted that to meet with the set standard, each school must have at least 15 to 30 teachers. Furthermore, He opined that, inadequacies of teachers not only on their total number, but also, in term of their qualification, commitment and dedication and lack of proper posting of teachers across various schools in the state are prevalent. Similarly, nonpayment of teachers salaries in Bauchi State is not a new challenge faced by teachers, NUT (2018) reported that some teachers spend up to 59 months without receiving their salaries which brought the untold hardship for teachers to feed their families, settle children's school fees. As a result, many had to sell their assets to earn a living and repay back loan (Hafsat Abdulhamid, 2021). Furthermore, Buchi State Ministry of Education (2019) reported that, the Pupil-Teacher ratio in public Secondary and Primary School reached up to 1:55 with Zaki Local Government Area having the highest ratio of 118 pupil per a teacher, this is an alarming rate (Hamma & Iliyasu, 2021). Therefore, Bauchi

State Public Secondary School is faced with serious dilemma of inadequate teachers in the schools, despite the fact that secondary education serves as a springboard on which the entry of any higher learning institution of each child is build on. Also, Abubakar et al. (2015) indicated some of the factors triggering employees turnover intention in Bauchi State as perceived organisational politics, lack of training and development, lack of proper compensation practices, lack of prompt payment of salaries and Promotion. Nevertheless, Adusei et al. (2016) and Ponnu and Chuah (2010) have described turnover intention as a very destructive phenomenon to the organizational growth and stability.

Several researchers contended that instant turnover of co-worker may threatened the remaining workers or create a “shock” to the entire employees thereby fearing or feeling unsecure with their job. Generally it could cause disruption and significantly lead to reduction in their work embeddedness, hence, triggering thoughts of turnover in the job (Holtom et al., 2008). Additionally, due to the occurrence as well as harmful effects of turnover to both the organizations and the individuals, further research effort is needed to give a clear understanding about how workers of an organization disengage their service and switch to other organizations.

Although researchers have revealed a number of reasons why Nigerian employees (teachers) were voluntarily leaving their place of work and moving to different organizations and countries in other part of world (Ajayi & Olatunji, 2019). However, very few researches described turnover intention as a consequence of poor HRM practices (Adusei et al., 2016; Sutcher et al., 2019; Carver-Thomas & Darling-Hammond, 2019; Santhanam et al., 2017; & Nkwo, 2015). Likewise, very few studies have examined the role of moderator on the relationship between HRM practices and turnover intention (Islam et al., 2020; & Santhanam et al., 2015). Therefore, the aim of this research is to review related literature and develop a model that examines the role of Job security as moderator on the relationship between HRM practices and turnover intention among Bauchi State Public Secondary School Teachers.

Most previous studies were carried out in the context of West, Asia, America and some African countries such as Ethiopia, Ghana and Kenya (Belete, 2018; Chepkemboi et al., 2013; Carver-Thomas & Darling-Hammond, 2019; Santhanam et al., 2015, Cobbold & Asamani, 2015; Kirby & Grissmer, 1993; Getahun & Tadege 2019; Jiru & Tadesse 2019). Although, fewer studies were conducted in southern part of Nigeria such as Lagos, Calabar, Akwa Ibom (Oyetoro et al., 2018; Agboola & Offong, 2018; Ajayi & Olatunji 2018). Therefore, current study will differentiate itself from the previous studies by investigating turnover intention in Public Secondary School in Bauchi State Nigeria, using HRM Practices as IVs and Employees job security as a moderator

2.0 Literature Review

2.1 Concept of Turnover Intention

Turnover intention is the most serious challenge facing the modern day managers in their day to day operation. Hence, it is viewed as the tendency of employees to quit their jobs or organisational contracts (Mobley,1982 & Schyns et al., 2007). Accordingly, Hom and Griffith (1995) viewed turnover intention as the way in which an employee make final decision to either voluntarily stay in a firm or go to other organization. Also, Chin (2018) defined turnover intentions as the conscious and planned desire to leave the organizations. Still, Shahnawaz and Oswami (2011) added that turnover intention is the employees' process by which they used their cognitive thinking, planning and desire to work in the organization or not. Employee turnover is detrimental to both individuals and organizations be it either private or

public. It refers to the number of staff who intend to leave an organization (Mayhew, 2017). Furthermore, Turnover Tendency, It is conceptually defined as the thinking and planning of employees to leave their jobs due to different reasons and is directly attributed to the actual turnover rates of employees in an organization (Belete, 2018).
In addition, According to Tett and Meyer, (1993) stated that, employees' turnover can be described as a termination of an individual employees from his organisation and further divided in two different dimensions such as voluntary and involuntary turnover, voluntary turnover-intention refers to as deliberate readiness of employees to quit from the organization, while involuntary turnover is a situation where by an employee unwillingly leave the organisation by reaching his retirement age, midcareer changes or Firings. e.t.c. More also, Pizam, and Thornburg (2000) stated that, voluntary turnover is the voluntary resignation by an employee. In addition, Croasmum et al. (2002) viewed turnover as employees movement out of the organisation or any permanent departure beyond organisational boundries.

Turnover can be classifies as voluntary and involuntary turnover. As Perez (2008) stated, since turnover is often associated with variables, such as job satisfaction, it is important to distinguish voluntary from involuntary turnover, otherwise the estimation of such a relationship in terms of all leavers will be inaccurate. When an employee leaves his work and the organization by his or her will the turnover is termed as voluntary turnover. As cited by Perez (2008) and Staw (1980) described that Voluntary turnovers create significant cost, both in terms of direct cost, such as replacement, or in terms of indirect cost, such as the pressure on remaining staff or the loss of social capital. Taylor (1998) further divided Voluntary turnovers in to functional and dysfunctional turnovers. Functional turnovers are the resignation of substandard performers and dysfunctional turnovers refer to the exit of effective performers. Dysfunctional turnover further classified into avoidable turnover (caused by lower compensation, poor working condition, etc.) and unavoidable turnovers (like family moves, serious illness, death, etc.) over which the organization has little or no influence Involuntary turnover refers the decision of management to force the employee to leave the organization. Therefore, every organization must use HRM practices as remedy to reduce the degree of employee turnover intention and overcome the problem of actual turnover (Cruise & McLeary, 2018).

2.2 Human Resource Management (HRM) Practices

2.2.1 Training and Development

According to Latham (1988), training and development refers to the process of gaining and developing abilities, skills and knowledge of individuals in order to perform daily operation smoothly in organizations. Also, training and development is defined as an organizational effort which is planned to provide assistance on employees' learning (Noe, 2010). Training aims to deliver knowledge and skills that are work related; while, development pertains to putting effort in changing employees' attitude (Werner & DeSimone, 2011). Training and development are also described as the processes that assist organizations to close the discrepancies between expected outcomes and current performance (Elnaga & Imran, 2013). Hence, training and development are believed to assist employees to accomplish organizational goals by transferring learned knowledge at workplace (Salas et al., 1999).

Therefore, training and development are as the planned effort or process whereby the organization assists the employees in facilitating or organizing learning activities for example conferences, workshops and many more of their job-related competencies (e.g. knowledge, behaviour or attitudes, skills), that can be beneficial toward the successful job performance and the organisation to achieve its defined goal (Noe, 2010). In modern organizational practices, training and development can help upgrade traditional work practices to an advanced work process (Kathiravan, et al, 2006), reduce stress and anxiety (Chen, et al, 2004), as well as lower the level of turnover intention among employees in workplace (Aburumman et al., 2020; Chen et al., 2004). For each and every organisation in order to replace it outgoing skillful and competence employees it has to embark on training program. In a contrary view, according to Alkahtani (2015) Training program add value, competencies and skills to the employees, and also, increases the likelihood of being taken by rival organizations.

Furthermore, training can be classified in to two categories: 1) on-the-job training and 2) off-the-job training (Ju & Li, 2019; Versloot, 2001). In a similar view, Sambrook, (2003) stated that, training and development can be divided into three facet which includes: on-the-job, off-the-job and distance training. According to McArdle, (2015) On-the-job training is the type of training provided at the workplace, is also a situation where by employee can learn the required skills that can be used in discharging his duty in the workplace using one on one training. While, off-the-job training is also known as formal training which refers to a situation where by an employee is allow or released to undertake special training program from universities, colleges and other specialist training companies who are external/outside to the organisation (Ju & Li, 2019)

According to Rawashdeh, (2018) training is one of the most important human resource management practices in the work place, as seen as the most valuable HRM practice that contributes immensely to organizational efficiency and effectiveness. Also, training help in developing the employees knowledge, abilities and skills in order to perform daily operation smoothly in organizations

2.2.2 Compensation Practices

Compensation practices is defined as any benefit gain from the organization either in monetary term or non monetary term and it may include all the rewards packages provided by the organization to its staff in exchange of the work done or services rendered such as salary, wages and bonuses etc (Aswathappa, 2008; & Thomas, 1999). according to Vizano, (2021), viewed compensation as one of the major motivating drivers of employees in any organization around the globe, whenever teachers are effectively compensated they will have a positive feelings toward their work and this can lead to the achievement of organisational objective. Also, according to Haidar (2015) compensation is one of the compelling reasons for an employee to be with the organisation, once employee perceived that all his benefit is paid by his organisation it make him have confidence and energetic to stay longer in the organisation. In line with this assertion, Aburumman et al. (2020) found that compensation is the most HRM practice that negatively impact employees' turnover intention; emphasizing that compensation that is not commensurate with needs of employees, may result to high level of turnover among employees in workplace.

Furthermore, according to Candra, (2018), compensation practices is a multi-dimensional in nature, that is financial compensation and non-financial compensation, financial compensation comprises two categories: 1) direct and 2) Indirect. Direct Financial Compensation refers to any payments made to workers in the organisation that relate with the salaries, wages, bonuses and commissions. And indirect financial compensation refers to any form of payment that covers things like benefits, retirement plans and temporary leaves of absence etc. And that of non-financial rewards can be inform of team leadership opportunities, commendation, self-esteem, and recognition of achievements that employees have made. A good compensation system can motivate employees, thereby reducing the intention of looking for other jobs and turnover (Wanous, 1974; Shi, 1991)

2.3 Career Growth

Career growth refers to the development of the employees in the organization as employee can grow through his career by getting improvement in the career level and learning new skills (Satter & Ahmed, 2014). Accordingly, Bagri (2010) and Yifei, (2018) maintained that, lack of career growth can make employees develop the intention to quit an organization. Career growth play a significant role in reducing workers intention to leave their organisation (Ohunakin, 2018). Also, Nawaz & Pangil, (2016) stated that, those employees with high anticipation that their organisation will allow their career to growth will have higher tendency of being with the organisation for longer period of time than those with lower expectation, which means employees intention to quite will be reduce vice versa.

Furthermore, Karavardar, (2014) stated that career growth is multi-dimensional in nature which includes: Promotion speed, renumeration growth, professional ability development and career goal progress. According to, Weng and McElroy (2012) and Weng, (2010) defined organisational career growth as the extent to which an employee perceives that his/her organization provides an environment where his or her career goals can be attained. Also, Weng and McElroy (2012) and Weng, (2010) added that career growth classified in to three dimension such as: career goal progress, professional ability development, and promotion speed/remuneration growth. in addition, Vande, (2020) refers career growth as a multi-dimensional in nature such as employees' own efforts in making progress toward their personal career goals, acquiring professional skills within the organization and the organization's efforts in rewarding such efforts, through promotions and salary increases.

2.4 Performance Appraisal

Performance Appraisal is defined as the process of evaluating the performance and skills of the employees in terms of the requirements of the job for which they are employed for, as well as purposes of administration including placement, selection for promotions, providing financial rewards and other actions which require differential treatment among the members of a group as distinguished from actions affecting all members equally (Oh, 2020). Consequently, Aburumman et al. (2020) confirmed that performance appraisal is an important HRM practice that negatively impact employees' turnover intention. Hence, inadequate performance appraisal mechanism in an organization may result to high level of turnover intention among employees in workplace.

In addition, Aburumman et al. (2020), empirically established that performance appraisal contributed to the lowering of employees' turnover intention. in a similar vein, a good performance appraisal will help in reducing employee intention to quite (Maiyaki & Yaro 2020). Hence, performance appraisal involves a formal and structured system of evaluating job related behaviours of employees and their contributions to the organization that is designed to minimize the turnover intention of organization's human resources (Andrew, 2009).

2.5 Promotion

Promotion is defined as a way of giving employees a hope and faith in their career in the work place and stimulating them to move ahead for better work performance and other organizational approved forms of behavior (Chukwu, 2019). Accordingly, Aburumman et al. (2020) posited that promotion is more of advancement of employees from lower grade to a higher one, which makes it as an important HRM practice that can negatively impact employees' turnover intention. Also, promotion viewed as an official upgrade from previous rank to the high level of rank which can bring about an increase in salaries, recognition and motivation of employees and also seen as a feedback from the organisation to the employees outstanding performance in turn lead to employee commitment toward the achievement of organisational objectives (Mohammed & El-jajah 2019). Furthermore, Siburian, (2013) stated that, the most important benefit of promotion apart from the financial benefit, it also bring about new experience to the employee which can improve his intellectual capacity.

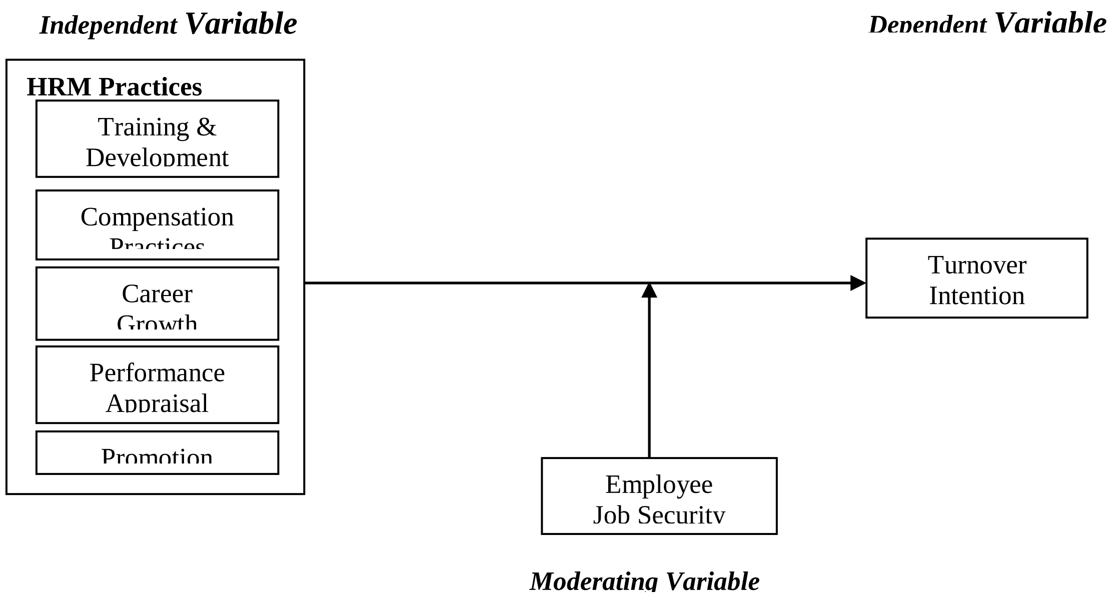
2.6 Concept of Job Security

Job security has been defined as employees' perception that they can have their jobs as long as they want and that there are no subjective or objective factors that can make them susceptible to job loss (Abolade, 2018). Also, according to Salas-Vallina and Alegre, (2017) contended that, job security refers to the employees perception of total fulfillment of all the stated condition of service, code and conduct, privileges and promises which in turn lead to the employee reciprocation by engagement to their work in order to achieve organisational goal. in addition, Nkedishu, (2020), added that, job security is the feeling of safe and secured about the continuity of the job by an employee without having any fear/threat of losing his job whether be through involuntary turnover, premature retirement and many more, once there is job security in the organisation the employees perceive the organisation to be their comfort zone. In addition, Akpha, (2013) stated that, job security is defined as the employees assurance or guarantee about the continuity of working with the organisation without any threat in term of loss of job or any right and privileges related to the job e.g. promotion opportunities, conducive working condition and career opportunities, among others.

Furthermore, according to the scholars like Delery and Doty (1996) and Davy, (1997) conceptualize job security as the degree of stability and continuity level perceived by the employee on his job and its features in the organisational future. Findings of prior studies, job security will be incorporated as a moderator on the relation between HRM Practices and employee turnover intention (Kraimer, 2005), other variables may be taken as moderator as suggested by Santhanam and Srinivas, (2019). This is also supported by Hair (2010) that when there is an unclear, in consistent and weak relationship between the predictor variable and criterion, a moderating variable is suggested to be used. Thus, this recommends the need for the moderator variable. Therefore, this study suggests that the job security could moderate the relationship between HRM Practice and turnover intention among Bauchi State teachers.

2.7 Conceptual Framework

Below is the proposed conceptual model for an employee turnover intention may be as a result of perceived low employee job security with HRM practices.



Source: Researcher

2.8 Theoretical Review

The current study adopts Social Exchange Theory (SET) to draw support in the course of explaining the relationship between the variables which was originally developed by Thibaut and Kelley (1959). This theory has also been utilized increasingly as a theoretical base to underpin turnover and retention research, as well as comprehend the employer and employees' relationship (Coyle-Shapiro & Conway, 2005). SET postulated that good acts and performances must be reciprocated (Blau, 1964). Also, the theory stated that that an employee who feels that he/she gets benefits from organisation will feel obligated to reciprocate with the gesture or compensate through positive behaviors, attitudes, efforts, and devotion (Mossholder, Settoon, & Henagan, 2005). Also, in an attempt to validate the theory of social exchange, Abubakra, Chauchange, kura, (2015) used the theory in assess the relationship between perceived organisational political, rganisational trust, training and development and compensation practice on turnover intention and the result found a strongly relationship.

Moreover, the main postulation of SET is that a person makes social relationships on the basis relationships that would be mutually beneficial, especially as employees' performance depends on how they are treated in the organization. This is called benefits reciprocation between employers and employees. Thus, as long as employees' values and expectations are met, employee embeddedness and commitment will be increased, which in turn decrease employees turnover intention and increases employee retention.

Therefore, when ever employees perceived that their organisation provided them with proper training and development, fair compensation, proper career growth, fair performance appraisal and a fair promotional mechanism will influence them to reciprocate with the gesture to stay in the organisation and reduce their intention to quite, Based on the earlier mentioned literature and theoretical highlights, this paper proposed a model that can investigate the moderating role of job security on the relationship between HRM practices (training and development, compensation practice, career growth, performance appraisal and promotion) and turnover intention of teachers

3.0 Conclusion

This conceptual study may provide useful guide into the rate of teachers turnover intention among public secondary school teachers in Bauchi State, for stakeholders includes policies makers, Ministry of Education, principals. Specifically, when tested empirically, the study may stands as a feedback for policy makers which can help in reducing the rate of teachers turnover intention. Furthermore, this proposed conceptual paper when tested empirically could provide insight on significant moderating role of Job Security on the relationship that exist between HRM Practices (Training and Development, Compensation Practice, Performance Appraisal, Career Growth & promotion) and Turnover Intentions of public secondary school teachers in Bauchi State. Also, give further validation of the above framework. Future studies should employ either a cross sectional and/or longitudinal study, so that the moderating effect could be concluded between the independent variable and the dependent variables.

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Quality Management Practices Implementation in Construction Firms

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Abstract
Quality management is an important management system considered by construction firms which improve the level of their performance. It is required for a construction firm that seeks to sustain itself in the current construction market which is highly challenging and competitive. The objectives of the study were to find out the benefits and factors affecting quality management implementation of construction firms in Federal Capital Territory, Abuja. The study administered questionnaire to 270 randomly selected registered construction firms of Federal Capital Development Authority (FCDA) in Abuja. Mean score was used to analyze the findings and the rankings of each factor was based on the mean scores associated with standard deviation. The findings of the study revealed that the most prevalent benefits of quality management practices include keep improving the performance; improved company moral; better quality products and services and better customer satisfaction. Finding also revealed the factors affecting quality management implementation practices, of which the highest level of factors identified was leadership and top management commitment and role evaluation, selection and appropriately exercise control over the capabilities for quality delivery by subcontractors; and identify, implement and control the application of statistical techniques in quality control. The study implies that leadership and top management should be more concern about implementing quality management practices in their construction projects.

Keywords: *Quality, Quality Management Practices, Construction Firms*

1.0 Introduction

The construction sector is globally considered to be a basic industry on which the development of a country depends. To a great extent, the growth of a country and its development status is generally determined by the quality of its infrastructure and construction projects (Wasiu, Aliyu and Modupe, 2012; Abdulrahim 2016). Similarly construction industry is vital for the development and growth of any nation. However, attainment of acceptable levels of quality in the construction industry has long been a problem. In fact, the construction industry is commonly regarded as the industry with the poorest quality compared to other sectors such as manufacturing and service (Wanderi, Mberia and Oduor, 2015).

The main reasons in project failure in developing countries include among others, lack of advanced planning, a holistic approach, lack of comprehensive engineering and inconsistency in monitoring and follow-up and above all, absence of a methodological approach. Quality elements must be given prior importance in the construction industries. (Ayalew *et al.*, 2016, Yohannes, 2020). The quality elements are team work, training, supplier's involvement, cost of quality, customer service, management commitment and leadership, statistical methods. The quality of codes and standards, drawings and specifications and constructability analysis plays a vital role in the quality of the construction works. (Rajiv & Harinat, 2018).

A study conducted by Mohammad (2016) identified the benefits of implementing quality management in construction industry as helps to identify the problems area, helps in improve cost estimating, achieve the desired outcomes and keep the customer satisfied, Improve warranty claims, attain and sustain the competitive advantage, keep improving the performance, maintain a consistent level of products and services improved safety and reduced rework.

According to Lassad (2006) itemized factors affecting quality management to include top management commitment and support, customer focus, organization for quality, employee training, employee participation, supplier quality management, continuous support, quality system improvement, quality system improvement Information and analysis and statistical quality techniques use. Project quality is greatly affected by poor management practices in each stages of the project. Managing quality in construction requires assigning the right people on projects. Leadership skill is one aspect of delivering a successful project. A leader without the proper understanding of project management tools and techniques cannot direct projects to hit success targets (Yohannes, 2020). This study is achieved through the following objectives:

(i) To determine the benefits of implementing quality management of construction firm..
(ii) To identify factors affecting quality management practices of construction firms

This research is of great significance to the growing construction sector in Nigeria. The findings of the study will be of importance to policymakers in identifying current and various challenges faced in construction firm, as well as developing good policies about quality management practices that will bring about success in construction projects. The importance of the study to construction stakeholders such as contractors, clients and consultants as it will enlighten them more about the impact of quality management practices on project performance and the immense benefit of practicing quality management in construction projects.

This study will also contribute to the body of knowledge in the field of quality management practices, and as a result, it will be used as a reference material for students and other interested researchers who want to conduct a more in-depth research on quality management practices. Furthermore, the study will assist the researcher in gaining knowledge in this field and gaining a thorough understanding in order to conduct further research. The study assesses the Quality Management Practices of Nigerian Construction firms registered within Federal Capital Authority (FCT) in Abuja. It is restricted to quality management practices of the Construction firms were evaluated, not the quality of the buildings constructed by the building construction firms. To this end, series of studies have been conducted in the area of QM in construction firms, but little is known in the main QM practices that mostly will reduce the incessant defects in construction products in Nigeria particularly in Abuja. Owing to this research aims at accessing quality management practices in Abuja construction companies, factors affecting the application of quality management practices in construction firms and the benefits of implementing quality management in construction firms in Abuja.

2.0 Literature Review

Quality professionals use a number of definitions to define project quality. Quality in its simplest form can be defined as meeting the customer's expectations, or compliance with customer's specification. No matter what definition we follow for quality, it becomes very complex when we try to put it into actual practice. For a user, quality is nothing but satisfaction with the appearance, performances, and reliability of the project for a given price range (Collins, 2015). The implementing concepts of quality management in construction project require the identification of quality standards (quality planning), the evaluation of overall project performance (quality assurance), and the monitoring of specific project results (quality control), Quality assurance (QA) and quality control (QC) are importantly and mostly used in construction project (Solomon, 2019).

Quality of construction projects is linked with proper quality management in all the phases of project life cycle (Yohannes, 2020). Yahya *et al.*, (2019) also stated in their study that fluctuation of materials price, lack of conformance to specification, poor monitoring and feedback, poor contract management and supply of defective material were the most significant factors contributing to poor construction project performance. Furthermore, Udeh (2018) opines that there are many constraints that compromise quality management in building construction projects in Nigeria which results to substandard buildings that are highly prone to collapse, these comprise of substandard materials, inexperienced contractor, lack of technical and professional experts, defective design and poorly trained workers as the major factors. Therefore there is a low uptake of quality management practice principles within construction organization in Nigeria. However, preparation of quality management plans (QMP) and quality auditing (a measure of quality assurance in building production), is not popular among Nigerian construction firms. Inadequate planning arrangements for quality, poor communication of quality requirements and lack of awareness of the benefits of quality management were identified as the most significant issues affecting quality management practice. (Abdullahi et al., 2018). While these concerns linger on, the problem of the technical professional bodies and allied government agencies have not really focused on the quality management of construction projects in such a way as to have a statistical base on the state or status of their quality management implementation (Abdulrahim, 2016).

During the last three decades, the concept of effective and efficient implementation of quality management systems has been the primary concern for the company managers, in particular those which companies that are the leaders in the international construction market (Mohammed, 2017). Mohammed further stated that Quality Management is one of the important elements of any construction project as cost and time, the role of it for any construction company is not an isolated activity, but intertwined with all the operational and managerial processes of the company as it attract customer’s satisfaction which would bring long term competitiveness and business survival for the companies. Since the early 1990s, quality management systems have been implemented and adopted in the construction sector worldwide (Leong et al., 2014). According to Benitto and Arunima (2017), quality management has increasingly been adopted by construction companies being an initiative to fix quality problems and to generally meet the wants of the last customer, when an industry needed seriously to occupy the idea of quality management system in the construction industry. Quality management system could possibly be implemented either at the business level or at the project level itself.

However, Hesham (2016) stated that in order to achieve quality in construction, the construction project must be contained as a set of activities that start with the requirements of the customers and end with satisfaction and contentment of the customers. It is also worth that quality management in construction is the responsibility of the stakeholders in the construction project (the owner designer- contractor-supervisor). Heshem further stated that modern quality management was classified as the following: (1) Quality Inspection, (2) Quality Assurance, (3) Quality Control and (4) Total Quality Management. Therefore, the designer establishes the quality standards and the contractor in building to the quality standards in the plans and specifications, controls the quality of the work. The purpose of construction quality management (CQM) is the Government’s efforts, separate from, but in coordination and cooperation with the contractor, assure that the quality set by the plans and specifications is achieved. CQM is the combined effort of the contractor and the Government. The contractor has primary responsibility for producing construction through compliance with plans, specifications, and accepted standards of the industry.

3.0 Methodology

The methodology involved a descriptive survey with a structured questionnaire administered to construction industry practitioners in Abuja. A total of 270 questionnaires was administered, out of which 221 (81.9% response rate) was returned. This response rate met the guidelines put forward Nulty (2008) that a response rate of 73% is considered valid for a sample size of 250 respondents. This questionnaire was created using a five-point likert scale with each point representing different levels of agreement and disagreement (with 1 indicating " strongly disagree," 2 indicating "disagree," 3 indicating "neutral," 4 indicating "agree," and 5 indicating "strongly agree.") and was analyzed using descriptive analysis. The mean score was used to analyze the findings among the factors affecting quality management and the benefits of quality management in construction firms and the rankings of each factor was based on the mean scores associated with standard deviation. Some of the variables and factors used by Lassad (2006) and Mohammad (2016) were adopted by this study.

4.0 Results and Discussion

4.1 Background Data of Respondents

The results of the educational qualifications showed that 2.7% had NCE/ND, 57.9% had Bachelor's degree and HND, 27.6% had a master's degree and 11.8% had PhD. Results further revealed the following outcomes, Project Managers (20.4%), Engineers (12.7%), Architect (14%), Quantity Surveyor (19.9%), Builder (18.6%), Contractor (14.5%). About 32.1% of the respondents had experience spanning 11 – 15 years while 10.9% had the least experience of 1 – 5 years. This result implies that construction professionals are experienced in their various fields which guarantee some level of their understanding of project quality management. The background data of respondents is presented in Table 1

Table 1: Background Data of Respondents

Profile	Frequency	Percentage (%)
Educational Qualification		
NCE/ND	6	2.7
HND/BSC	128	57.9
MBA/MSC/M.Eng	61	27.6
PhD	26	11.8
Industry Professionals		
Project Manager	45	20.4
Engineer	28	12.7
Architect	31	14.0
Quantity Surveyor	44	19.9
Builder	41	18.6
Contractor	32	14.5
Years of Experience		
1 – 5	24	10.9
6 – 10	33	14.9
11 – 15	71	32.1
16 – 20	67	30.3
0ver 20	26	11.8

4.2 The Benefits of Implementing Quality Management in Construction Firms

The results of the benefits of implementing quality management in construction firms is presented in Table 2.

Table 2: Benefits of Implementing Quality Management in Construction Firms

Factors	Mean	Std. Dev	Rank
Keep improving the performance	4.89	0.67	1
Improved company moral and a companywide spirit of teamwork	4.88	0.68	2
Better quality products and services	4.85	0.71	3
Better customer satisfaction/more repeat customers	4.83	0.62	4
Maintain a consistent level of products and services	4.82	0.88	5
Improved Financial/budget performance	4.80	0.69	6
Reduces waste of resources e.g. labour, materials and Money	4.74	0.56	7
Improved schedule performance.	4.73	0.76	8
Elimination and Reduced rework	4.72	0.72	9
Higher productivity	4.71	0.72	10
Attain and sustain the competitive advantage	4.71	0.62	11
Develop the firm image and being a qualified competitor market position.	4.69	0.85	12
Improved employee job satisfaction	4.68	0.65	13
Helps to identify the problems area.	4.63	0.73	14

From Table 2, the standard deviations of all the factors for the benefits of the implementing quality management in construction firms are small (i.e. closer to zero), this indicate that all the factors itemized in the study have strong benefits to the construction firms in Abuja. Specifically, factors such as Keep improving the performance, Improved company moral and a companywide spirit of teamwork, and Better quality products and services ranked 1st, 2nd and 3rd respectively were provides more benefits to the construction firms compared to others.

4.3 The Factors Affecting Quality Management in Construction Firms

The results of the factors affecting quality management in construction firms is presented in Table 3

Table 3: Factors Affecting Quality Management in Construction Firms

Factors	Mean	Std. Dev	Rank
Leadership and Top management commitment	4.86	0.77	1
Evaluation, selection and appropriately exercise control over the capabilities for quality delivery by subcontractors.	4.83	0.82	2
Identify, implement and control the application of statistical techniques in quality control	4.82	0.66	3
Monitoring and feedback by project participants	4.81	0.56	4
Training for team members on quality	4.80	0.71	5
Definition, establishment and documentation of quality planning on a project or contract, and also preparation of a quality plan.	4.77	0.67	6
Conduct receiving inspection and testing of incoming materials and components in accordance with quality plan	4.76	0.71	7
Corrective and preventive action	4.75	0.68	8
Conformity or nonconformity of work on the basis of Inspection and performance.	4.71	0.74	9
Inspection control, measuring and testing of equipment prior to use and after use	4.69	0.77	10

From Table 3, the standard deviations of all the factors affecting quality implementing quality management in construction firms are small (i.e. closer to zero), this indicate that all the factors itemized in the study have strong effects to the construction firms in Abuja. Specifically, factors such as leadership and top management commitment, Evaluation, selection and appropriately exercise control over the capabilities for quality delivery by subcontractors, and Identify, implement and control the application of statistical techniques in quality control ranked 1st, 2nd and 3rd respectively were provides more factors that affect construction firms compared to others. This implies that in order to ensure proper quality management practices implementation in construction firms factors must be given a due consideration as they all have one or two role to play in ensuring proper quality management practices in construction industry.

5.0 Conclusion and Recommendation

The findings of this study show that, while construction firms have benefited in many ways in quality implementation practices, the factors that affects quality management implementation have also been identified. As a result, this requires that top management commitment to quality must convey the philosophy that quality will receive a higher priority. Based on the findings, recommendations were put forward to provide some direction for improvement in this regard as; Construction industry need to set up quality departments that will plan, control and ensure proper monitoring is implemented at every construction stage so as to ensure adequate quality. All project stakeholders should recognize that implementing proper quality management will give them both a competitive advantage and also improve their collective reputation. Meeting clients' requirements the first time and every time within the complex processes of construction is achievable with right quality management practices.

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Safety Practices and its Influence on Productivity of Workers on Construction Sites in Kaduna

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Abstract
Construction sites poses serious threat and damages to construction workers as it is regarded as one of the most injury prone sector, when compared with other sector. Poor safety practices by managements and construction workers have great effects on the productivity of the construction in general. The study aimed to assess the safety practices and its influence on productivity of workers on construction sites in Kaduna, Kaduna State, Nigeria. The study had three objectives, which includes; to determine the safety practices of management staff and workers on construction sites; to examine the factors that influence worker's productivity on construction sites; to examine the impact of safety practices on workers on construction sites. Data was collected from 30 (Thirty) registered construction companies with Kaduna State Public Procurement Authority(KSPPA) using open ended and close ended well-structured questionnaire administered to 360 people (management, workers and supervisory bodies) in their construction sites in Kaduna. The data was analyzed through the descriptive and inferential statistical methods (Percentage tables, Pie chart, Mean score). Findings from data revealed that, on safety practices of management and workers in construction sites, provision of adequate site supervision and inspection is rated highest, followed by provision of adequate safety measures respectively. As a strategy to enhance performance through safety practices, the study recommended that safety managers should be engaged and training of workers on safety practices should be given adequate priority. There is need to avoid poor supervision of construction work always to reduce communication breakdown and Professional should be charged with supervisory roles on sites.

Key words: *Health, Safety, Accident, Hazard, Productivity, Construction Firms*

1.0 Introduction

The construction firm is known to be one of the riskiest industries in most countries and one of the most dangerous industries in which to work (Agwu and Hilda, 2013). It is believed to employ over 7% of the world's entire workforce and contributes to more than a 10th of the global Gross Domestic Product (GDP). It currently shows increasing trends, not only in terms of volumes of work done, but also in terms of the complexity of construction (Kayumba, 2013).

However, it is of great importance to provide a safe working environment for workers due to intrinsic hazards and risks associated with every situation (Olutuase, 2014). This because workers work better in a safe and conducive environment free from harm or danger. The mental and physical well-being of workers is a great priority in work delivery, since workers will only partake in construction when they are sound and fit. Again, workers are three times more likely to be killed and twice as likely to be injured as workers in other occupations. Hong Kong recorded a total of 3,001 convictions for health and safety offences with a total fine of $17million in 1993. Out of this figure, 1,382 convictions with a total fine of $1million were related to construction sites (Okeola, 2009).

The problem is not that safety measures on site are unknown but implementations are not adhered to and it is prevalent many construction sites in developing countries. Management failed to provide adequate safety tools and training, as they lay claim to cost of providing them and as well training the workers on how to apply them, hence they go in search for workers who are not acquitted with the knowledge of safety to reduce cost.

Safety practices are parameter to measure successful project delivery which is most paramount to the client because they greatly influenced construction projects performance and aids in achieving efficiency and effectiveness amongst professionals and even workers in the construction industry (Famakin and Fawehinmi, 2012) and Agwu and Hilda, (2013) asserted that more people have met their untimely death on construction sites in Nigeria while others have become permanently crippled from construction related injuries and fatalities that are by their nature unplanned and uncontrolled events. Since fatalities are unplanned events, they tend to occur uncontrolled and when they occur, they result in injuries and damages that are life-threating and might have psychological and mental effects on not only the victim but also on the victim's family. This study assessed the health and safety practices and its influence on productivity of workers on construction sites in Kaduna. The rest of the paper is organized into four sections. Section two presents a review of related literature on Safety practices, Productivity, and Safety Regulations etc. Section three discusses the methodology adopted by this paper. Section four is on results and discussions. While, section five presents a summary, conclusion and recommendations arising from findings of the study.

2.0 Literature Review

2.1 General Concept on Construction Industry

In Nigeria construction industry according to Oresegun (2009), safety is viewed as an inevitable aspect of construction since the only time an employee will perform his duties is when he or she is in good health, sure of a safe working condition and assured of good health care even when an accident occur. According to Ezenwa, (2011) construction site should adopt appropriate Health and safety methods that will reduce or eliminate risk to death or injury and based on this fact, construction industry would need to invest in safety practices as rise in technology and infrastructure would leads to construction sites accidents. Datta, (2000) also added that the construction sector of developing countries also demonstrates poor performance in respect of health and safety due to the absence of any rigid safety and construction laws. However, in the recent past in Nigeria especially 2005 till date, death tolls, permanent disability and severe environmental threat had been on the increase through collapse of buildings and major operational accidents especially in Abuja, Lagos and Port Harcourt (Awodele, and Ayoola, 2005).

Okeola, (2009), asserts that Health and Safety in construction is all about preventing people from been killed or injured at work or becoming ill through appropriate precaution and providing a satisfactory working environment. Ikechukwu and Dorothy, (2013) argued that Nigeria falls within the category of countries having no adaptive health and safety laws and regulations, where organizations allocate little resources to health and safety management, rarely keep, report, or release accurate records of accidents and injuries on site, leading to poor health and safety performance. They further argued that effective management of health and safety is motivated by various factors of which could be centered on the need to abide by existing rules and regulations, a consideration of human lives that are involved (socio-humanitarian perspective), or on the direct and indirect cost involved (financial-economic perspective).

2.1.1 An Overview of Construction industry in developed Countries
In most developed countries in the world, accident and injuries occur at greater rate than in developing countries. In the United States of America (USA), it accounts for 22% of all fatal accidents and only 7% of the employed (Che Hassan, Basha, and Wan Hanafi, 2007). Omran and Kadir (2010), averred that the construction industry is characterized as one with a poor safety culture globally. Bomel, (2001) noted that in Japan, construction accidents account for 30%-40% of the overall industrial accidents, with the total being 50% in Ireland and 25% in the United Kingdom (UK). Construction industries in United States according to Godwin, (2011), currently accounts for over 22%of all occupational death in the country despite the fact that it employs less than 7% of the country's workforce.

2.1.2 An Overview of Construction industry in developing Countries
Construction industries in developing countries according to Kazaz and Ulubeyli, (2004) suffers from delays and cost overruns due to labour productivity and most developing countries share the characteristic of low productivity. In this regard, Okolie and Okoye, (2013) affirmed that the emergence of new regulations, laws, standards and codes would greatly assist in making many construction organizations to improve their safety performance.

However, practices are not that simple, they required carefully planned and organized measures which are well implemented and controlled. Construction is generally a labour-intensive industry and improving the productivity of labour constitutes a prime target (Tran and Tookey, 2011). According to Attar et al. (2012), productivity signifies the measurement of how well an individual entity uses available resources to produce outputs from inputs. In the view, it is stated that in developing countries, physical construction activities alone provide between 2 and 6% of the employment demands of the nation and the subsidiary activities provide an additional 2 to 4%, while in the developed countries the figure rises to between 6 to 10% and 4 to 6% (Cockburn and Charles, 1970; Anonymous, 2005; Okeola, 2009).

2.2.3 General Concept on Safety regulations in Construction
In Nigeria, the first effort towards regulating and controlling Health and Safety at work was the Factories Act of 1958, but unfortunately there is lack of provisions for the enforcement of Health and Safety standards in construction industry. This Act was repealed in 1987 and replaced with the Factories Decree No. 16 and Workman's Compensation Decree No. 17. Both were signed into law on June12, 1987, but became effective in 1990 which Adeogun and Okafor (2013), are not being enforced in Nigeria as evidenced from the reports of unhealthy exposure to risks of workers and employees in various organizations are rampant.

Idoro, (2008) and (2011) observed that almost all the existing safety and health regulations in Nigeria originated from foreign countries. The Factories Act of 1990 is an adaptation of the UK Factories Act of 1961 (Idoro, 2008) while the Occupation Safety and Health OSH Act of 1970 was said to originated from America. The control of substances hazardous to health regulation of 1988, the PPE at work regulations of 1992, and management of health and safety at work regulations of 1999 are all British regulations (Idoro, 2011). The first effort in terms of regulation relating to health and safety at work in Nigeria was the Factories Act of 1958 (Dodo, 2014).

2.3 Productivity Rate in Construction Industry

Productivity according Bamisile (2004) cannot be economically achieved through the use of force but the creation of conditions that will encourage self-motivation and engender team spirit. Ogunlana, (1993) and Drucker, (1980) cited by Ameh and Osegbo, (2011) argued that there is nothing as dangerous to an economy as a decline in productivities because it creates inflationary pressure, social conflicts and mutual suspicion. While late arrival of materials or labour, equipment break-downs, poor lay out of work plan, and inability to provide information (Thomas and Raynar, 1997 in Mojahed, 2005) will lead to non-productive or down time. Debrah and Ofori (2001) asserted that the main priority is to improve construction productivity is by tackling the factors which impede productivity enhancement in the industry, this can be achieved by improvements of productivity and not to stop at improving manpower but it requires including improving many areas of construction industry.

Finally, according to Brenner, (2004) the ability of employees within an organization to share knowledge throughout the system depends on the conditions of their work environment. The construction industry in Nigeria focuses great attention towards improving productivity on site as it increases their profit and the concern for productivity especially in the public sector has increased with intensity, culminating to the establishment of the national productivity center under the Federal Ministry of Employment, Labour and Productivity (Osoba, 1999; Umeh and Usman, 2000).

2.3.1 Productivity Rate in Construction Industry in Nigeria

Construction industries in developing countries according to Kazaz and Ulubeyli, (2004) suffers from delays and cost overruns due to labour productivity and most developing countries share the characteristic of low productivity. In this regard, Okolie and Okoye, (2013) affirmed that the emergence of new regulations, laws, standards and codes would greatly assist in making many construction organizations to improve their safety performance.

However, safety practices are not that simple, they required carefully planned and organized measures which should be well implemented and controlled. Construction is generally a labour-intensive industry and improving the productivity of labour constitutes a prime target (Tran and Tookey, 2011). According to Attar *et al*., (2012), productivity signifies the measurement of how well an individual entity uses available resources to produce outputs from inputs.

In the view, it is stated that in developing countries, physical construction activities alone provide between 2 and 6% of the employment demands of the nation and the subsidiary activities provide an additional 2 to 4%, while in the developed countries the figure rises to between 6 to 10% and 4 to 6% (Cockburn and Charles, 1970; Anonymous, 2005; Okeola, 2009).

2.4 General considerations for Safety Practices in Construction Industry

Jackson *et al.,* (2009) defines workplace safety and health as the physiological-physical and psychological conditions of a workplace that result from the work environment provided by the organization as employees are more satisfied and motivated when their jobs are meaningful, when they create a feeling of responsibility, and when jobs are designed to ensure that some feedback is available. Every job virtually carried the potential risk of injuries or diseases (Leigh, 2011) and each accident, injury or disease developed from multi-linear interactions of the contributory factors and causes (Toft *et.al.,* 2012).

According to Rachenthin, (2004) poor safety practices could negatively influence company morale and make recruiting difficult particularly in high-risk industries. However, to be effective, safety communication and feedback should be a two-way process rather than simply a top-bottom approach as opines by Vinodkumar, and Bhasi, (2010) employees should also be encouraged to give their feedback on safety-related matters to the management and suggest ways of improving the work processes. Safety practices should be considered when planning for construction layout, accessibility, storage of equipment, plant, fencing and hoarding etc.

2.6 General Considerations for Safety Practices in Nigerian Construction Industry

According to Borys, *et al.* (2019), relevant, reliable and valid health and safety performance data is crucial to informing the operational and strategic decisions by driving management of health and safety effectively. Frequent safety meeting according to Tam cited in Hassouna (2005), are essential for communicating safety information to the parties involved.

Safety meetings are crucial to every construction industry, as most information on safety practices are passed and discussed in such meetings. However, in most construction industry, safety meeting is only schedule when accidents occur and only when the projects go beyond design schedule and when the projects require technicality and workers are to be informed on the challenges of the project work.

Okolie and Okoye, (2012) asserted that the institutional and regulatory framework for construction health and safety is highly fragmented and poorly implemented and call for urgent need for provision of adequate and enforceable health and safety regulations for construction operations as well as the establishment of construction industry training institutes including trade Centre’s in different parts of Nigeria.

3.0 Methodology

The methodology involved a descriptive survey with a well-structured questionnaire administered to the thirty registered construction industry in Kaduna with Kaduna State Public Procurement Authority. A total of 360 questionnaires was administered, out of which 249 (70% response rate) was returned. This questionnaire was created using a five-point likert scale with each point representing different levels of compliance (with 1 indicating " very good," 2 indicating "good," 3 indicating "fair," 4 indicating "poor," and 5 indicating "very poor.") and was analyzed using IBM SPSS. The mean score and standard deviation was used to analyze the findings among the impact of safety practices of workers and effects of supervision of workers on productivity and safety, and ranking was based on mean scores and standard deviation.

4.0 Results and Discussions

4.1 Background Data of Respondents

The results show that the respondents were between the age group of; 23% of the 20-29, 47% of the respondents were between the age group of 30-39, 21% of respondents were between the age group of 40-49 while 8% of the respondents were above 50 years of age. Educational qualifications showed that 15% of the respondents have attended only primary school, 40% of the respondent were N.D holder, 32% of the respondents were having HND, 1% of the respondents hold B.Sc / B.Tech, 8% holds M.Sc / M.Tech, while 5% of the respondents holds PhD degrees. It was further discovered that 10% of the respondents were regulatory bodies, 19% of the respondent were management staff while 71% of the respondents were construction workers. This signifies that majority of the respondents to this research questions were construction workers. Finally, it was discovered that 18% of the respondents have undertaken mostly public utility, 24% of the respondent have undertaken commercial, 21% of the respondents have worked on industrial while, 37% have mostly worked on residential. The background data of respondents is presented in Table 1.

Table 1: Background Data of Respondents

Profile	Frequency	Percentage (%)
Age of Respondents		
20-29	57	23
30-39	117	47
49-50	53	21
Above 20	20	8
Educational Qualification		
Primary School	38	15
ND	98	40
HND	78	32
Bsc/B.Tech	21	1
Industry Professionals		
Regulatory bodies	25	10
Managements	47	19
Workers	175	71
Project undertaken		
Residential	197	37
Commercial	127	24
Industrial	114	21
Public utility	97	18

4.2 Analysis of the Observation

4.2.1 Objective One: determines the safety practices of management and workers in construction sites

Table 4.2: Safety practices of management and workers on construction sites

Statements	N	Mean	Std.Deviation
Provision of adequate site supervision and inspection	247	1.66	0.81
Provision of adequate safety measures	247	1.37	0.67
Monitoring and ensuring the use of personal protective equipment by workers	247	1.32	0.60
Ensures workers use efficient handling and storage devices	247	1.23	0.50
Make provision for effective communication and information dissemination amongst workers	247	1.53	0.72

4.2.2 Objective Two: Examine the factors that influence workers productivity on construction sites

Table 4.3: Factors that influence workers productivity on construction sites

Statements	N	Mean	Std. Deviation
Provision for fall protection and building collapse	247	1.28	0.65
Provision for effective scaffolds and ladders	247	1.50	0.84
Provision of tools/equipment such as crane	247	1.92	0.99
Provision for excavation, concrete and underground works	247	1.39	0.76
Provision for transport, earth moving and lifting equipment	247	1.31	0.61

4.2.3 Objective Three: Examine the impact of safety practices on workers on construction site

Table 4.3 Impact of safety practices on workers on construction site

Statements	N	Mean	Std. Deviation
Use of personal protective clothing's and facilities	247	1.77	1.02
Workers presence at safety meetings	247	1.90	1.14
Provision of medium for report and feedback on site	247	1.85	1.05
Workers adherence to safety measures	247	1.31	0.72
Workers presence at safety training, meeting, seminars	247	1.43	0.77

Analysis in Table 4.2 shows safety practices of management and workers in construction sites, it was discovered that provision of adequate site supervision and inspection score a mean of 1.66 and Standard deviation of 0.81; provision of adequate safety measures has a mean score of 1.37 and Standard deviation of 0.67; monitoring and ensuring the use of personal protective equipment by workers score a mean of 1.32 and Standard deviation of 0.60; Ensuring workers use efficient handling and storage devices score a mean of 1.23 and Standard deviation of 0.50; make provision for effective communication and information dissemination amongst workers score a mean of 1.53 and a Standard deviation of 0.72. This agrees with Muhammad, Abdulateef and Ladi (2017) findings that workers' compliance with health and safety regulations have great impact in determining workers' quality and productivity on construction projects.

Again, Table 4.2 shows that Provision for fall protection and building collapse score a mean of 1.22 and Standard deviation of 0.65, Provision for effective scaffolds and ladders score a mean of 1.50 and a Standard deviation of 0.84, Provision of tools/equipment such as crane score a mean of 1.92 and a Standard deviation of 0.99, Provision for excavation, concrete and underground works score a mean of 1.39 and a standard deviation of 0.76, Provision for transport, earth moving and lifting equipment score a mean of 1.31 and a standard deviation of 0.61.

5.0 Conclusion and Recommendations

This study investigated influence of safety practices on productivity of workers on construction sites in Kaduna. Based on the findings of this study, it was concluded that the causes of accident are lack of adaptability of workers to safety practices as against traditional practices, ineffective communication between safety personnel and workers, lack of training on key issues pertaining health and safety consciousness, workers' lack of understanding about the workplace safety rules, operatives' engagement in improper conduct that affect others workers and failure of construction managers from engaging the best strategy to implement effective safety practices on site.

Further conclusion is that strategies to improve safety practices on sites should include: training of new staff on safety practices against the traditional practices of workers, strictly enforcing safety consciousness by workers on sites, training on proper use of scaffoldings, daily safety briefing by safety manager, inspection of scaffolds, equipment and tools before the start of work. The study further concluded that effects of safety practices may include; reduction of accident impact on operatives, cost savings as a result of absent of injury, improved worker's productivity, reduction in project delay and improvement in work place environment.

The study recommends that safety managers should be engaged to achieve effective safety practices on construction sites. In addition, training of workers on safety practices should be given adequate priority. This would ensure optimum utilization of human resources on construction sites and promote sustainable development. It was also recommended in the study, that there is need to avoid poor supervision of construction work always to reduce communication breakdown; inexperienced and uncommitted supervisor; inadequate documentation of records; lack of motivation and unclear instruction that affect productivity.

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Pedagogical Theories in Entrepreneurship Education in Nigerian Universities: Functional or Chimerical

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Abstract
Entrepreneurship education is a necessary method of instilling an entrepreneurial culture and attitude in society, as well as generating jobs, increasing individual 0incomes,and promoting national economic growth. Countries that have embraced entrepreneurship phavemade significant stridesin resolving the unemployment crisis and achieve dremarkable achievements. This research used a survey to collect data. The researcher's use of a sample to extrapolate to the whole population led them to this conclusion. All universities in Ebonyi state that are presently accredited by the NUC and conferring at least a bachelor's degree were included in the research.. The researcher utilized a systematic sampling strategy to distribute study participants across the participating institutions in accordance with their population sizes. A total of 283 respondents were randomly chosen using the sampling method. From the findings, it was discovered that Entrepreneurship education in universities leads to more startup enterprises and greater economic development; the creative environment in the entrepreneurship class encourages my entrepreneurial mind; the entrepreneurship course develops my skills to design a business plan; the entrepreneurship course boosts my abilities to manage an entrepreneurship project; and the entrepreneurship course has no major impact on students at either EBSU or AE-FUNAI. conclusively, the research indicated that teaching students the skills necessary to start their own businesses gives every student a shot at economic independence. It was found that the majority of the colleges and universities investigated complied with the National Universities Commission Standard for Entrepreneurship Education. The goal of good pedagogy is to equip students with the knowledge, skills, and dispositions they need to become independent learners who can find and create their own employment opportunities.

1.0 Introduction

Entrepreneurship education is a necessary method for instilling an entrepreneurial culture and attitude in society, as well as forgenerating jobs, increasing individual incomes, and promoting national economic growth. Countries that encourage entrepreneurship have made significant strides in addressing the problem of unemployment and have seen impressive outcomes (Olokundunetal., 2017, Dakungetal., 2017). According to Dakungetal. (2017), entrepreneurship education may help students develop a desire to start a firm because of the entrepreneurial information and skills they learn. Additionally, Olokundunetal. (2017) discovered that entrepreneurship education greatly enhances a business's start up rate.

All students are capable of becoming self-employed and entrepreneurs if they participate in entrepreneurship education programs and activities, according to Nwambametal. (2018). In Nigeria's colleges and universities, the Nigerian government developed amandatory Entrepreneurship Education curriculum through the National Institutions Commission (e.g.NUC) in 2007 in an attempt to increase the career possibilities for students upon graduation from universities. According to Nwambametal. (2018), it was expected that such entrepreneurship education would be offered successfully via suitable course content, teaching, and learning techniques.

This follows the assertion by Onuma (2016), who noted that effective entrepreneurial courses / programs should foster students' ability to solve challenges. Thus, entrepreneurial education should include some collaborative activities, projects, or exercises (Ogbarietal.,2019). Self-employment and job creation opportunities; requirements for starting and managing a business; the development of a plan for a project, an introduction to small-business startups, fund-raising for the development of businesses, and considerations for the environment were some of the topics covered in the entrepreneurial courses. While the course may cover an essential aspect of entrepreneurship and has the potential to impact practical knowledge to university students, the teaching approach creates a difference in the extent to which these students are impacted.

Students in Nigeria have traditionally relied on their professors for guidance on all topics relevant to their educational endeavours (Adebakin and Ajadi, 2022). In Nigeria, Face-to-face lectures for teaching and learning have been the conventional manner of education. However, this method is rather problematic in enhancing the required creativity and innovation needed to facilitate entrepreneurship. For Sidhu et al. (2015) and Oseni (2017), this teacher-centred educational style promotes student's excessive reliance on the instructor, which has a detrimental effect on student's autonomous aptitude and competence to explore, create and invent (Oseni, 2017; Adebakin and Ajadi, 2022). In order to increase learning in entrepreneurial theory, process, and practice, they need proactive and meaningful pedagogical interventions (Sirelkhatim & Gangi, 2015; Adebakin and Ajadi, 2022). with this in view, this paper will assess a variety of instructional approaches and materials to showcase how these methodologies are affecting student abilities as well as to provide each student with a variety of options for learning vital ideas, skills, and concepts in entrepreneurship.

The aim of this study is to develop pedagogical theories in entrepreneurship education in Nigerian Universities. However, specific objectives are:

i. To find out the extent to which course content of Entrepreneurship Education in Nigerian Universities conforms to the NUC standard.
ii. To determine the Pedagogical Approaches used for Teaching and Learning Entrepreneurship Education in Nigerian Universities.
iii. To determine the effect of learning entrepreneurship education on students in Nigerian Universities.

This study was focused on the course contents, and the Pedagogical Approaches to Teaching and Learning Entrepreneurship Education in Universities in Ebonyi state of Nigeria; specifically, two universities in Ebony state were examined.

2.0 Literature Review

2.1 Concept of Pedagogy

Pedagogy, or teaching methodology, is critical to the learning process. It included an efficient strategy and approach, a capable presenter, and instructional aids. Entrepreneurs are debated as to whether they are born or created. Okolie et al. (2020) research examine how courses are taught and emphasizes the necessity of learning through real-world scenarios, role acting, and project-based learning, as well as business plan preparation and presentation. Conventionally, numerous tactics are utilized in various combinations with various student groups to enhance their learning results. Generally speaking, pedagogy consists of;A content study of the unit/topic/individual idea that the instructor is teaching in the subject.

a) Define the teaching or instructional goals for the topic's subject material by putting the min concrete behavioural terms.
b) Recommendations on how to best teach the material at hand and how to best help students understand it, taking into account the stated instructional objectives.
c) Suggestions for appropriate evaluation methods, such as oral, textual, or experiential learning and test questions, to evaluate the efficacy of the teaching and learning process with respect to the content at hand.

The following graphic depicts the subject matter processes in light of the interconnectedness and dependence of the aforementioned four elements of the educational analysis.

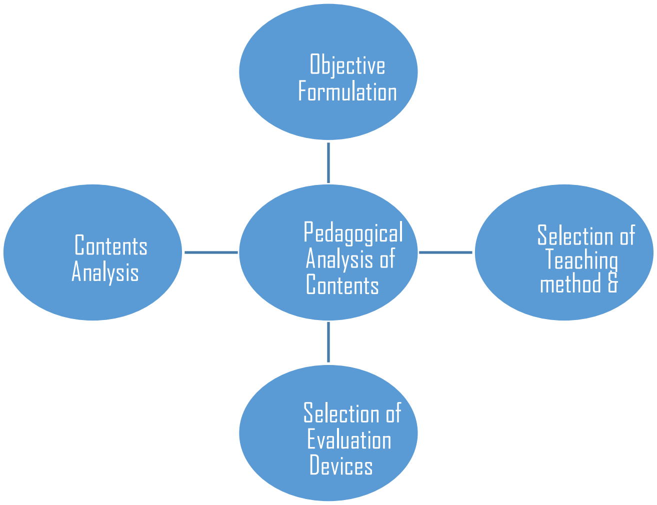

Figure 2.1 Components of Pedagogical Analysis

2.2 Pedagogy for Entrepreneurship Education

Diverse perspectives on entrepreneurial education have been documented in the literature. According to some academics, entrepreneurship education should emphasize entrepreneurial ideas and concepts since they help students enhance their cognitive talents (Igwe 2021) and should include practical instruction on how to start and operate a new firm. (Igwe 2020, Alao et al. 2020), On the other hand, advocated for active teaching and learning methodologies. Alao et al. (2020) also emphasized that it is vital to analyze if existing teaching techniques accomplish course goals based on various teaching styles. They recommended that students develop analytical and decision-making abilities via more participatory approaches such as role-playing and simulation.

According to Ogunleye (2019), conventional lecture approaches are still prevalent in entrepreneurship education. However, several observers questioned the use of conventionaltechniques, arguing that entrepreneurshiph, education should beaction-oriented and practical in nature (Sada et al. 2016). The researchers claimed that conventional approaches that emphasize theory and ideas are ineffective for teaching entrepreneurship and that learning should instead be more proactive,with professors serving as guides or facilitators.

Onuma (2016) suggested that entrepreneurial education involves experiential and practical learning environments, which are challenging to attain via standard teaching methods.On the other hand, several other experts advocated for student-centred problem-based learning in entrepreneurship education (Onuma, 2016). Education, instruction, and learning in Nigeria's classrooms have historically all taken place face-to-face, with pupils reliant on their teachers to help them succeed. Students learn to rely too much on their teacher, which limits their independence and potential for discovery, creativity, and innovation in the classroom (Ogbari et'al., 2019).

2.2.1 Traditional Methods

Utoware and Okoli (2021) report that the majority of Universities Institution (HEI) programs in the United Kingdom (86 percent) continue to use relatively conventional teaching and learning approaches.A traditional method of teaching entrepreneurship in classrooms, called as the didactic method or teacher-centered education, included the teacher lecturing to the students while they listened and took notes. The use of didactic approaches enables students to acquire used to collecting, analyzing, and interpreting real-world data. Lectures, the distribution of chosen readings, textbooks, seminars, and assignments are all examples of didactic approaches (Utoware and Okoli, 2021).

Conventional educational methodologies that emphasize theory and didactic approaches are criticized by Amadi and Eze (2019), who believe that they are "unsuitable" for teaching entrepreneurial skills. It has been observed that in a comparable cultural context, a teacher-centred approach to education leads to undue dependence on the instructor. Teachers may be seen as autocratic when they insist on their pupils just doing what they have already taught them and discussing only what they have already taught them.This undermines students' ability to learn on their own, limiting their freedom of inquiry and innovation The most common methods of teaching entrepreneurship include reading, lectures, guest speakers, case studies, on-site visits, research articles, theses/dissertations, and workshops (Oseni, 2017). These more common methods for studying entrepreneurship were added by Oseni (2017): Students and faculty provide consulting services to aspiring business owners via the use of videos, hands-on experience, the creation of business plans, digital simulations, role-playing games, and direct interaction with successful business people. Because of this, the next section will focus on non-traditional methods of instruction for aspiring business owners:

2.2.2 Non-Traditional Methods

Non-traditional teaching approaches may be seen as a student-centred approach to education and learning. The core emphasisis on the student developing their inventiveness, creativity, initiative, and innovativeness potential. According to Utoware and Okoli (2021), current approaches to teaching and learning are student-centred, which promotes individual learning, creativity, innovation, motivation, self-actualization, and professional applicability. Several examples of a student-centred approach to teaching and learning include the following:

2.2.3 Experiential Learning (EL)

These ideas are drawn from Dewey, Lewin, and Piaget's work (cited in Kolb et al., 2001). The cultivation of a meaningful and self-directed life is seen as the organizing principle of education throughout all experiential learning traditions. Learning by doing, or Experiential Learning (EL), is a strategy for enhancing academic performance. Experiential learning is "the process by which knowledge is produced through the transformation of experience," as the definition puts it (Amadi and Eze, 2019).

The focus of experiential education is on the student, not the teacher. Student engages in activities, asks questions, does experiments, finds solutions to problems, displays originality, and draws meaning from what they've learned (Akhmetshin et al., 2019). As an approach that puts the focus on the student, experiential learning may be modified to meet the needs of students with a wide range of learning styles. It has been shown that, in addition to the activity framework, fostering reflection is an important part of the cycle for youngsters. Indigenous students engaging in experiential learning must recognize and take responsibility for the political and cultural circumstances that inform their own perspectives (Akhmetshin et al., 2019).

Experience, perception, cognition (thinking), and conduct are all part of experiential education. The capacity to adapt to new situations is facilitated by the development and modification of concepts via experience (Utoware and Okoli, 2021).Humans learn by translating their experiences into pre-existing cognitive frameworks, which in turn influences people to change their thinking and behaviour, according to the theory of experiential learning. (Kolb et al., 2001). According to the Experiential Learning Cycle, learning is composed of our interrelated structures, as seen in Figure1below(Kolb et al., 2001).

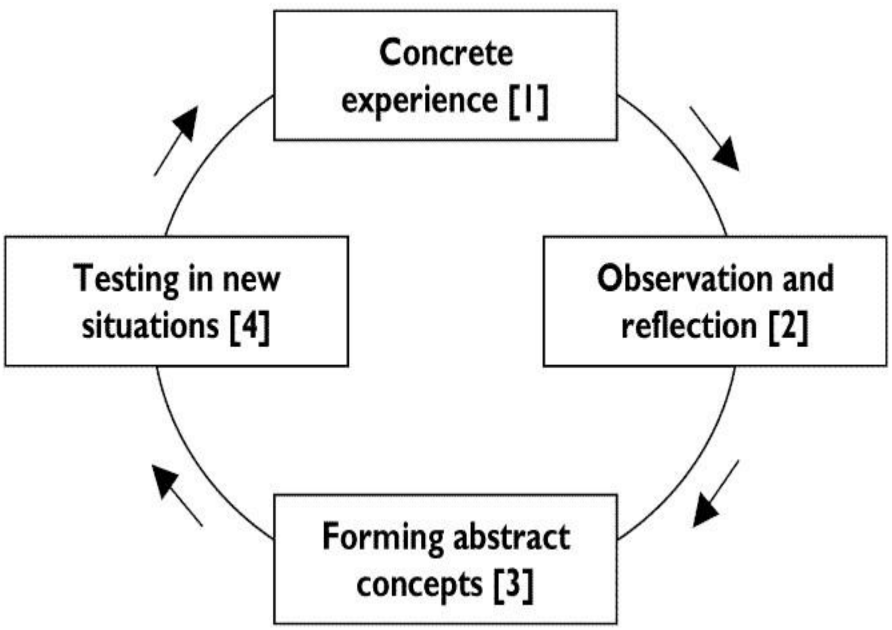

Figure 2.2: Structural dimension underlying the process of experiential learning and the resulting basic knowledge forms

This curriculum exposes students to uncommon experiences, learned lessons, and concerns and challenges encountered by entrepreneursinreal-world circumstances. Students may communicate directly with entrepreneurs in their groups to discuss their experiences and interests (Samuel and Rahman,2018). According to Samuel and Rahman (2018), innovative teaching techniques, multidisciplinary business material, and experiential learning methodologies must be included in students' fundamental entrepreneurial education. It It's probable that in recent years, the field of entrepreneurship research has adopted experiential learning as its most cutting-edge and applicable methodology. From this, we may deduce that studies based on entrepreneurs' actual experiences are the most cutting-edge and applicable.

2.2.4 Problem-Based Learning (PBL)

The potential of problem-based learning (PBL) in management education has garnered a lot of attention in recent years.Creative and problem-solving talents are cultivated via their application (Morselli,2019). Because it affects all elements of the university's work, including teaching, research, and outreach, it's very useful for entrepreneurship (Rossanoetal.,2016). Rossanoetal.,(2016) report that PBL was originally adopted at Case Western Reserve University in the 1950s and at medical schools in the 1970s. Morselli (2019) agreed that PBL entails a student-centred approach to learning within structures serving largely as facilitators. Students are encouraged to engage actively with the content and seek guidance, mentoring, and solutions to particular difficulties from the instructor rather than being passive listeners of lectures. Morselli (2019) argue that students have a large lot of autonomy about how, when, and where they study.

This is not a passive experience, as conventional teaching techniques are, but rather a journey of deeper learning. Cooperative activities, goal-oriented tasks, intellectual discovery, critical thinking exercises, and activities that offer experience in developing news kills are all covered. Students are exposed to a wide variety of learning opportunities via the use of modern technologies and traditional materials. The goal is to create an atmosphere in which students are encouraged to participate actively in the entrepreneurial process rather than just reading about it.

In this kind of instruction, the concepts of experiential and contextual education must be included into the curriculum for entrepreneurial education. By applying the principles of entrepreneurship in realistic scenarios, students may acquire the knowledge and abilities they need more quickly (Fayolle,2018). They went on to explain that PBL encourages students to reflect on and experiment with their knowledge, find out what they don't know, grow spiritually as individuals and as a group, become more articulate both orally and in writing, make better use of available evidence to support claims, be more adaptable in their approach to learning and responsibility, and hone skills they'll need in the real world.

2.3 Empirical Review

There have been many efforts to promote the subject of entrepreneurship education research by developing and advancing various models and theories. It may be claimed that such models are the backbone of several studies since they allow researchers to generate hypotheses more easily and, ultimately, new findings that add to the growth of a certain field. Ronstadt's (1990) (quoted in Ronstadtetal..2021) model and theory are widely used. Based on the research on available courses and ways of teaching them, Ronstadtetal. (2021) put up a hypothesis for entrepreneurial education.

The old-school approach, according to Ronstadt, would put more of an emphasis on doing things like creating a business plan and networking with the right people. However, Ronstadt believed that participants in the program needed to have certain characteristics as humans in order to succeed. Even while the new school still places a premium on doing things, it also places a premium on learning from mistakes. Business success is a result of a confluence of human, entrepreneurial, and external variables, as stated by Ronstadtetal. (2021).

In addition, Bernardus (2018) developed a two-way continuum method to help in the development of entrepreneurship training programs. The first continuum considers the presence or absence of course structure. In order to better represent today's dynamic entrepreneurial culture, it is suggested that classes be less organized. The second axis of the model is titled "entrepreneurial know-how/entrepreneurial know-who," and it describes how a good entrepreneurship program will not only instil an entrepreneurial mindset in its students but will also help them build a network that can aid them in their future entrepreneurial success.

Both of Ronstadt's contributions show that while it takes a combination of multiple factors to benefit from an entrepreneurship program, one could argue that certain factors benefit certain individuals more than others. This is important to keep in mind because the field of entrepreneurship education and entrepreneurs should be treated subjectively rather than objectively (Mavutovaetal.,2018).lso, Mavutovaetal.,(2018) suggests an unstructured approach to entrepreneurship lectures, which is problematic in a university context due to the need for structure in assessments. Ronstadt's camp has certain gaps in this area.

Olokundunetal's (2018) Teaching-Learning Process Model is another influential framework drawn from academic studies; it focuses on developing a pedagogy that caters to the unique needs of each student, in this case, aspiring entrepreneurs. It breaks down the process into its constituent parts, outlining the first four actions that the teacher must do before commencing class. The next part looks at how educators may inspire their students. The third phase involves doing the stuff, and the fourth involves looking over what you just did and maybe utilizing some of it again (Samuel and Rahman,2018).

There are a variety of challenges that librarians and information scientists in Nigeria face when trying to include entrepreneurship courses into their curricula. The first is the fact that the goals of entrepreneurship education programs often fail due to poor implementation of the program's curriculum (Kuloetal.,2018). Since there are not enough working entrepreneurs and up-to-date textbooks on entrepreneurship education, the goals of the curriculum cannot be turned into practical realities for the benefit of students during the implementation stage (Bernardus, 2018; Mavutova et al., 2019).

Nigeria's delay in launching its entrepreneurship education program is a further barrier to the program's success in achieving its policy goals. This line of reasoning is based on the assumption that all innovations in human civilization need some time to mature. Available material indicates that the United States of America first included entrepreneurship education in its university curriculum in 1947. In the 1980s, there were only 300 colleges and universities providing entrepreneurship courses; by the 1990s, that number had increased to 1,050 (Kuloetal., 2018).

Although entrepreneurship education is only getting started in Nigeria, a number of challenges have already arisen. The substantial initial expenditures of implementing the project weigh heavily on the budgets of the colleges and universities that were surveyed. Employees with the skills to provide excellent entrepreneurship education are in short supply. It is not a good environment for starting a small business. Newly minted college grads bursting with business ideas and energy would be severely hindered in their efforts to establish viable enterprises (Morselli, 2019).

A shortage of skilled instructors in the field of entrepreneurship is also a major barrier to expanding entrepreneurship education. These teachers would be able to make the course more goal-oriented and practical rather than just theoretical (Morselli,2019). The theoretical aspects of entrepreneurship education being taught to students in Nigerian universities are reportedly giving professors serious sleepless nights (Samuel et al., 2018).

Undergraduate students at Nigerian universities who are taking courses in entrepreneurial education have limited access to textbooks, lecture notes, and other learning resources. In the absence of textbooks on entrepreneurship education, students have been left to depend on instructors' handouts and training manuals, as observed by Morselli (2019).

Institutional and national barriers to entrepreneurship have been exacerbated by inadequate funding of entrepreneurship education and the education system at large. The National Universities Commission and parallel supervisory bodies agree that this funding restriction has hindered the rollout of entrepreneurship education courses (Kuloetal.,2018). Inadequate teaching methods, such as focusing on the theoretical formulation of company plans in groups of 10-15 students, which have been frequently criticized and demonstrated to be in error in the study, are another major barrier to entrepreneurship education (Kulo et al., 2018). Undergraduates may also see entrepreneurship education as a pointless elective or general topic that they are forced to take by their respective school/department officials (Samuel and Rahman, 2018). They are highly disinterested in any kind of entrepreneurship as a direct consequence of the flawed thinking shown above.

Students engaged in a mandatory course in entrepreneurial education at different universities may also hear conflicting signals from the echoes of self-employed graduates' unpleasant experiences (Bernardus, 2018). Entrepreneurs often have negative things to say to students because of the many obstacles they had to overcome when first starting out. These included high taxes, cumbersome regulations, inadequate infrastructure for small businesses, a high rate of inflation, labour restrictions, and strict laws on starting and operating a business.

2.4 Gap in Literature

Following this discussion, it is clear that encouraging an entrepreneurial mindset within university faculty is essential. To that end, the focus of the classroom should be on the students rather than the instructor. Second, this study shows that there is flexibility in the design of action-based entrepreneurship education. The university should implement the aforesaid strategy in light of its resources, including those of the lecturer, in particular with regards to the use of non-traditional teaching techniques. The findings also show that students would rather learn about entrepreneurship in a hands-on setting than in a classroom one. Experiential learning, problem-based education, and learning by practice are only few of the pedagogical strategies that emerged from the study's analysis.

3. Research Methodology

This research used a survey to collect data. The researcher's use of a sample to extrapolate to the whole population led them to this conclusion. Therefore, it makes sense. Creswell (2009) claims that survey design offers a numerical description of population-level trends, attitudes, or views via the examination of a representative subset of the population. The researcher draws conclusions about the whole population based on the findings of the sample. Survey research, as defined by Osuala (2005), is a method that involves selecting and analyzing subsets of populations. So, it's generally agreed that this is the approach the researcher should use.

Population and sampling of the Study: All colleges and universities in Ebonyi state that are presently accredited by the NUC and conferring at least a bachelor's degree were included in the research. Alex

Ekwueme Federal University, Ndufu- Alike University, Ikwo State University, and Ebonyi State University now house the majority of the country's students. The researcher utilized a systematic sampling strategy to distribute study participants across the participating institutions in accordance with their population sizes. A total of 283 respondents were randomly chosen using the sampling method.

Procedure for Data analysis: In this study, a questionnaire was employed to gather information. Because it allows for consistent data gathering from many respondents over a wide geographic region in a short amount of time, questionnaires were preferred for this study. Multiple statistical methods were used to analyze the data once it had been obtained. Descriptive statistical techniques were utilized to display the data obtained, and percentages were used for the analysis of the data as they related to the study purpose, all of which were accomplished with the use of the Software Package for the Social Sciences (SPSS).

4. Data Analysis and Discussion

4.1. Pedagogical Approaches

The study's primary objective was to catalogue how different schools dealt with the topic of entrepreneurship education. The results of the analysis may be seen in table 4.2.

Table 4.1 Pedagogical approaches for Teaching Entrepreneurship Education in the Schools Studied (Academic Staff)

Pedagogical Approaches	**Schools Studied**							
	EBSU				**AE-FUNAI**			
	P		**NP**		**AP**		**NP**	
	F	**%**	**F**	**%**	**F**	**%**	**F**	**%**
Instructional method	“6	85.7	1	14.3	9	75.0	3	25
Gaining knowledge through actual experience	5	71.4	2	28.6	4	33.3	8	66.7
Learning through solving problems	0	0.0	7	100	2	16.7	10	83.3
Mutual understanding	5	71.4	2	28.6	0	0.0	12	100
Expedition in the Field	4	57.1	3	42.9	5	41.7	7	58.3
Methods of creative problem-solving	1	14.3	6	85.7	0	0.0	12	100
A Discussion Based on a Case Study	0	0.0	7	100	4	33.3	8	66.7
Acquiring Knowledge from One's Peers	0	0.0	7	100	0	0.0	12	100
Task-based and project-based education	0	0.0	7	100	0	0.0	12	100
Modelling the Real World	0	0.0	7	100	7	58.3	5	41.7
E-learning	0	0.0	7	100	5	41.7	7	58.3
Reflective journals and portfolios	0	0.0	7	100	0	0.0	12	100
Learning Through Doing	2	28.6	5	71.4	1	8.3	11	91.7 “

Key: (AP) Applied, (NP) Not Applied,

Based on a minimum threshold of 50% response scores, the table shows that the Lecture Method, Learning by Doing, Cooperative Learning, and Field Trips are the most often utilized pedagogical strategies for teaching entrepreneurship education with high impact at EBSU. Alternatively, AE-did include the Lecture Method and Real-World Simulation used at FUNAI. On the other hand, less than half of those polled had a favorable impression of problem-based learning, creative problem-solving approaches, the case study/discussion method, peer learning, the project-based learning approach, e-learning, learning diaries and portfolios, and experiential learning. It might be argued that the five most often utilized teaching methods at the studied school were also the most effective.

The techniques utilized in the universities reviewed were consistent with the findings of McKeown et al. (2006), who found that the vast majority of HEI programs in the UK (86%) still rely on relatively conventional teaching and learning methodologies. The traditional method of teaching entrepreneurship in classrooms has been the so-called "teacher-centred" or "didactic" approach, in which students learn as the instructor lectures. Accordingly, it seems that the analyzed schools followed a more conventional model of education, which may have prevented pupils from developing essential entrepreneurial abilities. Entrepreneurship education should include approaches that help students comprehend the big picture of the many facets that go into the discipline, that the philosophy of learning is merely one component of a comprehensive entrepreneurship curriculum (Gibb, 1996). This research suggests that faculty at educational institutions should use a wider variety of methods when teaching students about entrepreneurship. The teacher, according to Gibb (1996), must take on the role of a facilitator for pupils to learn from their errors if an "enterprising approach" is to be used in the classroom. Teachers that use this method adapt their lessons to the individual requirements of their pupils.

4.3 Effect of Entrepreneurship Education on Students

The study's author aimed to ascertain faculty members' levels of concurrence on the positive impact that entrepreneurship education had on pupils. An answer rate of 50% was deemed statistically significant, while a rate of 30%-49% was regarded as somewhat significant, and a rate of less than 30% was not statistically significant at all. Therefore, respondents were asked to choose their degree of agreement or disagreement with each statement using the rubric in table 4.3.

Table 4.8 Effect of Entrepreneurship Education on Students

Effects on Students	**Schools Studied**											
	EBSU						**AE-FUNAI**					
	Levels of Agreement						**Levels of Agreement**					
	A		**U**		**D**		**A**		**U**		**D**	
	F	**%**	**F**	**%**	**F**	**%**	**F**	**%**	**F**	**%**	**F**	**%**
The course on entrepreneurship enhances my knowledge of the mindsets of entrepreneurs (i.e., how they view entrepreneurship & why they act).	“130	76.9	11	6.5	28	16.5	40	41.6	13	13.5	43	44.7
The entrepreneurship course expands my knowledge of financial planning for business endeavours.	85	50.2	33	19.5	51	30.1	55	57.2	4	4.1	37	38.5
The entrepreneurship training expands my knowledge of company planning.	71	42.0	37	21.8	61	36.0	56	58.3	12	12.5	28	29.1
The course on entrepreneurship expands my knowledge of market research for business projects.	90	53.2	29	17.1	50	29.5	40	41.6	21	21.8	35	36.4
The entrepreneurship course improves my network-building skills.	125	73.9	18	10.6	26	15.3	59	61.4	13	13.5	24	25.0

The culture of innovation in the entrepreneurship class encourages my entrepreneurial spirit.	79	46.7	24	14.2	66	39.1	59	61.4	7	7.2	30	31.2
The lecturers' perspectives stimulate my entrepreneurial mindset.	114	67.4	40	23.6	15	8.8	48	50.0	11	11.5	37	38.5
The perspectives of external speakers motivate my business mindset.	122	72.1	20	11.8	27	15.9	60	62.5	15	15.6	21	21.8
Local entrepreneurs' achievements stimulate my entrepreneurial mindset.	121	71.5	20	11.8	28	16.5	59	61.4	15	15.6	22	22.9
The entrepreneurs' entrepreneurial experience boosts my knowledge of the entrepreneurial process.	120	71.0	21	12.4	28	16.5	60	62.5	13	13.5	23	23.9
The entrepreneurship class improves my capacity to create a company strategy.	83	49.1	33	19.5	53	31.3	58	60.4	3	3.1	35	36.4
This training improves my capacity to manage an entrepreneurial endeavour.	75	44.3	38	22.4	56	33.1	56	58.3	11	11.5	29	30.2
The entrepreneurship training improves my ability to manage risks and ambiguity.	64	37.8	34	20.1	71	42.0	57	59.3	9	9.3	30	31.2
The entrepreneurial training improves my resource allocation abilities	86	50.8	33	19.5	50	29.5	56	58.3	3	3.1	37	38.5
The entrepreneurship training improves my capacity to recognize business opportunities.	70	41.4	38	22.4	61	36.0	56	58.3	10	10.4	30	31.2
Education in entrepreneurship in universities increases the number of new venture launches and economic development.	80	47.3	29	17.1	60	35.5	40	41.6	21	21.8	35	36.4

KEY: A= Agree Merged with Strongly Agree, U= Undecided, D= Disagree Merged with Strongly Disagree

As can be seen in Table 4.7, students at both Ebonyi State University and Alex Ekwueme Federal University, Ndufu- Alike, Ikwo, who took an entrepreneurial education course, reported the following positive outcomes. The knowledge I've gained from the entrepreneurship course has helped me in many ways: I now have a better grasp on the traits that make for successful entrepreneurs (a willingness to take risks, a creative spirit, etc.); I have a better grasp on how to save money for future As a result of taking an entrepreneurship course, I've been able to expand my professional network in a number of ways: I've been inspired by the professors' and speakers' perspectives; I've been motivated by the success stories of local entrepreneurs; I've gained a deeper understanding of the entrepreneurial process thanks to the entrepreneurs' firsthand accounts; and (e.g., money, personnel, time etc.).

Taking a course in entrepreneurial education at EBSU has given this writer the following advantages, in addition to those already mentioned: Since taking this course, I have gained a deeper understanding of the perspectives of entrepreneurs (how they define entrepreneurship and what motivates their actions), the value of entrepreneurship to both society and the individual, and the possible benefits of taking an entrepreneurial tack. Students at Alex Ekwueme Federal University in Ndufu-Alike, Ikwo, also indicated enhancements in areas like the ability to design a business plan, the ability to manage an entrepreneurial project, the ability to handle with risks and uncertainties, and the ability to uncover possibilities. They make a big difference in how people react.

There will be more startup businesses and more economic growth as a result of university entrepreneurship education; my creative mind will be encouraged in this class; I will learn how to create a business plan; my ability to manage an entrepreneurship project will improve; and entrepreneurship education at EBSU and AE-FUNAI will not have a significant impact on students. The course has helped me get a better understanding of the entrepreneurial mentality by stressing the value that entrepreneurship provides to individuals and society at large. This training has given me the tools I need to do market research for my own company. In contrast, a number of studies have shown that exposure to entrepreneurship education influences students' career choices and facilitates the launch of their own businesses (Fleming, 1994). It has been shown that...(Fleming, 1994). College students who took an entrepreneurship course were shown to be more likely to have entrepreneurial goals, as reported by Clark et al (1984). The authors claim that after taking their course, over 70% of the students had entrepreneurial aspirations and went on to start their own businesses.

5 Conclusion and Recommendations

5.1 Summary of findings

1. Both Ebonyi State University and Alex Ekwueme Federal University, Ndufu- Alike, Ikwo, employed the lecture technique, learning by doing and cooperative learning, Real World Simulation, and a field trip to teach and study entrepreneurial education.
2. More startup businesses and growth in the economy are the result of entrepreneurship education in universities; the stimulating atmosphere of my entrepreneurship class has sparked my creative, business-minded mind; the skills I've gained in constructing a business plan have been refined; and my skepticism about the viability of my company's proposed direction has been reinforced thanks to this course.

5.2 Conclusion

The research indicated that by gaining an understanding of entrepreneurship education, every student has the potential to become an entrepreneur and self-employed. It was found that the majority of the colleges and universities investigated complied with the National Universities Commission Standard for Entrepreneurship Education. The goal of good pedagogy is to provide students with the knowledge, skills, and dispositions necessary to become independent learners who can successfully enter the workforce upon graduation.

5.3 Recommendations

The following suggestions are made in light of the study's results and the final conclusion.The entrepreneurship program should include the following classes in order to meet the requirements of the NUC and to realize the program's goals for entrepreneurship education instruction and student learning. Introduction to entrepreneurship and the development of new ventures; marketing the new venture; calculating the financial needs of a new company; beginning a new business; obtaining business insurance; being creative and innovative in the creation of the new venture.Given that there is no one-size-fits-all method of instruction, academic personnel (lecturers) must make use of a variety of techniques to ensure their students learn well. To that end, the following methods have been proposedLearning strategies such as problem-based and creative problem-solving techniques; the case study/discussion method; peer learning; project-based learning; e-learning; learning diaries; portfolios; and experiential learning.

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Technology Business Incubation Centre Activities and the Performance of Women-Owned Enterprises in Minna Metropolis, Niger State

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Abstract
All over the world, Technology Business Incubation (TBI) has been identified as an essential emerging policy instrument for facilitating entrepreneurial growth and development through the use of technology and technological tools. Also, women entrepreneurs are equally regarded as the new engines of economic growth, prosperity and welfare in developing countries because, they constitute the productive forces in the private sector. The growth in the number of women-owned businesses has been relatively slow due to several challenges such as lack of access to finance, gender inequality, inadequate support system, fear of failure, balancing family responsibilities besides unfavorable business environments. In view of the above, this paper will consider the potential of women-owned businesses to contribute to the development of nations economy especially Nigeria. Using a survey method, the study assessed the Technology Business Incubation Centre activities and the performance of women-owned enterprises in Minna metropolis. A survey questionnaire was distributed to 130 women enterprises in Minna Metropolis through the Technology business incubation centre and 115 responses were obtained. Multiple Regression Analysis method was used in analyzing the quantitative data collected. The findings provided statistical evidence that significant positive relationship exists between Training programme, Networking, Linkages and that of performance of women-owned enterprises in Minna metropolis. It was recommended that although both Training, Network and linkages were found to have significant positive effects on performance of women enterprises, Managers of the Technology business incubation Centre and other stakeholders should focus more on the indicators that offer the most benefits to incubatees.

Keywords: *Entrepreneurial growth and development, Technology Business Incubation, Technology and Technological tools, Women-owned businesses.*

1.0 Introduction

A growing number of body of literature posit that business incubation can support the development of business skills, networks, and access to coaching and mentoring, besides providing a variety of support services that assist the incubatee entrepreneurs take their business to another level thereby minimising the business startup failure rate, (Rubin *et al.*, 2015; Jibrin *et al.*, 2013; Weiblen and Chesbrough, 2015). Research also shows that women-owned businesses which is the new engines of economic growth, welfare and prosperity represent a significant minority of all Small Medium Enterprises (SMEs) globally, especially, in developing countries (Byrne *et al.*, 2019; Neumeyer *et al.*, 2019; Vossenberg, 2013; Halim (2020).

One strategy that has gained increasing popularity globally over the years and has helped women entrepreneurs overcome their challenges and to facilitate their growth and consequential contribution to

any economy has been the development of business incubators, (Gabarret and D'Andria, 2021; Breivik-Meyer *et.al*., 2020; Ssekiziyivu and Banyenzaki, 2021).
Consequently, considering the incredible potential of women-owned businesses to contribute to the development of nations' economy especially Nigeria, it is important to empirically assess the business incubator activities and the performances of these businesses. It is against this backdrop that this study seeks to assess Technology Business Incubation Centre activities and the performance of women-owned enterprises in Minna metropolis.

To the knowledge of the researcher, there is no known study conducted, whatsoever, on technology incubation centre activities on women entrepreneurs in Nigeria. In an attempt to fill this gap, this study provides empirical evidence aimed at assessing technology business incubation centre activities on the performance of women-owned enterprises in the Minna metropolis. The findings obtained from the study will besides contributing to knowledge, provide information that will enhance the participation of more women in technology business incubation activities.

The aim of the study was to assess the effect of Technology Business Incubation Centre activities and the performance of women-owned enterprises in the Minna metropolis. In fulfilling this aim, the study has the following three specific objectives: - Assessed the effect of the provision of Office Space/facilities and the performance of women-owned enterprises in Minna Metropolis, assessed the effect of training and the performance of women-owned enterprises in Minna Metropolis and finally assessed the effect of networking and linkages and the performance of women-owned enterprises in Minna Metropolis.

The study sought to find answers to the major research question: "What is the effect of Technology Business Incubation Centre activities and the performance of women-owned enterprises in Minna metropolis. Answering the major research question, the specific objectives of the current study were operationalised using the following specif ic research questions: (i.) what is the effect of the provision of Office Space/facilities and the performance of women-owned enterprises in Minna Metropolis? (ii.) What is the effect of training and the performance of women-owned enterprises in Minna Metropolis and (iii.) what is the effect of networking and linkages and the performance of women-owned enterprises in Minna Metropolis?

The following hypotheses were postulated: (H_1): Technology Business Incubation Centre Office Space/facilities has no effect on the performance of women-owned enterprises in Minna metropolis. (H_2): Technology Business Incubation Centre Training programme has no effect on the performance of women-owned enterprises in Minna metropolis and (H_3): Technology Business Incubation Centre Networking and Linkages has no effect on the performance of women-owned enterprises in Minna metropolis.

The study focused on "Technology Business Incubation Centre activities on the performance of women-owned enterprises in Minna metropolis" even though many Business Incubation Centres exist in many states of the federation including Abuja. This was to give thorough touch to the work which covered the period of the activities from inception in 1998 to 2021

2.0 Literature Review

In this paper, several literatures were reviewed in Conceptual, Theoretical and Empirical terms.

2.1 Conceptualizations of the independent and dependent variables in the study was done, providing an overview on the what, why and how business incubation activities are carried out and concluding by clearly describing how it was conceptualized in this study. The highlights showed how the second, variable “performance” was conceptualized by extant studies and conclusion reached by clarifying how it was conceptualized in the current study,(Ruach and Hulsink, 2015; Siemieniuk, 2016; Krpalek *et al.*, 2016; Rambo, 2020; Ayatse *et al.*, 2017; Meyer, 2013; Hecker *et al.*, 2018; Lamine *et al.*, 2018; Xiao and North, 2018; Hillemane *et al.*, 2019; Kapinga *et al.*, 2018; Nair and Blomquist, 2019; Baskaran *et al.*, 2019; Rania *et al.*, 2020;)

2.2 In dealing with the **Theoretical review**, an attempt was made to confirm the worthwhile needs of the concept of firms and startups and a review of extant studies that investigated the understanding of the theory behind business incubators was carried out, (Manimala and Vijay, 2012, 2023; Bhattacharya *et al.*, 2014; Petratos, 2018; Kim and Lee 2016; Kiran, and Bose, 2020; Lukes *et al.*, 2019; Ssekiziyivu and Banyenzaki, 2021; Weiblen and Chesbrough, 2015)

2.3 **Empirically**, a review of some studies on business incubators and incubation was tactfully done and after careful study, gaps were identified, (Stephens and Onofrei, 2012; Lin *et al.*, 2012; Mungai and Njeru, 2013; Park and Ha, 2014; Park and Kang, 2014; Choi *et al.*, 2015; Prayogo *et al.*, 2019; Asikhia *et al.*, 2020; Kiran and Bose, 2020; Rania *et al.*, 2020;. Al-Mubaraki *et al.*, 2012; Martínez *et al.*, 2017; Zhang *et al.*, 2017; Binsawad *et al.*, 2019; Kim and Lee, 2016; Muafi, 2017; Xiao and North, 2017; Obaji *et al.*, 2016; Murage, 2018; Rambo, 2020; Shahzad *et al.*, 2012).

The gaps identified from the literatures represent grey areas that previous studies did not address which this study seeks to address. The highlighted three gaps were; the Institutional Business Incubation, Age-based Business Incubation and Gender-based Business Incubation, (Stephens and Onofrei, 2012; Weiblen and Chesbrough, 2015; Rambo, 2020). Consequently, the gender-based Business Incubation revealed that there was a dearth of works of literature on the gender-related research areas. This basically, was the focus of this work which looked at Technology business incubation Centre activities and the performance of women-owned enterprises in Minna Metropolis.

3.0 Research Methodology

According to the National Board for Technology Incubation (NBTI) Annual report (2014), Technology Business Incubation Centre (TBIC), Minna-Niger State was established in 1998 and was the foremost in North Central region of Nigeria. It is located at the city centre, N0. 1, Off David Mark Road, Tunga-Minna, the capital City of Niger State-Nigeria.

This study adopted a survey research design to achieve its aim and objectives. The primary source of collecting data was on the basic activities of the technology business incubation centre as it affects the performance of women-owned enterprises in Minna metropolis. The population for this study is the total number of women-owned businesses that have graduated or are still in the TBIC, Minna since its inception in 1998 to 2021. According to the record obtained from them, 130 women have so far passed through the tutelage of the centre.

Sample size is generally regarded as a study plan which can influence and control the recognition of important distinctions, relationships, or dealings. In this study, the researcher determined the sample size by using a census for small population (Israel, 1992; 2003) This becomes imperative as the population size obtained from Technology Business Incubation (TBIC), Minna is relatively small, (130); (Source; http://edis.ifas.dfl.edu.). The Author, Israel, (1992; 2003) suggest that the sample size for a population of 175 is 122 at 95% Confidence level and 5% precision levels, where P=5. Also from the same source, a population of 125 gives a sample size of 96 which may not be representative of the data obtained. However, the population obtained from the Technology Incubation Centre Minna is 130 which, even though small, was therefore adopted as the sample size.

The study relied mainly on the use of a primary data source, (questionnaire) which was the main instrument used in the collection of the data. These quantitative data was collected by distributing a questionnaire consisting of closed and open-ended questions. The questionnaire was divided into two main sections which include: Section A, the demographic section and Section B (part 1 and 2). The study comprises two variables; independent and dependent variables. The independent variable, business incubation was measured using three indicators namely; Office Space/facilities, Training Programme, Networking and Linkages while dependent variable, performance was measured using a non-financial form of measurement as captured in (Tseng *et al.,* 2014; Plattfaut *et al.,* 2015; Anning-Dorson, 2018).

The questionnaires was designed to accommodate the demographic profile of respondents (resident and non-resident). This section of the questionnaire was labelled as the demographic profile of respondents. In this section, the age, type of Enterprise of the respondents and academic qualification, enterprise location and years of experience were sought by framing questions to elicit responses from the respondents about these profiles.

For the assessment of the validity of the research instrument, this study adopted the face and content methods that involved the Manager of the Incubation Centre who assessed the extent to which the questions raised are related to what is obtainable in the centre. Another vital means to validate the instrument the engagement of a PhD holder from the relevant department of the Federal University of Technology, Minna, Niger State to assess and evaluate whether or not the questions raised in the questionnaires measured what they are intended for.

The study adopted inferential statistics, the "Regression" for the analysis of the data collected. This statistical tool is widely used by researchers for analyzing quantitative data that is conducted to provide evidence on the multiple effects of the relationship between two variables; the independent and dependent variables. According to Anderson *et al,* (2015) and in line with the above assumptions, the general Regression Model, assuming a linear relationship exists between the dependent variable and each independent variable took the following form:

$$y = f(X) \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \quad (1)$$

Where,

y is the dependent variable and X is the independent Variable

Hence,

In Keller, (2014), the Regression Equation for a Multiple Regression Model with more independent variables become:

$$y = f(X_1, X2, X_3, \ldots\ldots\ldots\ldots X_n) \ldots\ldots\ldots\ldots\ldots\ldots (2)$$

Where,

y is the dependent variable, "**Performance"**

$f(X_1, X_2, X_3, \ldots X_n)$ is the function of the independent variables **"identified indicators"** …… is the Model parameters

Modifying equation (2) further and introducing an error term, Ɛ (random variable) to capture errors of miss-specification in the Model, we have:

$$y = f(X_1, X2, X_3, \ldots X_n) + \varepsilon$$

$$y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \varepsilon \ldots \quad (3)$$

However, the least-squares criterion could be used to compute the Sample Regression Coefficients β0, β1, β2, (Aczel and Sounderpandian, 2009; Berenson *et al.,* 2012)

Then,

Substituting the variable of this study into equation 3 above, we have:

$$\text{Performance} = f(NL + OS + TP) + \varepsilon$$

Mathematically, it is expressed as:

$$P = \beta_0 + \beta_1 NL + \beta_2 OS + \beta_3 TP + \varepsilon \ldots \quad (4)$$

Where, NL = Networking and Linkages

OS = Office Space and

TP = Training Programmes

Ɛ = error term

Therefore, Regression Model for this study is:

$$P = \beta_0 + \beta_1 NL + \beta_2 OS + \beta_3 TP + \varepsilon \ldots \quad (5)$$

In this study and in line with previous studies, (Asikhia *et al.,* 2021; Shahzad *et al.* 2012), multiple regression analysis method was applied for the data analysis. Meanwhile, the hypotheses raised in the study was also tested and analyzed using multiple regression analysis.

4.0 Analysis and Discussion of Results

4.1 Enterprise location of the survey respondents

Table 4.4 showed that 53.9% (62 of 115) of the respondents are non-resident in the Technology Business Incubation Centre, Minna while 46.1% (53 of 115) are resident at the centre at the time of conducting the study. From the result, this shows that majority of the women owned enterprises are situated outside the incubation centre.

Table 4.4: Distribution of respondents by enterprises location

Enterprise Location	Frequency	Percent
Resident	53	46.1
Non-Resident	62	53.9
Total	115	100.0

Source: Author's Field Survey (2022)

The dataset acquired through the questionnaire survey was transformed to ensure normality. Hence, using the Kolmogorov-Smirnov test or normality, the results presented in Table 4.7 shows that the data is normally distributed. Thus the reason for using the multiple regression (parametric test).

Table 4.7: Normality Test (Kolmogorov-Smirnov[a])

Variables	Kolmogorov-Smirnov[a]		
	Statistic	**df**	**Sig.**
Office Space/facilities	.259	115	.006
Training Programmes	.229	115	.008
Networking and Linkages	.133	115	.014
Operational Standard	.142	115	.021

Source: Author's Field Survey (2022)

The three independent variables also had tolerance values between .873 and .989 which is greater .10 as shown in Table 4.8. The variance inflection factor (VIF) values range between 1.011 and 1.146 which indicates that there is no problem of multi-collinearity between the independent variables. The Durbin-Watson value in this analysis is .983 as shown in Table 4.9 which is within the range of 1.5 - 2.5, indicates that there is no autocorrelation in the residual.

Table 4.8: Collinearity Statistics Test

Variables	Collinearity Statistics	
	Tolerance	**VIF**
Office Space/facilities	.873	1.146
Training Programmes	.879	1.137
Networking and Linkages	.989	1.011

Regression Model

$$Y = \beta 0 + \beta 1\ X1 + \beta 2\ X2 + \beta 3\ X3 + \varepsilon \qquad \text{(Equation. 3.1)}$$

Where Y = Operational Standard,
$B0$ = constant
$\beta 1 – \beta 3$ = regression coefficients
$X1$ = Office Space/facilities,
$X2$ = Training Programmes,
$X3$ = Networking and Linkages
ε = stochastic disturbance error term

The model summary shown in Table 4.8 indicates that the three predictor variables has a multiple correlation coefficient R = .506 with the dependent variable. While the adjusted R square was calculated to be .256. This indicates that 25.6% of changes in the dependent variable was explained by the predictor variables.

Table 4.9: Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.506[a]	.256	.236	.63037	.983

a. Predictors: (Constant), Office Space/facilities, Training Programmes, Networking and Linkages
b. Dependent Variable: Y

The ANOVA table shown in Table 4.10 shows that the findings are statistically significant with p-value less than 0.05. As such, all three independent variables are effective at explaining the dependent variable.

Table 4.10: ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	15.200	3	5.067	12.750	.000[b]
	Residual	44.108	111	.397		
	Total	59.308	114			

a. Dependent Variable: Y
b. Predictors: (Constant), Office Space/facilities, Training Programmes, Networking and Linkages

From table 4.11, Office Space/facilities (*X1*) is not statistically significant with *p*-value > .05, therefore, it has no statistical effect on the dependent variable. This is an indication that with adequate entrepreneurial knowledge, availability of office space has little effect on enterprise performance.

Training Programmes is statistically significant with *p*-value = .007. Unstandardized coefficient value of .229 for this variable implies that a unit increase in Training Programmes will cause a positive increase of .229 in operational standards. Hence, increase in training programmes for women will increase the performance of their enterprises.

The third independent variable (Networking and Linkages) is also statistically significant with *p*-value = .000. The unstandardized coefficient value for this variable is .701 which indicates that a unit increase in Networking and Linkages will cause a positive increment of .701 in operational standards. Hence, increase Networking and Linkages for women will increase the performance of their enterprises

Table 4.11: Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	-.350	1.087		-.322	.748
	Office Space/facilities	.094	.189	.043	.494	.622
	Training Programmes	.229	.160	.124	1.426	.007
	Networking and Linkages	.701	.116	.496	6.032	.000

The final regression model is given below. Office Space/facilities was removed from the final model because it has no significant effect on the dependent variable (performance).

$$Y = -.350 + .229X2 + .701X3$$

Where X2 = Training Programmes

X3 = Networking and Linkages

4.2 Hypotheses Test

The multiple regression analysis technique was used for hypotheses testing in this study. The results of the test between the independent variables and dependent variables are presented in Table 4.11. These results indicate that Operational Standar d increases significantly with only Training Programmes and Networking and Linkages.

In general, the result of the study is in conformity with Asikhia et al., (2021) in which data analysis was by Multiple Regression. Here, the three formulated hypotheses in the study tested the effect of the independent variables (Office Space, Training Programmes, Networking and Linkages) on the dependent variable (operational standard). The statistical evidence from Pearson's correlation and both Standardized and unstandardized coefficients revealed that Operational Standard increases significantly with only Training Programmes, Networking and Linkages as both have significant positive effect and relationship. Hence, the null hypotheses two (H_2) and Three (H_3) formulated in the study were rejected and (H_1) accepted. This led to the acceptance of the alternate hypotheses. The three independent variables also had tolerance values between .873 and .989 which is greater .10 as shown in Table 4.8. The variance inflection factor (VIF) values range between 1.011 and 1.146 which indicates that there is no problem of multi-collinearity between the independent variables. The Durbin-Watson value in this analysis is .983 as shown in Table 3.9 which is within the range of 1.5 - 2.5 and indicates that there is no autocorrelation in the residual.

From table 4.9, Office Space/facilities (*X1*) is not statistically significant with *p*-value > .05, therefore, it has no statistical effect on the dependent variable. This is an indication that with adequate entrepreneurial knowledge, availability of office space has little effect on enterprise performance. Training Programmes is statistically significant with *p*-value = .007. Unstandardized coefficient value of .229 for this variable implies that a unit increase in Training Programmes will cause a positive increase of .229 in operational standards. Hence, increase in training programmes for women will increase the performance of their enterprises.

The third independent variable (Networking and Linkages) is also statistically significant with *p*-value = .000. The unstandardized coefficient value for this variable is .701 which indicates that a unit increase in Networking and Linkages will cause a positive increment of .701 in operational standards. Hence, increase Networking and Linkages for women will increase the performance of their enterprises.
Therefore, the final regression model is given below. Office Space/facilities was removed from the final model because it has no significant effect on the dependent variable (performance).

Hence, $Y = -.350 + .229X2 + .701X3$

Where X2 = Training Programmes
X3 = Networking and Linkages

5.0 Conclusion and Recommendations

Concluding, the findings provided statistical evidence that significant positive relationship exists between Training programme, Networking and Linkages and that of performance of women-owned enterprises in Minna metropolis. Hence, Training programme, Networking and Linkages affect performance of women-owned enterprises in Minna metropolis. The main implication of this finding was that, with adequate entrepreneurial knowledge, availability of office space has little or no effect on enterprise performance.

The implications of this study are that it will promote the knowledge of the involvement of women enterprises for rapid economic development and empowerment, help in strengthening interactions and collaboration between the knowledge base and the industries thereby in bridging the gap between theories, industrialization and commercialization of research results, enhance the creation of entrepreneurial culture especially for women as well as local incomes and jobs with the majority of graduating businesses settling within the area thereby creating more awareness and interest for intending women entrepreneurs and finally, it will provide bases for further research in the area as it will serve as reference material for such research while stirring up further discourse that would showcase the effect of technology business incubation activities and women-owned enterprises in Minna metropolis and beyond.

The following recommendations are proposed: (1).Technology Business Incubation Centres need to particularly focus on the area of establishing a clear mission and identify the way they want to add value to enterprises in their ecosystem. The types and levels of service offering need to be established and then they have to start advertising these services through various channels to reach more potential and willing new entrants and (2.) Although both Training, Network and linkages were found to have significant positive effects on performance of women enterprises. Managers of the Technology business incubation Centres and other stakeholders should focus more on the indicators that offer the most benefits to incubatees.

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Assessment of the Effect of Project Environment on Construction Labour Productivity in Minna, Niger State

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Abstract
Over the years construction labour productivity has been discussed this is because labour delivery has effect on construction cost over-run, contractors profit and overall economy. For this reason, this study seeks to examine the various effect of construction environment on construction labour productivity in Minna. The authors' utilized convenience sampling for this study and randomly attaching 100 questionnaires to construction player to capture their perception on the topic. Analysis of data from the poll was presented in tables and figures, comp onent factor analysis was used to factorize the variables believed to have greater impact on construction labour productivity while the hypothesis was tested using Regression analysis. However, the results among others enable the authors conclude that there is a statistical relationship between the project environment and labour productivity (i.e., number of days work per week and man hour work per week). Also, the authors recommend among others that necessary provision should be made available by the contractors or site owners to reduced waste of man hours due to inadequate supply of materials or unnecessary delays which may results to additional expenses

Key words: *Labour Productivity, Inadequate supply, Incentive payment, Construction Environment*

1.0 Introduction

For the nation's economy to grow, construction productivity is very important and plays a significant role in the industry (Naoum, 2016). Construction industry plays an important role in the economy of any country. One of the main factors influencing the construction industry growth is productivity and it is mainly associated with the labour performance (Hafez et al., 2014). The construction industry serves significantly as a source of employment and makes a remarkable contribution to the performance of the overall economy (Giang & Pheng 2011). Labour is known as the most crucial and flexible resource used in the construction projects and construction productivity is directly related to labour (Muqeem et al. 2012). Construction projects hire a large number of workers, thereby, it can be stated that manpower is the dominant productive resource, therefore construction productivity is highly dependent on human effort, efficiency and performance (Jarkas 2010).

Labour productivity has become an often-discussed topic in the construction industry since it affects the costs and schedule of construction projects. Construction companies aim to keep great labour productivity so that company profits are not affected. Not only that, it can also affect the economy of the nation (Naoum, 2016; Durdyev et. al., 2018; Alaghbari et. al., 2019). Poor labour productivity has led to project cost overruns and causes the project schedule to slip. Abdel-Hamid et. al., (2020) stated

that 18% of time and cost loss happens due to poor productivity. It is the most important concern in both developed and underdeveloped countries (Tahir, et. al., 2015).
The primacy of the effects of project environment as one of the main contributors to human resources productivity has been confirmed in previous studies conducted in a wide range of contexts (Sanders and Thomas, 1993; Fayek & Oduba, 2005; Yi and Chan, 2013). Low labour productivity occasioned by environmental factors is still a major issue for the construction industry in many countries (Fulford & Standing, 2014). Ohueri et. al., (2018), posited effective management and supervision financial incentives, training and development safe and fri endly working environment, and career progression as labour productivity inducing factors. Similarly, Social Insurance, on time payments, amount of pay, and dining hall and dorm conditions as well as Health & safety conditions were the factors identified by Kazaz & Acikara, (2015) as affecting construction labour productivity in Turkey. Likewise in Jordan, feeling of achievement, experience, use of foreign workers, scheduling and use of machinery were identified as construction labour inhibiting factors by Hiyassat et. al., (2016).

In the United Kingdom, experience, design errors, buildability, project planning, communication were regarded as the construction labour productivity inhibitors. Similarly, ineffective management programs as well as poor material management & safety programs are the limiting factors in US as suggested by Shan et. al., (2016) while in China, Li et al. (2016) suggested age has negative impact and work experience & BMI has positive impact on construction labour output. In Africa, labour productivity has been an issue due to the varying degree of environmental problems encountered on site by contractors (Afolabi et al., 2018). In Libya, lack of labour supervision, experience and skills of labourers, construction technology, coordination among construction industry discipline and error in drawing design were viewed by (Rabia et. al., 2020) as the factors that affects construction labour productivity.

Globally, the construction environment can cause low productivity compared to other labour enforced industries (Emam et al., 2016). The low productivity currently observed in the construction companies in Niger State is associated with material shortage, wrong construction design, financial and environment insecurity leading to the eventual abandonment of construction projects. It has been observed that the construction workforce, especially in Nigeria and exclusively to Niger state, is not seen as an important input despite labour's generally constituting a large percentage of total construction project costs (e.g., up to 40% of direct cost in large projects) (Kazaz, et al., 2016).

Consequently, labor-intensive industries, such as construction, are considered high-risk by contractors due to their relatively high environmental problems. The location of the project clearly has an enormous influence on the cost and completion time. Thus, the familiarity of project managers with labour productivity factors is of major importance (Shehata & El-Gohary, 2011) and contributes to project success (Gunduz & Abu-Hijleh, 2020). Construction workers in Nigerian public service almost zero attention and this significantly affects labour productivity (Afolabi et. al., 2018).

Furthermore, there is a growing and continuous interest in productivity studies all over the world because of the importance of labour productivity in the management and control of project costs (Kazaz, et al., 2016). Identifying and evaluating the factors that influence productivity are critical issues facing construction managers (Attar, et. al., 2012) and more so in the construction companies in Niger State and there is need for the improvement on labour productivity. Good project management in construction must vigorously pursue the efficient utilisation of labour, material and equipment and that improvement of labour productivity should be a major and continuous concern for those who are responsible for the cost control of facilities being constructed (Afolabi et. al., 2018). To this end, the study seeks to access the effect the construction environment has on construction labour delivery in Niger State.

2.0 Literature Review

Ameh et al. (2011) established the relationship between time overrun and labour productivity on construction sites in Lagos, Nigeria. He concluded that factors cause time overrun are inadequate fund for the project, inadequate planning of project before take-off, inadequate tools and equipment, delay in delivery of materials, subcontractors' incompetency and design changes during project execution. Attar et al. (2012) carried survey of building projects in Sangli, Kolhapur and Pune districts, where an increase in productivity is being sought. The authors concluded that for large companies, equipment factors have also highly effective. While in small and medium companies, owner/consultant factors also need special attention.

Vekaria (2012) concluded that project management skills were acceptable as the most important factor that influenced the productivity among the labour a part of the other factors such as technology exploration, skill and training, labour organization, project uniqueness and wage trends. Dayakar et al. (2012) study concluded on important factors affecting labour productivity are quality of site management, material shortage, timely payment of wages, labour experience, misunderstanding between labour and superintendent. Work concentrated on labour productivity ratios that reduced day by day, which in turn harm organization's profitability.MS excel methods and SPSS software used for analysis. Fifty-one factors were considered for study and categorized into four different groups which were work content issues, work environment issues, workforce issues and regulations.

Khaled et al. (2013) study comprised 30 productivity factors and classified them under three primary categories: Human/labour, Industrial and Management. Their study represented five factors which are most significant in construction labour productivity in Egypt: (1) Labour experience and skills, (2) Incentive programs, (3) Availability of the material and ease of handling, (4) Leadership and competency of construction management and (5) Competency of labour supervision. Loeraa et al. (2013) developed methodology to assess the labour productivity of industrial maintenance projects. In this methodology they proposed the work sampling tool in order to identify the main factors that affecting labour productivity as well as they proposed apply lean thinking to improvement labour productivity. Shah Meet et al. (2014) stated that productivity can be an influential factor in minimizing the project losses or increased profits. Productivity can help a company gain competitive advantage and slim profit margins. They suggest the top factors which affects productivity based on the survey conducted in the central Gujarat region were low payment, poor construction methods, use of technology/level of mechanization, and delays in material delivery.

Shashank et al. (2014) grouped factors affecting labour productivity in six different group which are Motivation group, Manpower group, Material/Equipment group, Safety group, Managerial group, Quality group. They said Motivation factor has the highest impact on labour productivity. So they suggested that, the construction company should increase labour satisfaction by paying a reasonable salary, developing financial reward or recognition program and improving the living condition on site. Goedhuys, et al. (2014) looked into the factors that influence productivity in Tazanian manufacturing firms. Using cross-sectional data at the firm level, the authors examined how advancement in technology and the environment in which firms operate affect their efficiency. They found that among the technological variables, research and development (R&D), innovation, technology, and training of employees have no impact on productivity, but rather higher educational level of management and foreign ownership have an impact. Varma et al. (2014) noted that productivity can be measured by monthly planned/targeted concrete and actual consumption of concrete data. Here, targeted concrete is the input value and actual consumption of concrete is the output of the productivity. They considered single factor type of productivity i.e. concrete they have calculated the productivity for shell and core type of contract. Raj et al. (2014) focused on human resource management in construction field. They conduct questionnaire survey with 100 labours of different company. And studied the impact of human resource management practices on productivity and financial performance in construction industry. They concluded that 75% of people fairly agree that site congestion is creating them to work uncomfortably.

Thiyagu et al. (2015) proposed fifteen independent groups affecting the labour productivity in the construction projects. The topmost factors affected the labour productivity are given Sanitation and hygiene of the construction site and the temporary shed; Labour injuries on site; Alcoholism; Working overtime; Shortage of construction materials; Payment delays; Change orders from the designers; Improper equipment; Poor quality of construction materials; Misunderstanding among labourers. Dharani et al. (2015) found that construction labourers are migratory in nature and therefore geographically searching for employment. Thus their employers keep on changing and it is impossible for both the parties to develop long-term relationships and loyalty to their employers. He found most of the construction labour is also engaged in some other profession like farms, factory, domestic servant etc. and hence they do not give full importance to construction work and tend to work informally. Due to this labour cultivates informality, and Informality lowers productivity growth.

Kazaz et al. (2015) said that among all inputs, labour force is the most difficult one to manage. In their study, it was aimed to compare labour productivity perspectives of manager and craft workers. They concluded the most influential factors that affect labour productivity were grouped under organizational factors. Rao et al. (2015) used three test for research study which are reliability test, factor analysis, regression analysis they concluded that most of respondents think that planning and scheduling has to be improved at site. Kazaz et al. (2016) identified 37 factors and categorized under four groups such as organizational, economical, physical, and socio-physiological factors. Analyze the dispersion of the factors within a group and the compactness of each factors group. And the results revealed that organizational factors group has the highest weighted mean and lowest standard deviation values. So, factors under organizational factors group are perceived as equal important by craft workers. And in economical and physical factors were also perceived equal important by craft workers. Only, factors categorized under socio-psychological factors group had different importance degrees according to craft workers evaluation.

Vaid et al. (2016) considered precast construction in housing projects. They concluded major factors affecting labour productivity which are selection of machinery, use of innovative material, standardization of elements, project planning and sample design. Saravanan et al. (2016) concluded eleven different factors influencing labour productivity which are time, quality, safety and managerial factors, experience of labour, type of project, misunderstanding, external factors, motivation, material/tools and natural factors.

One of the determining factors of the profitability, competitiveness and the growth of enterprises, firms, and/or businesses is labour productivity. Some international organizations mention the importance of labour productivity. The United Nations noted the importance of labour productivity through one of its

Sustainable Development Goals (SDGs) target. Labour productivity is the most essential component of production (OECD, 2001). It is also mentioned by the International Labour Organization (ILO) that labour productivity measures efficiency to produce goods and services and reflects the standards of living (ILO, 2016). Therefore, it is necessary to analyze the determinants of labour productivity. Ghate et al. (2016) observed that measurement of labour productivity is helpful in saving the time of the project as well as cost of project without hampering the quality of work. They used work study and work measurement techniques for data collection of labour and improvement in labour productivity. They concluded that this technique helped to reduce cost by 20% of labour cost per floor.

Mahesh et. al., (2017) found prior knowledge of labour productivity during construction can save money and time. Investments for projects are very high and because of the complexity in construction, various factors can highly affect overall productivity, thus the project can end up adding even more time and money in order to be completed. First method used for analysis was the Pearson product moment correlation coefficient. A study by Dua & Garg (2017) identified the determinants of labour productivity in developed and developing countries. The authors used panel cointegration and group-mean fully modified ordinary least squares estimation to analyze the data. The result showed that trade openness, technology, capital, government spending and human capital significantly affect labour productivity in developed and developing countries, but the impact is different. Dhiman and Sharma (2017) also looked into the Indian textile industry's productivity patterns and determinants. The study used labour and capital productivity levels in the Indian textile industry to examine how efficient labour and capital were, as well as their effect on the economy. The study found that both labour and capital productivity levels in industries have been decreasing, using a time series regression model with a cointegration test. According to the authors, productivity varies by industry and is dependent to a large extent on the productive existence of labour and capital in the Indian labour market.

Using dynamic ordinary least squares to analyze panel data from 1980-2014, Samargandi (2018) examined the determinants of labour productivity in North Africa and Middle East countries. The author found that human capital and capital stock positively impacts labour productivity. Furthermore, it was found by the author that financial growth, trade openness and industrial value addition have a substantial effect in boosting labour productivity, and innovation is an important factor in increasing labour productivity. Using the World Bank's Enterprise Survey database for 2013, Heshmati & Rashidghalam (2018) investigated the effect of labour productivity on the service and manufacturing sectors of Kenya's economy. The authors found that as the ratio of female-to-male workers in the labour force increases, labour productivity declines. While the study identified the factors that influence labour productivity, they did not examine the difference in labour productivity for the manufacturing sector. Another determinant of labour productivity widely investigated in literature is the capital of the firm. Wijaya (2019) found that capital formation, a proxy to capital, has a positive impact in the short run and long-run on the productivity of labour. According to the study, higher capital formation led to higher labour productivity, i.e., higher capital formation itself can be generated from an improvement in a total of the net inventory changes and fixed asset accumulation such as construction of railways, roads, public and private buildings, machinery, and land improvements.

Moussir and Chatri (2019) examined the differences in labour productivity between the traditional and modern sectors of the Moroccan economy by investigating the structural changes of the economy using an input-output model. The authors found that structural change, which is the reallocation of resources from the agricultural sector to the non-agricultural sector of the country, has significantly impacted the overall level of labour productivity growth which is explained largely by intra-sector growth. They indicate that although overall labour productivity growth for the country has improved, there are some aspects of the economy that makes use of unskilled labour in the traditional sectors. Timmer and Akkus (2008) showed that structural transformation, especially among developing countries through investment in human capital, improved technologies, and lowered transaction costs, facilitated the integration of economic activities and the efficient allocation of resources, and hence improved labour productivity. Also, the United Nations Industrial Development Organization (UNIDO, 2012) says that structural transformation of an economy is a key source of productivity growth and increased per capita income.

3.0 Methodology

This study on the impact of construction environment on construction labour productivity in Minna relies heavily on questionnaires to captured construction players perception on various environmental factors affecting labour productivity. A total of 100 questionnaires was randomly distributed among the construction workers. The questionnaires comprise 28 items which form the basis of evaluation environmental impact on construction project. However, component factor analysis was used to select 10 items which was believed to have greater impact on labour productivity. The author used 5-point Likert scale to rate construction site workers perception provided on the questionnaires in term of Very high extent (5), High extent (4), neutral (3), Low extent (2) and Very Low extent (1).

Descriptive statistics was used to analysis the data collected from the study and hypothesis was tested using Multiple regression model. This study hypothesis is stated below as;

$H_0$1: there is no statistically significant relationship between project environment and hours work per day.

$H_0$2: there is no statistically significant relationship between project environment and the numbers of days' work per week

4.0 Results and Discussions

4.1 Results

One hundred and one males who took part in the poll at the various construction sites. This is because of the religious belief in Northern Nigeria that has placed more responsibility on men than women.

Figure 1 shows the age distribution of the respondents. However, figure 1 reveals that a larger proportion (49) of the respondents who work at the building construction site was around the age group of 20-30 years. This was followed by those around the age bracket of 31-40 years (i.e., 31responses). The respondents whose age bracket falls between 10-20 years (4 responses), 41-50 years (9 responses) and 51-60 years (i.e., 8 responses) are depending group and can be described as less productive in the construction site. From Table 1 above reveals the education qualification of the respondents. However, 11.9% had postgraduate certificates, 19.8% had degree certificates, and 25.7% had NCE/ND certificates.

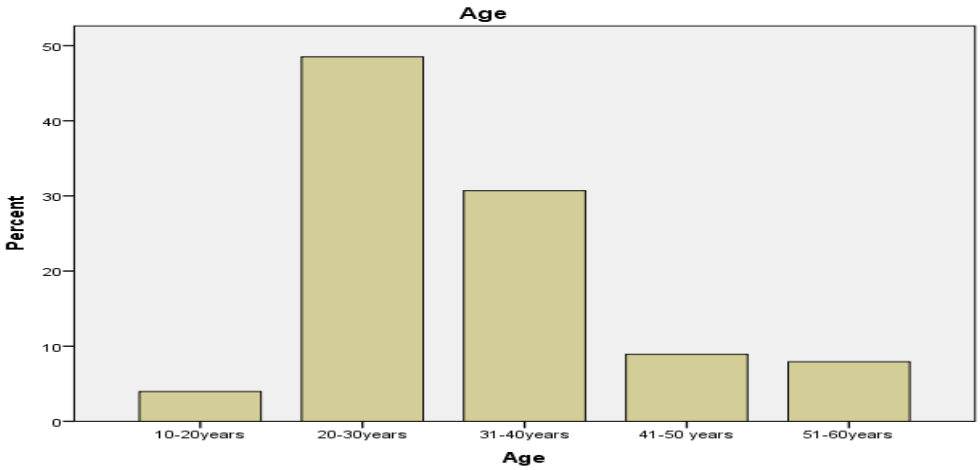

Figure 1: Age of the Respondents

Table 1 further showed that some respondents had other lower certificates (i.e., WAEC and Primary school Certificate) and some respondents doesn't have formal education (i.e. 12.9% responses)

Table 1 Education Qualification Distribution of the Respondents

		Frequency	Percent
Valid	Postgraduate	12	11.9
	Degree	20	19.8
	NCE/ND	26	25.7
	WAEC	15	14.9
	School Cert	15	14.9
	no formal education	13	12.9
	Total	101	100.0

Sources: Author (2021)

Table 2 shows that more than half of the respondent's had over eleven (11) years of experience in building construction projects, 41 (i.e., 40.6%) of the respondents had 6-10 years of working experience as a builder and only 8 (i.e., 7.9%) of the respondents had less than 5 years of working experiences.

Table 2: Distribution of Respondents by Years of Experience

		Frequency	Percent
Valid	0-5years	8	7.9
	6-10years	41	40.6
	11years above	52	51.5
	Total	101	100.0

Sources: Authors (2021)

Table 3 shows that about 47 (46.5%) respondents were labourers at the construction site, 18 (17.8%) of them were architects, 8 (7.9%) respondents were quantity surveyors, 10 (9.9%) respondents were project managers and about 18 (17.8%) respondents were site managers.

Table 3 Distribution of Respondents Profession in the Constructions Site

		Frequency	Percent
Valid	Project manager	10	9.9
	Quantity Surveyor	8	7.9
	Architect	18	17.8
	Laborer	47	46.5
	Site manager	18	17.8
	Total	101	100.0

Sources: Authors (2021)

Table 4 reveals that 68 (i.e., 67.3%) of the respondents had worked in more than sixteen (16) building construction sites and about 33(i.e., 32.7%) had worked between 11-15 construction. However, this finding implies that respondents are well exposed and experienced in construction projects and there is a tendency that there will be a waste reduction in terms of human resources.

Table 4 Distribution of Respondents by Number of Sites Worked in

		Frequency	Percent
Valid	11-15	33	32.7
	16 sites and above	68	67.3
	Total	101	100.0

Sources: Authors (2021)

Table 5 above indicate that about 59.4% of the respondents had spent over sixteen (16) years in contracting construction projects, 34.7% said they have spent around 11-15 years in contracting construction projects and only 5.9% reveals that they had spent 6-10 years contracting construction projects.

Table 5 Distribution of Respondents by Number of Years in Construction Contract

		Frequency	Percent
Valid	6-10years	6	5.9
	11-15years	35	34.7
	16years above	60	59.4
	Total	101	100.0

Sources: Authors (2021)

Table 6 Distribution of Respondents by Number of Hours Worked per day

		Frequency	Percent
Valid	0-5hrs	13	12.9
	6-10hrs	25	24.8
	11-16hrs	55	54.5
	Above 16hrs	8	7.9
	Total	101	100.0

Sources: Authors (2021)

From Table 6, 54.5% of the respondents work between 11-16hrs daily on their current project, 24.8% of the respondents work for a period of 6-10hrs per day, 12.9% of the respondents work for about 0-

5hrs daily and 7.9% of the respondents work above 16hrs per day. This finding implies that since a larger proportion (54.5%) of the respondents work for a period of 11-16hrs on daily basis on their current job it means there is a tendency that the labour productivity will be high.

The analysis result in Table 7 reveals that more than half (i.e., 52) of the respondents said they work daily on their current project, 26.7% (27 responses) respondents work twice per week on their current project, four (4%) respondents work once per week while around 17.8% (18) work occasionally on their current project. Therefore, the larger (51.5%) proportion who agrees that they work daily on their current project is an indication that labour productivity will be high on the construction sites.

Table 7 Distribution of Respondents on Numbers of Days Work Per Week

		Frequency	Percent
Valid	Once	4	4.0
	Twice	27	26.7
	Daily	52	51.5
	Occasionally	18	17.8
	Total	101	100.0

Sources: Authors (2021)

4.2 Test of Hypothesis

Components factor analysis was utilized to factorize the variables required for determining the hypothesis. Out of 28 items investigated only nine items (i.e., Inadequate Supply, Incentive payment, Financial status of owner, Financial status of the contractor, Deficiency in financial sources, Inaccurate Estimate, Poor building design, Design Complexity and Error indrawing) was equal and greater than the Eugen value of one. However, these nine (9) variables identified above proved to have a great impact on construction labour productivity and was used for further analysis by regressing these nine variables with the productivity of workers (i.e., hours work per day and numbers of days' work per week) in the site

4.2.1 Regressing the number of Hours work on current project with determinant of Project Environment

The proposed hypothesis (H_01) is that there is no statistically significant relationship between project environment and hours work per day.

Table 8: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.621[a]	.386	.325	.67096

a. Predictors: (Constant), inadequate Supply, Incentive payment, Financial status of the owner, Financial status of a contractor, Deficiency in financial sources, Inaccurate Estimate, Poor building design, Design Complexity and Error indrawing

The model summary of the linear regression analysis (Table 8), the R-value (0.621) indicates that the a good model fit between the dependent variable and constants (predictors). From the ANOVA Table (Table 9), the Sig. value (0.000) appears to be below the table value of 0.05. Since the P-value does not exceed the table value (0.05), we reject the hypothesis that the numbers of man hour work for the current project is not influenced by determinants of project environment (i.e. inadequate Supply, Incentive payment, Financial status of owner, Financial status of contractor, Deficiency in financial sources, Inaccurate Estimate, Poor building design, Design Complexity and Error indrawing).

Table 9: ANOVA[a] Table

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	25.726	9	2.858	6.349	.000[b]
	Residual	40.967	91	.450		
	Total	66.693	100			

a. Dependent Variable: hours work on current project
b. Predictors: (Constant), inadequate Supply, Incentive payment, Financial status of the owner, Financial status of a contractor, Deficiency in financial sources, Inaccurate Estimate, Poor building design, Design Complexity and Error indrawing

Table 10 shows that variables inadequate supply (0.323), incentive payment (0.078), the financial status of the contractor (0.563), deficiency in financial sources (0.287), inaccurate estimate (0.279), design complexity (0.412) and error in drawing (0.431) does not have significant relationship with the numbers of hours work per day on the current project since their significance value exceeds 0.05 confident level. Also, the variables financial status of the contractor (0.000) and poor building design (0.000) doesn't influence the number of hours work per day by labourers. Since their significant level doesn't exceed the confidant level of (0.05).

Table 10 Coefficients Table

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
(Constant)	.568	.571		.994	.323
inadequate Supply	-.200	.112	-.281	-1.784	.078
Incentive payment	-.266	.147	-.378	-1.815	.073
Financial status of owner	.703	.144	.929	4.897	.000
Financial status of contractor	.069	.119	.089	.581	.563
Deficiency in financial sources	.085	.079	.107	1.071	.287
Inaccurate Estimate	.084	.077	.130	1.089	.279
Poor building design	.384	.072	.595	5.329	.000
Design Complexity	-.124	.151	-.132	-.823	.412
Error indrawing	-.111	.140	-.088	-.792	.431

a. Dependent Variable: hours work on current project

4.2.2 Regressing Numbers of Days Worked per Week with the determinant of Project Environment

Table 11 shows the model summary for the hypothesis. The R-value (0.691) indicates a good model fit between labour productivity and Predictors (i.e., constant).

Table 11 Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.691[a]	.478	.426	.57770

a. Predictors: (Constant), inadequate Supply, Incentive payment, Financial status of the owner, Financial status of a contractor, Deficiency in financial sources, Inaccurate Estimate, Poor building design, Design Complexity and Error indrawing

It could be seen from the ANOVA Table (Table 12), that the Sig. value (0.000) is below the table value of 0.05. Since the P-value does not exceed the table value (0.05), we reject the hypothesis that the number of days works per week on the current project is not influenced by determinants of Project Environment (i.e., inadequate Supply, Incentive payment, financial status of owner, financial status of contractor, Deficiency in financial sources, Inaccurate Estimate, Poor building design, Design Complexity and Error in drawing.

Table 12: ANOVA[a] Table

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	27.768	9	3.085	9.245	.000[b]
	Residual	30.370	91	.334		
	Total	58.139	100			

a. Dependent Variable: numbers of days worked per week
b. Predictors: (Constant), inadequate Supply, Incentive payment, Financial status of the owner, Financial status of a contractor, Deficiency in financial sources, Inaccurate Estimate, Poor building design, Design Complexity and Error indrawing

Table 13 indicates that the variables (i.e. inadequate supply (0.478), the financial status of the contractor (0.795), deficiency in the financial source (0.777), inaccurate estimate (0.338), and error in drawing (0.775)) did not have a relationship with the numbers of days labourers work per week since their table values exceed the P-value (0.05). Therefore, accepting null hypothesis. Similarly, table 14 records that variables (incentive pay financial00), the financial status of the owner (0.002), poor building design (0.000) and design complexity (0.000)) have significantce relationship on construction labour productivity since the table values calculated on table 14 are below the P-value (0.05) thereby rejectingthe null hypothesis.

Table 14 Coefficients Table

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
(Constant)	3.169	.492		6.445	.000
inadequate Supply	-.069	.096	-.104	-.713	.478
Incentive payment	.676	.126	1.027	5.355	.000
Financial status of owner	-.398	.124	-.563	-3.218	.002
Financial status of contractor	.027	.102	.037	.261	.795
Deficiency in financial sources	-.019	.068	-.026	-.283	.777
Inaccurate Estimate	-.064	.067	-.106	-.962	.338
Poor building design	.410	.062	.680	6.599	.000
Design Complexity	-.679	.130	-.775	-5.235	.000
Error indrawing	.035	.120	.029	.287	.775

a. Dependent Variable: number of days worked per week

5.0 Conclusion and Recommendations

This study aimed at assessing the impact of project environment on construction labour productivity in Minna. From the analysis it enables the author to identify that variable (i.e., inadequate supply, financial status of the contractors, deficiency in the financial sources, inaccurate estimates and error in drawing) shows no significant relationship with the nnumberof days labourers work per week. Despite this impact of project environment on labour productivity in Minna, this study concludes that there is a relationship between the project environment on labour productivity (i.e., number of days work per week and maman-hour worked per week). Also, the authors recommend that:

i. Contractors should ensure to have all the necessary equipment and cross check the relevant documents and processes before project implementation to avoid waste of man hours due to inaccurate estimates, wrong building designs, design complexity, an so on.
ii. Necessary provisions should be made available by the contractors or site owners to reduced waste of man-hours due to inadequate supply of materials or unnecessary delays which may results to additional expenses.
iii. Labourers incentives payment should be done in time, this will improved labourer morale and in turn increase their productivity.

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The Effects of Managerial Skills on the Growth of Small and Medium Scales Enterprises in Kano State (A Study of Kano Technology Incubation Center, Kano)

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Abstract
This research work was designed to determine the relationship between managerial skills and SME's growth at Kano Technology Incubation Centre. The main objective of this study is to establish if there is any significant relationship between the managerial skills and the growth of Small and Medium Scale Enterprises (SMEs) in Kano State. Many literatures were reviewed in relation to the topic with the themes and sub themes of the study. Questionnaire was employed as instrument for data collection, it was validated using content validity test, whereas its reliability was determined using cronbach's alpha. The data collected were analyzed, grouped into frequency, computed and arranged in tables for easy references. The statistics tools used for data analysis include simple percentage and Pearson's Correlation Coefficient,. These techniques were appropriately applied at 5% level of significance. The result of the study shows that there is significant positive relationship between the dependent and independent variables, that is the analysis proved a significant linear relationship between level of managerial skills acquired by business entrepreneurs on the one hand and the SME's growth in terms annual sales and increase in number of employees on the other hand. Impliedly this means business owners that attend higher level of managerial skills are more likely to have more performing businesses, in addition it demonstrates that increase in managerial skills leads to increase in organizational performance and business growth. Base on the results of this research, it has been recommended that, entrepreneurs should acquire managerial skills as much as possible to enable them take their businesses to a greater level. SME's are also strongly advised to register with the technology incubation Centers in order to harness from the bundles of benefits that are readily available there, so as to grow their business and equally compete favorably in the market hence a positive relationship was established between the Centers training on managerial skills and SME's growth

Key words: *Growth, Incubation Center, Managerial Skills, Small and Medium Scales Enterprises*

1.0 Introduction

1.1 Background to the Study

Small and medium scale enterprises (SMEs) are sources for economic growth and development for every nation, because as they grow, their economy grows too. In this era of industrialization, where the development index of nations are measured basically on their achievement in terms of provision of welfare to their populace, small scale businesses play a role as employment providers in a way that ensures equitable income distribution (Kuratko, 2005). Thus, (Ayanda, and Laraba, 2011) described small businesses as "mighty minors" that functionalize market economies and remove or minimize imperfection factors that impede adaptation to change. SMEs are generally believed to be the most appropriate scale of business for developing economies like Nigeria (Baptista, Escaria, & Madruga, 2008). This is owing to the fact that their requirement of capital size and managerial expertise matches the limited size of capital for investment and managerial expertise obtainable in such countries compared to developed ones (Elkan, 1988).

Managerial skills can be defined as certain attributes or abilities that an executive should possess in order to fulfill specific tasks in an organization. They include the capacity to perform executive duties in an organization while avoiding crisis situations and promptly solving problems when they occur. Management skills can be developed through learning and practical experience as a manager. The skills help the manager to relate with their fellow co-workers and know how to deal well with their subordinates, which allows for the easy flow of activities in the organization. (Corporate Finance Institute, 2022). Effective managerial skills are vital for any organization to succeed and achieve its goals and objectives. A manager who fosters good management skills is able to propel the company's mission and vision or business goals forward with fewer hurdles and objections from internal and external sources.

According to Corporate Finance Institute (2022) Management and leadership skills are often used interchangeably as they both involve planning, decision-making, problem-solving, communication, delegation, and time-management Good managers are almost always good leaders as well. In addition to leading, a critical role of a manager is to also ensure that all parts of the organization are functioning cohesively. Without such integration, several issues can arise and failure is bound to happen. Management skills are crucial for various positions and at different levels of a company, from top leadership to intermediate supervisors to first-level managers.

According to Katz (1974), there are three managerial skills that every manager needs. These are: Technical Skills which is the ability to perform the given job. The lower-level managers require more technical skills; Human Relations (Interpersonal) Skills or the ability to understand, communicate and work with people. Human relations skills are required by all managers at all levels of management. The reason for that is all managers have to interact and work with people; Conceptual Skills being the ability to see the big picture, to visualize the organization as a whole. It includes analytical, creative, problem-solving skills. The top-level managers require more conceptual skills and less technical skills. National Business Incubation Association (NBIA) defines business incubation as a program that provides "management guidance, technical assistance and consulting tailored to young growing companies as well as access to appropriate rental space and flexible leases, shared business services and equipment, technology support services and assistance in obtaining the financing necessary for company growth" (NBIA, 2007).

Small and Medium Enterprises (SMEs) have become the engine of growth and development for many countries in the World. Thus, successive administrations in Nigeria have formulated and implemented different strategies to create enabling environment for SMEs formation and growth, National Development plans inter alia setting up thirteen (13) Industrial Centers (IDCs); establishment of financial institutions to provide credit for SMEs, World Bank assisted SMEs Schemes, National Economic Reconstruction Fund (NERFUND), Electronic Settlement Limited (ESL), Restaurant Revitalization Fund (RRF), National Directorate for Employment (NDE), National Poverty Eradication Programme (NAPEP) etc. Empirical evidence showed that most of these programs were established to train entrepreneurs and equip them with managerial skills so as to enable them manage their business activities in an effective, efficient and economical way. However, despite the establishment of all these programs and policies for the betterment of SMEs in Nigeria, the SMEs growth has been insignificant (Chrita, 2012).

The main objective of this study is to establish if there is any significant relationship between the managerial skills and the growth of Small and Medium Scale Enterprises (SMEs) in Kano State. Other specific objectives include:

i. To determine the level of conceptual skills on SMEs at Technology Incubation Center Kano.
ii. To determine the level of technical skills on SMEs at Technology Incubation Center Kano.

Research Questions

i. What is the level of conceptual skills on SME'S at Kano Technology Incubation Center?
ii. What is the level of technical skills on SME'S at Kano Technology Incubation Center?

Statement of Hypothesis

H0: There is no significant relationship between conceptual Skills and growth of Small and Medium Enterprises at Kano Technology Incubation Center.

The study findings will help in guiding formulation of policies and strategies to facilitate the growth of SMEs. Policy makers are always interested in quantifying program outcomes and thus such impact study will help the policy makers in designing programs for SME's growth and development. It will help Business entrepreneurs to understand the importance of managerial skills and their impacts on their businesses in the country. Thus, the study will motivate the business entrepreneurs to acquire the necessary managerial skills which is expected to help them grow their respective businesses. Finally the study will also serve as a source of secondary data providing a data bank for subsequent studies by prospective researchers.

This study was conducted on the effect of managerial skills on the growth of SMEs in Kano State, using SMEs at Kano Technology Incubation center. The scope of the study is therefore defined by concentrating on the relationship between conceptual and technical skills on the SME's growth at Kano Technology Incubation Centre, Kano State; data was collected from different entrepreneurs in different professions across different local government within who are presently under going skill acquisition program at the Technology Incubation Center Kano.

2.0 Literature Review

This Section presented and discussed the conceptual and theoretical frameworks which guided the study; Literatures relevant to the subject matter were also identified, studied and reviewed which enable the researcher to identify the study-gap on which the work was built upon.

2.1 Concept of Managerial Skills

According to Smith & Morse (2005) and Rudmann (2008) the terms: skills, expertise, acumen, competency, qualities and/or values are used interchangeably in the literature. Skill is a quality of performance which depends not only on individual natural ability, but also on training, practice and experience (Adeyemo, 2009). In entrepreneurship, in order to ensure a superior performance, a firm must develop and practice a unique set of skills ahead of its competitors (Barney, 1991; Mahoney, 1995). Many previous literatures argue that it is necessary for owners or managers in small-scale businesses to possess appropriate skills and ability before running the businesses (Okpara & Wynn, 2007).

Management skills can be defined as certain attributes or abilities that an executive should possess in order to fulfill specific tasks in an organization. They include the capacity to perform executive duties in an organization while avoiding crisis situations and promptly solving problems when they occur. Management skills can be developed through learning and practical experience as a manager. The skills help the manager to relate with their fellow co-workers and know how to deal well with their subordinates, which allows for the easy flow of activities in the organization. (Robert Katz, 1999).

Good management skills are vital for any organization to succeed and achieve its goals and objectives. A manager who fosters good management skills is able to propel the company's mission and vision or business goals forward with fewer hurdles and objections from internal and external sources. Managerial and leadership skills are often used interchangeably as they both involve planning, decision-making, problem-solving, communication, delegation, and time-management. Good managers are almost always good leaders as well.

In addition to leading, a critical role of a manager is to also ensure that all parts of the organization are functioning cohesively. Without such integration, several issues can arise and failure is bound to happen. Management skills are crucial for various positions and at different levels of a company, from top leadership to intermediate supervisors to first-level managers.

2.1.1 Technical skills

Technical skills involve skills that give the managers the ability and the knowledge to use a variety of techniques to achieve their objectives. These skills not only involve operating machines and software, production tools, and pieces of equipment but also the skills needed to boost sales, design different types of products and services, and market the services and the products.

2.1.2 Conceptual Skills

The Conceptual Skills involve the skills managers present in terms of the knowledge and ability for abstract thinking and formulating ideas. The manager is able to see an entire concept, analyze and diagnose a problem, and find creative solutions. This helps the manager to effectively predict hurdles their department or the business as a whole may face.

2.2.3 Concept of SME's Growth

SMEs is one of the areas that are currently receiving academic and policy attentions but up to now differentiating SSBs from other scales of businesses such large, medium and micro defies universal definition (Chendo, 2013; Luper & Kwanum, 2012; Uchenwamgbe, 2013). Researchers and other interested parties have looked at the issue base on some specific criteria such as value added and value of assets, annual sales or number of employees (Amboise & Muldowney, 1988; Uchenwamgbe, 2013).

SME has no standard definition. SMEs have been identified differently by various individuals and organizations, such that an enterprise that is considered small and medium in one country is viewed differently in another country. Some common indicators employed in the various definitions include total assets, size of the labor force employed, and annual turnover and capital investments (Baenol, 1994). In addition, no single definition of SMEs exists among officials of multilateral development institutions.

In Nigeria, the Central Bank defined the constructs on the basis of total asset and number of employees (Chendo, 2013). Nevertheless, the National Council on Industry (1996) cited in (Egbetokun, 2008) and (Osotimehin, and Olajide, 2012) defined that, micro business is a business whose total cost, including working capital but excluding cost of land, is not more than N1 million and a labor size of not more than 10 workers, while SSB is a business whose total cost, including working capital but excluding cost of land, is over N1million but not more than N40 million and a labor size of between 11 and 35 workers.

Base on the above, it seems that in Nigeria there is no consensus on the definition of SSBs, but they are defined along three dimensions: in terms of either employment or investment, or a combination of any two, or all. It also worth deducing that any business with capital base worth N 1 million or has a number of employees up to 11 is regarded as SSBs.

2.3 Relationship Between Managerial Skills and SME's Growth

Lyles (2004), further evaluate managerial competencies as measured by the education of the founder, managerial experience, entrepreneurial experience, start-up experience and functional area experience versus new venture growth. The results show that relative profits tend to be high when an entrepreneur has more education and experience in the line of business. On the other hand, profitability tends to be low when the entrepreneur has only start up and managerial experience, but lacks an educational background. Other empirical studies, such as Smallbone and Welter (2001), found that managerial competencies as measured by education, managerial experience, start-up experience and knowledge of the industry positively impact on the growth of new MSEs.

Small and medium business growth plays a crucial role in the economic development of a nation (Kovalainen and Hogstedt, 2006). According to Andy Ohemeng Asare (2014), small and medium businesses have the ability to ensure an equitable distribution of income, promote general economic welfare among all citizens, improve local market and make productive use of scarce resources. Similarly, (Krasniqi, 2007) indicates that SMEs also stimulate technological innovation and other aspects of economic and social development. Thus, SMEs have three attributes in a market economy: they develop markets, accumulate capital through trading and develop commercial culture and skills within the region (Clover and Darroch, 2005). As stated by Cant and Wiid (2013), SMEs contribute towards 91% of formal business activities and their contribution to GDP is estimated at between 51-57% of total GDP.

SMEs in Nigeria are not only substance of change and growth in the economy at large, but they are also the bedrock of the nation (Ihua, 2009). Innovation is an essential characteristic of SMEs (Levy and Powell 2005). Thus, globalization has brought abo ut changes in customer's demand so pressuring SMEs to greater demands (Morrison, 2006). According to Morrison (2006), the ability of suppliers to listen to customers and understand their expectation of product is very crucial to business growth. According to Vanguard Media (2015) highlights the lack of skilled labor among youth population is an obstacle to small businesses development and inability to business owners to communicate with their customers. Hence, it is difficult for them to employ highly skilled expertise as a result of expensive labor turnover.

2.4 Theoretical Analysis

This study adopts the contingency approach based on the fact that managerial skills were measured on establishing goals, allocation of resources, communication skill, measuring performance, taking action and self-control. The contingency theory argued that there is no one or single best way or approach to manage organizations. When a manager makes a decision, he must take into account all aspects of the current situation and act on those aspects that are keys to the situation at hand. Therefore, the contingency approach to management helps the manager to develop managerial strategy based on the situation and condition they are experiencing.

2.5 Review of Empirical Studies

(Shehu, 2020) examined the relationship of owner/manager knowledge, competitive intensity, complexity of marketing, technical competence, firm size with the mediation of advisory services on the performance, using structured questionnaire on 198 manufacturing SMEs operating in Kano State. The regression result indicated significant relationship between owner/manager knowledge and performance. This study established relationship between owner/manager knowledge and SMEs performance but did not pay attention to the skill or performance level.

Some studies have proceeded by looking at performance in terms of employee performance in particular (Purcell, Kinnie & Hutchinson 2003; Harrison 2000) while others have extended to a general outlook of organizational performance (Guest 1997; Swart et al. 2005). In one way or another, the two are related in the sense that employee performance is a function of organizational performance since employee performance influences general organizational performance. In relation to the above, (Wright, & Geroy, 2001) note that employee competencies change through effective training programs. It therefore not only improves the overall performance of the employees to effectively perform their current jobs but also enhances the knowledge, skills an attitude of the workers necessary for the future job, thus contributing to superior organizational performance.

Empirical studies conducted by different scholars revealed that entrepreneurial skills do affect performance of small and medium enterprises (SMEs). However researchers such as (Kinyua, 2014), (Bello, 2015) found that entrepreneurial skills have positive and significant effect on SMEs performance and it is one of the key success factors of SMEs. While researchers such as (Ali & Mohammed, 2017) found a negative effect of entrepreneurial skills on SMEs performance.

Fiberesima and Rani (2012) studied the impact of strategic management on business success in 40 SMEs of Port Harcourt, Rivers State. The study analyzed the data collected through questionnaire method with descriptive statistics and reported that majority of the SMEs were either disorganized in their practice of strategic management or made no attempt and that strategic management was found to be positively related SMEs performance. The findings collaborate with those of Papulova and Mokros (2007) who observed that technical skills are important in businesses that relate to engineering and other technical orientations. Rue and Byers (1992) in their theory of management competencies view technical skills as very important to lower-level managers. The study findings show that technical skills contribute to a moderate and to a very great extent on the growth of MSEs in Kenya.

2.6 Study Gap

The study gap is all about the areas that are not fully covered by the previous researchers on the topic of discussion (effect of managerial skills on Small and Medium Scale Enterprises (SMEs).

Few studies were conducted on this topic in Kano State; among all the studies conducted none was conducted at Kano Technology Incubation Center.

3.0 Research Methodology

For the purpose of the study, correlational research design was employed and used; using which sign a mathematical relationship between the variables under study was established and studied. The population of this study is 210, consisting of the sixty (60) staff of the Centre and 150 SMEs who are presently undergoing training at the Center; such entrepreneurs come from different part of the Country.

Thus, the sample size of 136 was determined and used based on Krejcie and Morgan table of sample 1970. The study used Stratified sampling technique in picking the samples from the population. Questionnaire as a research instrument was employed and used is this study for data collection purpose, it was designed in a close ended patterns using likert-scale and administered directly to the respondents. Content validity test and reliability test were respectively applied on the instrument before it was finally distributed to the respective respondents for data collection.

To validate the research instrument, the questionnaire used, was given to the subject-experts in the concerned area to rate the relevance of its contents for validity purposes. The Content Validity Index = 0.8667 and is greater than 0.5 which the standard criterion for measuring the validity of research instrument. Based on the above calculation the validity of the research instrument is proved to be adequate and sufficient. On the other hand, the reliability test for the instrument used in this study was done using cronbach's Alpha as follow; The analysis of cronbach alpha of the individual variables which makeup the research instrument, the cronbach alphas of the individual variables are as follows: 0.614; 0.778; 0.821 and 0.543 for the conceptual skills; technical skills; annual sales and no. of employee respectively. This analysis indicated that the instrument is reliable as all the Cronbach's alpha values exceeded the prescribed threshold of 0.5 given by Field (2009).

In congruence to the study objectives the study used descriptive statistics for the analysis of demographic data (bio-data) and Pearson linear corr elation coefficient for hypotheses testing to determine the extent of relationship between the variables concerned.

4.0 Discussion of Result

The hypothesis formulated in chapter one will be tested here using Pearson's correlation coefficient:

Table 4.8 Determination of Managerial Skills' values

Conceptual skills	0	0	11	221	260
Technical skills	0	0	15	216	261
TOTAL (CS+TS)	0	0	26	437	521
Managerial Skills (Average of the two above)	***0***	***0***	***13***	***218.5***	***260.5***

Note that: the combination conceptual and technical skills made up the managerial skills

Table 4.9 Determination of SME's Growth Values

Annual Sales	0	0	10	179	180
Number of Employees	0	0	15	216	261
TOTAL (AS+NE)	0	0	25	395	441
SME's Growth (Average of the two above)	***0***	***0***	***12.5***	***197.5***	***220.5***

Table 4.10 Dependent and Independent Variables

MANAGERIAL SKILLS (X)	0	0	13	218.5	260.5
GROWTH OF SMEs (Y)	0	0	12.5	197.5	220.5

Table 4.11 Person's Correlation Coefficient

X	**Y**	**XY**	**X^2**	**Y^2**
0	0	0	0	0
0	0	0	0	0
13	12.5	162.5	169	156.25
218.5	197.5	43,153.75	47,742.25	39,006.25
260.5	220.5	57,440.25	67,860.25	48,620.25
∑= **492**	∑=**430.5**	∑= **100,756.5**	∑= **115,771.5**	∑= **87,782.75**

0.993355

$$R = \frac{n \sum xy - \sum x \sum y}{\sqrt{\{n\sum x^2 - (\sum x)^2\} \{n\sum y^2 - (\sum y)^2\}}} \qquad R = \frac{5\,(100{,}756.5) - (492)\,(430.5)}{\sqrt{\{5(115{,}7571.) - 492^2\} \{5(87{,}782.75) - (430.5)^2\}}}$$

$$R = \frac{503{,}782.5 - 211{,}806}{292{,}241.81} \qquad R = 0.999092 \qquad R \approx 0.9991$$

Interpretation: the Pearson's correlation coefficient calculated indicated a strong positive relationship between Managerial skills and Growth of SME's. Therefore, the null hypothesis {Ho}: *"There is no significant relationship between managerial Skills and growth of Small and Medium Enterprises at Kano Technology Incubation Center."* is thereby rejected. This means the level of Managerial skills is positively and significantly related with the SME's growth.

4.1 Discussion of Results

This study was conducted on the Effects of Managerial Skills on the Growth of Small and Medium Scales Enterprises at Kano Technology Incubation Center, Kano. Kano Technology Incubation Centre was established in 1994 with the aim of technology incubation programs to accelerate the industrial development of the nation using technology incubation as a strategy, the mission of the program is to develop the necessary infrastructure for nurturing technology related activities and to create enabling environment for effective linkage among technology providers, policy makers, entrepreneurs and capital. So far it has nurtured and graduated over 800 businesses. The mandate of the Centre is to commercialize researches and harness the talents of people with good innovations in the society (Ahmed 2022).

The analyses of findings from this study revealed that Kano Technology Incubation Centre trains, nurtures and empowers businesses/entrepreneurs for rapid economic development. Kano Technology

Incubation Centre equips entrepreneurs with conceptual and technical skills The incubation Centre helps business entrepreneurs particularly the Small and Medium enterprises to grow and develop their businesses. The findings also established a significant linear relationship between the Centre's efforts in equipping businesses with managerial skills and the SME's growth on the other hand. This is also supported with study conducted by (Fiberesima, and Rani, 2012) and that of (Shehu, 2020) whose both findings discovered positive relationship between managerial skills and SME's performance.

5.0 Conclusions and Recommendations

5.1 Conclusion

The findings from this study proved that managerial skills have positive and significant relationship with SME's growth. This result is broadly consistent with prior management literature on SME's growth. This study examined the relationship between managerial skills and small business growth, by using a self-administered questionnaire, 128 samples were distributed. Pearson's correlation coefficient confirmed that managerial skills in term of technical and conceptual skills have significant influences on small business growth. It consolidates theories that managerial competencies explained business growth.

5.2 Recommendations

From the research analysis and conclusions above, the following recommendations were drawn to aid operators of small and medium scale enterprises: For growth of SMEs in Nigeria, entr epreneurs need to acquire conceptual skills for strategic planning of their enterprises through such areas as decision making, resource allocation and innovation. Technical skills are very important for business growth. Entrepreneurs need to have the required expertise to successfully manage an enterprise most especially in engineering and technical related businesses.

SME's are strongly advised to register with the technology incubation Centers in order to harness from the bundles of benefits that are readily available there, so as to grow their business and equally compete favorably in the market hence a positive relationship was established between the Centers training on managerial skills and SME's growth. Future researchers could also be extended on this study by examining and adding more components and variables associated with managerial competencies relevant to small business owners.

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Alternative Business Survival Model: A Proposed Approach

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Abstract
Emphasis is placed more on innovation for survival of business. However, innovation contributes only 20 percent towards survival of businesses, situation that sours socioeconomic crises. Hence, this study proposes an alternative model for survival of businesses. Library based study was adopted for the research. Relationship between relevance creation and business survival was conceptually examined. The paper discovers significant predictive power of relevance creation on survival of business through competitiveness. Thus, this study recommends to both existing and prospective businesses to attach hallmark importance to market perspective and needs; exceed market expectations; build activities around empirical evidences of what adequately support customer satisfaction and never form business for personal gain. Further, empirical research to examine the practicability and impact of this model on surviving and failed businesses respectively, is highly suggested by this study.

Key words: *Alternative, Business, Model, Proposed, Survival*

1.0 Introduction

Socioeconomic stability of every nation depends ‘solely’ on survival of businesses. Without it, nations face socioeconomic crises. Socioeconomic crises posit psychosocial and economic stress (Doza et al, 2020). It features combination of adverse conditions, not only to finance and economic, but also to mental, emotional, physical and socio-politico. It strongly relates to increase in the rates of unemployment, inequality, poverty and its resultant repercussions that generally ensue upsets and instabilities (Impalure & Dore, 2020; Sani, 2019).

In business, survival connotes endurance to live to a predetermined end. Thus, it indicates wellness and resiliency-of business-over time (Hogevold, 2011). It is associated with vigour and vitality, manifested in high productivity and efficiency of processes (Hernández et al, 2020). Steady patronage to business’s offer is highly stable (Hogevold, 2011). Business’s survival stimulates increased exploitation of local materials and greater capacity utilisation of domestic manpower (Motilewa et al., 2015; Ogechukwu et al., 2013). This generates economic and employment opportunities, enhances the potentials for wealth creation and improves the odds for poverty reduction. As a result, gap of inequality gets significantly influenced (Sani, 2019). Solution to socioeconomic problem is therefore, the fundamental role of business (Allaire, 2014). Thence, unless business survives, stability of nations is generally in peril.

However, the ‘ongoing’ revolution in information and communication technology (ICT) has exposed business to a dramatic shorter life span. Business becomes obsolete more quickly than at any time in the past (Ehinomen & Adeleke, 2012). For example, in a study conducted by Adebumiti (2020), discovers that the survival rate of small and medium enterprises in Nigeria is only 20%. In countries of the Organization for Economic Co-operation and Development (OECD) and Latin America, more than half of firms fail in the first five years, and the first year between 20% and 30% of nascent firms disappear (Hernández et al, 2020). Hernández et al, (2020) further add, the survival rate of new venture is 29.7% in

Colombia, and 70% of firms fail in the first five years. Survival has therefore, become the main challenge of contemporary business.
Ironically, despite 'universal' increase of business innovation practices, averagely, it contributes only about 20% to business's survival (Alsaaty & Makhlouf, 2020). This suggests, innovation is not the primal factor for survival of business. In fact, research indicates situation that comparison business tends to be more innovative (Collins & Hansen, 2011). Thus , people do not buy for innovativeness (Baberjee & Duflo, 2019).

In view of the above, this paper proposes relevance creation as the determining factor for survival of business. The paper is not negating the importance of innovation to business. Rather, it argues that, impact of innovation to business is relevance laden. It only has significance to business if it positively influences relevance creation and its maintenance. Hence, the paper seeks to propose an alternative model for business's survival, by conceptually examining the predictive power of relevance creation on the survival of business.

2.0 Literature Review: Business's Survival

As shown earlier, in business, survival connotes endurance to live to a predetermined end. Therefore, business's survival implies resiliency, goodness and functioning well of business. It is a sustainable condition that allows business to develop and thrive (Ruggeri, 2020). Business's survival leads to stable economic system that adapts to changes. Consequently, greater economic participation of citizens is enhanced. Hence, citizens freely participate and pursue economic activity based on talents and skills (Acemoglu & Robinson, 2013). Thus, equitable and sustainable growth model becomes the centre of policy making. This makes market failures preventable and private sector is strengthened to maximise the value it creates for society (Moffatt, 2019). As such, crises are managed and possibilities for economic expansion are provided (Amadeo, 2019; Philp, 2018). In effect, the larger economy stays in the expansion phase, and positively influences increased employments and wealth (Amadeo, 2019). Due to the stability and inclusive nature of business's survival, it becomes the catalyst for investments and prosperity (Blowers & Leroy, 2003; Gurria, 2019). This creates adequacy of life essentials, and people tend to have more access to a range of amenities and options (Acemoglu & Robinson, 2013). As such, standard of living and quality of life are improved (Gitman et al, 2018).

By that, economic opportunities are made available to all thereby, contributing to reduced unemployment, high liquidity and low volatility, to facilitate the achievement of the goals of full employment, growth and stability (Acemoglu & Robinson, 2013; Philp, 2018). These bring expanded opportunities for upward mobility; improved people's living standard; inclusive well-being for all, including those at the bottom of the income distribution; reduced inequalities; and environmental and social sustainability are raised (Gurria, 2019). Therefore, business's survival is the best in resource absorption and generation (Blowers & Leroy, 2003; Rivkin, 1968); and unless businesses survive, citizens cannot fulfil obligations, and absence of it has socioeconomic and political consequences (Gurria, 2019; Messmore, 2011).

2.1 Underpinning Theory

This study is underpinned by Relevance Theory. This theory posits that, meaning is primarily a psychological phenomenon (Wilson, 2016). Thus, behaviour toward business's offer is mainly determined by attached meaning, principally influenced by psycho-emotional processes (Robbins & Judge, 2007). This implies, unless customer perceives business's offer relevant toward addressing personal concerns, behaviour towards the offer would be negative. Thence, for business's offer to have customer acceptability, affective and cognitive effect on customers' problem is indispensable. This enhances acceptability and revisit intention (Chan, 2019). Therefore, survival requires firm to position itself in a way that customer perceives effectivity of what it offers (Tracy, 2015).

3.0 Methodology

Library based study was adopted by this research. A qualitative content analysis was conducted to conceptually examine relationship between relevance creation and business's survival. The study is an attempt to propose an alternate model for survival of businesses that can be empirically tested, for sustained socioeconomic stability.

4.0 Results and Discussion

The Proposed Survival Model: Relevance, Competitiveness, Survival (RCS) Model

This model is built on three universal assumptions:

i) ***RELEVANCE CREATION***. It is the starting point of success in every business. It informs and communicates to the market the entire value proposition of business. It aims to positively influence market's patronage by effectual responsiveness to market's needs and problems.

ii) Relevance that is successfully created produces ***COMPETITIVENESS;*** business gets a competitive edge over its competition.

iii) The overall goal of every business is ***SURVIVAL***. This is on the premise that, all the activities of business are purpose laden. By and large, survival connotes business resiliency to continuously accomplish a targeted purpose.

Diagrammatically, the RCS model can be depicted as:

Figure 2: The RCS Model

Stage One: Relevance Creation

Relevance conceptualises meaningfulness, significance and usefulness. It is an impact that makes a difference (Maxwell, 2018). To customer, it is the utility value of business's offer (Tracy, 2015). Thus, it is symmetrical to business ability in meeting customer expectation. It indicates effectual responsiveness to market's needs to positively influence market's patronage. When customer need is effectively met, customer becomes satisfied. This results to comfort and convenience and in effect, shapes customer revisit intention (Chan, 2019; Wilson, 2016). Therefore, relevance creation indicates connection with customer affective and emotional dimensions that leads to business success (Robbins & Judge, 2007; Collins & Hansen, 2011; Gerber, 1995; Gerber, 2016).

Based on the review of literature, relevance creation requires the followings:

a. **Definition of the Purpose of Business.** This is the raison d'être of business existence. It sets business direction. It is defined from either inner or outer perspective (Gerber, 2016). Personal interests dominate inner perspective. Others' interests direct outer perspective. Outer perspective firms get better performance outcome and reputation (Ahsen & Gauch, 2021; Gerber, 2016). They pick must appealing customer category and learn everything possible about the category to get it what it wants (Gerber, 2008). Business gets what it wants by helping people get what they want (Maxwell, 2018). Thus, successful business is outer perspective oriented, and its existential purpose is built on the premise of serving others.

b. **Customer Description.** When purpose of business is outer perspective based, next is to know the customer to serve. Thorough description of customer and understanding of customer experience are essential. They are the factors that influence customer purchase decisions (Lemon & Verhoef, 2016).

c. **Clear Understanding of Customer Problem.** Customer and market problem is complex (Dolfing, 2020). Meanwhile, to serve others well, clarity of a problem is vital (Maxwell, 2018). Hence, clear understanding of the nature, trend and feature of customer problem is crucial for business success. Opportunities are missed, resources are wasted and competition breaks due to poor problem articulation (Spradlin, 2012). This is due to the effect of knowledge on decisions make (Dong, Du & Qi, 2016). Therefore, problem understanding saves business from jeopardised decision (Abubakar et al, 2019). Further, it allows business to objectively assess its strengths, weaknesses, opportunities and threats in relation to a specified problem.

d. **Competency, Confidence and Character (the three Cs).** Every activity in business involves a role (Robbins & Judge, 2007). Each role requires nonnegotiable competence to influence market (Bhide, 1999; Maxwell, 2018). However, every business needs competency more than competence (Laguna et al., 2022). Competency posits an advanced abilities and skills to serve at the best (Maxwell, 2018). It differentiates firm from rivalry, as it makes customization of products possible (Baberjee & Duflo, 2019). Without competency, business's survival is bleak (Loon et al, 2016). Competency in business is dynamic (Vanhaverbeke & Kirschbaum, 2005). While no two businesses are alike (Freedman, 2022), so also problem solving techniques differ (Haavold & Sriraman, 2022). Competency is built from firm's ability to organise itself into a knowledge-creating system (Vanhaverbeke & Kirschbaum, 2005), in cognisance to market needs and specification (Sundah et al, 2018). However, competency lacks impact without confidence (Dani, 2020; Warrell, 2015). It is the belief in abilities, skills and expertise that involves inner and outer communication (Burns, Burns & Ward, 2016; Budin, 2017). Despite the preponderance of competency and confidence on business success, character is the absolute (Fleming, 2003). Poor character derails and good character keeps business on track to success (Maxwell, 2018; Collins & Hansen, 2011). Therefore, survival tendency is most favoured when business pursues the three Cs concurrently.

e. **Communication, Recognition and Influence.** Business actions focus on influencing customer buying decision, because customer is at the core for business survival (Kotler & Keller, 2006). Hence, the major role of business is to position itself the way that customer perceives superiority, adequacy and effectivity of the offer it presents (Tracy, 2015). This requires communication-of the value of the offer, knowledge of the problem and concern-to target customers, in order to have effect on their desirability. People do not care how much 'business' knows, until they know how much 'it' cares (for their problems) (Maxwell, 2018). Communication needs to convey relevance, distinctiveness and believability (Kotler & Keller, 2006). Positive effect on consumer desirability leads to recognition of the business. As repercussion of recognition, influence on consumer buying decision; loyalty; repurchase and satisfaction is generated (Maxwell, 2018; Curtis et al, 2011).

Stage Two: Competitiveness

Developments in ICT have rendered 'intense' competition indispensable (Akis, 2015). Thus, business's survival revolves around competitiveness: competitive advantage, competitive efficiency, competitive factor cost and competitive power (Hacioglu & Dincer, 2013; Marmolejo, 2012; Zimmerman & Blythe, 2013; Mourdoukoutas, 2011). Competitiveness is a function of relevance enticed by customer satisfaction (Simon & Gomez, 2014). When customer is satisfied, connection between business and customer's affective and emotional dimensions is established. This assures business attainment to the facets of competitiveness. Such connection gets business the competitive power to gain more shares thereby, assuming the superiority and influence over competitor and market (Akis, 2015). Meanwhile, on the facet of competitive advantage, customer perceived relevance affords business an edge over competition. Hence, studies suggest significant positive relationships between customer satisfaction, competitive advantage, loyalty and retention strategies (Amer & Abdulwahhab, 2020; Hassan & AbdulRehman, 2016). In addition, relevance earns business an increase in customer inflows due to loyalty, retention and advocacy. This leads to corresponding increase in production scales and efficiency. When production scales and efficiency are increased, business enjoys economies of scale (Hilker, 2021), with reduced advertisement and other marketing costs to protect market position. In this process, competitive factor cost and competitive efficiency are obtained. Both are extremely good in favourable influence of firm's pricing strategies (Toni & Larentis, 2017).

Stage Three: Survival

Survival is the end target of business enterprise. It is characterised by business long-term active engagement with market, which enables continuous cash inflows to the business (Korunka et al, 2011). It features wellness, resiliency, vigour and vitality and majorly manifests high productivity and efficiency of processes, leading to steady patronage to business offers (Hernández et al, 2020; Hogevold, 2011). However, survival in business is never by chance. It is by incessant monitoring and taking actions to continuously maintain relevance, so as to keep growth in track. Growth is the law of business life (Maxwell, 2003). Hence, it relates significantly to competitiveness and success of business is measured by growth (Khyareh & Rostami, 2018; Gerber, 2008).

5.0 Conclusion and Recommendations

By and large, businesses are formed to survive. However, survival of business is not accidental. Skills and competencies are inevitable. While studies emphasise business innovation, it practically contributes only 20 percent to the survival of business. Hence, this paper proposes a model, which is built on relevance creation. Conceptually, relevance creation strongly predicts survival of business, through the generation of competitiveness.

In view of the foregoing, this study recommends the followings to both existing and prospective businesses:

i) Attach hallmark importance to market needs and expectations. Business should always have sufficient knowledge to what market requires in present and future time and respond appropriately.
ii) If possible, attempt to exceed beyond the expectation of the market; but, never fall below.
iii) All the activities of business should at all times be based on empirical evidences of what adequately support customer satisfaction.
iv) Competency, confidence and character are keys to success in the contemporary business world. Therefore, ability to deliver, consistency of values, communication, moral ethics, among others are uncompromising while attempting to create and maintain business relevance.
v) Never form business for personal gain; rather, for others. It pays handsomely in return.

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Entrepreneurial Self-Efficacy, Entrepreneurial Education and Entrepreneurial Intention of Female Students in North Western Nigerian Universities: A Proposed Framework

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Abstract
Studies on entrepreneurship suggest that entrepreneurial intentions of females have been established to be the source of economic growth and development across the globe. Despite the relevance of female entrepreneurs to a nation's economic development, this set of entrepreneurs continues to experience low level of business ownership which is not unconnected with their low level of entrepreneurial intention (EI) in comparison with their male counter-part. To corroborate the above submission, the Global Entrepreneurship Monitor (GEM) 2015 report revealed that the EI of female across all African nations stood at 47% which is low in comparison with 52% of their male counterpart. The report further indicated that the EI of Nigerian female stood at about 41% which is equally low when compared with 57%, 68% and 70% of the Uganda, Botswana and Malawi's female EI respectively. It was revealed that the Nigerian female Total Early-stage Entrepreneurship Activity (TEA) stood at 6% which is still very low in comparison with other African countries like Uganda, Zambia and Cameroon with 47%, 41% and 39% respectively. To address this issue, this study proposes a conceptual framework by integrating entrepreneurial self-efficacy that could serve as a mechanism in transmitting the effect of entrepreneurial education and could offer a better clarification on the EI of female students in North-Western Nigeria.

Keywords: *Entrepreneurship, self-efficacy, entrepreneurial education, entrepreneurial intention*

1.0 Introduction

Entrepreneurship has been globally acknowledged and remained the climax of attention due to its relevancy. The relevance of entrepreneurship and entrepreneurs have grown significantly due to their roles in creating novel ideas, transmuting these ideas into sustainable and profitable undertakings, generating ground-breaking processes and generating great employment opportunities for teeming youths of nations (Gelaidan & Abdullateef, 2017). The continuous displeasure and disappointment in white-collar jobs opportunities enthused the appeal for self-employment and/or entrepreneurial intention, particularly among students (Obembe, Otesile, & Ukpong, 2014; Teixeira & Davey, 2008). Therefore, a progressive students' desire for entrepreneurship and entrepreneurial activities is very vital in developing entrepreneurship viability of a region/country. This desire for entrepreneurship will serve as an impetus for higher institutions of learning in shaping students' mind-set or attitude towards developing entrepreneurial intention and eventually become self-employed. (Glinskiene & Petuskiene,; 2011; Đorđević & Bogetić, 2010).

Entrepreneurial intention (EI) is considered as a significant construct because intention to become self-employed is largely believed as the most important phase in the course of becoming an entrepreneur; since intention has been described as the most suitable predictor of planned behaviour (Zhang & Duan, 2010; Zhao, Seibert & Lumpkin, 2010). Studies on entrepreneurship suggest that entrepreneurial intentions of females have been established to be the source of economic growth and development across the globe. For instance, Sajjad, Kaleem, Chani, and Ahmed (2020) argued that female entrepreneurship is vital for economic growth and development. Thus, any nation that desired to enhance its economic growth and development, should support female to independently own their businesses which must be preceded by developing an intention (Sajjad, Kaleem, Chani, & Ahmed, 2020).

Notwithstanding the relevance of female entrepreneurs to a nation's economic development, this set of entrepreneurs continues to experience low level of business ownership which is not unconnected with their low level of entrepreneurial intention (EI) in comparison with their male counter-part. To corroborate the above submission, the Global Entrepreneurship Monitor (GEM) 2015 report which is the last GEM's report from 2015 to 2021 that featured Nigeria revealed that the EI of female across all African nations stood at 47% which is low in comparison with 52% of their male counterpart. The report further indicated that the EI of Nigerian female stood at about 41% which is equally low when compared with 57%, 68% and 70% of the Uganda, Botswana and Malawi's female EI respectively (Kelley et al., 2015).

Another central indicator of GEM is the Total Early-stage Entrepreneurship Activity (TEA) rate, which "*measures the percentage of the adult population (18 to 64 years) in the process of starting a business and those who have recently started one*". It was revealed that the Nigerian female TEA stood at 6% which is still very low in comparison with other African countries like Uganda, Zambia and Cameroon with 47%, 41% and 39% respectively (Kelley et al., 2015). The low level of EI and TEA of these female folks may have resulted to the low business ownership for this group of people, as intention precedes venture creation. A report by World Bank indicated that share of business owned by Nigerian female stood at 33.6% which is very low when compare with the 66.4% businesses owned by their male counterparts (World Bank, Doing Business Data, 2021).

Thus, investigating the likely factors that could enhance and harnessed the seemingly low entrepreneurial intention and TEA which will ultimately increase the share of business ownership of the Nigerian female will be a huge contribution to the body of literature. This will also contribute to the attainment of Sustainable Development Goals (SDG) number Five (5) of equal opportunities and empowerment for both male and female.

One of those factors as identified in previous literature is entrepreneurship education (EE) (Entrialgo & Iglesias, 2016; Fayolle & Linan, 2014). This education in universities is targeted at instilling entrepreneurial skills and self-confidence in students to stimulate entrepreneurial intentions or contemplations of entrepreneurship as a career choice by undergraduates (Middleton, 2010). Notwithstanding the inclusion of entrepreneurship education as a mandatory course to all undergraduate students in Nigerian universities, the yearning for white-collar jobs and graduate joblessness has continued to be on the rise. This may likely be due to deficiency in entrepreneurial self-efficacy among the female students.

Entrepreneurial self-efficacy (ESE) is the extent of an individual conviction that an individual is capable of successfully executing the numerous roles and tasks of entrepreneurship (Lee, Chang, & Lim, 2005). ESE is very important with regards to university students; as it influences their impetus as well as aptitude to engage in the thought-provoking process of initiating their own venture and signifies the degree of academic preparedness for their career as a potential entrepreneur (Bandura, 2012).

In addition, the relationships between ESE and entrepreneurial education in relation to female students' EI have not received adequate attention in the extant literature. Some previous studies established the positive and significant relationship between self-efficacy and EI (Margahana & Garaika, 2019; Nowiński, Haddoud, Lančarič, Egerová, & Czeglédi 2017; Solesvik 2017). This shows that the seemingly mediating role of entrepreneurial self-efficacy on EI had not been given adequate attention in previous studies; despite the scholarly suggestions to examine the mediating role of entrepreneurial self-efficacy in EI model. For instance, (Zeiba & Golik 2018;Travis & Freeman, 2017, Hwang, Choi, Lee, Culver, & Hutchison, 2016) suggested that further study is required to investigate the complex meditational relationship of entrepreneurial self-efficacy as most of the previous studies only examined the direct relationship.

Hence, in response to the above suggestions, this study examines the direct relationship of EE and EI of female undergraduate students in federal universities in North-western Nigeria, as well as through the mediating role of ESE in order to contribute to the existing body of knowledge. The remaining sections of the paper are review of literature and theoretical framework, methodology, data analysis and presentation of findings and finally, suggestion for further study.

2.0 Literature Review

This section covers the concept of entrepreneurial intention, entrepreneurial education, empirical studies on entrepreneurial education and entrepreneurial intention. Entrepreneurial self-efficacy and Entrepreneurial intention. Hypotheses were developed and underpinning theory was explained.

2.1 Entrepreneurial Intention

Entrepreneurial intention is seen as an individual conviction of a person who anticipates opening a new business enterprise (Thompson, 2009).

Similarly, Intentions signifies an individual's stimulus to make an effort to act upon a conscious plan or decisions (Liu, Lin, Zhao & Zhao, 2019). EI according to Jimoh (2021) is the individual's willingness and development of mind-set to harness all the necessary resources toward commencing a business entity with the view of earning a return. In line with the above submission, Khalid, Jusoff, Rahman, Kassim, and Zain (2009) posited that a person's predisposition to be an entrepreneur may not find expression, until the intention to become an entrepreneur is established.

2.2 Entrepreneurial Education and Entrepreneurial Intention

Oduwaiye (2009) sees entrepreneurship education as the scope of lectures, curricular and programmes that endeavour to provide students with the required entrepreneurial competencies, aptitudes, technical know-how and skill geared towards the pursuit of a career in entrepreneurship. It was documented that entrepreneurial education enhance students productivity and positively influenced students to embark entrepreneurial career (Mahendra, Djatmika, & Hermawan, 2017). Kuttim, Kallaste, Venesaar and Kiis (2014) established that involvement in entrepreneurship education classes has a positive influence on entrepreneurial intention of students. In the same vein, entrepreneurial education had also been proved to positively influenced entrepreneurial intentions (Hussain & Norashidah, 2015; Lorz, 2011; & Hattab, 2015). Related finding had equally shown that hands-on entrepreneurial education is adequate to having a positive impact on entrepreneurial motivation of students (Jakubiak & Buchta, 2016). Jimoh (2021) and Aladejebi (2018) ascertain the effect of Entrepreneurship Education on Entrepreneurial Intention among Tertiary Institutions in Nigeria. It was established that entrepreneurial education positively influenced entrepreneurial intention. Rengiah (2017) in Malaysia also found a positive relationship between entrepreneurial education and entrepreneurial intention.

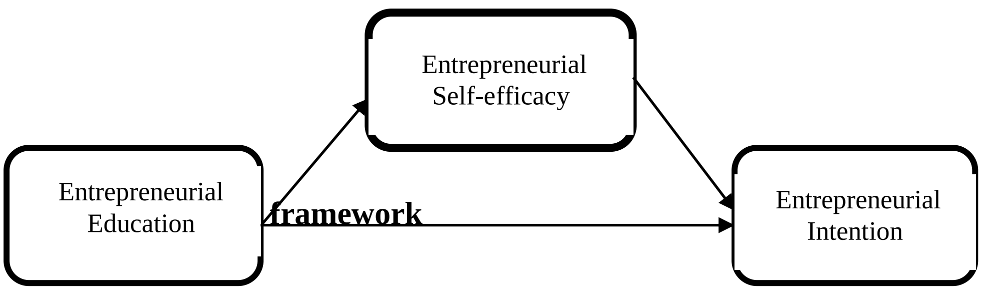
Conversely, Popescu, Bostan, Robu, Maxim and Diaconu (2016) analyses how entrepreneurial intentions are influenced by certain psycho-behavioural traits of the individual in Romanian. The study found that entrepreneurial education negatively relate with entrepreneurial intention. Similarly, Michell and Tendai (2016) examined the association of entrepreneurship education and entrepreneurial intention among university students in the eastern cape province of South Africa. Using a sample of 150 undergraduate students, the study found that there is no direct relationship between entrepreneurship education and entrepreneurial intention. On the basis of the above, the null hypotheses were formulated:
Ho1: Entrepreneurial education has no significant effect on entrepreneurial intention (EI) in North-Western Nigeria Universities
Ho3: Entrepreneurial self-efficacy does not mediate the effect of entrepreneurial education on entreprenurial intention of female undergraduate students in North-Western Nigeria Universities

2.3 Entrepreneurial Self-Efficacy and Entrepreneurial Intention

Entrepreneurial self-efficacy (ESE) signifies a person's conviction in his/her ability to carry-out tasks and functions aimed at entrepreneurial outcomes (Chen, Greene & Crick 1998). Similarly, Boyd and Vozikis (1994) see ESE as an individual's belief in his/her ability to perform the role and task of an entrepreneur with successful outcomes. Empirical studies have established that self-efficacy affects an individual's career choice (Bandura, Barbaranelli, Caprara, & Pastorelli, 2001; Betz & Hackett, 2006). Thus, positive entrepreneurial intention tends to be associated with persons with higher entrepreneurial self-efficacy (Pihie & Akmaliah, 2009). This is in agreement with Wilson, Kickul and Marlino, (2007) who found that persons with a superior self-confidence and beliefs in their abilities that they possess unique capabilities with respect to establishing and running a business venture are likely to have higher entrepreneurial intention. In line with this, a number of studies positively correlate entrepreneurial self-efficacy with resolution to create and nurture business ideas in the field of entrepreneurship (Utami 2017; Hsu, Wiklund & Cotton 2017; Hatak & Snellman 2017; McGee & Peterson 2017). In line with the above, the null hypothesis was formulated:
Ho3: Entrepreneurial self-efficacy has no significant effect on entrepreneurial intention (EI) in North-Western Nigeria Universities

2.4 Theory of Planned Behaviour (TPB)

The theory of TPB was propounded by Ajzen (1991), and regarded as one of the most useful models that explained the entrepreneurial intentions of students. It is a modified version of the theory of "reasoned action" by Sheppard, Hartwick, and Warshaw, (1988). This theory is employed to explain and analyse human behaviour which comprises three basic elements: attitude towards behaviour, subjective norm and perceived behavioural control. Attitude towards behaviour implies the extent to which an individual has a favourable or unfavourable evaluation of becoming an entrepreneur (Ajzen, 2002). Therefore, university graduates are likely to commence a business when they perceived good opportunities; and vice-versa. Furthermore, Subjective norm is the perceived social pressures to perform or not to perform a specific behaviour towards entrepreneurship; It is grounded on the belief that that some vital individual will approve or fail to approve the prospective entrepreneur's actions of commencing a new venture (Ajzen, 2001). The individual's intention to commence a business is proportionate to the extent of approval he/she receives from this referent groups such as: family, friends, and society among others. For instance, Pressure from family, friends and society affect one's behaviour to becoming an entrepreneur. Also, perceived behavioural control signifies the perceived ease or difficulty in relation to one's capability of executing entrepreneurial behaviour (Liñán & Chen, 2009). This implies that perceived behavioural control can be seen as the individual's belief with regards to how easy or difficult the performing of entrepreneurial behaviour will probably be. Thus, individual who belief that they possess the technical know-how, skills and proficiency needed to commence a new venture are more often involved in start-up attempts.



2.5 Implication

In effect, this study postulates that entrepreneurial self-efficacy could be a mechanism through which entrepreneurial education can influence entrepreneurial intentions. This is because regardless of the level of entrepreneurial education one may acquire, without adequate self-belief and conviction in one's ability to effectively and efficiently manage a business venture to a successful end, one might found it difficult in translating the knowledge acquired in to intention to creating a venture. Hence, if female students are inculcated with the aforementioned entrepreneurial traits, it may likely improve their low entrepreneurial intention and thus, closing the wide gap between these category of students and their female counterpart across African countries. This may translate to more venture creation and mitigate the high rate of graduate unemployment and dependency on government jobs which has become worrisome to the Nigeria government.

2.6 Limitations, Directions for Future Research and Conclusions

The main drawback of this study is that the study is limited by proposing and conceptualizing only a frame work using the aforementioned variables without carrying out an empirical research. Thus, future studies are required to empirically investigate the hypothesized relationship utilizing a set of data from female final year students in North-western Nigeria. In addition, other psychological constructs such as individual entrepreneurial orientation among others should be considered as a typical mediator and empirically tested by future studies. Conclusively, this conceptual paper remains an essential article to the Nigeria government, policy maker, researchers and research students. Additionally, the study suggested some vital gaps that serve as directions for future research.

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Assessment of the Prospects and Challenges of Quality Management Practices on Building Construction Project Delivery in North-Central Nigeria

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Abstract
The challenge of poor-quality delivery has persisted in the construction industry despite efforts to sensitize and train the construction practitioners on strict adherence to required quality standards. However, a link has been established between the level of use of quality management practices and project performance. Therefore, this research aimed to assess the impact of quality management practices on building construction project delivery in North-Central Nigeria. The methodology of study involved descriptive survey research in which structured questionnaire were self-executed to ensure reasonable consultations from the respondents and present truthful trustworthy data that is bias-free. The findings showed that the challenges inherent in quality management practices on building construction project performances entails the lack of available quality system documentation, insufficient understanding in the process requirement and the lack of awareness in benefit of TQM. Additionally, the construction professionals are of the perception that the major benefit accruable from the use of quality management practices is to the construction professionals as they are able to apportion and recognize the various aspect of works to be done as well as when they should be done with respect to the precedence in consideration of the quality practices.

Key words: *Quality Management, Total Quality Management, Prospects, Challenges, TQM*

1.0 Introduction

The construction industry is a facilitator of growth in national economies and has been described as an engine of growth (Ali & Rahmat, 2010). The industry's contribution to economic growth is noticeable through the creation of income or value adds (Pheng & Hou, 2019). The contribution of the construction sector is equally noticeable locally in Nigeria. For instance, Oladinrin et al. (2012) note that through its contribution to housing, infrastructure, and employment, the sector is critical to the attainment of Nigeria's national socio-economic development. Sanni and Windapo (2008) highlight the contribution of the sector to the capital base of Nigeria's economy and employment generation. The downturn in the sector's performance is exemplified in incidences of collapsed buildings, the prevalence of abandoned construction sites, and the generally low quality of finished projects (Zubairu, 2016). These challenges include lack of synergy, material shortage, unethical practices, unstable price of materials, project delays, and poor management (Ogunmakinde et al., 2019).

Again, the operational effectiveness of the construction industry is affected by a lack of technical and managerial expertise, corruption, and poor project planning and control (Ezeokoli et al., 2021). Specifically, Ekpenyong (2016) noted that the performance of construction projects had deteriorated with time because of the industry's substandard workmanship and a lack of emphasis on quality management. The need for every construction project to satisfy the cost, quality, and timeliness expectations of the client has been highlighted (Bayraktar, 2020).

Quality management is the maintenance of the quality of construction works at the required standard to satisfy customers and ensure long term competitiveness and business survival (Tan and Abdul-Rahman, 2005), and the importance of quality management in construction projects cannot be overstated (Farooqui et al., 2008). According to Muhammad (2021), poor building quality has necessitated more maintenance, rehabilitation, and renovation work in order to ensure the serviceability and safety of such structures. As a result, housing in the North-central geopolitical zone is vulnerable to the aforementioned building challenges and shortfalls. The main source of these issues is that the government agencies in charge of housing delivery are not proactive in their duties. However, the challenges confronting the construction industry do not appear to be of serious concern to the government (Kim and Park, 2013), and consequently, they have not been addressed, implying that there is still a need for effective quality management.

The objectives of this study are to establish the challenges of quality management practices on building construction projects' performance and to ascertain the benefits of quality management practices on building construction projects' performance. The study's results will help construction professionals understand the problems of quality management practices, as well as the advantages of adopting and implementing quality management methods that would ideally improve project delivery of building projects in Nigeria as a whole.

2.0 Literature Review

The findings of the study by Egwunatum et al., (2021) reveal inadequacy of the necessary machineries, equipment, tools and facilities for the effective execution of work on construction site; breakdown in communication and information exchange between the management and supervisory teams on site as challenges in the implementation of Total Quality Management in the Nigerian construction industry. Adeosun et al. (2020) also revealed that handling of the construction process by unqualified and quacks, possession of approved drawing without compliance and usage of substandard building materials were the major causes of building collapses. Ahaotu, (2018) highlighted that leadership and communication are the two main challenges for effective implementation of Quality Management within the Nigerian Construction Industry. Osho (2019) concluded that the top ranked barrier and benefit of quality management practices of contracting firms are shortage of skilled workers and improvement in company reputation respectively. The stakeholders are faced with the challenge of delivering projects of the highest quality on schedule and on budget. The primary issue among stakeholders is a lack of understanding of how proper quality management practices can affect quality performance (Ekpenyong, 2016). As a result, the study's problem is concerned with determining the challenges and benefits of quality management practices on the quality performances of construction projects in North-central Nigeria.

3.0 Methodology

The descriptive research design was used to assess the prospects and challenges of Quality management practices on construction Project delivery in North-central, Nigeria. The design seeks to describe and examine the prospects and challenges of quality management practices on the delivery of construction projects. For the purpose of this research study, data was composed through the use of self-executed questionnaires. The questionnaires were organized in a systematized order, accompanying closed-ended questions. The questionnaires were self-executed to ensure reasonable consultations from the respondents and present truthful trustworthy data that is bias-free. The targeted professionals for this study are the building material colleagues in construction projects, that is to say: Architects, Store Keepers, Quantity Surveyors, Project Managers, Materials Procurement Officers, Engineers, Materials Suppliers, and Site Managers from the client, contractors and client construction domiciled within the North-central region of Nigeria. For the purpose of this study, the purposive sampling technique is applied to determine the population that will be involved in the questionnaire survey.

4.0 Results and Discussions

4.1 Demography of Respondents

Table 1: Potentials of IMFBs in Entrepreneurial Development

	Frequency	Valid Percent	Cumulative Percent
Gender			
Male	59	69.4	69.4
Female	26	30.6	100.0
Total	85	100.0	
Level of Education			
National Diploma	9	10.6	10.6
Higher National Diploma	25	29.4	40.0
First Degree	27	31.8	71.8
Master’s Degree	18	21.2	93.0
PhD	6	7.0	100.0
Total	85	100.0	
Profession of Respondents			
Project Managers	12	14.1	14.1
Quantity Surveyors	13	15.3	29.4
Architects	9	10.6	40.0
Engineers	11	12.9	52.9
Site Managers	22	25.9	78.8
Estate Surveyors	10	11.8	90.6
Builders	8	9.4	100.0
Total	85	100.0	
General Experience of Respondents in Construction Works			
Less than 5 years	18	21.2	21.2
5 – 10 years	24	28.2	49.4
Above 10 years	43	50.6	100.0
Total	85	100.0	
How much do you know about Project Quality Management			
Not at all	17	20.0	20.0
Moderate	22	25.9	45.9
Very Much	46	54.1	100.0
Total	85	100.0	

The result in Table 1 shows the background information of respondents. The gender of the respondents comprises of basically male respondents with 59 out of the total response of 85 indicating a response rate of 69.4 percent while the female respondents have a response rate of 30.6 percent with 26 responses, which is in line with the study of Mobayo et al. (2021) that owing to the masculine nature of construction jobs, women are hardly involved. Consequently, the level of education includes having those with National Diploma to be 9, Higher Natio nal Diploma to be 25, First Degree to be 27, Master’s Degree to be 18 and PhD to be 6 indicating a response rate of 10.6, 29.4, 31.8, 21.2 and 7.0 percent concurrently.

The profession of the respondents that responded to the questionnaire includes Project Managers (12), Quantity Surveyors (13), Architects (9), Engineers (11), Site Managers (22), Estate Surveyors (10) and Builders (8) with a response rate each of 14.1, 15.3, 10.6, 12.9, 25.9, 11.8 and 9.4 percent respectively. Subsequently, the general experience of the respondents in construction works comprises of those with less than 5 years of experience with 18 responses, 5 – 10 years with 24 responses and above 10 years with 43 responses which depicts a response rate of 21.2, 28.2, and 50.6 percent simultaneously. Lastly, the knowledge of their project quality management was similarly asked with 17 having not all knowledge of the project quality management, 22 has moderate knowledge and 46 has very much knowledge of the subject matter. This depicts a response rate of 20.0, 25.9 and 54.1 percent respectively.

4.2 Prospects of Quality Management Practices on Building Construction Project Performance

Table 2: Prospects of Quality Management Practices on Building Construction Project Performance

The benefits of quality management practices on building construction projects’ performance	Mean	SD	Rank
Professional apportionment and recognition of the aspects of works to be done	4.8290	.37721	1
Improvement in the cost of quality of the building projects	4.7546	.79599	2
Quality awareness and review of the construction projects	4.7509	.43328	3
Establishment of correction action in advance of defect	4.5316	1.07026	4
Removal of Error Causes	4.4870	1.00596	5
Maintenance commitment on building construction	4.3903	.62895	6
Quality evaluation measurement on building projects	4.3309	1.26897	7
Project quality improvement team development	4.2974	1.33300	8
Zero defect of the construction projects within days, weeks, months and years after completion	4.2639	1.27587	9
Establishment of ad-hoc committee for zero defect programme	4.2193	1.31872	10
Analysis of quality construction project feedbacks	4.1524	1.41784	11
Availability and definition of satisfactory specifications	4.0855	1.63569	12
Specific and standard goal setting	2.9368	1.39285	13
Proper supervision and training at requisite time	2.2491	1.85713	14
Satisfaction of clients requirement	1.9368	1.69715	15

The benefits of quality management practices as ranked by the construction professionals and shown in the Table 2 indicates professional apportionment and recognition of the aspects of works to be done as the most important benefit and thus, ranked 1st with a mean score of 4.83. this is consequently triggered by the improvement in the cost of quality of the building projects, quality awareness and review of the construction projects and establishment of correction action in advance of defect with respective mean scores of 4.75, 4.75 and 4.53, and therefore, ranked 2nd, 3rd and 4th. These emphasize that the benefit of the usage of quality management can save the company of finances owing the prevention of reworks as well as corrective action should there be any case of defect. Consequently, there is removal of the causes of errors which increase the chance of project success with a mean score of 4.49 and ranked 5th. Maintenance of commitment on building construction, quality evaluation measurement on building projects and project quality improvement team development has mean scores of 4.39, 4.33 and 4.29, and ranked 6th, 7th and 8th.

These factors highlight the benefits of quality management practices to project team performance as it is highly likely that there would be commitment, requisite project measurement level as well as team quality improvement. Furthermore, the beneficial effects of construction quality management can trigger zero defect of the construction projects within days, weeks, months and years after completion, establishment of ad-hoc committee for zero defect program as well as analysis of quality construction project feedbacks which are necessary factors for the project teams to prepare for possible defects inherent in the construction project and are thus, ranked 4.26, 4.22 and 4.15 respectively, and positioned 9th, 10th and 11th concurrently. Other factors include availability and definition of satisfactory specifications, specific and standard goal setting, proper supervision and training at requisite time, and satisfaction of clients' requirements with mean scores of 4.06, 2.94, 2.25 and 1.93, reliably positioned 12th, 13th, 14th and 15th respectively.

4.3 Challenges of Quality Management Practices on Building Construction Projects' Performance

Table 3: Challenges of Quality Management Practices

The challenges of quality management practices on building construction projects' performance	Mean	SD	Rank
Lack of available quality system documentation	4.5465	.49876	1
Insufficient understanding in the process requirement	4.5167	1.09131	2
Lack of awareness in benefit of TQM	4.3123	.82807	3
Insufficient top management support	4.1413	1.35854	4
High cost to implement TQM	4.0632	1.44801	5
Lack of continuous professional development	3.7807	.97747	6
Lack of subordinate propensity to follow orders	3.4684	1.16058	7
Difficulty of verbal communication	3.1710	1.46620	8
Lack of TQM exposure	3.0929	1.39117	9
Time insufficiency in implementing TQM/time consuming	3.0632	1.27538	10
Documentation inefficiency of suppliers, materials and services	2.9851	1.36581	11
General lack of TQM understanding	2.1710	1.75785	12
Inadequate planning to implement TQM	2.0929	1.69578	13

The challenges of building project performance is influenced by varieties of quality management practices limitations, and these challenges are ranked by several construction professionals in this study (Table 3). These challenges include the lack of available quality system documentation, insufficient understanding in the process requirement and the lack of awareness in benefit of TQM as the top ranked factors with mean scores of 4.55, 4.52 and 4.31, and ranked 1st, 2nd and 3rd respectively.

These show that there is need for quality management training as well as the increment in the awareness level of quality management by the engineers and other construction professionals as posited by the result of this study. Consequently, Insufficient top management support with mean score of 4.14 and ranked 4th is induced by the perceived high cost to implement TQM by the top management with mean score of 4.06 and ranked 5th. However, these are likewise triggered by the lack of continuous professional development, Lack of subordinate propensity to follow orders as well as Difficulty of verbal communication as communication is fundamental to better performance quality wise and in order perspective with mean scores of 3.78, 3.47 and 3.17, and ranked 6th, 7th and 8th concurrently. Furthermore, there is serious lack of TQM exposure, Time insufficiency in implementing TQM/time consuming owing to the hiring and firing of the construction professionals, documentation inefficiency of suppliers, materials and services, general lack of TQM understanding, and inadequate planning to implement TQM are pivotal challenges inherent in the quality m anagement practices on building construction projects' performance with mean scores of 3.09, 3.06, 2.98, 2.17 and 2.09, and ranked 9th, 10th, 11th, 12th and 13th respectively.

5.0 Conclusion and Recommendations

This study assessed the prospects and challenges of quality management practices on building construction project delivery in North-Central Nigeria. It was established that the challenges inherent in quality management practices on building construction project performances entails the lack of available quality system documentation, insufficient understanding in the process requirement and the lack of awareness in benefit of TQM. It is quite surprising that many construction firms largely lack the basic understanding of the TQM as suggested by the position of this study. This study stressed further that documentation has been a challenge to the Nigerian construction professionals to produce or even to make use of, which makes quality practices a continuous problem to the construction industry. This study also suggests that high chance of Professional apportionment and recognition of the aspects of works to be done, improvement in the cost of quality of the building projects, quality awareness and review of the construction projects and establishment of correction action in advance of defect are the essential benefits accruable from quality management practices of the construction firms. Consequently, it is deducible that the construction professionals are of the perception that the major benefit accruable from the use of quality management practices is to the construction professionals as they are able to apportion and recognize the various aspect of works to be done as well as when they should be done with respect to the precedence in consideration of the quality practices.

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Challenges of Digital Transformation of Informal Business Organizations in Rural Periodic Markets in Katsina State, Nigeria

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Abstract
Informal businesses have been considered to be part of every nation's economy, only that they are concealed from official records of authorities and are considered as one of the pillars in the functioning of rural periodic markets. Owing to rapid changing demands of digitalization of all forms of businesses, the main objective of the paper is to examine the major challenges that prevent informal businesses from being digitally transformed to comply with current trends of the digital world. Being a qualitative research, a case study method was used. Data was generated from the informants of the three periodic markets sampled for the study and was analysed using ATLA TI9 software package. The paper looks at the three concepts: informal business; periodic markets and digital transformation and analyses the reasons that retard digitalization of the informal business in rural periodic markets in Nigeria through seven developed themes from the results of the data analysed. Some of the major findings of the paper is that lack of education, lack of awareness on how digital technology works and general apathy on digital transformation of modern business operations are some of the major challenges for entrenching digital transformation of informal business activities in rural periodic markets. The players in the informal business and rural periodic markets need specific dexterity, focus and culture towards digitalization of their business operations. Thus, the study recommends that the major stakeholders should step up to provide the necessary sensitization of the informal business owners towards engaging them with relevant skills, mind set and culture for achieving digital transformation.

Keywords: *Informal business, rural periodic markets, digital capability, digital economy and digital transformation.*

1.0 Introduction

Many studies on informal business showed that the scrawny, less educated, poor and susceptible people are the major practitioners in informal business activities (Chen, Jhavbala & Lung 2001). Interestingly, irrespective of the level of economic and social developments of most countries of the world, there exists some sizeable participation of informal business by the citizens of such countries that results to subjection of many of them into difficult conditions, which emanated from multiple socio-economic forces (Huang, Zhang & Xue 2018). Informal business people operate everywhere. They are on the streets of capital cities of states, local governments, villages, hamlets and rural periodic markets. Tawodzera (2022) reported that majority of the players in periodic markets are people from informal business activities with their characteristics of scruffy trading pursuits. Babajo, Yusuf & Musa (2018) further maintained that informal businesses pervade local periodic markets everywhere especially in Nigeria.

The speed at which technology is transforming businesses is unprecedented in the annals of history of the business world (Morakanyane, Grace & O'Reilly 2017). In fact, businesses be them formal or informal are progressively using technology to exploit their efficiency and attractiveness to make room for hitherto inaccessible interactions and sustained operations among players (International Labour Organization [ILO] 2021). Currently there have been many massive changes occasioned by advancement in technology in the affairs of humans such as use of robotics, artificial intelligence, generic engineering and biotechnology, digital manufacturing, drones and so on (Ghosh 2020). However, despite these developments, majority of periodic markets in Nigeria suffer from near total absence of social amenities such as electricity, banking services, effective mobile telephone services and numerous other things that are goad by modern technology. The informal businesses in these rural periodic markets are faced with minimal application of information technology contraptions. For instance, countries in sub-Saharan Africa, Nigeria and Chad to be precise, in 2016 – 2018, had less than one fourth of all of businesses (both formal and informal) using email (ILO 2021).

In today's modern information technology world, processing information and knowledge are permanent features in developing connections among businesses, customers and other stakeholders (Brunetti, et al. 2020). Although there are some evidences of tapping the advantages of digital capability by some informal business ventures in Africa, such as the emergence of Uber that has brought digitalization of transportation system in about 15 African countries (Theko 2020), there are still some grey areas that need to be polished and replenished digitally in order to guarantee digital transformation of informal business activities in rural periodic markets in Nigeria. These negative developments heighten the problem of digital transformation of informal business activities in Nigeria's rural periodic markets.

Based on these prevailing deficiencies of informal business activities in rural periodic markets towards achieving digital transformation the following research objectives were formed: to examine the challenges that inhibit informal businesses from being digitally transformed; to attempt to proffer solutions in order to curtail or minimize these challenges; to see to the realization of digital transformation of informal business activities in periodic markets in Nigeria.

2.0 Conceptual Explanations and Literature Review

2.1 Concept of Informal Business

Informal business has been with the world right from the time when civilization begun in various forms not only as a principal moneymaking way but in various different outlines to prevent interference from government and its regulations and laws Ruzek (2015). The concept of informal sector came to lime light by the attempts of a British anthropologist named Keith Hart in 1971 as consequence of a study he conducted on a group of emigrants who were a class of lowly waged, that were looking for employment in the urban cities of Ghana (Chen, 2012). Afterwards, many scholars offered additional acumens on the concept, (Bonnet, Vanek, & Chen 2019). Perceptions of the concept from these scholars became varied and extensive. (Koufopoulou, Williams, Vozikis & Souliotis 2019). Subsequently, many researchers have attempted to offer explanations on the concept. In their yearning to offer convincing definition of the concept Horodnic, Williams, Windebank, Zaiț and Ciobanu (2021) indicated that informal business involved skills and activities that are conducted informally and which are legal in all facets within the practicality that they are obfuscated or not disclosed to the government to dodge the payment of levy, social security and/or labour laws. They however discarded any illegal informal business dealings (e.g., illegal drugs trading) from informal business activities which are placed under the wider scale of criminal economy.

During a workshop in 2001 organized by Central Bank of Nigeria [CBN]/Nigeria Social and Economic Research [NISER]; the participants reached a conclusion on an operational definition of the concept that was aptly compliant to the practical description of the concept for the country. The workshop arrived at the consensus that informal business should be viewed as '(business activities) which operate without binding official regulations, as well as those that operate under official regulations that do not compel rendition of official returns on its operations or production process,' (Onwe 2013). This definition and that of Horodonic, et al. (2021) have same characteristics with what acquires in the Nigerian informal business per se and therefore it reflects the contextual clarification of the concept of informal business in this paper.

2.2 Concept of Periodic Rural Markets

Periodic markets have been in existence in many communities and there is no particular time when they started (Ehinmowo & Ibitoye, 2010). In spite of this datum, researches undertaken on periodic markets showed that they began from extemporaneous growth based on socio-economic and physico-cultural contexts over a period of time (Kio-lawson, Dekor & Chika 2015). Periodic markets developed from some significant commercial activities in rural areas and some cities in Africa, Asia, and Latin America (Liu, Liu, Zhao, Tang, & Gong 2022). Jesheelan, Harrihalan and Dishesh (2017) submitted that conventional rural periodic markets operation occurs once or at best twice in a week and the operation days vary from village to village.

Hodder (2018) defined a periodic market place as a recognized spot where buyers and sellers of goods, converge to conduct buying and selling of goods and services at a certain period of the week outline purposively for that reason. Aikins (1989) stated that periodic market places are designated based on the consensus of the people were the market is located. The consensus day when the market will hold is usually agreed by the people of the local community where the market is domiciled. The operation days of the market is normally fixed once weekly. twice weekly or every 3rd, 4th 5th etc. day after the previous market day.

2.3 Concept of Digital Transformation

Several studies were carried out on digital transformation, yet there has been no consensus on its definition (Kraus, et al. 2021). However, despite this assertion, according to Beauty (2019) many researchers viewed it as the application of novel, rapid transforming digital technology that could be applied to solve problems frequently exploiting cloud computing, gradually eliminating the use of owned hardware but subsequently leaning heavily on subscription based cloud services. This means to say that the central concern is about the application of technology to enhance the way businesses and other human endeavours are carried out fast and successfully. More so, researchers on digital transformation globally are studying a varied array of issues in diverse business areas; in different settings and frameworks of growth; and from hypothetical perspectives (Kraus, et al. 2021) through the application of information technology to enhance rapid development of business and profit making. Furthermore, it was greatly observed that over the years, the business world has been transformed through the application of digital technology, thus business activities no matter how informal they could be must not be left behind in the area of digital transformation. This is pertinent in the sense that adequate and operational application of securities in information technology is necessary to spawn business advantages and accomplishments (Gerth & Peppard as cited in Kraus et al. 2021).

For the purpose of this paper and informal economy and its workers and rural periodic markets, digital transformation could be seen as changing either partial or complete old-style ways of conducting business by reassessing business competencies, procedures and associations through the application of information technology.

2.4 The Challenges of Digital Transformation of Informal Business

There are a number of challenges that prevents informal businesses from being digitally transformed. They are identified from the literature as follows:

Lack of education: This is one major challenge that impedes actualization of digital capability talk less of digital transformation of the informal economy. Majority of the members of informal business owners are not educated enough. Very few attended primary schools not to talk of higher education and because of their educational deficiencies, Kolm and Larsen (2016) stated that there is confirmation that shows that workers who are lowly educated, to a large extent had to contend with informal employment opportunities as compared to workers who are highly educated. For their insufficient education, they lack proper knowledge and skills to handle digital aspects of their business operations.

Lack of Technical Infrastructure: Nigeria is still trying to cope with its failing power supply. In the past 12 years the national grid failed partially and totally 222 times and as if in commensurate with the grid failure, the government hiked electricity tariff (Udegbunam, 2022) thereby making its accessibility more difficult to consumers. This growing trend results into lack of cost-effective, accessible, and consistent electricity supply that has been the main stumbling block to digital transformation of Nigeria as a whole and its informal business development in rural periodic markets. With near absence of electricity, there could not be any meaningful achievement of digital transformation of the country not to talk of informal businesses in the rural periodic markets. In another instance, Nigeria's power supply could only provision 10% of its daily requirements with only 40% of the citizens attached to the national grid (GSMA as cited in Bukht & Heeks 2018), this act prevents many people especially in the rural areas the opportunity to have access to data centers for connectivity. More to this negative development in many places, particularly rural parts of the country, 4G and in most cases even 3G are still difficult to access (Okeleke & Stryjak 2015). So, building network capacity and reach has been difficult in rural areas thus digital transformation of informal businesses might be a mirage.

Weak Digital infrastructure: Compared to some countries, Nigeria cannot boast of sound digital infrastructure that can take care of its digital transformation needs. As at now there is fast growing demands for digital facilities that could stand the test of time. There is acute lack of this infrastructure for any structural digital services and connectivity in many less developed countries, Nigeria inclusive (Bukht & Heeks 2018). Olayinka and Wynn (2022) reported that although there has been growing snowballed acceptance of digital technologies for use personally by the citizens of Nigeria that has produced an increasing exigence for digital services and products for commercial purposes, the application of digital transformation inventiveness by businesses in Nigeria is grudgingly at a very nascent stage of implementation. The financial institutions and some well-established small and medium enterprises are struggling to cope digitally and this makes the position of informal economy in digital transformation of their commercial activities yet to be e nvisioned.

Affordability: Although digital transformation has the prospect to restructure the business activities for the informal businesses, but could the informal business pay for the digital technology to be employed? According to DreamFactor (2022) there are some elements that regulate digital transformation of informal business. These factors include not limited to: the exact number of people in the business needed to be trained to apply digital products; the number of customers and clients the business attends to; the technology gadgets the informal business already own and use; whether the business use cloud services. Considering to implement these factors will cost. Again the question is, could informal businesses operating in rural periodic markets in Nigeria afford this digital transformation?

Possession of Appropriate Devices and Applications: In situations where other challenges can be overcome, there is the challenge of having the right devices and applications of digital transformation. Even the United Nations through its Secretary Antonio Guterres acknowledged that digital advances were reduced around a small number of people, organizations and nations (united Nations as cited in Olayinka & Wynn 2022). Sasu (2022) reported that only 37.3% of GSM subscribers have access to the internet via mobile devices. Jaiyeola (2022) reported that the gap in internet connectivity is much wider and the rural areas lag far behind. Only 29.5 percent in the rural areas have smartphones and not many of them are players in the informal business in rural periodic markets. In a nutshell in many rural areas there is no meaningful connectivity and meaningful connectivity implies when a subscriber has 4G-like speed on his smartphone in his desired place of interest and accordingly 81 percent of Nigerians have no access to meaningful connectivity (Jaiyeola 2022). Affordability here too is still a big problem. Many informal business operators cannot afford to possess a simple smartphone (Buhkt & Heeks 2018) as majority of them are living in poverty.

Digital Content: The digital content in Nigeria, as far as language is concerned cannot guarantee free flaw digital transformation. We have earlier on mentioned that education has been a challenge to informal business owners towards digital transformation. Majority of internet languages are foreign to Nigerian informal business owners and organizations. Many of the informal business owners have never received any formal education, so they can neither read nor write. Language is apparently a barrier. In Nigeria, though the official language is English, there are no fewer than 500 indigenous languages that include Hausa, Yoruba, Igbo, Fulani, that are widely spoken both within and outside Nigeria but regrettably they are not available online in a wider proportion (Nottebohm et al. as cited in Bukht & Heeks 2018). This is a big minus to informal business' digital transformation.

Digital Capability: This is the most intriguing challenge to the users i.e. informal business owners in the rural periodic markets in Nigeria. For informal business owners and organizations to be digitally transformed they need to be literary active in digital economy. According to Marcus et al. (2015) there are three layers of digital literacy that every member of the informal business owner and organization must be proficient in: (i) *basic literacy* – this enables any informal business owner/organization to use the digital technology and platforms; (ii) *English literacy* – proficiency in English language is crucial and fundamental since most of the online content were produced in English, (iii) *digital literacy* – every owner of informal business must be familiar with the technicalities of digital devices and must also avail himself with the way the internet operates.

3.0 Methodology

Qualitative research inquiry method is adopted for the paper. The paper depends on ontological assumptions to direct its analysis. The principal assumption of ontology is that reality is subjective (UKEssays 2018). According to this assumption, information about what the research is seeking to know should come directly from the perspective of the informants. The research inquiry technique chosen for any study is usually influenced by research's philosophical viewpoint (Rashid, Rashid, Warraichi, Sabir, & Waseem, 2019). The paper adopts case study method of qualitative research. The justification for adoption of case study among other methods of qualitative research inquiry is that case study looks at and analyses people, happenings, verdicts, incidents, projects, processes, formations, or other arrangements that are examined in their entity.

The population of the study comprised of 15 identified major periodic markets as contained in the official document of the state's ministry of commerce (Katsina State Government 2016).

From the population of 15 major rural periodic markets, three were selected for the study. They are: "Yar Kutungu Periodic Market in Katsina Local Government Area, in Katsina Senatorial Zone, Mashi Periodic Market in Mashi Local Government Area, in Daura Senatorial Zone and Sheme periodic market in Funtua Local Government Area, in Funtua Senatorial zone. These are well-known, active and big rural periodic markets selected from the three senatorial zones of the state. Two informal business associations were selected from 'Yar Kutungu and Mashi and three from Sheme rural periodic markets as sample for the study from the 27, 29 and 32 informal business associations that are relatively documented in the three periodic markets respectively at the Sarkin Kasuwa's office (a symbolic office responsible for administrative and adjudicative issues of the markets). The associations are: 'Yan Kuli-kuli (Groundnut cake and oil sellers); 'Yan Damaga (Waste pickers); 'Yan Hatsi (Grain sellers); 'Yan Dako (load loaders); 'Yan Nama (Butchers/Meat sellers); 'Yan Turaku (Livestock sellers) an 'Yan Cefane (Fresh tomato and Pepper sellers).

Nonrandom selection technique was guided the selection of individuals for the key informant interview. The researcher picked any business owner from each of the associations in the periodic market who volunteered to be part of the interview as his selection criteria. Purposive sampling technique was used. The justification for purposive sampling is that it is applied when the researcher intends to get extended information about a specific phenomenon instead of making statistical suppositions (McCombes, 2021). A total of 14 (fourteen) informants were purposively sampled two from each informal business association. The number of sample is in compliance with Creswell and Creswell (2018) and Patton (2002) presumptions that there are no specific restrictions for sample size. Sample size between 10 and 50 is adequate depending on the research questions and the type of qualitative inquiry. According to Shetty (2022) some researches' sample size did not go beyond sample size of 10 and were well adequate with appreciable results.

Key informant (semi-structured) interview data collection technique was used to collect data for the study. All the interviews were tape recorded with the use of hand held smart phone device. The data obtained was transcribed and translated through the assistance of a staff, who is an expert in translation from the Department of English, Al Qalam University Katsina. The data obtained was analysed through the use of ATLAS TI9 a qualitative data analyses software. The data was analysed by applying thematic analysis in line with the suggestion of Braun and Clarke (2005).

4.0 Data Analyses and Discussion

Below is the word cloud generated from the responses of the informants:

Source: *Analysis of data generated through ATLAS T19 2022*
Figure I: Word Clout of the Data

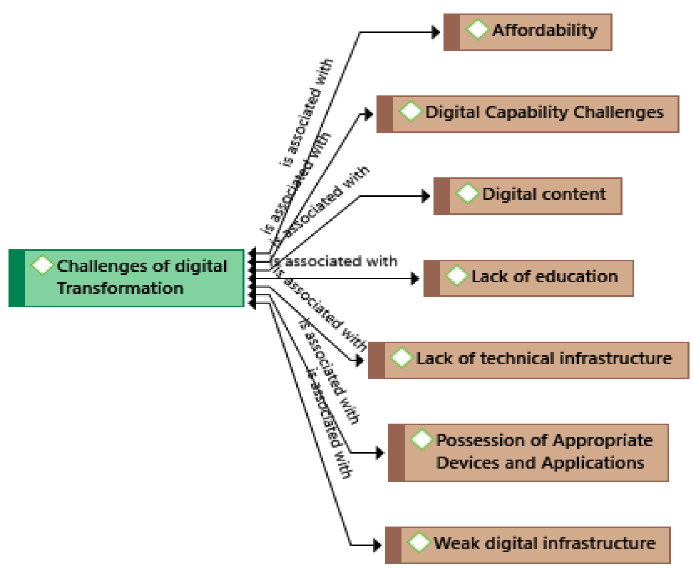

Figure II: The Themes Developed from the Software Analyses of the Data
Source: *Analysis of data generated through ATLAS T19 2022*

Table I: Coding of Informants and their Responses on the Themes

S/N	Informants Code	Affordability	Digital Capability	Digital Content	Lack of Education	Lack of Tech. Infrastructure	Possession of Appropriate Devices and Application	Weak Tech. Infrastructure
1	IYC_1	None	capable	Applicable	Diploma	confirmed	Has Android phone only	confirmed
2	IYC_2	None	Incapable	Not applicable	No formal education	confirmed	Only ordinary phone	confirmed
3	IYK_1	None	Incapable	Not applicable	No formal education	confirmed	Only ordinary phone	confirmed
4	IYK_2	None	Incapable	Not applicable	Prim. School dropout	confirmed	Only ordinary phone	confirmed
5	IYD_1	None		Applicable	Diploma	confirmed	Has Android phone and a computer	confirmed
6	IYD_2	None	Semi-capable	Partially applicable	Secondary School	confirmed	Only ordinary phone	confirmed
7	IYN_1	None	Incapable	Not applicable	No formal education	confirmed	Only ordinary phone	confirmed
8	IYN_2	None	Incapable	Not applicable	Primary School Certificate	confirmed	Only ordinary phone	confirmed
9	IYT_1	None	Incapable	Not applicable	No formal education	confirmed	Only ordinary phone	confirmed
10	IYT_2	None	Semi-capable	Partially applicable	NCE	confirmed	Only ordinary phone	confirmed
11	$IYDA_1$	None	Incapable	Not applicable	No formal education	confirmed	Only ordinary phone	confirmed
12	$IYDA_2$	None	Incapable	Not applicable	No formal education	confirmed	Only ordinary phone	confirmed
13	IYH_1	None	Incapable	Not applicable	No formal education	confirmed	Only ordinary phone	confirmed
14	IYH_2	None	Incapable	Not applicable	No formal education	confirmed	Only ordinary phone	confirmed

Source: Fieldwork December 2022

Key to codes in the informants' column: IYN – Informant 'Yan Cefane; IYK – Informant 'Yan Kuli-kuli; IYD - Informant 'Yan Damaga; IYN - Informamt 'Yan Nama; IYT – Informant 'Yan Turaku; IYDA – Informant 'Yan Dako and IYH – Informant 'Yan Hatsi

There are seven themes that emerged from the data gathered and analyses from the software. They are: lack of education, lack of technical infrastructure, weak digital infrastructure, affordability, possession of appropriate devices and applications, digital content, and digital capability Challenges.

4.1 Affordability

Digital transformation affordability implies the readiness by the business organization in our case business associations to train its people how to apply digital products; to ensure that the number of customers and clients the business attends to are also digitally compliant; to obtain the technology gadgets or already own and use; and the business should use cloud services. From the point of view of the informants none of their business associations is ready to go near these expenditures. “Even those sophisticated phones which you call ‘Android’ are not affordable to most of our members. So how can digitalization of our business be possible? We live to see.” $IYT_{1.}$ According to many of them it is practically impossible for their associations that are struggling to survive with the meagre monthly contributions they receive from their members to embark on such infrastructural venture. The informants’ statements confirm the laid don criteria by DreamFactor (2022) is practically impossible to attain.

4.2 Digital Capability Challenges

One of the informants with Diploma Certificate affirmed that digital transformation in rural periodic markets in the state may be difficult to attain. This is because since its basic requirement necessitates that a person should possess a certain level of literacy, not only reading, writing and calculation but digital literacy that enables the user to manipulate the digital gadgets. His words:

> Digitalization of business is an excellent thing if well-managed. But it is extremely difficult to attain in our markets; certainly not very soon. So many things have to be put in place. However, you should note that even the customers are not familiar with digitalization. They rather pay in cash. To be frank only cash transfer is available. Even that one is not fully functional as lack of education from both the many of the sellers and buyers make them deficient in the aspect of digitalization of business in this market. $IYC_{1.}$
>
> More so, on the side of the service providers, there has been epileptic network supply almost every day. IYC_1

Another informant corroborates the statement of the informant above by saying: “As I said our people are not literate and digitalization requires special digital literacy, which I can assure you it will take long for our members to attain”. $IYD_{2.}$ This is also supported by another member who spoke in the same vein: “Digital transformation of our business is difficult to come by. We can only boast of money transfer. I think that is the highest we could reach now. Even that one is domiciled with little number of informal economy workers. From my little knowledge digitalization entails a lot of things that can mainly be handled by the government.” $IYD_{1.}$ Almost all the informants confirmed that majority of them do not have the digital capability to embark on any digital transformation of their businesses. This confirms the assertion of Marcus et al. (2015) that three layers of literacy basic literacy, proficiency in English language {since the digital content is in English language in the case of Nigeria and digital literacy) is required to attain digital transformation.

4.3 Digital Content

Most of the informants confirmed that they only understand how to read and write Hausa. However, the language of the internet is largely English in Nigeria. From their assertion it is extremely difficult for them to attain digital transformation in their local businesses. According to one of them: "Even if everything is available for digital transformation, what of the knowledge that will make us use it? Very insignificant number of our members have secondary school certificates. Others can hardly read and write. So could be digitally transformed?" $IYT_{1.}$ Another informant stressed: "I have Quranic education and a certificate in 'Adult Education' and I can read and write Hausa language and can operate Android phone but I am not sure that Hausa language has been imputed as one of the languages of the internet". $IYC_{2;}$ Language of the internet is certainly a barrier that blocks digital transformation of business organizations in periodic markets of the state. This is also confirmed from the findings of (Nottebohm et al. as cited in Bukht & Heeks 2018) that Nigerian languages are not present as internet languages in a wider proportion to enable digital transformation.

4.3 Lack of Education

From the statements of the informants, lack of education has been a challenge to them. Many of them could neither read, write nor understand English Language which has always been the dominant language of the internet in Nigeria. For instance, the first informant affirmed that she only possesses Qur'anic education at elementary level and thus she could neither read, write nor speak in the English language. She confessed that "I can barely read Hausa text." IYK_1 She further confirmed that very few of her members completed primary school. Another informant from the same association attested to that by saying: "I attended Primary school but at the fifth year I withdrew on the tradition of our local environment. Very few girls completed their primary education in my village." IYK_2 There are few with secondary leaving out certificate and very few with diploma certificates as in the statement of this informer "I have a Diploma in Accounting. I can read write and calculate. Majority of the members of our association are not educated. Very few went to Primary school and some had both primary certificates and attended Qur'anic schools." $IYC_{1.}$ The second informant of the same association confessed by saying: "I attended adult education literacy class. I can read and write in Hausa language." From the 'Yan Damaga association, the first informant related that "I have diploma in Mass Communication. I can tell you that many of our members re not literate." $IYD2_{.}$ The second person from the association said that he has secondary school certificate but confessed that "I am not good in English language." $IYD_{1.}$ From "Yan Nama association the second informant confessed that "$_I$ have primary leaving certificate. Most members of our association are not educated. I can read write in Hausa language and a little English." $IYN_{2.}$ While the first reiterate that 'I only underwent qur'anic education and can barely read any text." $IYN_{1.}$ Similarly, the first 'Yan Hatsi informant maintained that "I have Qur'anic education. I can relatively read and write in Hausa language and understand little English. Most of our members cannot." $IYH_{1.}$ The same tone with the second informant: "I did not go for any form of formal education. However, as a youth I struggled to learn how to read and write in Hausa Language through adult education. $IYH_{2.}$ I only have Qur'anic education. $IYDA_{1.}$ I did not go to any formal school. $IYT_{1.}$ The second informant from the association mentioned that "I finished secondary school and I am in my final year in NCE". IYT_2 These are the statements from all the informants confirming that majority of them did not go further than primary school education and they could barely read and write in Hausa language. This corroborates with the assertion of Kolm and Larsen (2016) that informal business orker are loly educated and do not exalt to high position in business.

4.5 Lack of Technical Infrastructure

All the informants affirmed to the fact that electricity is lacking in their periodic markets. Some of the assertions of the informants categorically "there is no electricity". $IYH_{1.}$ Another informant said that there is no steady supply of electricity that will guarantee us to recharge our phones at our convenience." $IYDA_{2.}$ An informant from 'Yan Turaku stalls reiterated that electricity is lacking seriously." $IYT_{2.}$ The same with all the rest of the informants. This is in line with the findings of (GSMA as cited in Bukht & Heeks 2018) that Nigeria's power supply could boast of only 10% of its daily requirements to its populace and more so, only 40% of its people are connected to the national grid.

4.6 Possession of Appropriate Devices and Applications

From table I, it could be discerned that only to people have Android phones an only one person has computer. Many of them confessed that they cannot afford an Android phone. While some sais even if they could afford to get one, it is not going to be beneficial to them, since they do not know how to operate it. An informant confessed having an Android phone just for music and other things not relevant to his business. "I have an Android phone and I used it to browse the net for music and other stuff nothing more." $IYH_{2.}$ One member from 'Yan Dako association said that "I don't think any of our member can afford an Android phone talk less of going digital in this time of austere living. If what I learnt about digital transformation is true, then unless the government steps in and do something serious about it, left to us, it is practically impossible to see it materialized. $IYDA_1$

4.7 Weak Digital Infrastructure

All the informants attested that in their rural periodic markets there are issues of weak digital infrastructure. For instance, an informant insisted that "no network most of the times. The equipment for digitalization are not available." $IYH_{1.}$ Another informant from 'Yan Dako association said that "we are waiting to see digitalization could apply to load loaders in rural periodic markets like our own? This is where network is weak, no steady supply of electricity that will guarantee us to recharge our phones at our convenience." $IYDA_{2.}$ From the 'Yan Turaku association an informant explained that "digitalization as it was explained to me is we shall be conducting our business using our cell phones and computers. Yes, it is possible if everything that is required for digitalization are available." $IYT_{1.}$ The second informant expressed pessimism that "digitalization of our business is possible but not in the next foreseeable future because of so many challenges., no available digital infrastructure for digitalization in the rural periodic markets. $IYT_{2.}$ These assertions of the informants are confirmed from the findings of Olayinka and Wynn (2022) who found out that the application of digital transformation creativity by businesses in Nigeria is resentfully at a very embryonic phase.

5.0 Conclusion and Recommendations

Digital transformation is desirable for every business that wants to survival. Despite the humongous challenges of digital transformation surrounding informal economy businesses it is still grossly important for them to do all it takes to be digitally transformed. This will obviously pave way for their recognition online, they could be captured in the official records, they could be recognized for social and economic security by the authorities and transitionally they will transform and eventually convert to formal economy.

Recommendations

As part of efforts towards digital transformation of informal economy and its workers in rural periodic markets in Nigeria, the paper recommends the following:

i. Education is very crucial and fundamental for the ell-being of human beings. The paper recommends that informal economy workers organizations as part of their functions should organize literacy classes for basic, intermediate and advance. Part of what should be taught and learned must include reading and writing in the English language and some forms of calculations.
ii. For lack of technical infrastructure, the paper recommends that the government of the country should step up efforts towards power stability everywhere in the country. It should invest more in the power sector with serious supervision to against corruption and sabotage.
iii. Weak digital infrastructure could be addressed through massive investment in telecommunication infrastructure by both local and foreign telecommunications companies. The Nigerian Communication Commission should be given more powers to ensure more regulation of telecommunication infrastructure to be more responsible in creating the enabling environment that will make operators compete favourably.
iv. For informal economy organization's and their workers operating in the rural periodic markets to afford to afford what it takes to achieve digital transformation the paper recommends concerted collaboration between them and the government. The known and popular informal economy organizations should make proposal for the government to come to their rescue in areas that are in affordable to them even if it involves repaying back in instalments what was expended on them on the project.
v. The paper recommends that informal economy workers operating in the rural periodic markets must strive to own appropriate phones that are compatible with at least 3G-like speed in order to have accessibility to the Internet easily. This will help facilitate digital transformation of their business easily.
vi. The paper had earlier recommended for establishment of literacy classes for members of the informal economy organization's members to teach them how to read and write English. This is because English has been the main language of the Internet. The Nigerian Communication Commission need to evolve policies that would encourage content developers to cogitate content that is suitable for the Nigerian context.
vii. The paper also recommends that for informal economy organizations and their members to be capable for digital transformation they need to embrace the three layers of digital literacy. Again this can be done through organizing literacy class to polish the members on digital needs that will enhance their digital capabilities.

5.1 Limitations

This is a concept paper and it is based on a review of literature on the concepts of informal economy, informal economy workers, periodic markets and digital transformation. It does not include all the researches done on the concepts. The literature selected are based on the premise of the authours' subjectivity within the bounds of the research environment.

5.2 Suggestions for Further Research

The paper is a concept based research and it exclusively relied on literature search. Informal economy seems to be one of the most neglected in the debut of digital transformation literature. Therefore, more vigorous research on digital transformation of informal economy especially as it relates to rural periodic markets are needed. It is suggested that further research based on primary investigation with respondents nationwide be carried out in order to get firsthand information on the research topic which could enable the government and informal economy workers organizations to get the necessary knowledge and capabilities to cope with spontaneous changes in business operations brought about by digital transformation.

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Effect of Perceived Risk on Online Buying Behaviour among Undergraduate Students in Ahmadu Bello University (ABU) Zaria

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Abstract
The electronic commerce (e-commerce) has shown an upward trend in Nigeria, providing online transaction platform for both domestic and global market which benefits business and consumer. A comprehensive understanding of how perceived risk influence online buying behaviour is essential for e-commerce marketers to gain competitive advantage. Therefore, this study examines the effect of perceived risk dimension on online buying behaviour among undergraduate students in ABU Zaria. The study used the partial least square structural equation modeling (PLS-SEM) as a technique to run and analyse the data collected from 400 level undergraduate students using a sample of 246 students. The findings of the study showed that financial risk and privacy risk in online buying behaviour were found to be negative and significant. However, Product performance risk was found to be positive and insignificant relationship in online buying behaviour. The study concludes that financial risk and privacy risk are critical factors that prevents students from engaging in online buying behavior. Thus, the study recommends that online vendors should focus on enhancing students' confidence in their ability to restore or reduce the level of perceived risks in online buying behaviour.

Keywords: *Perceived risk, financial risk, privacy risk, product performance risk, online buying behaviour*

1.0 Introduction

The internet has grown to a great deal in both its applications and number of users. There is a lot of adaptation, together with its relatively unique characteristics of interactivity and personalization which increases the chance of new business strategies (Ko, Jung, Kim, & Shim, 2004). The major change brought by the internet was the online shopping which is becoming a treat to the traditional shopping channels like the retail stores. With the advancement of the of internet which has made a recognition of online shopping increased by thousands or millions of people all over the world, using their various gadgets to shop has made a transformation from the traditional way of shopping to the modern online way of shopping. Online shopping becomes the third most favorite internet activity following the e-mail using or instant messaging and web browsing (Li & Zhang, 2002).

Nigerian e-commerce has been growing immensely, this makes Africa's growth in development to be 25.8% when compared to other countries growth of 15.8% with Nigeria's growth rate which was credited to be 25% per annum (Chinedu & Obot, 2019). The Nigerian internet users in 2018 had 92.3 million internet users. This figure is projected to grow to 187.8 million internet users in 2023. The internet penetration amounted to 47.1 percent of the population in 2018 and is set to reach 84.5 percent in 2023 (Usman & Kumar, 2019).

Electronic commerce (e-commerce) is the buying and selling of goods and services online through the use of internet (Nazir, Tayyab, Sajid, Rashid, & Javed, 2012). Online shopping is a form of e-commerce which permits consumers to directly purchase goods or services from a seller by using the internet (Singh, 2013). Industries are responding to innovative order in the technological world, the internet world to meet the needs of their dynamic customers (Olise, Moses, Stephen, Happiness, & Oby, 2019). Internet usage in Nigeria is rapidly growing due to increase in internet penetration (Usmna & Kumar, 2019; Olise et al., 2019). Therefore, the trend of internet shopping is becoming a drone that is spreading through every marketing activity.

Internet shopping is fast becoming increasingly popular in Nigeria as a result of the conveniences consumers see and also the reasonable prices of products and services available online (Ogbuji, 2018). Nevertheless, it has been observed that there are some new problems and challenges that the foremost internet users' concern comprises security of payment, data protection, the validity and enforceability of e-contract, insufficient information disclosure, product quality and enforcement of rights (Paynter and Lim, 2001). Ariffin, Mohan, and Goh, (2018) asserted that method of online shopping conducted is different compared to traditional transactions, whereby it has developed to be more sophisticated, thus exposing and increasing the vulnerability of consumer perception to imbalance online shopping. A consumer may face numerous problems, for example, in placing an order where the wrong product is delivered or no delivery at all in spite of the fact that payment was made to the supplier through the consumer's credit or debit card.

Therefore upon the presence of the practical problem that necessitates the need for research on online buying behaviour, there were no studies found on perceived risk and online buying behaviour in Nigerian context. Even though, there is generally lack of or little studies on dimensions of perceived risk the few ones available have paid more attention to determinants of online buying (Inegbedion, Obadiaru, & Bello, 2016;George, Olufemi, Jubril, & Lucas, 2015;Nwankwo, Kanyangale, & Abugu, 2019).In view of the foregoing literature gap, the current study seeks to examine the effect of dimension of perceived risk as determinants of consumer online buying behaviour in Nigeria.

Research Questions

i. To what extent does financial risk affect consumer online buying behaviour among undergraduate students in ABU Business School?

ii. To what extent does performance risk affect consumer online buying behaviour among undergraduate students in ABU Business School?
iii. To what extent does privacy risk affect consumer online buying behaviour among undergraduate students in ABU Business School?

Objectives of the Study

The major objective of this paper is to determine the effect of perceived risk on consumer online buying behaviour. Other specific objectives are:

i. To investigate the effect of financial risk on consumer online buying behaviour among undergraduate students in ABU Business School.
ii. To assess the effect of performance risk on consumer online buying behaviour among undergraduate students in ABU Business School.
iii. To determine the effect of privacy risk on consumer online buying behaviour among undergraduate students in ABU Business School.

Hypotheses of the Study

In line with the research objectives of the study, the following hypotheses are formulated.

i. $H0_1$: Financial risk has significant effect on consumer online buying behaviour among undergraduate students in ABU Business School.
ii. $H0_2$: Performance risk has significant effect on consumer online buying behaviour among undergraduate students in ABU Business School.
iii. $H0_3$: Privacy risk has significant effect on consumer online buying behaviour among undergraduate students in ABU Business School.

The study was carried out among undergraduate students in Ahmadu Bello University Business School (ABUBS) which is made up of six (6) departments, which cover the study population. The effect of financial risk, performance risk and privacy risk on consumer online buying behavior was assessed. The study will be significant to academia and practitioners. It will help online vendors to understand risk associated with online buying behaviour, and academically it will open new doors for a further research on the use of other dimensions of perceived risk.

2.0 Literature Review and Theoretical Framework

2.1 Concept of Consumer Behaviour

Consumer Behaviour has been the subject for increasing interest to marketers globally with absolute volume of research on the subject. Marketers that understand the consumer usually makes the difference between companies that succeed and those that fail. In a related study, Bhatti, (2018) investigated the impact of consumer behavior in online shopping using convenient and non-probability sampling of 150 questionnaires to assess consumer behavior in online buying. In his analysis, he portrays consumer purchase intention and attitude as having a positive significant impact on consumer online buying behavior. The finding was in line with the study of Lim, Osman, Salahuddin, Romle, & Abdullah, S. (2016) where they stated that consumer intention and attitude are the factors that make people to engage in online buying bahaviour.

Leyiaro, (2015) assessed the factors influencing consumer online buying behavior. The factors constitutes of perceived benefit, perceived risks, psychological factors and website design. In today’s market place, consumers have become dynamic due to them being more informed and sophisticated than before. Background knowledge therefore about consumer needs, characteristics, perceptions, preferences and behavio urs will enable marketers develop effective strategies to promote products and services through taking advantage of the underpinning drivers to know about their behaviour.

2.2 Online Buying/ Shopping Behaviour

As a result of internet, many organizations have found a profitable channel for conducting business and a basic form to gain competitive advantage in a more technological oriented market. Online buying or online shopping is the process of buying goods through the internet. These processes consist of five steps similar to those associated with the traditional mode of buying (Liang & Lai, 2000). The process of online shopping behavior begins with the recognition of a certain need, which determines consumers to search for information on web sites. In the next stage, they will evaluate different buying possibilities by a set of personal criteria and will chose the product which best fit their expectation. After taking the purchasing decision, the consumer becomes the customer of a specific organization, due to a transaction and a series of eventual post-sales services (Onete, Constantinescu, & Filip, 2008). Lakshmi, (2016) determined the dimensions that affect consumer behavior in online buying such as personal characteristics, psychological characteristics, social characteristics, cultural characteristics, customer loyalty and trust. The study stated that convenience, and trust are the most important variables, the next which are important for them are prices and quality of products. Those variables are the most essential ones for consumers when they decide to shop online.

2.3 Financial Risks

Online shopping experience is negatively related to perceptions of financial risks associated with online shopping regardless of product category (Dai, Forsythe, & Kwon, 2014). The likelihood of suffering monetary loss as a result of buying a product or service is termed as financial risk. Egeln Joseph, (2012) opined that financial risk refers to probability of not getting the lowest possible price for the selected product from a particular online store. Crespo, Bosque and Sanchez, (2009), they viewed financial risk as the potential monetary.

Outlay associated with the initial purchase price as well as the subsequent maintenance cost of the product and the potential financial loss due to fraud. Abrar, Naveed and Ramay, (2017) averted that online consumers are concerned about their credit card information getting leaked out or they might get over charged by the vendors. Shoki, Sylvester, Ismail and Ali Mat, (2014) categories perceived risks experienced by consumers into levels and they stated that financial risk being the highest level of fear of respondents is the chances of suffering a financial loss due to fraud of credit card. They also stated that sometimes, consumers also fear that certain online websites are not secured enough and need constant reassurance. George, Olufemi, Jubril and Lucas, (2015) asserted that financial risk stems from paying more for a product than being necessary or not getting enough value for the money spent.

2.4 Performance Risk

Crespo, Bosque and Sanchez, (2009) averted that performance or functional risk is the possibility of the product malfunctioning and not performing as it was designed and advertised and therefore failing to deliver the desired benefit. Furthermore, performance risk is the ability of the product to perform its basic function and deliver the value as per the promise made. Sharma and Kurien, (2017) stated that customers that buy from online site, they always have the dilemma whether they are going to get a genuine product or a duplicate one, and whether it is a standard product without any defects. Perceived performance risk may be higher in the online shopping environment due to inability to physically examine the product before purchase. Hubert, Blut, Brock, Backhaus and Eberhardt, (2017) argued that performance risk, refers to the likelihood that the application is flawed and does not work in the way it was originally intended.

2.5 Privacy Risk

Featherman and Pavlou, (2003) asserted that privacy risk is when there is a potential loss of control over personal information, such as when information about you is used without your knowledge or permission. Drennan, Mort, and Previte, (2006) averted that consumers may feel less control over their personal information which might be revealed as a result of online transaction, which makes them hesitant to provide such information required to make an online transaction. Inegbedion, Obadiaru and Bello, (2016) argued that internet users, including internet shoppers, are often required to reveal their personal information, such as name, address, email, telephone number and credit card number. Such information which they are required to reveal in order to shop online is perceived to be consumers' private information, as a result many consumers refuse to purchase online due to some privacy matters. Chen and Barnes, (2007) argued that perceived privacy is the consumers' ability to control the presence of other people in the environment during a market transaction or consumption behaviour.

2.6 Empirical Review on Dimensions Perceived Risk and Online Buying Behaviour

Most of the studies came from Asian countries such as Malaysia, India and Pakistan (Tham, Dastane, Johari, & Ismail, 2019: Hong, Zulkiffli, Wan Farha, & Hamsani, 2016: Ariffin, Mohan, & Goh, 2018:Tandon, Kiran, & Sah, 2016: Shweta & Deepak, 2018:Zeba & Ganguli, 2016) and very little studies were conducted in Nigeria.

Tham et al., (2019) examines the impact of financial risk, convenience risk, non-delivery risk, return policy risk and product risk on consumer online shopping behaviour. 245 copies of questionnaire were administered to online shoppers through convenience sampling. Confirmatory factor analysis was used for model test and then structural equation modeling was used to test the study hypotheses. The result indicates that product, convenience and return policy risks have a significant and positive impact on consumer online buying behavior. Financial risk was found to have an insignificant and negative effect on consumer behavior. In addition, non-delivery risk also has significant and negative impact on online shopping behaviour. However, the study was not able to cover the other various forms of perceived risk and the study sample size is not a well representative of Malaysian's population which will hinder the work to be generalized.

Hong et al., (2016) investigated the impact of perceived risk and customers' attitude towards online shopping intention. The study variables were financial risk, product risk, non delivery risk and psychological in online shopping intention. 200 copies of questionnaires were issued to the respondents through convenience sampling method. The study was analysed using Pearson correlation analysis and regression analysis to see the relationship between the independent and the dependent variables. The study revealed that product, financial and non delivery risks have a positive and significant relationship between consumer's attitude to shop online, while psychological risk has a negative significant relationship between consumer's attitude to shop online. However, the study could have used probability sampling method which could have make the study in a more scientific approach.

Ariffin et al., (2018) examined the relationship between six factors of consumer's perceived risk and consumers online purchase intention. The variables of the study are financial risk, product risk, security risk, time risk, social risk and psychological risk and online purchase intention. 350 copies of questionnaires were distributed to online shoppers through electronic mail. The study used Pearson Correlation to see how the variables correlate and multiple regression analysis to analyse the direct relationship of the variables. The re sult indicates that financial risk, product risk, security risk, time risk, and psychological risk have a significant negative influence on consumer online purchase intention, while social risk was insignificant. Security risk was the main contributor for consumers to deter from purchasing online. However, the study could have use trust as a moderator of the factors of perceived risk to see whether if it will strengthen the relationship between the variables.

Marriott and Williams, (2018) explored consumers perceived risk and trust for mobile shopping. Perceived risk, financial risk, psychological risk, performance risk, time risk, trust (as a mediator) and online purchase intention were the variables used for the study. 500 copies of questionnaires were issued to online shoppers through social media, email and face to face surveys were distributed by the researcher. The study used structural equation modeling (SEM) to see the relationship between the variables. The result of the study indicates that the three antecedents of risk, being financial, performance and psychological risks, significantly contribute to overall risk development, overall risk is found an insignificant predictor of m-shopping in the study. However, the study could have extended the model to include other antecedents of perceived risk. Also, the study used two theoretically grounded model of trust and risk that shows low explanations into variance which implies further research to combine these research findings against other well established technology acceptance models.

Sharma and Kurien, (2017) analysed the impact of demographic profile of respondents on perceived risk. The study variables are performance risk, financial risk, time risk, psychological risk, social risk, privacy risk and system risk. The study used both qualitative and quantitative approach for data gathering to understand the impact of demographic variables which are gender, income, education, age and occupation on perceived risk. The qualitative approach was based on focus group discussion while the quantitative approach was based on 1,350 copies of questionnaires sent to respondents both online and personal method. The study used Chi square to analyse the data. The study found that Indian consumers are more concerned about financial risk and performance risk as compared to other risk associated with online transactions. Also, from the bases of demographic variables, on gender, it was found that females perceived more risk in online transactions as compared to males. From the chi square analysis, it was found that of the demographic variables, gender and income levels have a significant relationship with perceived risk. It was also found that approximately all risks are perceived equally by different occupation/professional group segments. However, the study was not grounded on any theory which could have underpinned the study.

Emamdin, Singh, and Fah, (2020) examined the role of e-trust, e-loyalty, and e-satisfaction on online buying behaviour among millennials in Kuala Lumpur, Malaysia. The study used convenience sampling to distribute 100 copies of questionnaires to respondents through the internet. The study used multiple regression analysis and correlation analysis to analyse the relationship between the variables. Results of the study reveals that only e-loyalty and e-satisfaction were significant predictors of online purchasing behaviour by millennials. However, the study was not based on any theoretical model.

George, Olufemi, Jubril, and Lucas, (2015) examined and investigated perceived risk and trust among online shoppers and online vendors in Nigeria. The study variables on perceived risks are financial, product performance, social, psychological and time/ convenience loss. The study used questionnaires to

100 respondents. Data was analysed using Pearson product-moment correlation coefficient. The study found that the presence of perceived risk negatively affects trust in online shopping and that perceived usefulness of online shopping has a positive effect on actual usage of online shopping. However, the study focused its attention to only two states and the federal capital territory without specifying weather the respondents are students from a tertiary institution or they are business people.

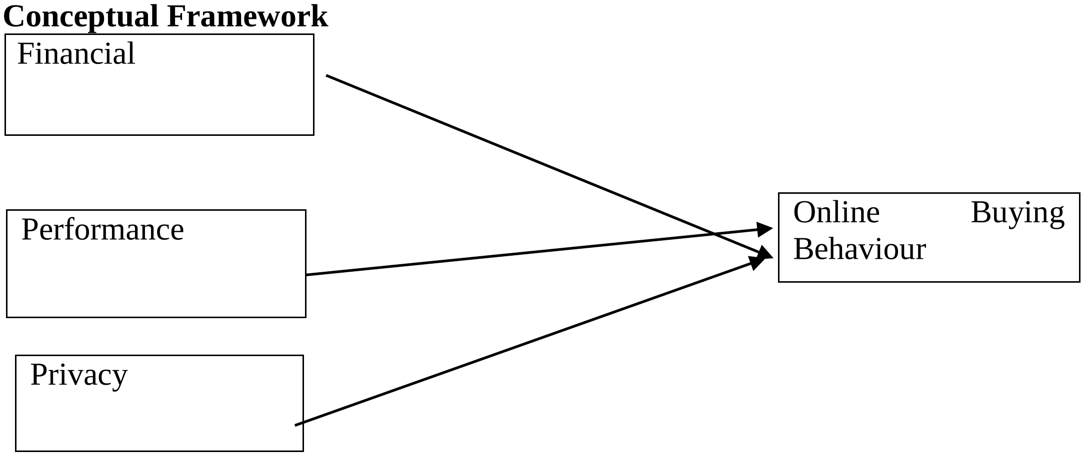
Abrar, Naveed, and Ramay, (2017) investigated the influence of perceived risk (financial risk, product risk, convenience risk and non-delivery risk) on online impulse buying tendency. 200 copies of questionnaires were distributed online to respondents through facebook and google groups. The study used correlation and regression for data analysis. The study found that overall perceived risk, financial risk and product risk were found to have a moderately negative association with online impulse buying tendency whereas convenience risk and non-delivery risk had negative but weaker association with online impulse buying tendency. However, the sample size of the study respondents was too small to make generalization about the online buying behaviour of the people of Pakistan.

Kumar, (2017) analysed trust and perceived risk on online shopping. The study variables are the eight factors of perceived risk (Financial risk, Product performance risk, Physical risk, psychological risk, social risk, Time/ convenience risk, Source Risk and Privacy Risk) and trust (Integrity, Benevolence, Familiarity, Predictability and Competency). 208 copies of questionnaires were distributed through simple random sampling method. The study employed factor analysis to see the variance of respondents shopping behaviour. The study found that six factors, three types each of perceived risks and trusts respectively, impacts the shopping behaviour while shopping online. However, the study was restricted for using factor analysis alone. It could have used correlation and regression analysis. The study was not based on any theory.

2.7 Theoretical Framework

The study has adopted the theory of Reason Action developed by Fishbein and Ajzen (1975). The reason for the adoption is that the theory is one of the most frequently used frameworks to explain consumer behaviour (Frankowski & Leskovec 2016) and to clarify the determinants of human behavior (Nwankwo et al., 2019). The theory provides a behavioural clarification of the essentiality of attitudes on potential buyer's decision-making process (Fishbein and Ajzen 1975). The main principle in the theory of reasoned action is that people behave in rational manner while trying to achieve positive outcomes and meeting the expectations of others. In this way, the theory of reasoned action clarifies how attitudes are shaped and why such attitudes influence the way human-being behave.

2.8 Conceptual Framework



3.0 Methodology

3.1 Population and Sample size

The population of this study constitutes undergraduate students of ABUBS. The number of departments in ABUBS is (six) 6 they are Accounting, Business Administration, Banking and Finance, Economics, Insurance and Actuarial Science and Marketing. ABUBS is having 400 level students in only three departments out of the ones mentioned. They are Accounting, Business Administration and Economics department. However, the study intends to use the three departments as the population of the study.

Table 1: Current Population of ABUBS

S/N	Department	No. of students
1.	Accounting	141
2.	Business Administration	250
3.	Economics	120
	Total	511

Source: Exam officers ABUBS

From table 3.1, the three departments above will be used as the study population of 511 students in which sample will be drawn from it.

3.2 Sample Size and Sampling Technique

The sample size of this study was determined using Yamane (1973) formula with 95% confidential level at 5% level of precision from three departments. Therefore, the calculation of sample size will be given in the following equation.

$$n = N / 1+N (e)^2$$

Where n = sample size

N = population

e = error of the sampling or level of significant

Thus, N = 511, e = 0.05 and n =?

$$n= 511/1+511(0.05)^2$$

$$n= 511/2.2775$$

$$n=224$$

Furthermore, 10% (22) *will be added to the above minimum sample size given by the formula to make it 246. As this will take care of other errors such as incorrect filling and* failure of some respondents to return questionnaire (Israel, 2013).

In this study, simple random sampling was employed because it's a method in which each element of the population has an equal chance of been selected in the sample. The reason for selecting this method is because simple random sampling can be used in a homogenous population and has the least bias and has the most generalizability as each and every element can fall within the sample (Sekaran & Bougie, 2013).

3.3 Sources of Data

The source of data for the study is primary source. Primary source was used through the use of survey questionnaire to collect data from respondents.

3.4 Method of Data collection

Date was collected through self administered questionnaire. *The copies of questionnaires were distributed to the eligible respondents in each department. Only those students that have ever used online medium to buy a product were considered.* The questionnaire is divided into two sections and all questions are in close ended form.

Section one ask questions on the bio data of the respondent and in section two, questions were asked on perceived risks dimensions which are financial, performance and privacy risks.

3.5 Measurements of Variables

The dependent variable, consumer online buying behaviour was measured on the attributes of online shopping based on 7 items. Respondents will be asked to indicate why they prefer to shop online instead of purchasing through the traditional method. The questionnaire will be adapted from (Moshrefjavadi, Dolatabadi, Nourbakhsh, Poursaeedi, & Asadollahi, 2012). The adapted measuring scale used seven-point likert scale ranging from "Strongly Disagree" (1) to "Strongly Agree" (7). But for this study, it intends to use the five-point likert scale for measuring consumer online behavior ranging from “Strongly Disagree” (1) to “Strongly Agree” (5). This will enable the researcher to have precise, clear and straight forward answers from the respondents.

The independent variables are the dimensions of perceived risk which are financial, performance and privacy risks. Financial risks will be measured on 3 items adapted from (Moshrefjavadi et al., 2012). This study employs a 5-point likert scale ranging from “Strongly Disagree” (1) to “Strongly Agree” (5) in order to measure the variable. The measures of the construct have satisfied the validity and reliability assessment as stated by the authors.

Product performance risk will be measured on 3 items adapted from (Moshrefjavadi et al., 2012) on 5 point likert scale. Privacy risk will be measured on 3 items adapted from (Faqih, 2016) also on 5 point likert scale.

3.6 Technique of Data Analysis and Justification

This study employs the use of Statistical Package for the Social Sciences (SPSS) version 21 for data coding, data screening, and other preliminary analyses. However, for the major analysis, the study employs the use of Partial Least Squares Structural Equation Modeling (PLS- SEM) path modeling using the smartPLS3.2.7 statistical software.

4.0 Results and Discussions

4.1 Analytical procedure

Prior to the main analysis, this study ensured assumptions about outlier check, normality and multicollinearity (Hair, Hult, Ringle & Sarstedt, 2017). After successfully satisfying all assumptions, we adopted the partial least squares (PLS) path modeling method. The method is used because the study is aimed at predicting the dependent variable (Duarte & Raposo, 2010) and PLS is also a non-parametric technique (Ruiz, Mujica, Berjaga, & Rodel lar, 2013). In order to validate and evaluate the research model, Hair, Sarstedt, Ringle, and Gudergan (2017) suggested using two stages of evaluation. They are measurement models (also called external models in PLS-SEM) and structural models (also called internal models in PLS-SEM).

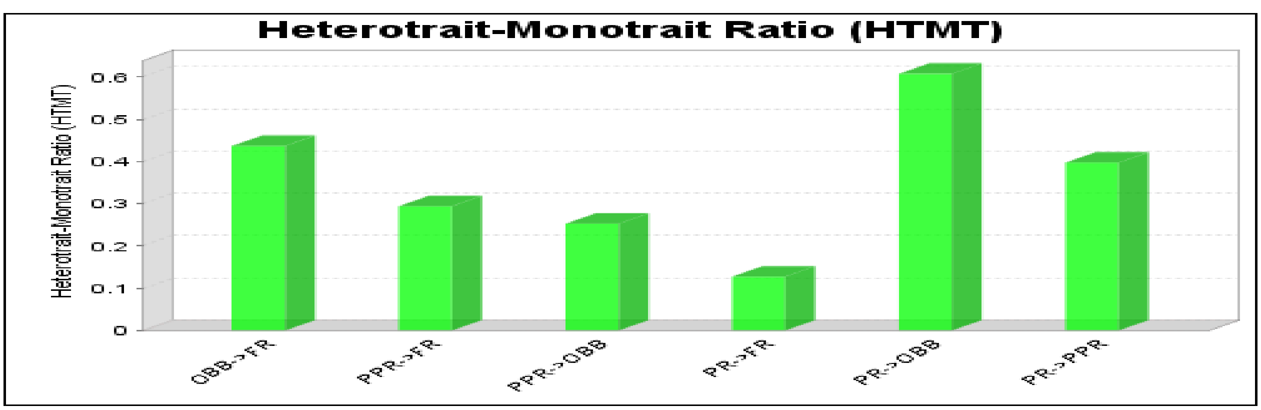
4.1.1 Measurement Model

In order to evaluate the measurement model of this study, the researchers evaluated the reliability of the individual items measuring each potential structure, the internal consistency reliability (i.e. the composite reliability), the discriminant validity, and the convergence validity of each reflective construct (Hair et al., 2017). Although, Hair et al. (2017) recommends using an outer loading of 0.70 as reliable and acceptable, they argued that an indicator should be deleted only if deleting the item increases the constructs AVE or Composite reliability. Hence, all the items where maintained because the AVE was already sufficient and no improvement is expected after deleting any item.

Table 1: Measurement Model

Constructs	Indicators	Loadings	Cronbach's Alpha	Composite Reliability	Average Variance Extracted (AVE)
Financial Risk	FR1	0.85	0.81	0.88	0.72
	FR2	0.82			
	FR3	0.86			
Online Buying Behaviour	OBB 2	0.79	0.86	0.89	0.54
	OBB1	0.74			
	OBB3	0.83			
	OBB4	0.71			
	OBB5	0.53			
	OBB6	0.78			
	OBB7	0.71			
Product Performance Risk	PPR1	0.57	0.65	0.75	0.52
	PPR2	0.96			
	PPR3	0.56			
Privacy Risk	PR1	0.96	0.94	0.96	0.89
	PR2	0.93			
	PR3	0.95			

In addition, the composite reliability and Cronbach's alpha value were evaluated to determine the internal consistency of the reflective structure (between 0 and 1), the higher values represent higher reliabilities. In conclusion, all of these constructs are reliable because their respective composite reliability and Cronbach alpha values are above the threshold of 0.70. Again, the convergent validity was also met as all the AVE values were all above 0.50. Furthermore, to ascertain the discriminant validity, Duarte and Amaro (2018) proposed the use of multitrait-multimethod (HTMT) matrix as a more adequate and sensitive approach to detecting discriminant validity.



As can be seen from the figure above, the HTMT statistics are given based on the correlation between their reflective construction items. Since the HTMT value is lower than the 0.85 threshold proposed by (Hair et al., 2017), the reflective latent variable of this study has discriminant validity.

4.1.2 Structural Model

After all the requirements of the measurement model are met, the structural model is evaluated. The first part of the structural model evaluation involves the testing of theoretical relationships.

Table 2: Structural Model

R/Ship	Beta Values	Standard Deviation	T Statistics	P Values
FR -> OBB	-0.34	0.11	2.97	0.00
PPR -> OBB	0.06	0.15	0.45	0.65
PR -> OBB	-0.51	0.12	4.32	0.00

The bootstrapping result presented in table 2 shows that FR has significant negative relationship with OBB (Beta= -0.34, P=0.00). Similarly, PR was found to have negative and significant effect on OBB (Beta=-0.51, P=0.00). On the other hand, PPR was found to have positive and insignificant relationship with OBB (Beta=0.06, P=0.65). All the hypotheses were assessed at 5% level of significance.

4.1.3 Effect size and Predictive Relevance

The effect size outlines the potential effects of specific exogenous latent variables on endogenous variables. The general criteria for evaluating $f2$ include the values of 0.02(small), 0.15(medium), and 0.35(large) (Cohen, 1988).

Table 3: *f-Square, R-Square and Q-square*

Constructs	OBB	Effect Size	
FR	0.197	Medium	
PPR	0.007	None	
PR	0.421	Large	
-Square			
Construct	**R Square**	**R Square Adjusted**	
OBB	0.442	0.413	
Q-Square			
Construct	**SSO**	**SSE**	**Q^2 (=1-SSE/SSO)**
OBB	434	355.222	0.182

As can be seen from table 3 above, based on the standards highlighted by Cohen (1988), it can be seen that PR has a large effect, FR has a medium effect size, while PPR has no effect on OBB. It also shows that all the variables accounted for 44% variance in online buying behaviour which is considered moderate according to Chin (1998). Consequently, since the Q^2 is greater than zero, it is assumed to have predictive relevance because higher Q^2 represents greater predictive relevance (Duarte & Roposo, 2010).

4.2 Discussion of the findings

The major objective of this study is to examine the effect perceived risk dimensions in online buying behaviour among undergraduate students in ABU Zaria. Results from the collected data signified that FR has significant negative relationship with OBB. These findings are in agreement with the study of (Hubert et al., 2017; Abrar et al., 2017; Ariffin et al., 2018; Tham et al., 2019) which found a negative and insignificant effect between FR and online buying behavior, and contradicts the findings of (Hong et al., 2016; Sharma & Kurien, 2017; Nepomuceno, Laroche, & Richard, 2013). Similarly PR was found to have negative and significant effect on OBB. This finding is in line with the study of (Inegbedion et al., 2016; Faqih, 2016; Fortes & Rita, 2016). On the other hand, PPR was found to have positive and insignificant relationship with OBB. The finding contradicts the findings of (Abrar et al., 2017; Almousa, 2011). This implies that the lower the financial risk and privacy risk the more students will engage in online buying and vise versa. Thus, financial risk and privacy risk are very critical in online buying behavior of university students which could lead to disengagement in online buying behaviour. While product performance risk is not significant since it can also be found in the traditional buying.

5.0 Conclusion and Recommendations

The study concludes that financial risk and privacy risk are critical factors in enhancing students to engage in online buying behavior of undergraduate students of ABU Zaria. The less the financial risk and privacy risks, the more students will engage in online buying behaviour. Therefore, the study recommends that online vendors and policy makers should try to restore confidence in the fear of exchange in online buying behavior by improving digital payment infrastructure, product exchange, guarantees of the products, and money refunded in case of faulty products ought to be addressed vigorously. Campaigns should also be done to educate consumers on online shopping to lure in more shoppers. This is because consumers are more likely to make online purchases if they feel their security and privacy provided by online vendors are adequate. Lastly, this study contributes to online buying behavior literature by documenting the effect of perceived risks dimensions in online buying behaviour of undergraduate students.

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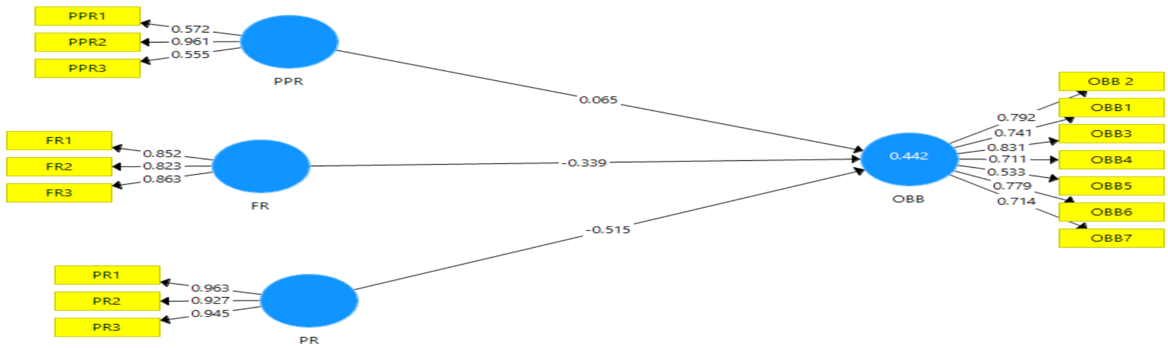
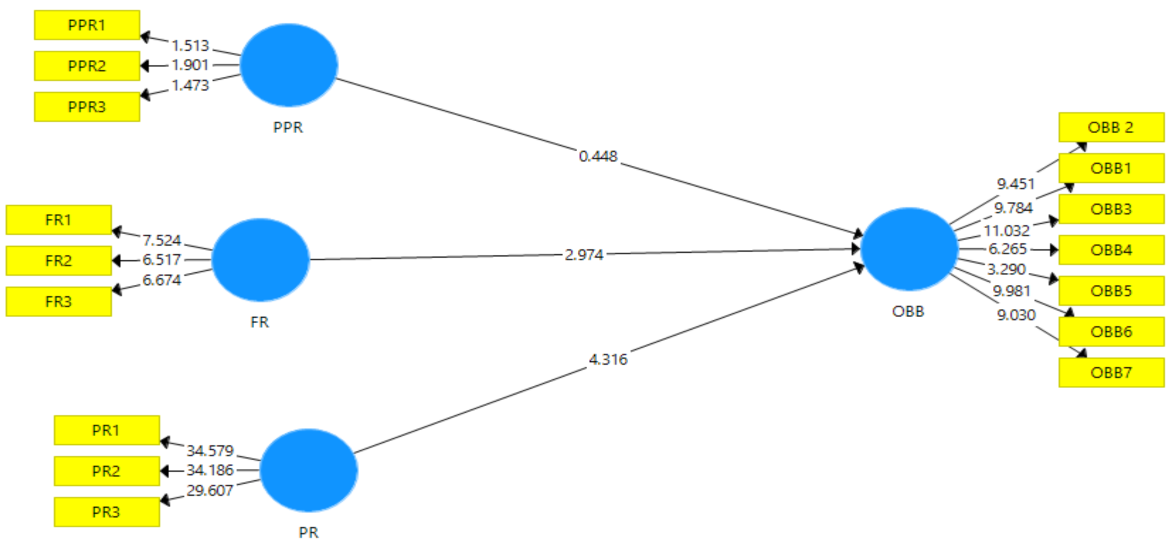
Appendices

PLS Algorism



Structural Model



Effect of Balance Psychological Contract on Turnover Intention of Health Workers in Kano State

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Abstract
The study assessed effect of balance psychological contract on turnover intention of Health workers in Kano State. Cross sectional survey research design was adopted for the study. Data were generated from primary source. The instrument of the primary data collection used was structured questionnaire. Data were analysed using descriptive and inferential statistical tools. Copies of structured Questionnaires were administered on a sample of 357 respondents were selected from 4812 target population of health professionals in Kano State Hospitals Management Board. Cluster and simple random sampling techniques were used in selecting respondents from 40 secondary health facilities cutting across 14 zonal offices under the board. Partial Least Squares (PLS) path modeling using the smartPLS3 statistical software revealed that, balance psychological contract was found to have positive (Beta value = 0.373 t-value = 5.638 & p value =0.000) and significant effect on turnover intention among health workers in Kano State. It was recommended that, Kano State government should give priority to ensuring the fulfillment of health workers ' balance psychological contracts through internal opportunities for jobs training to prepare them for future individual and organisational needs, provide more opportunities for health workers' skills development, and support health workers to attain the highest possible levels of performance in their respective facilities.

Key words: *Balance psychological contract, Turnover intention, Health workers, Social Exchange, Reciprocity.*

1.0 Introduction

Turnover intention is one of the major determinants of turnover behaviour (quitting behaviour). It is an individual desire or willingness to quit or leave an employer organisation, it is not just intending to quit the location, but the work role, the job, and also the organisation. Turnover intention starts when an employee is thinking about leaving an organisation, finding another alternative, and finally having a turnover intention (Carmeli & Weisberg, 2006). If such alternatives do not exist, employees may involuntarily stay in their jobs, which lead to the problem of a change in attitude and effort and a possible decline in performance (Özbağ, Ceyhun , & Çekmecelioğlu, 2014). For people who stay on the job because of a lack of an attractive alternative, it leads to lower productivity and effectiveness at work (Maslach et.al, 2001). It can also lead to work overload, mistrust, disruption in a workflow, and further turnover (Wagner, 2010; Miller, 2010). When employees leave, organisations lose their knowledge, skills, and abilities which can have a detrimental impact upon organisational effectiveness which may jeopardize the operations of the organisation.

A psychological contract is a set of beliefs held by an individual employee about the terms of the exchange agreement between the employee and his/her organisation (Rousseau, 1989) and an exchange concept providing a broad explanatory framework for understanding employee-organisation linkages (Argyris, 1960; Schein, 1980). This means that it involves perceptions regarding the ways one party expects the other party to behave towards it. This kind of contract is developed from interactions between an organisation and its employees.

The term psychological contract implies that the individual has a variety of expectations of the organisation and that the organisation has a variety of expectations of him (Armstrong, 2014). These expectations not only cover how much work is to be performed for how much pay, but also involve the whole pattern of rights, privileges, and obligations between workers and organisations. Accordingly, expectations such as these are not written into a formal agreement between employees and organisations, yet they operate powerfully as determinants of behaviour (Denisi & Griffin, 2005; Gabriel & Jonathan, 2012). These beliefs are predicated on the perception that a promise has been made (of employment or career opportunities) and a consideration offered in exchange for it (accepting a position, foregoing other job offers), binding the parties to some set of reciprocal obligations (Rousseau & Tijoriwala, 1998). Psychological contract could either be transactional, relational, transitional or balance. The balanced psychological contract is found in a dynamic and open-ended employment relationship based on the business success of the employer's organisation and the employee's career opportunities for advancement based on skills and performance (Yusuf, 2021).

Effective health care service delivery is a crucial element in nation-building, this could only be achieved where there are competent, skilled, enough, and satisfied health workers such as medical doctors, Nurses, Midwives, Medical laboratory professional, pharmacists, etc who can deliver effective health care services and improve the health standards. However, a shortage of qualified and skillful psychologically satisfied and committed medical officers has continued to raise concerns about the ability of our health sector to deliver effective health care services to our rapidly growing population. This has led to a turnover and the brain drain of the Nigerian trained health workers.

World Health Organisation (WHO, 2006) reports that the world does not have sufficient health personnel estimating that, about 4 million health workers are needed to fill the gap in the global human resources of health. The number of health workers per thousand populations in 2006 was estimated at 2.9/1000 in Africa; 5.8/1000 in Southeast Asia; 14.9/1000 in the USA and 40.3/1000 in Europe (WHO, 2006). Therefore, among a major global challenge is the retention of health workers not only in poorer countries like that of Africa but practically everywhere in the world.

The population of Africa in 2020 was 1.3b, based on the UN estimates which constitute 18.2 percent of the world's population (Worldometer, 2020) with a 27th poorest country out of 28 globally. As of 2015, the average poverty rate stood about 41 percent. Consequently, the literacy level and the health status of the continent have been low compared to other continents of the world. For instance, going by the recommendation of the World Health Organisation (WHO) of one doctor per a population of 5,000 people, about 10 African countries have one doctor to 30,000 or more people (Schrecker & Labonte, 2004). Consequently, most African countries face severe shortages of health workers and this is not unconnected to factors such as quality of health infrastructure, number, and workload of health workers, salaries and intangibles such as the fulfillment of psychological needs of workers that influence the decisions of health workers to leave or to stay. Besides, the dearth of skills, high turnover rates, and poor motivation as well as low job satisfaction, differential conditions of service, remuneration, and work environment; negative attitude to work, and poor supervision are contributing to inequitable access to health care services to the disadvantage of lower levels. Operating within the difficult milieu described above is the health worker, a critical part of the health system and perhaps the most essential of the health sector's resources, whose satisfaction and effective utilisation enhances the efficiency and effectiveness with which all the other resources used relied upon (WHO, 2006; Wagner, 2010).

Nigeria had a doctor-population ratio of 1:24,607 in 1979 with a population growth rate of 2.3 percent per annum (Mbanefoh, 1992) and in 2018 Nigeria has 36.6 medical doctors per 100,000 persons which are below WHO recommendation of 1:600 doctor/patient ratio.

It has been estimated that in 2005 the public sector in Nigeria had about 17,800 doctors, 122,000 nurses and midwives, and 86,600 community-level health staff (CHOs/CHEWs). This translated to 0.13 doctors, 0.92 nurses and midwives, 0.10 pharmacists, and 0.64 CHOs/CHEWs in the public sector per 100, 000 population. Generally, it is estimated that about 75% of health professionals practicing in Nigeria are employed by the public sector. Based on this assumption, it has been therefore estimated that there were in total 22,250 practicing physicians (public and private sector combined) in Nigeria in the year 2005, which brings the density of physicians per 100, 000 population to 0.15. In comparative terms, Nigeria in 2005 had total health workers of 253,385 to cater for a population of 136,032,236 in comparison to that of South Africa which had health workers of 319,992 to cater to a population of 45,214,001.

It has been further argued that each year substantial numbers of health workers leave the health workforce, either temporarily or permanently. These exits can provoke shortages if workers who leave are not replaced, and such shortages compromise the delivery and quality of health services. According to the National Strategic Health Development plan 2009-2015, "the health indicators in Nigeria have remained below the country's targets and internationally set benchmarks which have recorded very slow progress over the years. The health status indicators for Nigeria are among the worst in the world. Life expectancy at birth is 49 years while the disability-adjusted life expectancy at birth is 38.3 years; vaccine-preventable diseases and infectious and parasitic diseases continue to exact their toll on the health and survival of Nigerians, remaining the leading causes of morbidity and mortality (FMoH, 2009).

Since the year 2009, Nigeria has been losing an average of 700 medical doctors annually to Europe, America, Australia, and South Africa. It has been reported that 864 doctors left their jobs from Nigeria to abroad in the year 2012. In the year 2013, 699 doctors requested letters of good standing out of whom the highest number 243 went to the United Kingdom, 147 went to Canada, and 81 went to South Africa, 71 to Australia, and 47 to the United States. The peak of 3,500 Nigerian medical doctors leaving their jobs was recorded in 2007 (Omoluabi, 2014). Doctors are not the only health professionals leaving their jobs, nurses and midwives left the country in droves, with turnover peaking at over 5,000 departures annually between the years 2002 and 2005, when Nigeria lost more nurses than it produced (WHO, 2006).

It is well-acknowledged fact that Nigeria's health workers are geographically mal-distributed in favour of urban areas and Southern Nigeria. Factors such as overall level of development, quality of health infrastructure, number and workload of health workers, salaries, and intangibles influenced the decisions of health workers to leave or to stay (FGN, 2013). Apart from these, the current state of insecurity in some states in Northern Nigeria such as the North-East zone, Zamfara State, etc. is contributing to their inability to attract medical doctors to their health facilities.

Nigeria's health workforce profile has shown the density of medical doctors in some states, highlighting the terrible disadvantage of the Northern States in the area of health workers. Lagos State and the FCT have 10 -15 times the number of doctors in ten Northern states in Nigeria. When Kano has 6.1 ratios of health workers per 100,000 populations, states like Lagos had 503: 100,000 populations (FGN, 2013). Furthermore, in the year 2006, Kano has a population of 9,383,682 has a total number of physicians of 234 while Lagos State had a population of 9, 013,534 with several physicians of 3705 with a ratio of 1: 2,433 which is about twenty times more than that of Kano State which gives a ratio of 1: 40,101 populations. This cannot be unconnected to a high rate of turnover and the low job satisfaction of health workers coupled with the unfulfilled psychological contract of the health workers in some of these states. In 2006, Kano State with a population of 9,383, 682 (NPC, 2009) had 234 medical doctors, 1001 Nurses, 275 Pharmacists, and 374 Community Health Officers working in public hospitals which accounted for a ratio of 2: 100,000, 11: 100,000, 3: 100,000, and 4: 100,000 respectively which is quietly below the African average as well as that of Nigeria's average ratio per 100,000 population (FGN, 2012) as earlier highlighted.

Despite the efforts by the government to address the factors that lead to turnover among health workers; still, there is a disproportionate distribution of health workers among the six geopolitical zones in Nigeria. For instance, Lagos State and the FCT (82: 100, 000) have 10-15 times the number of doctors in ten Northern Nigeria states including Zamfara (2.7: 100,000), Katsina (2.0: 100,000), Kebbi, Jigawa, Bauchi, and Niger. North West has a physician of 8.59 ratio of health workers to 100,000 populations with 26% percentage of Nigeria's population. North Central has a Percentage of 9.73 health workers with 14 % of the country's population. North East Percentage of 4.06 with 14 % of the country's population. While South West, Percentage, is 43.9 with 20% of the country's population. South East has 19.59 physicians and accounting only for 12% of the population. South-South has 14.37 with a percentage contribution to the country's population of 15 %. Kano, in particular, has 6.1 ratios of health workers per 100,000 populations while states like Lagos had 503: 100,000 populations (FGN, 2013).

While commenting on the inadequacy of the health workers and the density of healthcare workers in Kano State, Gadanya was quoted to have lamented that, as of January 2017, Kano State had a total of 359 medical doctors which amount to a density of 2.8 per 100,000 populations while the density for nurses and midwives stood at 8.0 and 5.9 per 100,000 populations, respectively. In further highlighting on the phenomena, he said based on these statistics, the median density for the three cadres in Kano is 5.6 per 100,000 populations which he described as substantially below the minimum requirement of 2.28 per 1,000 populations, as stated in the World Health Report, and therefore an issue of great concern. He stated that the sub-optimal health care workers (HCWs) patients' ratio affected the provision of essential healthcare service adding that whereas about 80% of Kano's population live in rural areas, only about 26% of the healthcare workers in the state live in rural areas (African news page, 2018).

The commissioner also argues that, in many parts of the state, there are many employed but under-utilized healthcare workers who can be trained to improve competency around health priority areas which is an effort from the employer of health workers (i.e. government) to improve the skill development of the workers (i.e. balanced psychological contract) and given specific responsibilities for the care of citizen of Kano (i.e. developmental opportunities of the health workers within organisation).

Several types of research were conducted on the effect of psychological contracts on employees' behaviour, and attitude in the work environment such as job satisfaction, organisational commitment, turnover intention, and organisational citizenship behaviour as earlier highlighted. Such researches include Robinson and Rousseau (1994), Turnley and Feldman (1999), Tekleab and Tayloy (2003), Lo and Aryee (2003), Suazo (2009), and Umar, (2016). These studies found that the perceptions of organisational violation or breach of psychological contract were positively related to employee turnover intentions and or actual turnover. However, most of these researches were conducted in private sector organisations and mostly in advanced countries of the world where there is relative economic advancement and relative working environment compared to the economic situations in Africa in general and Nigeria in particular with the poor economy and poor working environment. The central question to ask is to what extent does balance psychological contract affect turnover intention of health workers in Kano State? To achieve this the study is set to assess the effect of balanced psychological contract on turnover intention of health workers in Kano State. In view of the above the study hypothesised that, balanced psychological contract has no significant effect on turnover intention of health workers in Kano state.

2.0 Literature Review and Theoretical Framework

2.1 Balanced psychological contract:

The term psychological contract explains employment relationship and generally refers to unwritten expectations that influence the ways that employees and managers operate. By defining the psychological contract more explicitly, researchers began to focus on the subjective and individualised nature of the employee’s perception of the organisation, promises, and obligations of the employer (Burgess, & Mani, 2018). Argyris (1960) was the first to utilise the term psychological contract.

Definitions of psychological contract may vary but, there is some general agreement concerning the features or nature of the psychological contract. The general consensus appears to be that, the psychological contract is promissory, implicit, reciprocal, perceptual, and based on expectations (Sambrook & Wainwright, 2010). Psychological contract as promissory can be defined in relation to the promises that employees believe were made to them by their employer probably prior to entering the organisation. Also, the psychological contract when defined as implicit is such that, it is unspoken, unwritten, and often only becomes apparent when it is breached, causing feelings of violation.

More so, the psychological contract enables the human side of organisation to function smoothly and is particularly important in a time of uncertainties and risks such as during corporate restructuring (Morrison, 1994). Psychological contracts act in a similar manner to hygiene factors. Good contracts may not always result in superior performance but poor contracts tend to act as de-motivators and can be reflected in the lower commitment and heightened absenteeism and turnover (Sparrow, 1996). Psychological contracts help to accomplish two tasks i.e. it helps to predict the kinds of outputs employers will get from employees, and predict what kind of reward the employee will get from investing time and effort in the organisation (Sparrow & Hiltrop, 1997).

Rousseau (1995) theoretically identifies four types of psychological contracts based upon the dimensions of 'time frame' and 'tangibility' to include a transactional, a relational, a balanced or team player, and a transitional psychological contract. The balanced psychological contract means an open-ended employment arrangement conditioned on the economic success of the organisation and the employee's opportunities to develop his/her career advantages (Rousseau, 1995). It is likely to be found in a high-involvement team with high member commitment, high integration/identification, ongoing development, mutual support, and dynamic of nature (Van den Brande, Janssens, Sels, & Overlaet, 2009).

Balanced psychological contracts are open arrangements with both parties contributing to each other's learning and development, conditioned on the economic success of the employer and characterised by external employability, internal advancement, and dynamic performance. Rousseau (2000) perceived external employability as career development on the external labour market where the employee has an obligation to develop marketable skills and the employer has committed to enhancing worker's long-term employability outside the organisation as well as within it. Internal advancement refers to career development within an internal labour market. The employee is obligated to develop skills valued by the current employer and the employer has committed to creating worker career development opportunities within the firm. Dynamic performance, on the other hand, involves an employee's obligation to successfully perform new and more demanding goals which can change again and again in the future to help the firm become and remain competitive. At the same time, the employer is committed to promoting continuous learning and helping employees successfully execute exciting performance requirements.

2.2 Turnover Intention:

The term turnover is defined as, the ratio of the number of organisational members who have left during the period being considered divided by the average number of people in that organisation during the period (Price, 2006). Labour turnover is also the flow of manpower into and out of an organisation (Fapohunda, 1980). The inflow of manpower is referred to as accession and the outflow is separation (leaving). Separation may be in the form of quits, discharges, lay-offs, retirement, leaves of absence, and even death. Accession, on the other hand, has to do with replacements and new hires. Labour turnover is one of the unorganized forms of industrial conflict. It is a retreat by employees usually from unsatisfactory situations.

Willard, (2013) argues that turnover intention is considered as part of a sequence in the psychological withdrawal of an employee from the job process. Scholars have argued that generally most employers do not pay serious attention to this concept, but rather dealing with the actual turnover, which is a manifestation of the intention to leave. In addition, it is difficult to gain access to people who have already left to determine why they really quit, thus making the study of intention to quit more appropriate than actual turnover.

In a bid to develop a comprehensive model for turnover intention Mobley, (1977) cited in Lee (2013) pioneered a comprehensive explanation for the psychological process underlying withdrawal. According

to his withdrawal decision process, dissatisfaction leads to thoughts about quitting. There are a number of possible mediating steps between dissatisfaction and actual quitting. First, one of the consequences of dissatisfaction is to inspire thoughts of leaving. These thoughts, in turn, stimulate consideration of the expected utility of a job search and the costs of quitting. The next step would be the behavioural intention to search for an alternative. The intention to search is followed by an actual search. If alternatives are available, an evaluation of these alternatives is initiated. The evaluation of alternatives is followed by a comparison of the present job to the alternatives. If the comparison favours the alternatives, it will inspire a behavioural intention to quit, followed by actual withdrawal.
It has been argued that salaries and conditions of service, job performance, career growth, work environment, job satisfaction, supervisory style, promotional opportunities, employee commitment, and many other factors all play a significant role in shaping employee turnover (Mobley, 1982). As such employee turnover is the outcome of push and pulls factors that come into play during the employment relationship. As Jafari (2011) observes, “in the turnover process everyone usually points out one factor for their turnover choice, but there are always more factors on the backhand that works as driving force for that factor”.

Numerous research results show that job satisfaction is found to be significantly and negatively related to turnover intentions (Callier, 2011). It has also been noted that a poor relationship between leaders and subordinates can cause employees to lose satisfaction with their jobs. In fact, the number one reason people quit is that they are treated poorly by their bosses. Those who remain in their jobs, working for poor bosses, have lower job satisfaction, lower commitment, psychological distress, and subsequently high turnover intentions. A reward has also been cited by many scholars as a strong predictor of employee retention and turnover intentions (Armstrong, 2014). As scholars argue (Samuel & Chipunza, 2009; Mobley, 1982), money is a motivating factor for employees in organisations and serves as a basis upon which individual employees assess the value their employer places on them.

Few studies were carried out on psychological contract and turnover intention of health workers. Among these are the studies of Bonilla, (2018) studied the Fulfillment of the employee psychological contract in a healthcare system: Does it drive employee engagement and reduce turnover intention? The purpose of this study was to evaluate perceptions of a healthcare system’s employees to discern whether the impact of employees’ psychological contract fulfillment affects business outcomes. Using social exchange theory and evaluating employees’ attitudes toward their employer based on the tenets of psychological contract theory, the data analysis was completed using linear regression and a hierarchical multiple linear regression. The study showed that employees claiming PCF impacted employee engagement and those with the strongest fulfillment tended to have the highest level of engagement. Engaged, fulfilled employees were less inclined to claim turnover intention and that employee engagement is a significant negative predictor of turnover intention. The study recommends that industry should have an insight into employee perceptions about their employer relationship, and related business outcomes during a time of intense competition for talent, rising compensation and benefits costs for employers, and the need to meet the insatiable expectations of today’s disloyal workforce. Also, companies should develop the ability to deliver on employees’ PCF as it is causally linked to higher levels of engagement and the reduction of turnover intention.

More recently a study carried out by Yusuf, et al (2021) examined effect of transactional psychological contract (TPC) on turnover intention of health workers in Kano State Hospitals Management Board (KSHMB). Data for the study were generated from primary and secondary sources. The instruments of the primary data collection used was questionnaire while secondary sources made use of annual reports, gazettes, papers presented at workshops. Data were analysed using descriptive and inferential statistical tools. Partial Least Squares (PLS) path modeling using the smartPLS3 statistical software revealed that, TPC has positive but a weak effect on turnover intention among health workers in Kano State. It was recommended among other things that; Kano State government should give concern for health workers short-term and long-term wellbeing. This could be through provision of stable wages without undue salary underpayment, ensure fulfillment of the effective delivery of government promises to the health workers, as well as timely payment of retirement benefits. The study primarily focused on the transactional dimension of psychological contract of health workers which is quite different from the balanced dimension of the psychological contract which is the focus of the current study.

2.3 Theoretical Framework:

Social Exchange Theory (SET) by Homans (1958) served as the theoretical framework for the study. SET is based on concepts of equilibration, expectancy, and distributive justice in dyadic exchange. SET was built on five key propositions developed that assist in structuring individuals' behaviour based on rewards and costs as: first, the Success Proposition states that behaviour that creates positive outcomes is likely to be repeated. Secondly, The Stimulus Proposition believes that if an individual's behaviour is rewarded in the past, the individual will continue the previous behaviour. Third, The Value proposition believes that if the result of a behavioural action is considered valuable to the individual, it is more likely for that behaviour to occur. Fourth, the Deprivation-satiation proposition believes that if an individual has received the same reward several times, the value of that reward will diminish. Finally, Emotions occur due to different reward situations. This assumes that, those who receive more than they expect or do not receive anticipated punishment will be happy and will behave approvingly. The social exchange theory can be used to understand workplace behaviour. It suggests that psychological contract is a major employment relation that leads to emotional or affective response by an employee which is expected to predict employee turnover intentions.

It is pertinent to note that based on SET assumptions, social behaviour as a series of exchanges, Individuals attempt to maximise their rewards and minimise their costs; and when individuals receive rewards from others, they feel obligated to reciprocate. Negotiated exchanges between parties i.e. the employee and the employer is based on the expectations that inputs will lead to a proportionate outcome, and that, social relations (employment relationships) are formed by the use of subjective cost-benefit analysis and the evaluation of alternatives. Therefore, the SET laid the basic foundation for understanding the balance psychological contract. When individuals receive the fulfillment of their psychological contract from their organization, they feel obliged to respond in kind and repay the organisation, this leads to balance psychological contract from both the employee and the employer. This is a description of engagement as a two-way relationship between the employer and employee; this is what brings about a psychological contract. One way for individuals to repay their organisation is through their level of engagement. The more engaged the employees are to their work, the greater amounts of cognitive, emotional, and physical resources they will devote to perform their job duties. When the organisation fails to provide economic resources, the employees are more likely to be dissatisfied with their job and hence develop an intention to withdraw and disengage themselves from their roles or the organisation.

Furthermore, social exchange in the workplace assumes mutual obligation based on exchanges between parties (health workers and Kano State Hospitals Management Board). The exchanges at work are often governed by reciprocity norms such that when health workers receive something from their organisation, they feel compelled to reciprocate, typically in kind (i.e., positively or negatively). For instance, SET assumes that rewards and costs drive relationship decisions. Parties in an employment relationship take responsibility for one another and depend on each other. The cost is something of value that is given up; it can also be the withdrawal of a reward or punishment such as time, efforts, money, etc that a party gives up in exchange for rewards which is termed as profit (money, services, efforts, etc) this is more of the balance psychological contract.

Employees expect rewards that they receive in exchange for their contributions (e.g., training, promotions, and career development opportunities etc). If an imbalance between inputs (efforts) and outcomes occurs, individuals are likely to reduce the discrepancy by adjusting their attitudes, contributions, or outcomes to restore the balance between the two ratios. This means that an employee's effort in the organisation should be commensurate with the expectation he has from the employer otherwise it will lead to unmet expectation which leads to turnover intention.

3.0 Methodology:

A cross-sectional survey research design was used. It is the most common research design used in various studies in human resource management most especially psychological contract and turnover (Rousseau, 2000; Antoki & Trivellas, 2014; and Umar, 2016). The population for the study is the staff of Kano State Hospitals Management Board (KSHMB), The population of the staff of KSHMB is 9402 (KSHMB annual budget, 2020), however, due to the nature of the study which is limited to professional health workers in Kano State, the target population is the health professionals serving under the KSHMB which is 4812 cutting across the 40 facilities under the board cutting across all sub-disciplines in the health sector. The sample size was determined by using Krejcie and Morgan's (1970) table which greatly simplified the process of sample size determination. According to this table, the sample size for a given population of 4812 is 357.

Ten zones were randomly selected from the existing fourteen zones for the administration of questionnaires to respondents. One facility from each zone was selected at random and respondents from the sampled facilities were selected through a simple random sampling technique. Cluster sampling technique was employed to select one facility in each zone and a simple random sampling technique was employed to select respondents from the selected facilities. A structured questionnaire was used in data collection using a closed-ended five Likert scale of strongly agree, agree, undecided, disagree, and strongly disagree to recognize the degree of intensity in the respondents' feelings and perceptions, this is for easy coding; tabulation, and subsequent analysis.

3.1 Measurement of Turnover Intention: The Turnover Intentions Scale was developed as part of the Michigan Organization Assessment Questionnaire (Cammann, Fichman, Jenkins, & Klesh, 1979). However, Ncede (2013) adapted the scale with a four scale. Therefore, in this study, the turnover intention was measured using a questionnaire adapted from Ncede, (2013) where four items were used to measure turnover intention. First, the intention of leaving the job in the next three months, intention of leaving the job in the next six months, intention of leaving the job sometime in the next year, and intention of leaving the job in the next two years. The respondents were asked to rate their turnover intention using the scale of Very Low, Low, Uncertain, High, and Definite. Ncede (2013) obtained the value of a Reliability statistic for turnover intention with the Cronbach's Alpha 0.924 for the 4 items. Therefore, the study adopted the four items from Ncede, (2013) of turnover intention to measure the construct. Turnover Intention in this study has a Cronbach's Alpha of 0.818 and convergent validity of 0.879 as presented in table 2 under the discussions.

3.2 Measurement of Balanced Psychological Contract

The PCI measures a balanced psychological contract from three dimensions of external employability, internal advancement, and dynamic performance assessed from the employee and the employer obligations perspectives. There were five sets of questions for the three dimensions and from both the employee and the employer side making it six sets of items. Balance psychological contract has a Crombats' Alpha reliability of 0.899 and convergent validity of 0.918 which is above the rule of thumb 0.70, this was presented in table 2.

4.0 Data Analysis and Interpretation:

Data collected were presented and analysed. The analyses of the measurement model through construct validity and internal consistency reliability analysis of measures used were presented and the structural model for testing direct relationships between BPC and TI was carried out using the Smart PLS3 approach. 357 questionnaires were administered to sample respondents, 305 questionnaires were successfully filled and returned making an 85% response rate which falls above the range of common response rate of 40-50% in social science study in Nigeria (Linus, 2001)

4.1 Normality Test

Normality is the mainly significant postulation in multivariate analysis (Tabachnick & Fidell, 2007; Hair et al., 2010). Accordingly, all the two; the univariate and multivariate normality were examined, the Skewness and Kurtosis of all the items are within the acceptable range of < 2 and < 7 respectively. For instance, skewness values are less than 2; similarly, the kurtosis values, are less than 7. Perhaps this is in line with the examination of Tabachnick and Fidell, (2007). Homoscedasticity test is related to the assumption of normality, if the data is fairly normal, then the relationships between the variables are assumed to be homoscedastic and, thus, heteroscedasticity is absent (Tabachnick, & Fidell, 2007). Both the multivariate and univariate normality is confirmed in this study, which enables us to conclude that the assumptions of homoscedasticity, and, the absence of heteroscedasticity are achieved.

4.2 Multicollinearity

Multicollinearity is a dilemma that happens when the independents variables are extremely interrelated to as high as 0.9 and above (Tabachnick & Fidell, 2007). If the multicollinearity problem is detected, it can be resolved by deleting the offending variable(s). Multicollinearity was screened using Variance Inflation Factor (VIF). The general rule of the cut-off points is that the VIF values should not exceed 5 (Hair et al., 2016). From table 1 VIF is within the accepted limits and, thus, is good enough and consequently, it is concluded that there is no multicollinearity problem among the exogenous variables.

Table 1 ***Collinearity (VIF)***

Constructs	VIF
TO_INT	2.524
Bal-Psy_Cont	3.913

Source: SPSS Output, 2021

4.3 Assessment Model:

The study used PLS structural equation modeling (SEM) to calculate approximately its theoretical model using the software application SmartPLS 3. In PLS analysis, the first step is to evaluate the measurement model consisting of validity and reliability (Ramayah, Lee, & In, 2011). Reliability test assessed how consistently measuring tools measures the idea believed to measure, on the other hand, validity tests try to assess how sound an instrument measures an exacting concept it is designed to measure (Hair et al, 2010; Sekaran & Bougie, 2009).

Furthermore, the outer model is evaluated by the particular item internal consistency reliability, construct internal consistency reliability, and construct validity. The reliability, convergent, and discriminant validity of the instruments were assessed using the methods developed for a PLS context by both Fornell and Larcker (1981). In PLS analysis, the projecting power of an individual model is evaluated by the R squared (R2) figures of the endogenous constructs or latent variables, as well as ascertaining the standard path coefficient for each association from exogenous variables to endogenous variables. The R2 values signify the sum of variance in the construct that is explained by the model (Hair et al, 2013).

4.4 Individual Item Reliability of the Measurement Models of Health workers in Kano State

The study further assessed the individual item reliability and other measurement model assessments was presented in table 2 for the individual item or factor reliability of reflective constructs and determined using the outer loadings of each construct's indicators (Hair *et al*., 2012). To establish convergent validity, the factor loading of the indicator and the average variance extracted (AVE) have to be considered. The value ranges from 0 to 1, and the AVE value should exceed 0.50 so that it is adequate for convergent validity, where the construct is assumed to have convergent validity when its items or indicators are converged or share a high proportion of variance (Hair *et al.*, 2014).

Table 2: Measurement Model: Reliability and Convergent Validity N305

Constructs	Items	Loadings	CA	CR	AVE
Bal-Psy_Cont	EDP_2	0.658	0.915	0.93	0.518
	EDP_3	0.636			
	EDP_4	0.855			
	EDP_5	0.854			
	EEE_2	0.861			
	EEE_3	0.59			
	EEE_4	0.615			
	EID_1	0.332			
	EID_3	0.783			
	EID_4	0.579			
	EID_5	0.86			
	EMPDP_1	0.87			
	EMPEE_1	0.641			
Turn-Int	TO_INT1	0.848	0.87	0.911	0.72
	TO_INT2	0.863			
	TO_INT3	0.813			
	TO_INT4	0.869			

Source: Smart PLS computed Output

As seen from table 2, the indicators have loadings of 0.50 and above. Therefore, based on the criterion given by (Hair *et al*. 2014), all the items are reliable to measure their respective reflective latent construct.

4.4 Assessment of the Structural Model

Under the structural model, the study tested the hypothesis of the study, determined the coefficient of determination, effect size, and the predictive relevance of the model Specifically, a standard bootstrapping procedure was employed using several 5000 bootstrap samples for 305 cases to assess the significance of the path coefficients of direct relationships (Hair *et al*., 2014; 2017) this empirically examined the direct relationships between independent variable (BPC) and the dependent variable (TI). The null hypothesis states that, balance psychological contract has no significant effect on turnover intention among health workers in Kano state". The result of the study shows that the balance psychological contract was found to be positive (Beta value = 0.373 t-value = 5.638 and p-value =0.000) and significantly related to turnover intention among health workers in Kano State. Having tested the hypotheses, it is equally important to assess the effect size of each endogenous variable on the exogenous. F square *f2*value is used to determine the effect size, as a rule of thumb *f2* values of 0.35, 0.15, and 0.02 are considered large, medium, and small, respectively. Based on the results, BPC has effect size of 0.09 on TI which is considered small based on the rule of thumb.

This hypothesis expressed that balance psychological contract has a positive effect on the turnover intention of health workers in Kano State as unit increase in balance psychological contract leads to change in turnover intention by 37.1 %. The result is consistent with the studies of Umar, (2016) whose findings revealed that balanced psychological contract has a more negative significant influence on employee turnover intention in the Nigerian deposit money banks than other (transactional and relational) dimensions of the psychological contract that have no significant influence on turnover intention.

5.0 Conclusion and Recommendation

Social exchange theory suggests that the underlying process of social exchange relationships relies on the norm of reciprocity whereby individuals reciprocate benefits received such that over the course of time, there is a cycle of benefits received generating an obligation to reciprocate in discharging obligations through the provision of benefits and so on. Therefore, to fulfill the balance psychological contract of health workers KSHMB in collaboration with Kano State government should exert their maximum efforts in the discharge of their obligations, and reduce the adverse effect of turnover intention of health workers in State.

Based on the data presented, analysed, and the findings revealed, the study recommends that, Kano State government should give priority to ensuring the fulfillment of health workers ' balance psychological contracts through internal opportunities for jobs training, this should not be limited to the workers' current job but preparing them for future individual and organisational needs. Provide more opportunities for health workers' skills development, and support to attain the highest possible levels of performance in their respective facilities. This will ensure psychologically satisfied employees and employers for effective work relationships.

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Adaptability of Artificial Intelligence (AI) Technology in Project Management Tasks: An Exploratory Study of Northern Nigeria Projects

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Abstract
The discipline of Project Management (PM) like most other professions evolves with changes in technological advancement. The adoption of Artificial Intelligence (AI) technologies in PM is assuming a phenomenal dimension, but unfortunately low, in Northern Nigeria projects. This study therefore, aims at evaluating the adaptability of AI technologies into PM tasks in the region's projects. This research adopted qualitative research method, in which a semi-structured questionnaire was issued to 384 respondents made up of Project Management Officers/Directors, Project Managers, Program Managers, Project Officers, Junior Project Managers in North-East, North-West and North-Central geo-political zones of Nigeria, and out of which 241 responded representing 62.80% response rate. Data analysis was by means of both descriptive and inferential statistics. Study results showed that 'tasks prioritization' and 'delivery of untiring objectivity and vigilance' ranked highest amongst identified AI roles, whereas, 'need to build soft-skills on areas of AI deficiency, possession of digital-knowhow, data-science, digital security and privacy knowledge' ranked highest among critical competences that drive the future traits of Project Managers for AI adoption. The study concludes that interface between AI technologies and Project Management would improve project success of Northern Nigeria projects. The study recommends the strengthening of institutional frameworks by government and built environment professional bodies to promote the application of Artificial Intelligence technologies in Project Management tasks.

Key words: *Adaptability, Artificial Intelligence, Northern Nigeria, Project Management*

1.0 ntroduction

Artificial intelligence is viewed as one of the most researched and developed technological fields in this digital era. From Smart Personal Assistant (SPA) to the self-driving vehicle (SDV), AI is swiftly making its way into real world application and has progressed at an exponential pace (Butt, 2018). Technology is employed by many human life sectors to achieve efficiency and effectiveness thus, enabling management to be dependable, secure and acquiescent. AI also augments human capabilities by helping project managers in the administration of different projects with limited available resources (Elrajoubi & Minh, 2021). Also, there exists specific Project Management AI software that performs the daily management of project activities and administration without human intervention (Project practical, 2021). Tasks undertaken by AI includes but not limited to speech recognition, computer vision, translation between natural languages, and mapping of inputs. AI has been deployed in special applications to solve specific industry and academic challenges. In sum, AI technology can be likened to computers and electricity and perceived to be a general-purpose technology with numerous application support systems.

The discipline of project management like most other disciplines evolves with changes in technological advancement. Currently, digital technologies of sorts have emerged with emphasis on global megatrends (GM), artificial intelligence (AI), and machine learning (ML) taking over several activities of a nation's economic sub-sectors of which Project Management (PM) is not an exception. Extent literature has shown a connect between AI and project management in the following ways amongst others, namely decision making in projects, supports problem solving functions, used in project planning, improves efficiency of large volume of data usage in projects, allocation of resources and distribution of tasks, and has the potential to increase project success and mitigate project failure.

The need for an intelligent assistant with capacity to analyze vast amount of project data and information, find patterns of association among various elements of project tasks, and make superfast but accurate decisions and predictions is becoming more discerning now than ever before. Project management as a competency in Nigeria is still inundated with many traditional practices despite the numerous revolutionary changes introduced by digitalization in almost all business sectors. The seeming conservative practice of Project management amongst project management stakeholders of several development projects taking place in the mass infrastructure project provisioning of Northern Nigeria, and the quest for a revolutionary approach towards modernization precipitated by digital technology and other similar factors are the primary considerations that underpins this research. Hence, the need for an exploratory study on the adaptability of artificial intelligence in project management tasks in Northern Nigeria projects.

The aim of this research is to evaluate the adaptability of Artificial Intelligence (AI) into Project management tasks. While, the specific objectives are:

i. To access the roles of AI technologies on Project Management in Nigeria

ii. To examine the traits of future project managers with respect to AI adoption in Project Management in Nigeria.

H_0: There is no significant statistical relationship between the roles of AI Project Management on the traits of future project managers with respect to AI adoption in Project Management.

This study is particularly important to project managers working on Construction projects in Northern Nigeria as it fundamentally seeks to explore the applicability of AI in project management tasks in order to enhance project deliverables and their performance. The scope of this research work is limited to Northern Nigeria where there is a perceived low-level knowledge and adoption of AI in the management of vast project economic and physical projects in the region.

2.0 Literature Review

2.1 Conceptual Review of Artificial Intelligence and Project Management

Artificial Intelligence (AI), is defined as 'the application of advanced analysis and logic-based techniques, like machine learning, for supporting an automated decision, interpreting events, and taking action' (Olivia, 2020). Brooks et al. (2020), also views Artificial intelligence as 'the study of intelligent agents, autonomous non-human entities that can take in information from their environment and act upon their environment in a way that enables them to succeed in their goals'. Interestingly, AI has made tremendous advancement in this digital era especially in the past few years leading to the performance of some human tasks among which are: car driving, booking a meeting for an event, talking on behalf of others on audio calls etc. These are made possible by AI's subsets and techniques enhancement (Belharet et al., 2020). In a report produced by the Association of Project Management (APM) Research Fund titled 'Artificial Intelligence in Project Management', in which empirical data was collected from 280 project professionals with experience of AI technology in the UK, on AI's usefulness and future considerations for the project profession, the study revealed that AI has a high perceived usefulness in complex projects and a low ease of use. The report findings further indicated the existence of positive correlation between perceived usefulness of AI and a high-level of project complexity. Kockum & Dacre (2021) observed that 'ever since Alan Turin asked whether machines could think in the 1950s, there has been a discussion on using computers for different areas of decision making.

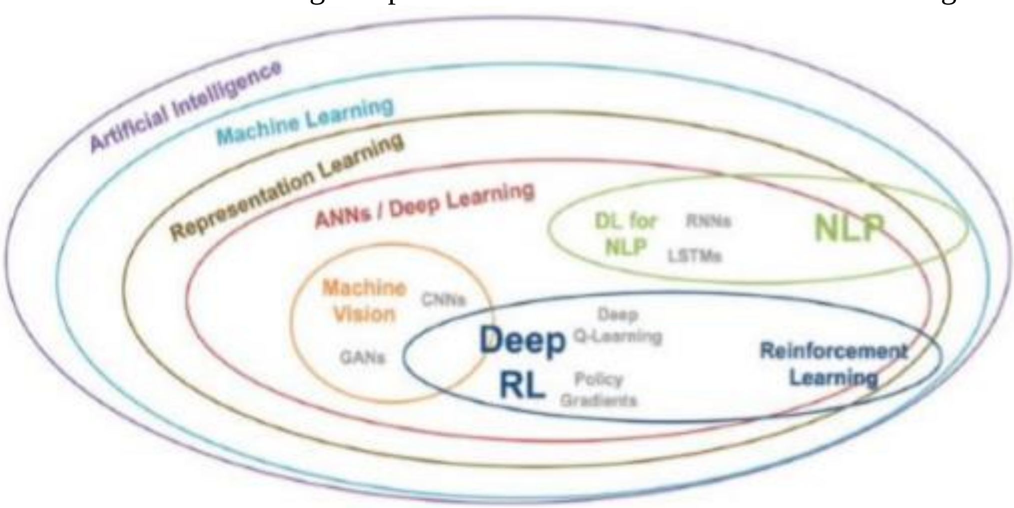

Figure 2.1: Venn diagram representing AI and its subsets. (Deep Learning Illustrated P. 86)

Project management on the other hand is defined as the application of knowledge, skills, tools and techniques to project activities to meet project requirements (PMBoK, 2017). Project management AI is regarded as an incorporated system or a machine that is capable of administering projects without human intervention and/or participation (Elrajoubi,2020). To use the power of AI, it doesn't entail tasks in an automating form but, making inference from various insights and make recommendation process, project related decisions and revealing insight to the team (Schreck et al., 2018). Among many AI tools that assist project managers to handle and administer critical tasks are: Chatbots, Stratejos, Rescoper, ClickUp, PolyOne, and Clarizen (Lahman, et al., 2018).

3.0 Methodology

This research adopted a qualitative research method in which semi-structured questionnaires was distributed to retrieve data from the target respondents.

The target population for this study includes the construction professionals that are domiciled within the Northern Nigeria such as the Project Management Officers/ Directors, Project Managers, Program Managers, Project Officers, Junior Project Managers, Project Team Members comprising Architects, Engineers and Quantity Surveyors.

The sampling frame for this study comprises of the construction professional domiciled in the Northern region of the country including the North-East, North-West and North-Central geo-political zones of which there exists infinitesimal number of construction professionals compared to the population of the area. Cochran 1977, formula for determining study's sampling size was adopted considering the infinitesimal number of construction professional prevalent in the study region, as similarly adopted by Deinne (2021) and Muhammed, et al. (2022a).

$$n_0 = \frac{Z^2 pq}{e^2}$$

Where e = precision level (i.e. the margin of error),
p = the proportion of the population which has the attribute in question,
$q = 1 - p$

$$\text{Thus,} \quad n_0 = \frac{1.96^2(0.5*0.5)}{0.05^2}$$

$$n_0 = 384$$

Therefore, the sample size for this study is 384 respondents.

A semi-structured questionnaire was issued to the target construction professionals using purposive sampling technique. The distribution of the respondents shows that the construction professionals in each region, namely- North-West, North-East and North-Central purposively received 128 questionnaires, making a total of 384. Further breakdown shows that 3 states in each geo-political zone were selected and thus, each state received 43 questionnaires. The selected states in the North-West includes Kaduna, Kano and Kebbi states, North-East comprises of Bauchi, Borno and Yobe states, while The North-Central states consist of Niger, FCT and Kogi states correspondingly. A 5-point Likert scale of multiple responses such as "1-Strongly Disagree, 2-Disagree, 3-Neutral, 4-Agree and 5-Strongly Agree" were adopted to retrieve the study data. The method of analysis includes descriptive statistics of frequency, percentage, mean index score (MIS) and inferential statistics of linear regression analysis which were adopted for the dependent and independent variables analysis.

4.0 Results and Discussions

4.1 Background of the Respondents

In line with the questionnaire distributed to 384 respondents', only 241 was properly filled and returned representing 62.8 percent. According to Kothari (2004) cited in Muhammed et al. (2022a), a response rate of 50 percent is posited to be average, 60 – 70 percent response rate is indicated to be acceptable, while 70 and above percent response rate is considered excellent. Thus, the response rate of 62.8 percent of this study is considered acceptable for analysis and drawing of inference.

Table 4.1: Demography of Respondents

Demographic	Value	Frequency	Percentage (%)
Gender	Male	196	81.3
	Female	45	18.7
Age	18 – 24	36	14.9
	25 – 34	62	25.7
	35 – 44	73	30.3
	45 – 54	53	22.0
	>=55	17	7.1
Profession of Respondents	PMO Director/Managers	29	12.0
	Project Managers	39	16.2
	Program Managers	34	14.1
	Project Officers	38	15.8
	Junior Project Managers	36	14.9
	Team Members	35	14.5
	Engineers	30	12.4
Highest Academic Qualification	OND	22	9.1
	HND	73	30.3
	First Degree	79	32.8
	Master's Degree	57	23.7
	PhD	10	4.1
Experience in Project Management	<5 years	48	19.9
	6 - 10 years	76	31.5
	=>11	117	48.5
State of Respondents Domiciliation	Kaduna (NW)	31	12.9
	Kano (NW)	29	12.0
	Kebbi (NW)	21	8.7
	Bauchi (NE)	16	6.6
	Borno (NE)	22	9.1
	Yobe (NE)	27	11.2
	Niger (NC)	33	13.7
	FCT (NC)	35	14.6
	Kogi (NC)	27	11.2
Actual Users of the Project Management Tools and Techniques	PMO Director/Managers	26	10.8
	Project Managers	35	14.5
	Program Managers	33	13.7
	Project Officers	32	13.3
	Junior Project Managers	29	12.0
	Team Members	32	13.3
	Engineers	35	14.5
	Quantity Surveyors	19	7.9
Size of the company in which you work	<10	53	22.0
	10 – 20	68	28.2
	21 – 30	45	18.7
	31 – 40	43	17.8
	>40	32	13.3
Do you know anything about AI systems	Yes	164	68.0
	No	77	32.0
How many years have you being using Project Management Software	< 5 years	97	40.2
	5 - 10 years	111	46.1
	> 10 years	33	13.7
Do you use any AI systems	Yes	203	84.2
	No	38	15.8
Have AI systems been	Yes	38	15.8

tried in your organization	No	203	84.2
Would you like to use AI systems in the future	Yes	194	80.5
	No	47	19.5

Source: Field Survey, (2022)

Table 4.1 depicts the background of the respondents and as the result indicates that 196 respondents are male while 45 are female construction professionals which represents 81.3 and 18.7 percent response rate respectively. This sentiment was echoed in the study of Muhammed et al. (2022b), that stated that the construction sector is largely dominated by male construction professionals due to the perceived masculine nature of construction activities. The other demographics of the respondents are succinctly stated in table 4.1 above.

4.2 Mean Responses of the Respondents

4.2.1 Roles of AI on Project Management

Table 4.2: Roles of AI on Project Management

FACTORS	MEAN	SD	RANK
Task Prioritization; It is easier for AI to make an assumption with regard to the data at hand and also assists the team to understand their actual priority	4.8299	.37652	1st
AI (unlike human being), delivers untiring objectivity and vigilance and do not compromise or getting tired in performing project	4.8299	.37652	1st
AI can enhance visibility for early risk date	4.5560	.49789	3rd
AI foster safe working environment by detecting invisible warning signs in regards to likelihood of accidents occurring.	4.5394	1.04058	4th
AI-Enabled project management tools can provide more insights to project managers about the possible outcomes for projects, which will enhance the quality and agility of critical decision-making.	4.4855	1.00871	5th
AI-Enabled project management tools give greater support and accuracy to the decision making	4.3402	1.25516	6th
AI and Machine Learning (ML) algorithm support the optimization of project schedules to minimize the total cost base or resource constraints	4.2780	1.26223	7th
AI assists project managers to sustain a holistic and Nano project management	4.1950	1.34449	8th
AI supports project managers and can issue them with an automated alerts and work scheduling which is essential for performance of routine procedures	4.1950	1.34449	8th
Adopting AI to Project Management enhances successful project performance and efficiency	4.1120	1.60465	10th
AI can provides actionable insight into the project by sorting through and collating from arrays of sources	3.7884	.97939	11th
Incorporating sophisticated AI powered software can lead to the project cost reduction	3.1826	1.46908	12th
AI can also provide actionable insight into a multitude of aspects in relation to the project that allows project team to get around complicated problems	3.0498	1.29003	13th
AI is better and efficient in Analysis, Insights and Prediction far better than human being	2.2614	1.86249	14th
AI is more accurate than human beings in terms of data crunching and interpretation	2.2614	1.86249	14th

Source: Field Survey, (2023)

As indicated in the table 4.2 above, the factor with highest mean response is ‘task prioritization of AI seeing as being able to make an assumption with regard to the data at hand and also assists the team to understand their actual priority’ and ‘AI (unlike human being), delivers untiring objectivity and vigilance and do not compromise or getting tired in performing project’ both with a mean score of 4.8299 and ranked 1st. Consequently, ‘AI can enhance visibility for early risk date’, ‘AI foster safe working environment by detecting invisible warning signs in regards to likelihood of accidence occurring’, ‘AI-Enabled project management tools can provide more insights to project managers about the possible outcomes for projects, which will enhance the quality and agility of critical decision-making’, ‘AI-Enabled project management tools give greater support and accuracy to the decision making’, and ‘AI and Machine Learning (ML) algorithm support the optimization of project schedules to minimize the total cost base or resource constraints’ are ranked 3rd, 4th, 5th, 6th and 7th with a mean score of 4.5560, 4.5394, 4.4855, 4.3402 and 4.2780 correspondingly. Similarly, ‘AI assists project managers to sustain a holistic and Nano project management’ and ‘AI supports project managers and can issue them with automated alerts and work scheduling which is essential for performance of routine procedures’ have mean score of 4.1950 and ranked 8th consecutively.

4.2.2 Traits of future project managers with respect to AI adoption in Project Management

Table 4.3: Traits of future project managers with respect to AI adoption in Project Management

FACTORS	MEAN	SD	RANK
AI cannot replace Project managers but rather both AI and project managers (PM) need each other to foster project management	4.5560	.49789	1st
AI is inoperative without the inputs and added values of skilled project managers. So, in the future digital era, Project managers need to build a soft-skill set that focuses in the areas where AI falls short.	4.2697	1.35933	2nd
Having strong ‘digital know-how’ and ‘data science skills’, alongside ‘security and privacy knowledge’ are the most important skills a project manager needs to acquire to cope with the future digital era challenges than other mentioned soft skills.	3.7884	.97939	3rd
Do you agree that AI has the power to change/alter the type of job we do	3.7884	.97939	3rd
In the presence and future AI era, an organization and project managers need be prepared to collaborate with machines to deliver projects, execute strategies and provide insights to key stakeholders	3.2739	1.34772	5th
Adoption of AI into project management can help eliminate repetitive administrative task and allow project managers to have more time and energy to focus on the real work	3.1826	1.46908	6th
Do you agree that AI can replace human mind completely	3.1826	1.46908	6th
By adopting AI into project activities, AI replaces project managers in the near future	3.0498	1.29003	8th
Leadership, planning, monitoring management skills, strategic management, budgeting	2.2614	1.86249	9th

Source: Field Survey, (2023)

Table 4.3, shows that **‘**AI cannot replace project managers but rather both AI and project managers (PM) need each other to foster project management’ is ranked 1st with a mean score of 4.5560. **‘**AI is inoperative without the inputs and added values of skilled project managers. So, in the future digital era, Project managers need to build a soft-skill set that focuses in the areas where AI falls short’ is ranked 2nd with a mean score of 4.2697. Consequently, ‘having strong ‘digital know-how’ and ‘data science skills’, alongside ‘security and privacy knowledge’ are the most important skills a project manager needs to acquire to cope with the future digital era challenges than other mentioned soft skills’ and ‘do you agree that AI has the power to change/alter the type of job we do’ with mean score of 3.7884 and ranked 3rd.

consequently, 'in the presence and future AI era, an organization and project managers need be prepared to collaborate with machines to deliver projects, execute strategies and provide insights to key stakeholders' is ranked 5th mean score of 3.2739.

4.4 Inferential Statistics

H_0: There is no significant statistical relationship between the roles/impact of AI Project Management on the traits of future project managers with respect to AI adoption in Project Management.

X - Roles/impact of AI Project Management in Nigeria

Y - The traits of future project managers with respect to AI adoption in Project Management

Table 4.4: *Correlation between the variables*

Correlations			
		Y	X
Pearson Correlation	Y	1.000	.979
	X	0.979	1.000
Sig. (1-tailed)	Y		.002
	X	0.002	
N	Y	5	5
	X	5	5

Table 4.5: *Model Summary*

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.979[a]	.958	.944	.22423	.958	68.433	1	3	.004	2.881

a. Predictors: (Constant), X

b. Dependent Variable: Y

***Table 4.6:** Analysis of Variance*

ANOVA[a]

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	3.441	1	3.441	68.433	.004[b]
	Residual	.151	3	.050		
	Total	3.591	4			

a. Dependent Variable: traits of future project managers

b. Predictors: (Constant), roles/impact of AI Project Management

***Table 4.7:** Coefficients*

Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.	Correlations		
	B	Std. Error	Beta			Zero-order	Partial	Part
(Constant)	.951	.143		6.633	.007			
x	.303	.037	.979	8.272	.004	.979	.979	

Source: Data Analysis, (2022)

As regard to this result in line with the position of table 4.4 – 4.7, a correlation of +1.00 is an indication that changes in a variable correspond to a change in the other variable while a correlation of -1.00 shows that a fall in one variable posits a negative change in the other variable (Ubani et al., 2015). A close to zero correlation shows that there exists minute linear relationship between the two variables. Decisions are thus made when the corresponding values of X and Y variables incline towards +1.00. In the case of this study, as the independent variable X (roles/impact of AI Project Management in Nigeria) increases, the dependent variable Y (the traits of future project managers with respect to AI adoption in Project Management) increases implying that as the roles and impact of AI project management increases in Nigeria so also does the trait of future project managers with respect to AI adoption in project management increases in Nigeria with a correlation of value of (0.979) as indicated in table 4.4. Consequently, as shown in table 4.5 that indicates the model summary, the R value of (0.979) shows evidently that there remains a strong linear relationship between the roles of AI Project Management in Nigeria and the traits of future project managers with respect to AI adoption in Project Management. Furthermore, as indicated in that same table 4.5, R^2 signifying 95.8% shows that variable X contributes largely to variable Y, while 4.2% of the changes experienced is ascribed to the influence of many other factors not explained by the regression function. Similarly, the R^2 value of (0.958) shows the goodness-of-fit of the model as it is very close to 1 while a model of 1 is a perfect fit just as explained in the studies of Zaid (2015) and Verbeek (2017).

4.5 Discussion of Findings

In line with the result of this study as indicated in table 4.2, it is imperative for the construction professionals domiciled in Nigeria to trend the part of AI technology as one of the feature of this systems is on task prioritization. This is emphasized by the fact that ‘task prioritization of AI seeing as being able to make an assumption with regard to the data at hand and also assists the team to understand their actual priority’ and ‘AI (unlike human being), delivers untiring objectivity and vigilance and do not compromise or getting tired in performing project’ (4.8299). According to

Wilkens (2020), Glikson & Woolley (2020) and Andres et al. (2021) the task prioritization of AI predicated on the lack of distraction except the ones induced by human error. This is because as the AI system is programmed, so the way it would act unlike humans that are influenced by several factors including natural, social, economic and political factor prevalent in the society. Accordingly, AI can enhance visibility for early risk date' (4.5560) and 'AI fosters safe working environment by detecting invisible warning signs in regards to likelihood of accidence occurring' (4.5394). This is consonance with the studies of Javanmardian & Samandari (2019) who also agrees that one the functionalities of AI is predicated on early risk detection and the provision of safe working environment in the workplace.

4.6 Conclusion and Recommendations

Project in Northern Nigeria is extremely broad with varying level of project management tasks carried out under differing adaptability level and understanding of AI technologies. This study showed positive correlation between the role of AI and Project Management in Nigeria. It also highlighted the traits of future project managers with respect to AI adoption in Project Management tasks. The study concludes that the more the impact of AI in project management of Northern Nigeria projects, the more will be an increase in the adoption of AI in project management for project success in the region. Arising from the above, this study therefore recommends need for strengthening of all institutional frameworks by way of Governmental policy trusts that would foster seamless provision of requisite supportive AI technologies infrastructures such as electricity, and subsidy of AI technology-based gadgets. The Nigeria tertiary education especially for the built-environment professions curriculum should be constantly reviewed in line with current digital technology skill and applications to promote the acquisition of requisite information technology skills, knowledge of soft-skill sets, and relevant AI operationalization skills necessary for the implementation of AI technologies in Project management tasks.

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Mediating Role of Job Satisfaction on the Relationship between Training and Academic Staff Performance of Selected Federal Polytechnics in North West Nigeria

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Abstract
The objective of the study is to conceptualise the mediating role of job satisfaction on the relationship between the training and performance of the academic staff of selected North West Federal Polytechnics. The research design adopted for this study is descriptive. The findings revealed that effective training leads job satisfaction and improve academic staff performance in the selected Federal Polytechnics. The study recommends that management should use the appropriate training policies in selecting employee for training in order to avoid bias as this will improve academic staff performance in Federal Polytechnics.

Key words: *Training, Job Satisfaction, Employee Performance*

1.0 Introduction

The success or failure of any organization depends on the performance of its employees. Employee performance is imperative in any industry because it is one of the key indicators of productivity and profitability (Hee & Kamaludin, 2016). According to Darden and Babin (2016), it is a rating system used in many corporations to decide the abilities and output of an employee. Good employee performance has been linked with increased customer satisfaction of service quality, while poor employee performance has been linked with increased customer complaints and brand switching.

According to Abiodun (2018), there are many measures used by an organization in order to attain efficiency in performance, such as quality, efficiency, ability, productivity, profitability and effectiveness. Employee job performance has always been the major challenge in organizational management and adopting effective ways to motivate employees to achieve and deliver higher job performance as well as increase organizational competitiveness is the main objective of every organization (Hank & Robert, 2018). However, Muhammad (2018) observed that the academic staff performance of Nigerian tertiary institutions is deteriorating. This issue, if not urgently addressed, will become a serious threat to the survival of the educational system in Nigeria.

Poor performance of academic staff is evidenced by the poor quality of graduates, low rate of publication by lecturers and low morale on the research perspective. According to Webometrics.com ranking of 2020 and 2021 showed that Yabatech was the best Polytechnic in Nigeria and was rated at 6754 and 8689 respectively in the world ranking. In view of declining performance in polytechnics, the Nigerian president has set a seven-man panel to investigate the problems militating against the institutions for necessary solutions (Vanguard, 5 may 2021). Mr Ochoga, the chairman of the panel said that the polytechnics had failed to live up the desire of the designers of technical education which was to promote technology and advance the economy. Furthermore, the academic staff union of polytechnic chairman attributed the declining of performance to poor funding, poor motivation, irregular curricula review and widening gap of infrastructure (punch 26october, 2921). Moreover, the secretary, National Board for Technical Education related the poor performance to shortage of well-qualified technical and vocational education teachers and TETFund bias in favour of Universities.

The Nigerian education sector has been poorly funded in the past years, falling below the United Nations Educational Scientific and Cultural Organization's recommendation of 26% global bench mark. Education sector to received N1.29 trillion which is equals to 7.9% of N16.39 trillion total budgets (Federation Budget 2021). This is insignificant amount to cater for the increasing number of institutions in the country.

The education sector plays a dynamic role in both developed and developing countries. Tertiary educational institutions serve as facilitators to providing the skilled manpower required to lubricate the engine of economic and technological growth and development. Manpower training and development is facilitated in these institutions by employees, who themselves require an enabling environment for better performance and output (Muhammad, 2018). Educational institutions, especially at the tertiary level, are expected to provide highly skilled work force for the society. Hence, these institutions should attract and retain excellent personnel both academic and non-academic staff through training, which is the major human resource practice employed by educational institutions to boost employee performance (Lawal, 2018). Agrawal (2018) asserted that training is one of the variables named by both researchers and practitioners that affect employee job performance. Inadequate training makes employee skills obsolete, inefficient and ineffective and hence low performance, while effective training improves employee performance and increases efficiency.

Dongh (2016) posited that training benefits organizations by improving employee relations, reducing absenteeism, cross-skilling and increasing productivity and efficiencies. Apart from the consistent development of employee skills through training at intervals, employees also need on the job support in the shape of a mentor, who looks after, repairs, maintains and develops their skills necessary to perform routine activities (Farooq, 2016). Some organizations have proved that employee's knowledge, skills, abilities, attitude, motivation and behaviours affect performance (Lawan, 2018). Lynah (2018) asserts that job satisfaction is one of the challenges that affect employees' performance in the organization. While dissatisfied workers in most cases perform low, a satisfied worker expends more efforts on job performance, working harder and better. Thus, a highly satisfied work force is a necessity for achieving a high level performance.

Furthermore, Anwar (2015) argues that a highly satisfied work force is an absolute necessity for achieving high level performance and advancement. Organizations that prioritize employees' welfare are more likely to produce a better result. Khaled (2016) opined that employees who have higher job satisfaction have higher probability to perform than the employees who are not satisfied with their jobs. Hence, factors like pay, promotion and training that lead to employees' job satisfaction should not be neglected by managers because it takes happy employees to be productive employees. Thus, the success of every organization depends on the employees who are the most valuable assets in the organizations. Employee performance in an organization depends on a high level of attention on work and high level of attention depends on employees' satisfaction (Omran, 2016).

Godfrey (2015) reveals that the productivity and efficiency of human resources depends upon a number of dynamic factors, which range from personal factors to organizational policies. Job satisfaction is one of the very important factors that affect the productivity of human resources. The degree to which employees are satisfied with their work influences the level at which they perform with respect to the quantity of work and the quality, creativity and ability of employees to meet organizational objectives.

Employee job satisfaction is very important in an organization because if employees are not satisfied, their work performance, productivity and commitment as well as interpersonal relationship among the management and their subordinates would be lowered (Ameeq & Hanif, 2016). Employees feel satisfied when they enjoy their duties and responsibilities, their work environment and work practices within the organization (Amin, 2013). Asad (2019) asserts that an effective training program enhances job satisfaction and organizational effectiveness. Employee skills deteriorate and become obsolete overtime and new skills need to be learned. Hence, training improves performance through job satisfaction.

Moreover, Kumar and Siddika (2017) believe that organizations can develop and enhance the quality of current employees by providing comprehensive training to increase job satisfaction and morale and increase motivation, efficiency in productive process resulting in financial gain. Their study also revealed that training increased employees' capability to adopt new technologies, method and innovation in strategies and reduce employee turnover. Employee training enhances satisfaction and prevents them from abnormal organizational behaviour as turnover, struggle, non- attendance and deficient relations with other employees (Mehrad, 2015).

Furthermore, the training policies of polytechnics allows staff to enjoy tertiary education trust fund [TETFUND] benefits repeatedly; there is the tendency for some staff being granted these opportunities again and again, whereas some are ignored, denied or not motivated to seek these opportunities for their growth and development on the job (Agena, 2017). As explained by Agena, the distortion results from the faulty staff selection procedure for employees' training. Favouritism in recommending staff applications for training slots sponsored by TETFUND intervention demoralizes and affects staff and makes them indifferent towards carrying out assigned tasks, thereby decreasing their performance.

While employees who feel unjustly denied of training opportunities become unsatisfied and indifferent, those who are favoured tend to perceive the benefit as their privilege and are mostly unlikely going to commit in improving their performance on the job. Either way, the anomaly may cause some retention issues, which may be evident of the turnover incidents in some institutions.

To assist in the possible improvement of employee training in polytechnics and other tertiary institutions that may face similar challenges, this study is embarked upon. It examines the mediating role of job satisfaction on the relationship between training and employee performance among the academic staff of polytechnics. By examining the training process and relating it to job satisfaction and performance, the study will provide relevant information to guide policies and improve transparency and the effective realization of training objectives for polytechnics.

There is a decline in lecturers' job performance in Nigeria despite the programmes put in place to improve their performance. Their poor performance, quality, poor content delivery, etiquette and commitment is raising a lot of public concern (Owolabi, 2012). This is evidenced by the poor quality of graduates, low publications by lecturers and low morale on the research. According to the national ranking 2020 and 2021showed that Yabatech was the best Polytechnic in Nigeria and was rated at 6754 and 8689 respectively in the world ranking (Webometrics.com).

In view of the decline academic staff performance, Nigerian president has set a seven-man panel to investigate the problems militating against the institutions for necessary solutions (Ochoga, 2021). Mr Ochoga, the chairman of the panel said that ‘the polytechnics in Nigeria had failed to live up to the desire of the designers of technical education which was to promote technology and advance the economy.

Moreover, Academic Staff Union of Polytechnics (ASUP) president attributed the declining of performance to poor funding, motivation, irregular curricula review and widening gap of infrastructure (Ezeibe, 2021). The National Board for Technical Education secretary, Bugaje (2021) stated that the poor performance of academic staff of polytechnics is as a result of shortage of well-qualified technical and vocational education teachers and TETFund bias in favour of universities among others.

Abolade (2017) opined that inadequate training may lead to various work outcomes, such as absenteeism, employee turnover, low productivity, job dissatisfaction and low performance. Inadequate training practice is among the major issues of poor employee performance in most organizations. Moreover, the issue of training has been a major challenge fuelling industrial conflicts in tertiary institutions, especially polytechnics (Isah, 2018). Such crises are largely fuelled by suspicions of favouritism in selecting employees for training facilitated by tertiary education trust fund [TETFUND] intervention funds. Due to these conflicts, employees perform inadequately and in some cases these result in high trained employee turnover to the detriment of the benefactor employer (Ahmed, 2016). One of the major problems of training starts right from the selection procedure, design and the method used for the training most of which are inappropriate and cannot impact the required knowledge (Muhammad, 2018). Unless this trend is reversed, the sector will continue to produce graduates of low quality to the economy. Training lecturers would enable them to perform their duties of teaching, research and community services effectively and efficiently.

There is consistency of findings of similar studies with positive relationships between training and employee performance (Kumar, 2017; Nahida, 2018; Hank & Robert, 2018; Okojackonia 2017; Muhammed & Hisham, 2018; Rahma & Muhammed, 2018; Ameeq & Hanif, 2013; Amin, 2013; Elnaga & Imran, 2013; Yusuf, 2017), Sani, Lawan and Bature (2018) suggested that further research should be conducted with job satisfaction as mediating variable in order to realize a suitable result. The study should expand the scope to ascertain the actual picture of it. There is the need to examine the mediating role of job satisfaction on the relationship between training and employee performance using selection procedure, training design and method as proxies for training. In order to fill this gap, therefore, this study attempts to show us how job satisfaction mediates the relationship between training and employee performance. Employees become more satisfied when they are well trained and hence perform better.

By extending the research to more than one polytechnic more population are involved and the study examines the topic more thoroughly. This is because more staff opinions are involved from different institutions, thereby adding more substance to the result.

The main objective: Is to investigate the mediating role of job satisfaction on the relationship between training and performance of academic staff of some selected north western Nigerian public polytechnics.

2.0 Literature Review

2.1 Employee Performance

With the unpredictable business environment and intense business competition, companies are required to reach certain standards by improving their performance to align with such great demands; otherwise, a lot of problems will surface, including running the risk to close down the business. Employee performance has metamorphosed into a contemporary issue in organizational management (Mafini, 2015). At both industry and national levels, the variable of employee job performance has significance to the economies of developing countries, such as Nigeria, whose productivity levels are partially determined by the aggregate job performance of individual employees in different industries throughout the entire country (Owotunse, 2018). Employee performance is a human behaviour the result of which is an important factor for individual work effectiveness evaluation. It could be said that organization's success or failure depends on job performance of the individuals in that organization. According to Rashidpoor (2000), job performance is a set of behaviour, which a person shows in relation to his job or, in other words, the amount of efficiency gained due to the person's job type (training, producing or servicing).

Furthermore, employee performance contributes to the improvement of several aspects in employees, such as behaviour, attitudes and traits, which help to increase the productivity of an organization. It is considered to be those actions, behaviours and outcomes that individual employees engage in or bring about that contribute to the goals of the organization (Som, Mustapha, Othman, Aziz & Noranee 2015). Long, (2014) described employee performance as the level of the productivity of an individual employee, relative to his or her peers, on several job-related behaviours and outcomes. Tang and Chang (2010) viewed employee performance as behaviours engaged in by employees at work that are in keeping with organizational goals.

On the contrary, Khuong and Yen (2016) opined that employee performance is seen as an activity that an individual is able to complete the assigned task successfully. The total output that employees recognize contributes to the organization. However, employee performance can be viewed from the perspective of the sum of opportunities, abilities and motivation.

2.2 Employee Training

Employee training is one of the most important factors that help the organization to enhance performance and achieve organizational goals. Decenzo and Robbins (2000) explained training as a learning experience that seeks a relatively permanent change in an individual that will improve his ability to perform on the job. This mean training must be designed in such a way that it will involve either changing or enhancing skills, knowledge, attitudes and social behavior. This change or enhancement of skills, knowledge, attitudes and social behavior could involve what the employee knows, how he works and his relations and interactions with co-workers and supervisors. Training thus consists of planned programs designed to improve performance at the individual level (Isah, 2018). Improved performance on the part of the individual, group or organization means, there have been measurable changes or enhancements in knowledge, skills attitude and social behaviors.

Similarly, Muhammed (2018) defined training as the teaching or learning activities carried on for the primary purpose of helping the members of an organization to acquire and apply the knowledge, skills, abilities and attitudes needed by that organization . It is the act of increasing the knowledge and skill of an employee for doing a particular job. Therefore, training needs to be seen by the management of every organization as a long term investment in its human resource. According to Pallavi (2013), training programs play a vital role in every organization. These programs improve employee performance at the workplace and update employee knowledge and enhance their personal skills and help in avoiding managerial obsolescence.

2.3 Selection Procedure

Selection procedure is a process of choosing the right person for the job or training from a pool of different candidates, who applied for a certain job training (Mark & Andrew, 2012). Unconventional selection practices in terms of poor policy in selecting staff for training, inconsistency in the selection process, side tracking interview, god-fatherism in the selection process and the influence of the management on the interviewer to pick for training may mar the organizational plan and pose performance challenges (Andrew, 2000). Additionally, the success of an organization depends on the calibre of the manpower that steers the day to day affairs of the organization.

2.4 Training Methods

There are many methods of training employees in an organization. The range of training methods used has been expanded by the application of technology in its “hard” (for example, through computing technology) and in its “soft” (for example, through instructional design) approaches (Sadler-Smith, 2000). Training employees is intended to increase the expertise of trainees in particular areas. When thinking about the training method to use, it is useful to consider the current level of expertise that trainees possess (Sims, 2006).Training methods can generally be categorized as either on the job or off the job. The training delivery options for either method can be sourced from either in- house or external sources or a combination of both (Coles, 2000).

2.4.1 On the Job Training Methods

On the job training (OJT) is having a person to learn the job by actually doing it (Dessler, 2005; Sims, 2006). Whereas Tennanat (2002) defined on-the-job training as a method where the learner develops skills in the real work environment by actually using the machinery and the material during training. Adamu (2008) asserts that on-the -job training is designed to impart knowledge of job by working under an experienced worker. The trainer or the experienced worker teaches and advises the trainee on the specific methods and techniques of doing the job. In some cases, the trainee is expected to learn by watching the master. The trainee is learning and at the same time working, although the trainee’s output will not be much.

2.4.2 Off-the-Job Training Methods

Off-the-job training is a process of acquiring skills and knowledge at a location different from the employee’s office. It includes group discussion, individual tutorials, lectures m reading, training courses and workshops (Kempton, 1995). It permits individuals to leave their primary place of work for a different location. Its advantage includes the trainee’s ability to concentrate, analyse past behaviours and reflect on what has been successful and what has not (Okanya, 2008). This kind of training offers an opportunity to impart knowledge and skills that can be learnt or practiced in a safe and conducive atmosphere. Kempton (1995) opines that if training is conducted in an organized and systematic way it should be able to develop new attitudes and experiences that contribute to the success of the organization and improve employee morale, which would translate to better performance and greater productivity and create a psychological climate, which orients the activities of each employee towards achieving the goals of the organization.

2.5 Training Design

Training design refers to the degree to which the training has been design and delivered in such a way that provides trainees the ability to apply learning on the job (Holton, 2000). It is very necessary for the organization to design the training very carefully (Armstrong, 2000). Aguinis and Kraiger (2009) continued to explore error training as a strategy for increasing performance and maintaining performance under changing environmental demands. In contrast to traditional training design approaches that focus on teaching correct methods (and avoiding errors), error management training encourages trainees to make errors and engage in reflection to understanding the causes of the errors and the strategies to avoid making them in the future. In terms of design, recent research suggests that the benefits of training are enhanced by applying theory-based learning principles, such as encouraging trainees to organize the training content, making sure they expend effort in the acquisition of new skills and providing trainees with an opportunity to make errors together with explicit instructions to encourage them to learn from these errors (Aguinis & Kraiger, 2009).

2.6 Job Satisfaction as Mediator

Job satisfaction is a crucial issue in the performance of workers. The concept of job satisfaction has been contestable and its definition, depending on the perspectives (Hofman, 2013). Rice (1997) defined job satisfaction as an overall feeling about one's job or career in terms of the specific facets of job or careers On the other hand, Evans (1997) argued that the concept is ambiguous and its ambiguity is rooted in the distinction between what is satisfactory and satisfying. In an attempt to solving this ambiguity, Bogler and Nir (2012) re-conceptualized job satisfaction in terms of two constituents: job fulfillment (how well the job is performed) and job comfort (one's satisfaction with the conditions of the job). (e.g. compensation, autonomy, co-workers). It can be related to specific outcomes, for example, productivity. Job satisfaction means the contentment of the servers because of their jobs. It is the personal evaluation of the job conditions (the job itself, the attitude of the administration or the consequences or wages, occupation, security, etc.) acquired from the job (Fletcher & Williams, 2006).

Studies have identified four major factors that affect job satisfaction. First, we have the demographic factors, which include age, gender, tenure and education. The results suggest the existence of relationships between demographic characteristics and job satisfaction, but the evidence tends to be mixed, with positive and negative relationships (Vegas, 2001). The second critical aspect is linked to the remuneration of the employees. A salary is a payment which persuades an employee to commit his or her personal time and work (Hyz, 2010). The challenge is that a salary is the main source of the cost for the operation and development of business (Oshagbemi, 2000). There is no clear view on the relations between job satisfaction and salary. Some studies take the Herzberg view and treat salary as one of the hygiene factors. On the other hand, others argue that if the salary is equal to or greater than expected from the employee, the employee's satisfaction increases and the opposite result occur when the salary is lower than expected (Hyz, 2010).

Supervision is the other important aspect and refers to the fairness and competence at managerial tasks by one's supervisors and co-workers (Hart, 1994). The leadership style is very crucial in job satisfaction because it helps people to learn to contribute and to feel the freedom in their work (Bogler, 2001; Chen, 2001; Cranny., 1992). The results of some other studies have shown meaningful relations between job satisfaction and the possibilities of promotion, gaining respect, the size of the organization and self-development and achievement of the use of talents (Hyz, 2010). Studies have demonstrated that organizational behaviors, like warmth among employees, mutual trust, respect and rapport between employees and superiors, can be significant predicting factors of the job satisfaction experienced by employees (Belias & Koustelios, 2014).

Payment level of wages and salaries is an important factor that affects employees' job satisfaction. Money not only helps personnel to attain their basic needs but is also instrumental in providing upper-level needs satisfaction (Luthans, 1992). A study of 2000 managers demonstrated that the amount of wages received was very positively related to satisfaction, even with managerial level held constant. Work itself has an influence on employees' job satisfaction, since the Herzberg, Mausner and Syndermann (1959) monograph on the motivation to work was published in 1959, evidence has been accumulated that the work itself plays a significant role in attaining job satisfaction (Feldmann & Arnold, 1985).

2.7 The Theory Relevant to the Study

The theories that will guide this study are system theory and Herzberg theory.

2.7.1Two Factor Theory

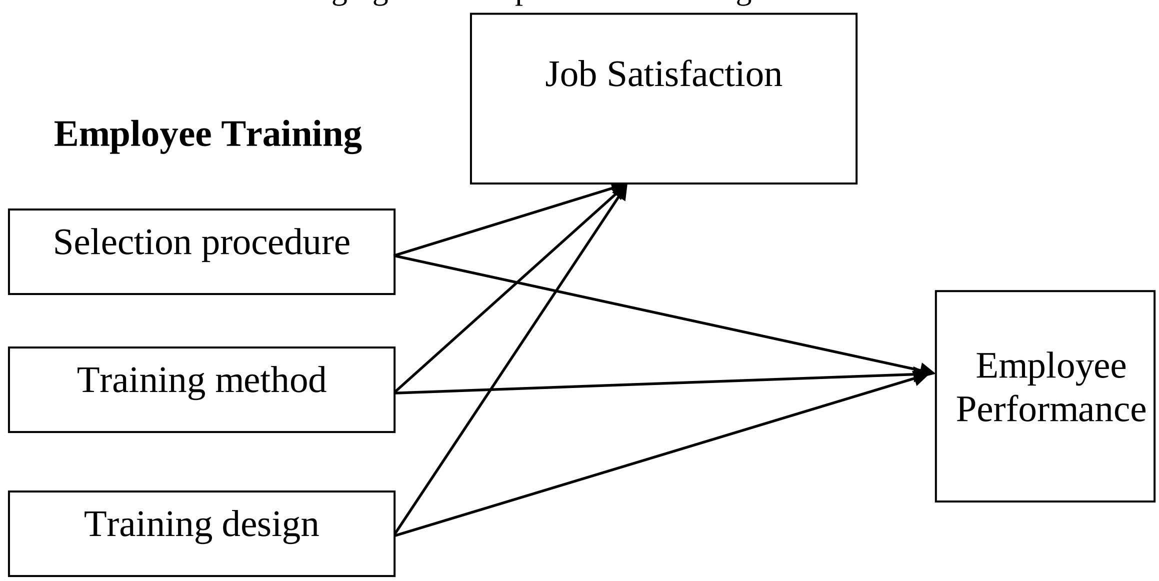
Herzberg's two factor theory is probably the most widely known and accepted approach relating directly to job satisfaction. Herzberg addressed the problem of job satisfaction in terms of those factors, which cause satisfaction (motivators) and those which cause dissatisfaction (hygiene). This information then becomes the basis for evaluating an individual's job and making the changes necessary to increase worker motivation. Herzberg analyzed and classified the job content factors or satisfying experience as: Achievement, Recognition, Work itself, Responsibility, Advancement and Growth (Schermerhorn, 1993). According to Herzberg, these factors stand out as strong determiners of job satisfaction with three of them, a sense of performing interesting and important work (work itself), job responsibility and advancement, being the most important relative to a lasting attitude change. Achievement more so than recognition was frequently associated with such long-range factors as responsibility and the nature of the work itself (Chappells & Shave, 2004).

It is interesting to note that recognition based on achievement provides a more intense satisfaction than does recognition used solely as a human relations tool divorced from any accomplishment. The latter does not serve as a satisfier. Compared with the satisfiers or motivators, there are factors which cause low job dissatisfaction. Such factors were found from the analysis of the study results to be associated primary with an individual's relationship to the context or environment in which he does his work. These factors are extrinsic to the work itself and referred to as dissatisfies or hygiene (or maintenance) factors. Herzberg categorized the context or the environmental factors causing dissatisfaction to include: company policy and administration, supervision, working conditions, interpersonal relations, status, job security, salary, personal life (Connoway, Dickey & Radford, 2011).

According to Schermerhorn (1993), Herzberg's two-factor theory is an important frame of reference for managers, who want to gain an understanding of job satisfaction and related job performance issues. Schemerhorn asserts that Herzberg's two-factor theory is a useful reminder that there are two important aspects of all jobs: what people do in terms of job tasks (job contents) and the work setting in which they do it (job context). Schermeerhorn suggests that managers should attempt always to eliminate poor hygiene sources of job dissatisfaction in the work place and ensure building satisfier factors into job content to maximize opportunities for job satisfaction. When these factors are considered good or acceptable, workers do not tend to become satisfied; they simply become not dissatisfied. Productivity is not restricted. It is just held at an acceptable level. When workers become dissatisfied with any of these factors they tend to restrict output (Chappells & Shave, 2004).

2.8 The Conceptual Model of the Study

The proposed framework or model of this research has three variables; employees' performance as the dependent variable, job satisfaction as the mediating variable and training as the independent variable, whose dimensions are: selection procedure, training method and training design. It is expected, therefore, that improved employee performance will depend on how efficient and effective the tertiary educational institutions are managing the three proxies of training.



Source: Researcher, 2019
Figure2.1: Conceptual Model of the Study

From Figure 1 above, it should be noted that training was employed as the independent variable, job satisfaction as the mediating variable and employee performance as the dependent variable of the study.

3.0 Conclusion and Recommendations

The study concludes that if the right employees are sent for training through systematic procedure of identifying and selecting employees for training, there would be a significant improvement on the employee performance. Therefore, polytechnics would become more productive and remain vibrant in global competitiveness and complexity of the work environment. Adequate training needs assessment should be conducted by staff development unit to identify the skill gap before sending employee for training.
In the light of the foregoin, the following recommendations are made:

i. Efforts should be made in ensuring effective training for academic staff in polytechnics as this would lead to a significant improvement of academic staff performance.
ii. Adequate training design rich in content and which identified skill gap should be for employee training.
iii. Bias and sentiment should be avoided when selecting employee for training as that leads to dissatisfaction on the affected staff.
iv. Training methods should be chosen base on employee's needs for training.
v. Federal government should improve the level of infrastructure in the schools and more funding should be available for the institutions to organize seminars, workshops and conferences internally so as to improve performance.

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Human Resources Planning and Corporate Performance in the Electricity Distribution Company in Nigeria

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Abstract
For any organizational to the able to thrive well in this present time, its human resource department must be very effective. The study looked at the relationship between human resource planning and corporate performance, a case study of Jos Electricity Distribution Company (JED) Gombe field office. The study examined human resource planning as the independent variable and corporate performance was the dependent variable whose measures are efficiency, growth and effectiveness. The study adopted the cross-sectional survey in its investigation of the variables. Primary source of data was generated through self-administered structured questionnaire. The population for the study is eighty-seven (87) staff of Jos Electricity Distribution Company (JED). The sample for the study was 72 which was gotten from Krejcie and Morgan Table. The tests were carried out at a 0.05 significance level. Findings from the study revealed that there is a significant positive relationship between human resource planning and corporate performance in the JED Gombe field office. There was also a positive significant relationship between human resource planning and efficiency and effectives of JED Gombe office. The study concludes that human resource planning has a positive and significant relationship with corporate Performance in the Jos Electricity Distribution Company, JED Gombe Field. The study recommends that the management of the JED, Gombe field office need to ensure the human resource planning is tailored towards enhancing employee productivity, retention and general performance.

Keywords: *Corporate Performance, Efficiency, Effectiveness and Human Resources Planning*

1.0 Introduction

In highly competitive environments, there is intense pressure on businesses to be productive while also being efficient. Most businesses can gain a competitive edge by making sure their workforce is at its peak performance at all times. Employees who are happy at their jobs develop a connection with the business, are proud to be a part of it, and support the mission and core principles of the company. As a result, these workers exhibit high levels of productivity and performance. Employees who are not satisfied exhibit traits such as low productivity, absenteeism, and turnover. These characteristics are very expensive for the organization (Buchanan & Huczynski, 2019).

In the modern era, human resource planning is a hot topic and a widespread phenomenon that is used by many organizations. This is consistent with the idea that the human resource should be carefully planned out and treated as the most valuable asset of every organization because it is the lifeblood of the business and an embodiment of the knowledge, skills, experience, and talents that businesses use to practically actualize their aims, goals, objectives, missions, and visions. Human resource planning is therefore necessary in order to maximize job performance in support of their employer's strategic goals as the capabilities of an organization cannot be efficiently and effectively made viable without the human capital that coordinates other production factors (Wilton, 2019).

According to Stone, Cox, and Gavin (2020), the goal of human resource planning will always be to find, cultivate, and keep talent while also ensuring that the workforce is in line with the company's goals and is a valuable member of the team. In order to properly meet future human resource requirements, it may also involve human resource forecasting, an inventory of current human resource resources, the projection of current resource availability into the future, and the planning of the necessary programs for recruitment, selection, training, and development. Mahapatro (2022) also noted that human resource planning connects human resources to an organization's needs and strategic plan to guarantee that the staffing is adequate, qualified, and competent enough to accomplish the organization's goal. The significance of managing people at work, particularly in terms of planning and managing their careers, has increased due to the need for competency (Bals, Schulze, Kelly & Stek, 2019).

African governments make concerted efforts to promote socioeconomic development. Consequently, planning, developing, and managing the human resource function have been central to many of the public sector reform initiatives that have been implemented. In 1996, a high flyer program that sought to identify young officers for special training and a code of conduct for civil servants were both introduced in Ghana as a result of a bloated civil service (Pierskalla, 2022). A bloated civil service in South Africa resulted in the computerization of employment records, the creation of the Medium-Term Expenditure Framework (MTEF), and the division of policy making from implementation (Muthuramu, 2018).

As a result, it was crucial to institutionalize HRP in the public sector as part of the Civil Service reforms, and each Ministry, Department, and Agency (MDA) was required to create strategic human resource plans to control and rationalize hiring, end stagnation, link staff development to their career advancement, as well as meet organizational skill requirements (Charalampous, Grant, Tramontano & Michailidis, 2019). According to the HRP process guidelines, all government ministries and institutions must create strategic human resource plans by compiling and analyzing data on existing positions.

Thus, a Ministry of Power with an effective HRP will be able to align its structures, personnel, and corporate development objectives. Only if the Ministry of Health has a robust HRP process in place can this be accomplished. Surveys conducted in both developed and developing nations have revealed that HRP has a significant effect on corporate performance (Alshammari, 2020).In view of the forgoing, this study will determine the relationship between Human Resources Planning and performance in the Jos Electricity Distribution, Gombe field office.

This study would provide answers to the following research questions:

i. What is the relationship between human resource planning and efficiency in the Jos Electricity Distribution, Gombe field office?
ii. What is the relationship between human resource planning and growth in the Jos Electricity Distribution, Gombe field office?
iii. What is the relationship between human resource planning and effectiveness in the Jos Electricity Distribution, Gombe field office?

2.0 Literature Review

2.1 Theoretical Framework

This theory contends that HRM procedures have a direct impact on employee performance. It was first put forth by Schult in 1961 and developed by Becker in 1994. It contends that Employees possess a set of skills acquired through education and training that results in a stock of productive capital. Investment in developing human capital benefits both employers and employees. Both parties should receive a reasonable return on their investment from the pay scale. An important component of a company's market value is its human capital. There is a case for assessing the value that people bring to organizations as a basis for HRM planning and for tracking the efficiency and impact of HR practices. The organization will concentrate its attention on what needs to be done to find, keep, develop, and make the best use of its human capital as a result of the process of identifying measures and gathering and analyzing information related to them.

Measurements can be used to track progress toward strategic HR goals and generally assess how well HR practices are working (Kapoor & Sherif, 2012). The use of metrics to direct a management strategy that views people as assets and reinforces that competitive advantage can be achieved by strategic acquisitions in those assets through employee engagement and retention, talent management, and learning and development programs is the distinguishing feature of the human capital theory.

2.2 Concept of Human Resource Planning

Human refers to what a man is, and resource is a tool or something that is available (Rao & Min, 2018). According to Morrison, Ross, Morrison, and Kalman (2019), planning entails determining the best course of action that could be taken to accomplish the desired goals. To put it another way, an organization's overall health depends on clearly defined goals, targets, and objectives that aim to effectively maximize and utilize its human resource. According to Soliman, Anchor, and Taylor (2019), planning is a purposeful social or organizational activity that involves creating the best course of action for the future in order to accomplish desired goals and find creative solutions to challenging problems. The majority of organizations use planning processes that not only specify the tasks that will be completed within a certain time frame but also the quantity and kind of human resources that will be employed to complete these tasks. This process is known as human resource planning. Similar to how human resource strategies, plans, and programs adopted to address gaps in hiring, staffing, learning, and career development help the organization's capacity to achieve its vision, mission, and business goals.

Human capital theories, which look at the circumstances in which such investments are profitable, have been used to guide the investments in human capital. According to Nguyen (2020), the concept of human capital theory refers to the total stock of human capital that an organization, nation, or economy possesses. Human capital is described by Fix (2018) as the qualities one brings to a position of employment, including intelligence, fulfilling work energy, a generally optimistic attitude, reliability, and commitment. A stronger human capital base will result in a faster rate of economic expansion. The direct economic effects of investments in human capital are thus the focus of the human capital theory.

2.3 Corporate Performance

Performance is the competency of an organization to transform the resources within the firm in an efficient and effective manner to achieve corporate goals (Al Karim, 2019). (Al Karim, 2019). Corporate goals vary depending on the purpose for which they are established. Like manufacturing companies, businesses have three main objectives: survival, growth, and profit. Establishing organizational goals, tracking progress toward those goals, and making necessary adjustments to meet those goals more effectively and efficiently are all part of corporate performance (Adubasim, Unaam, & Ejo-Orusa, 2018). Corporate performance is the difference between an organization's actual output or results and its intended outputs (or goals and objectives). Corporate performance is related to the firm's productivity and effectiveness. It is a contextual idea related to the phenomenon under investigation (Adubasim & Odunayo, 2019).

Corporate performance is primarily influenced by management style, followed by employees' proper and active participation in achieving the organizations' strategic goals. Strategic goals are fulfilled by adhering to established plans and procedures as well as by creating and acquiring new knowledge across all areas of the organization's activity. Some businesses will focus on their interactions with customers in an effort to improve customer satisfaction and retention through a deeper comprehension of their wants and needs. Other businesses will concentrate on their goods (continually developing new ideas and getting them to market quickly). The third category of businesses primarily focuses on internal operations (exchange of best practices among various departments, cost-cutting, and increased productivity) (Aguinis & Glavas, 2019). Anyhow, a variety of obvious results, including an increase in sales, improved productivity, efficiency, and return on investment, among others, express corporate performance. A corporate performance index gauges how well an institution or organization has accomplished its objectives (George, Walker & Monster, 2019). According to another definition, corporate performance is a tool for improving organizational, team, and individual outcomes by taking certain standards and goals into account. It is obvious that whenever individuals are aware of what they are expected to do, and are involved in setting those expectations, they make great effort to fulfill them as well (Ronnie & Philip, 2021).

2.4 Measures of Corporate Performance

2.4.1 Effectiveness

Effectiveness in organizations is a broad concept that is challenging to quantify. According to Bryson (2018), there is no one definition for the idea of corporate effectiveness because it is so elusive. This might be as a result of the concept having too many definitions and too many criteria. (Elsa, Utami, and Nugroho, 2018) defined corporate effectiveness as a quality associated with an organization that is determined by comparing the entity's actual state to its ideal state. He makes the claim that a company can be either effective or ineffective. Effective people who work well in teams form the foundation of effective organizations Doz (2020). Corporate effectiveness can be measured using a variety of factors. According to Maheshwari (1980), corporate effectiveness is a multi-dimensional concept with no consensus on which dimensions are important and should be the basis for the analysis.

Effective organizations, according to Jamal, Anwar, Khan, and Saleem (2021), are ones that are efficient, adaptable, and free of corporate stress. (Schlesinger & Nagel, 2018) who perceived an organization as having stability, integration, voluntarism, and achievement support this point of view. For him, a stable organization is one that succeeds in its mission. Elsa, Utami, and Nugroho (2018); Doz (2020); Bowen & Fincher (2018); and Being successful means being more than just effective support the opinions of these authors. It means making an important input to the long term interests of the shareholders by adding value. Effective organisations are built on effective individuals who work effectively in groups Bryson (2018). There are different variables for measuring corporate effectiveness. Vo and Arato, (2020) said this much when he opined that that corporate effectiveness is a multi-dimensional concept, which has no agreement as to which dimensions are significant and should be used as the basis of the analysis.

2.4.2 Growth

A number of concepts of corporate growth have emerged in the various literatures, however, corporate growth connote diverse meaning to various organizations and there are diverse parameters business entities may use to measure its growth, in as much as the desired goal of firms is to add value to their business (Hunt, Prince, Dixon-Fyle & Yee, 2018). Hendri (2019) pointed out that growth is an anticipated phenomenon of efficiency and effectiveness an organization tends to achieve over a period of time. Accordingly, growth is an indication of resourcefulness of the employees of a firm and can be measured in terms of profit, growth in market share, product development, revenue and expansion of the company's assets. As firm grows unit costs of production will fall, in the same vain organizations will benefit from favorable economies of scale, increased in purchasing power, ability to survive inflation rate, high revenue turnover and increased status for corporate employees.

Furthermore, Organizations are said to undergo different stages of growth in their business life cycle, from stage of entrant into the market, to the stage of survival, move to the stage of optimization and eventually decline and transferring their knowledge and talents to surviving firms (Mosca, Gianecchini & Campagnolo, 2021). Organizations all over the world struggle for survival regardless whether public or private. Small firms strive to get more revenue, while the conglomerate makes every effort for rebranding and increase in their market share (Welch, 2022). Thus, Shapiro (2018) and Schoemaker, Heaton and Teece (2018) opines that Corporate growth is a yardstick to analyze how a firm is doing in terms of level of sales, product innovation, increase in revenue and its market share in relation to other firms in the same industry.

2.4.3 Efficiency

Luttenberger, (2020) opines that efficiency refers to the accomplishment of goals with minimum resources or waste. It includes measures such as time minimization, cost minimization, and waste minimization. Speed and time are important resources for any organization and must be seen to seek to maximize speed and minimize time. The way an organization does this indicates how efficient and productive they are. Speed and time were the essence of time and motion studies since the day of scientific management introduced by Taylor that led to management efficiency. They are sources of competitive advantage. Doing the right thing in corporate governance terms is an important, but not a sufficient, condition for performance. And doing the wrong thing (e.g. an ineffective audit committee, or lack of independence among the executives) will make it more difficult for an organization to perform but is not a measure of success or lack of it either.

The questions relating to organization efficiency are: How effective is the organization in dispatching businesses (including through organization committees in and between meetings) and following up on decisions, does the organization identify and focus on key (not just a long list of) issues and risks facing the organizations; is the organization able to take initiatives, dealing with crises and identifying emerging issues? The conception of time here is the duration taken to accomplish a task. These honest questions are both a matter of choice. Since it is usually only after an extended period is it possible to know whether the organization has dealt with the right issues, how well it has done so, and which issues have not been addressed. Accordingly, failing to ensure succession or invest in new technology is just as much about performance as successful talent management or systems investment. Organizations can be really helpful in identifying risks that executive director alone, sometimes preoccupied with current challenges, and may not have spotted (Adim, Ibekwe & Akintokumbo, 2018) There are two questions rather than one here because a history of dealing with key issues as they arise is not enough. The ability to take initiatives, deal with crises and identify issues that are not part of 'normal business' is a crucial differentiator between an efficient and a tolerable organization. For the same reason ‘meeting organization objectives’ isn’t included as a performance measure, since it runs the risk of being too inward-looking and passively taking things too much as they are.

2.5 Empirical Review

According to Mwashila's (2018) research findings, career development programs like training, job orientation, career advancement, and mentoring are effective because they have a positive effect on employee performance in Kenya's public universities. According to López-Fernández, Romero-Fernández, and Aust's (2018) research, human resources planning has a big impact on promoting objectivity, justice, and impartiality in work performance. Therefore, human resources development for employees encourages job performance to a large extent. The justification for this opinion is not implausible because human resources development programs can be implemented in an organization without taking anyone's interests into account.

The fairness of the human resources development program is intended to accomplish the goal of skill acquisition and conceptual agenda, according to Hmoud and Laszlo (2019). It makes decision making to be objective and encourages rational outcome. Thus the results of his study show that training and career development had positive effect on employee performance. This means that when other factors have been kept constant, training and career development increase and employee performance is valued at 98.5%. Obiekwe (2018) in his findings concludes that to withstand the international competition, organisations should develop and retain skilled, talented and motivated employees so as to develop quality, cost, consciousness and productivity but it is no doubt that human resource planning and career development are the two vital pillars on which the organisations stand strongly.

Kamau (2021) in his study on reasons for slow adoption of performance management concerting non-governmental organizations operating in Nairobi found out that more emphasis has been placed on performance planning and performance contracts and very little on performance monitoring and training. Al-Jedaia and Mehrez, (2020), in his study on the survey of preferred methods, rate and uses of performance appraisals by employees in selected tertiary public institutions in Nairobi found out that while all respondents had the full knowledge and understanding of performance management, the only important parts in the components was planning and contracts. They admitted that there is a need for training in performance management.

A study done on the relationship between performance management system and organizational performance at the standard chartered bank Kenya limited by Ambiyo (2018) in which a case study design with a total of 15 respondents were interviewed using an interview guide target respondent being heads of departments in the organization. Findings reveal that performance management system that has been put in place has to a great extent contributed positively to the banks performance. Practices adopted by the bank like setting goals, sharing feedback with employees, evaluating employee performance, rewarding employee performance and disciplining employee contribute to firms’ performance. This finding supports the study by Murphy, Torres, Ingram and Hutchinson (2018). In his study on perceived social and psychological effects of performance appraisal in selected international donor organizations in Kenya, the study found out that performance appraisal had a positive effect on the international donor organizations by promoting positive attitude towards donor relations.

The study adapted the following hypothesis

H_{O1}: There is no significant relationship between human resource planning and efficiency in the Jos Electricity Distribution, Gombe field office.

H_{O2}: There is no significant relationship between human resource planning and growth in the Jos Electricity Distribution, Gombe field office.

H_{O3}: There is no significant relationship between human resource planning and effectiveness in the Jos Electricity Distribution, Gombe field office.

3.0 Methodology

The cross-sectional survey approach was used to collect data for the study. The population of the study comprises all the staff of JED, Gombe office. A total of eight seven (87) staff gotten from the organization, formed the target population for this study. The sample size for a given population was determined using the Krejcie and Morgan (1970) table. The table determined that our sample size should be 72 for our population. The simple random sampling technique will be applied in this study as the sample procedure. With the help of the SPSS Package version 23, descriptive statistics and Spearman's rank correlation were employed for data analysis and hypothesis testing.

4.0 Data Analysis and Results

4.1 Bivariate Analysis

The hypothesis test included the bivariate hypotheses $Ho_{1,}$ Ho_2 and Ho_3, which were all expressed in the null form. To conduct the analysis, we used the Spearman Rank (rho) statistic. The 0.05 significance level is used as a threshold for the probability of either accepting or rejecting the null hypotheses at ($p>0.05$).

Table 1: Correlation Matrix showing Relationship between Human Resources Planning and Corporate Performance

			Corporate Performance	Efficiency	Growth	Effectiveness
Spearman's rho	Corporate Performance	Correlation Coefficient	1.000	.852**	.945**	.911**
		Sig. (2-tailed)	.	.000	.000	.000
		N	63	63	63	63
	Efficiency	Correlation Coefficient	.852**	1.000	.730**	.665**
		Sig. (2-tailed)	.000	.	.000	.000
		N	63	63	63	63
	Growth	Correlation Coefficient	.945**	.730**	1.000	.819**
		Sig. (2-tailed)	.000	.000	.	.000
		N	63	63	63	63
	Effectiveness	Correlation Coefficient	.911**	.665**	.819**	1.000
		Sig. (2-tailed)	.000	.000	.000	.
		N	63	63	63	63

**. Correlation is significant at the 0.01 level (2-tailed).

Source: Research Data, 2022 (SPSS output, version 23.0)

The table shows the test for the three previously postulated bivariate hypothetical statements.

H_{O1}: There is no significant relationship between human resource planning and efficiency in the Jos Electricity Distribution, Gombe field office.

The correlation coefficient 0.852 shows that there is a strong and positive relationship between human resource planning and efficiency. The p value 0.000<0.05 indicates that the relationship is significant. Therefore, the null hypothesis is hereby rejected and the alternate upheld. Thus, there is a significant relationship between human resource planning and efficiency in the Jos Electricity Distribution, Gombe field office.

H_{O2}: There is no significant relationship between human resource planning and growth in the Jos Electricity Distribution, Gombe field office.

The correlation coefficient 0. 945 shows that there is a positive but weak relationship between human resource planning and growth. The p value 0.000<0.05 indicates that the relationship is positive but weak. Therefore, the null hypothesis is hereby rejected and the alternate upheld. Thus, there is a significant relationship between human resource planning and growth in the Jos Electricity Distribution, Gombe field office.

H_{O3}: There is no significant relationship between human resource planning and effectiveness in the Jos Electricity Distribution, Gombe field office.

The correlation coefficient 0. 911 shows that there is a positive but weak relationship between human resource planning and effectiveness. The p value 0.000<0.05 indicates that the relationship is positive but weak. Therefore, the null hypothesis is hereby rejected and the alternate upheld. Thus, there is a significant relationship between human resource planning and effectiveness in the Jos Electricity Distribution, Gombe field office.

4.2 Discussion of Findings

Using the Spearman's rank order correlation tool and a 95% confidence interval, the data demonstrated a strong and positive significant relationship between human resources planning and corporate performance in the Jos Electricity Distribution, Gombe field office. This study's findings indicated that human resources planning had a significant relationship with measures of corporate performance (efficiency, growth and effectiveness). This finding was backed by Nguyen, (2020) in her research findings established that training, job orientation, career advancement and mentoring are reliable career development programmes as they had positive impact on employee performance in the public universities. Likewise, the findings of Kamau (2021) reveals that Human resources planning makes significant impact towards encouraging objectivity, fairness and impartiality in work performance. Thus, to a large extent, Human resources development of employees encourages job performance. The reason for holding this opinion is not farfetched, as human resources development programmes can be adopted in an organisation without consideration to any person in mind.

Furthermore, Bryson (2018) also indicated that the fairness of human resources development programme is designed to achieve the objective of skill acquisition and conceptual agenda. It makes decision making to be objective and encourages rational outcome. Thus the results of his study show that training and career development had positive effect on employee performance. This means that when other factors have been kept constant, training and career development increase and employee performance is valued at 98.5%. Similarly, Vo and Arato, (2020) in his findings concludes that to withstand the international competition, organisations should develop and retain skilled, talented and motivated employees so as to develop quality, cost, consciousness and productivity but it is no doubt that human resource planning and career development are the two vital pillars on which the organisations stand strongly.

In the same vain, Mwashila (2018) in his study on reasons for slow adoption of performance management concerting non-governmental organizations operating in Nairobi found out that more emphasis has been placed on performance planning and performance contracts and very little on performance monitoring and training. Obiekwe (2018), in his study on the survey of preferred methods, rate and uses of performance appraisals by employees in selected tertiary public institutions in Nairobi found out that while all respondents had the full knowledge and understanding of performance management, the only important parts in the components was planning and contracts. They admitted that there is a need for training in performance management.

5.0 Conclusion and Recommendations

Most public agencies are under increasing demand to accomplish greater results with fewer resources. The common popular complaints about government that it does not focus on results and it wastes money are indicative of public demands for quality services at affordable prices. Since human resource planning and management is a participatory and team-based management approach designed to achieve defined results by improving planning, programming, management efficiency, effectiveness, accountability and transparency. This makes it one of the most needed strategy for an organizational like Jos Electricity Distribution (JED), Gombe office to constantly attain its objectives in an efficient and effective manner. The study thus concludes that a relationship exists between human resources planning and corporate performance in the electricity distribution company in Nigeria.

The study recommends that:

i. Management of the JED, Gombe field office need to ensure the human resource planning is tailored towards enhancing employee productivity, retention and general performance.
ii. The board of directors with senior staff of JED should have standard employee appraisal criteria to make it regular and involve all staff in assessing their performance
iii. Management of the organization should maintain and enhance the performance development programs placing more attention on those ones that inculcate more knowledge and skills that would drive employees‟ performance in the organization.

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Assessment of Maintenance Management Practice of Auto – Technicians and their Impacts on Vehicle Operational Performance in Minna, Niger State

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Abstract
Understanding auto technicians' impact on vehicle maintenance Management is critical to the efficient and effective transportation of goods and people. This is why this study focused on assessing the maintenance management practices of auto technicians and their impacts on vehicle operational performance in Minna. A questionnaire survey of registered auto-technicians and licensed vehicle drivers was carried out to elicit information about maintenance management practices developed by auto-technicians and the impacts of their maintenance practices on vehicle operational performance. Using the Taro Yamane sample size formula, 386 questionnaires were administered to the two groups of respondents; the data collected were analysed descriptively using mean and averaged to determine the rating of various parameters on maintenance management practices and their impacts. The results show that auto technicians' maintenance management practices are rated very high and considered to be of a high standard, with an overall mean of 3.05. There was an agreement between the drivers and auto technicians that the impact of automobile technicians on vehicle operations is very high, with an overall mean of 3.51. Therefore, the study recommends that their unions and the government of Niger State encourage the training and retraining of auto-technicians to enhance their capabilities and competencies.

Key words: *Automobile Technicians, Vehicle, Maintenance, Management*

1.0 Introduction

Automobiles are self-propelled vehicles used primarily on public roads but adaptable to other surfaces. Automobiles are classified by size, style, number of doors, and intended uses (Mustapha, 2015). The typical automobile, also called a car, auto, motor car, or passenger car, has four wheels and can carry up to six people, including the driver. Larger vehicles designed to carry more passengers are called vans, minivans, omnibuses, or simply buses. Those used to carry cargo are called pickups or trucks, depending on their sizes and designs. Minivans are van-style vehicles built on a passenger car frame that usually carry up to eight passengers. Sport-utility vehicles (SUVs) are more rugged than passenger cars. They are designed to transmit power in mud or snow (Idris et al., 2014). As such, this implies that the transmission of power by mechanical and electrical devices has long been in use in the automobile industry.

The automobile industry is a service industry that sustains the transport sector of a nation's economy. The people behind this sector are the Automobile Technicians (AT). The Automobile Technicians are sets of technicians who apply, coordinate and oversee the processes involved with the passage of materials, goods, products or people and ensure safety throughout these passages (Mustapha et al., 2020). The AT may work in large and small shops, overseeing the drivers and the transportation process. According to Idris et al. (2014), AT focuses on revamping, rebuilding and servicing specific systems of the automobiles, such as braking, steering and suspension systems in large shops. In contrast, in small shops, they work in a wider variety of repair jobs. To carry out these functions effectively, good maintenance skills are imperative to separate problems with assemblies, components and parts.

Maintenance is a combination of all technical, administrative and managerial actions during the life cycle of an item intended to retain or restore it to a state in which it can perform the required function. Proper maintenance is very crucial for any equipment which is subjected to operations. Like in any other technology area, management plays a vital role in maintenance activity. It usually is essential that the manufacturing or production automobile industries identify, define and communicate the management practices to automobile owners. Therefore, an automobile workshop refers to a building, room or cluster of rooms for repairs and practical works. The primary management functions of the automobile workshop include planning, organising, controlling and coordinating human and material resources such as machine tools and equipment (Nwaodo, 2010). Therefore, good management is imperative if the motives of the workshop are to be realised.

Management is getting things done by coordinating an organisation's resources through planning, organising, directing and controlling to attain the organisation's objectives. Management is essential in all organised cooperation and at all levels of an enterprise (Nwaodo, 2010). Maintenance management is responsible for the smooth and efficient working of the industrial plant and helps improve productivity. According to Al-Turki (2011), maintenance management is the activities of planning, organising, implementing, monitoring and controlling in order to sustain a certain level of availability, value and reliability of the system and its components (assets) and its ability to operate to a certain standard level of quality. Thus, maintenance management is associated with the direction and organisation of various resources to control the availability and performance of the industrial unit to some specified level. Maintenance management may be a vital production management function entrusted with keeping equipment/machines and plant services in proper operating condition. Maintenance management is essential to improve equipment performance, ensuring quality operation within safe conditions for people and the environment (Jiang, 2015). According to Constantin (2017), the goal of maintenance is to restore it when necessary, but mainly to seek the improvement of the system's reliability. Maintenance activities are related to the repair, replacement and service of component(s) so that it may continue to operate at a specified 'availability' for a specified period.

Therefore, the choice of maintenance management practice heavily impacts the firm's performance. The main measures of a firm's operational performance are reliability, maintainability, productivity, efficiency, availability and production per unit cost, among others (Er-Ratby and Mabrouki, 2018). Since a firm's maintenance costs are generally high, applying best maintenance management practices can boost a firm's operational performance (Kamau, 2014). Therefore, the assessment of the impact of automobile technicians on vehicle maintenance management practices which offer better operational performance, needs to be established in the Minna metropolis.

1.1 Statement of Research Problem

A firm's maintenance management practices impact heavily on its operational performance. A firm must adopt practices that offer operational success (Esin and Hilal, 2014). Many maintenance management practices are in use in automobile industries; such practices include, among others, reactive (unplanned) and proactive (planned) maintenance practices. The automobile industry, particularly the motor vehicle operators, is burdened with an increasingly high cost of vehicle maintenance and frequent breakdown of operational vehicles due to poor maintenance management and a lack of competent auto technicians. The type of maintenance management practices adopted by auto-technicians is not very clear, and the extent of the impact of their adopted maintenance management or vehicle operation in Minna is not well understood

The need to understand the types of maintenance management practices adopted by auto-technicians and their impact on vehicle operational performance in Minna necessitated this study. The analysis of the impacts on auto-technicians will enable policymakers. Those who are in charge of regulating the activities of the auto-technicians to develop appropriate strategies to improve the competence of the auto-technicians and set appropriate maintenance standards for the automobile industry in the State. This study, therefore, is set to assess the maintenance management practice of auto-technicians and their impacts on vehicle operational performance in Minna through the following objectives:

i. Examine the extent of applying various maintenance management practices by auto-technicians in Minna.
ii. Assess the impact of the adopted maintenance management practices on vehicle operations.

1.2 Hypotheses

The following null hypotheses were tested at 0.05 level of significance

HO_1: There is no significant difference between the mean responses of the respondents on the applications of the various maintenance management practices applied by the automobile technicians in Minna

HO_2: There is no significant difference between the mean responses of the respondents on the levels of impact of the adopted maintenance management practices on the automobile industry's operational performance

2.0 Literature Review

The scope of maintenance is illustrated by its numerous definitions; it is defined from a theoretical perspective as those activities that protect the original or operational condition of equipment or facilities "as-built" (Dahal & Dahal, 2020). However, this definition focuses on maintaining equipment design characteristics and does not acknowledge how performing repairs at intervals can extend the useful life of equipment by ensuring system reliability and reducing idle time (Bagshaw, 2017). According to Barney (2011), the objectives of maintenance are:

i. To maximise the time, the machine, tools, equipment, and building, among others, will be available for use and for the purpose for which they are required.
ii. To enhance the operational reliability of the machine, tools and equipment.
iii. To minimise the overall operational cost of production by reducing scraps and wastages that may be due to the malfunctioning of the machines.
iv. To preserve the value of the assets by reducing the rate by which they deteriorate.

As observed by researchers, maintenance costs are usually 10 to 30% of an organisation's total running costs. This cost can be minimised by adopting well-known maintenance management practices and monitoring the firm's performance by measuring Key Performance Indicators (KPIs) (Jamie, 2019). This is meant to ensure that the Firm's objectives have been met. When failure to meet the objective exists, intervening actions must be taken (Vanneste & Wassenhove, 1995). Maintenance can be a profit generator; mismanagement can lead to firms making huge losses.

Usman et al. (2012) highlighted that the maintenance management strategy has the following goals:

i. Enhancing equipment capability quantitatively and qualitatively;
ii. Extending equipment lifetime by replacement and repair
iii. Improving component and system reliability
iv. Improving safety, health and environmental factors in the expectation that such improvements will contribute to better quality and higher profits
v. Reducing maintenance costs by increasing system capacity, reinforcing
vi. Reducing the frequency of service interruptions and the many undesirable
vii. Redundancy and employing more reliable components.

The benefits of maintenance management, according to Bagshaw (2017), include:

i. Ensuring that equipment is always in the best technical condition;
ii. Ensuring the integrity rate of equipment usage;
iii. Improving equipment reliability;
iv. Improving the economic benefits to the nation's economy;
v. improving the ongoing costs of equipment;
vi. Improving the utilisation of equipment;
vii. Reducing hospital dependence on sub-contractors, which is the main factor in increasing maintenance costs and low maintenance performance and
viii. Reducing hospital operating costs, optimising the financial structure and
ix. Reducing the cost of maintenance by having an adequate spare part inventory.

As technology has advanced, various maintenance strategies have evolved, including condition-based maintenance, predictive maintenance, remote maintenance, preventive maintenance (PM), and e-maintenance. The main challenges organisations face today are choosing the most efficient and effective strategies to continually enhance operational capabilities, reduce maintenance costs, and achieve competitiveness in the automotive industry. Therefore, in addition to formulating maintenance policies and strategies for asset maintenance, it is vital to assess the maintenance management practice of auto–technicians and their impacts on vehicle operational performance in Minna, Niger state.

3.0 Methodology

A descriptive survey was selected to assess the impact of automobile technicians on vehicle maintenance management in Minna. The target population was 3 800 registered motor mechanics in Minna and 11 277 Licensed Motor Vehicle Drivers from January 2017 to April 2021. Simple Random Sampling (SRS) was used to sample the registered motor mechanic and licensed motor vehicle drivers in the Minna metropolis. Using the Taro Yamane formula (1967), a sample size of 386 was used for the study. The instrument used for the data collection was a structured questionnaire which comprised twenty-two (22) items. These include eleven (11) items dealing with the maintenance management practices applied by ATs and eleven (11) items dealing with the levels of impact of the adopted maintenance management practices on automobile industries. The questionnaire was subjected to experts for validation before it was administered to target respondents. Cronbach Alpha was used to determine the reliability coefficient of the questionnaire, which was found to be 0.94. The data collected from the respondents were analysed using frequency, average, mean and t-test statistics. The study adopted a four-point rating scale Using real limit of numbers. These include:

3.50 – 4.00 as **VHE-** Very High Extent **VHL-** Very High Level

2.50 – 3.49 as **HE-** High Extent **HL-** High Level

1.50 – 2.49 as **LE-** Low Extent **LL-** Low Level

0.50 – 1.49 as **VLE-** Very Low Extent **VLL-** Very Low Level

Also, a t-test was used to compare the mean response of the groups; therefore, if the P-value is less than the α-value (P< α), the null hypothesis will be rejected; this implies a significant difference; however, if the P-value is greater than the α-value (P> α), the null hypothesis will be accepted; this implies no significant difference.

4.0 Results and Discussion

4.1 Research Question 1

What is the extent of applying various maintenance management practices by auto-technicians in Minna?

Table 1: Mean response of respondents on the extent of applications of the various maintenance management practices applied by the automobile technicians in Minna

S/N	Types of Maintenance Practice	X_1	X_2	X_a	Remarks
1	Predictive maintenance based on analysis of the operation	2.99	3.28	3.14	HE
2	Predictive maintenance based on analysis of physical observation	3.01	2.92	2.97	HE
3	Scheduled maintenance to avoid breakdown	3.92	3.87	3.90	VHE
4	Repair of breakdowns	2.66	2.53	2.60	HE
5	Stopping a machine to attend to defects that may hinder the maximum performance of automobiles	2.56	2.59	2.58	HE
6	Computer-based management maintenance	2.57	2.49	2.53	HE
7	Prioritising maintenance practice in line with impending risks value in terms of safety	3.58	3.61	3.60	VHE
8	Taking small-scale repairs by operations staff when a machine is still in operation	2.68	2.73	2.71	HE
9	Condition monitoring techniques to determine whether a problem exists in running equipment	3.75	3.87	3.81	VHE
10	Planned maintenance based on the onset of failure to prevent breakdowns	2.76	2.77	2.77	HE
11	Planned maintenance based on the onset of failure to delay breakdowns	3.00	2.98	2.99	HE
	X_g			**3.05**	**HE**

Keys: X_1 = Mean response of registered motor mechanic; X_2 = Mean response of Licensed Motor Vehicle Drivers; X_a = Average of Mean response of the respondents; Xg = Grand Average of Mean response of the respondents; VHE= Very High Extent; HE= High Extent; LE= Low Extent and VLE= Vey Low Extent.

The result in Table 4.1 shows that three (3) out of the eleven (11) items dealing with the extent of applications of the various maintenance management practices applied by the automobile technicians in

Minna are rated very high extent. Conversely, eight (8) items are rated as high extent, and none are rated as low extent or very low extent. Based on the grand average mean value (3.05) between the mean range of 2.50 – 3.49, this gives the impetus to conclude that the extent of applications of the various maintenance management practices applied by the automobile technicians in Minna is high.

4.2 Research Question 2

What is the impact of the adopted maintenance management practices on vehicle operations?

Table 2: Mean response of the respondents on the levels of impact of the adopted maintenance management practices on automobile industry's operational performance

S/N	ITEM	X_1	X_2	X_a	Remarks
1	Providing effective repair services	3.49	3.57	3.53	VHL
2	Assist in spare parts availability	3.65	3.82	3.74	VHL
3	Provide vehicle engine services	3.42	3.33	3.38	VHL
4	It helps in prolonging the vehicle life span	3.63	3.57	3.60	VHL
5	Helps in vehicle operation performance	3.76	3.67	3.72	VHL
6	Providing efficient repair services	3.43	3.21	3.32	HL
7	Human resources availability	3.76	3.75	3.76	VHL
8	Tools in use	3.52	3.61	3.57	VHL
9	Availability of external motivation	3.65	3.72	3.69	VHL
10	Availability of internal motivation	3.32	3.28	3.30	HL
11	Increase staff competencies	3.12	3.32	3.22	HL
	X_g			**3.51**	**VHL**

The result in table 4.3 shows that eight (8) out of the eleven (11) items dealing with the impact of the adopted maintenance management practices on the automobile industry's operational performance are very high. Conversely, three (3) items are rated as high level, and none are rated as low or very low. Based on the grand average mean value (3.51), which is between the mean range of 3.50 – 4.00, this gives the impetus to conclude that the respondents have a very high-level impact of the adopted maintenance management practices on the automobile industry's operational performance

4.3 Hypotheses

4.3.1 Hypothesis 1

HO_1 There is no significant difference between the mean responses of the registered motor mechanic and licensed motor vehicle drivers on the extent of applications of the various maintenance management practices applied by the automobile technicians in Minna

Table 3: t-test statistics between registered motor mechanics and licensed motor vehicle drivers on the extent of applications of the various maintenance management practices applied by the automobile technicians in Minna

Respondents	Mean (X)	Std. Deviation	N	df	Std. Error	t-calc	P-value	Decision
Registered motor mechanic	3.044	0.488	11		0.147	-0.068	0.655	Accepted
Licensed Motor Vehicle Drivers	3.058	0.520	11	20	0.157			

Keys: df= degree of freedom, t-cal= t-calculated, P-value= Probability value, N= Number of respondents

Table 3 above shows t-cal=-0.068, df (20). Since the P-value (0.655) is more significant than the α-value (0.05) (P>α), therefore, the null hypothesis is accepted. This implies a significant difference between the mean responses of the respondents on the extent of applications of the various maintenance management practices applied by the automobile technicians in Minna.

4.3.2 Hypothesis 2

HO_2 There is no significant difference between the mean responses of the respondents on the levels of impact of the adopted maintenance management practices on the automobile industry's operational performance

Table 4: t-test statistics between registered motor mechanics and licensed motor vehicle drivers on the levels of impact of the adopted maintenance management practices on the automobile industry's operational performance

Respondents	Mean (X)	Std. Deviation	N	df	Std. Error	t-calc	P-value	Decision
Registered motor mechanic	3.522	0.195	11		0.588	-0.105	0.918	Accepted
Licensed Motor Vehicle Drivers	3.532	0.211	11	20	0.637			

Keys: df= degree of freedom, t-cal= t-calculated, P-value= Probability value

Table 4 shows t-cal=-0.105, df (20). Since the P-value (0.918) is more significant than α (0.05) (P>α), the null hypothesis is accepted. This implies that there is no significant difference between the mean responses of the respondents on the levels of impact of the adopted maintenance management practices on the automobile industry's operational performance

4.4 Discussion

The findings on the extent of applications of the various maintenance management practices applied by the automobile technicians in Minna show that the most used maintenance management practice is scheduled maintenance. The finding is in line with Warren (2020) that scheduled maintenance deals with the equipment's inspections according to parameters of time, hours of operation, mileage, and consumption, among other factors. For example, in the case of an automobile, the engine is checked for engine oil every 5000 km and the distribution belt every 80 000 km. Similarly, the same thing happens with an aeroplane, whose parts are designed to be inspected or changed every specific time of flight hours (Tseko et al., 2020).

The study also discovered that computer-based management maintenance is the least used maintenance practice. This is because computer-based management maintenance can only be effective if the system is used by trained personnel (computer-based management maintenance can only be effective if the system is used by trained personnel (Nigussie & Muralidhar, 2020). Cezary (2016) stressed that the training needs to be given in all areas of maintenance and also needs to be constantly updated. Contrary to the challenges of computer-based management maintenance, Higgins et al. (2008) state, among others, that computer-based management maintenance reduces spare parts inventory, better process stability and reduces overtime. Labib (2018) highlights that accessibility and accuracy of the information can provide more reliable decisions in computer-based management maintenance because of closer working relationships between maintenance and production.

The study also revealed that the extent of applications of the condition monitoring techniques to determine whether a problem exists in running equipment is very high. These findings align with Carlos et al. (2020) that condition monitoring is a form of predictive maintenance where continuous monitoring of the performance of a machine or condition of the specific part is monitored, which will affect the product quality.

The findings on the impact of the adopted maintenance management practices on the automobile industry's operational performance revealed that human resources availability has the highest impact. This agrees with Prachi (2015) that human resources help implement maintenance management activities such as staffing. This implies that staffing becomes a key to all maintenance management functions. The study also revealed that staff skills and competencies are requisite for automobile maintenance management practices. This result agrees with Mustapha (2015) that the most critical skills needed by a maintenance manager in the automobile industry are occupational (technical) and employability (non-technical) competencies such as organisational skills, analytical skills, interpersonal skills and computer skills, scheduling and overseeing all maintenance-related work by managing a team of maintenance technicians and supervisors. The study also revealed that tools in use impact maintenance management practices. This agrees with the International Labour Organization (2021). Using the right tools for the right job helps secure reliable and satisfactory production quality, employee safety, and environmental protection.

5.0 Conclusion and Recommendations

Based on the findings of this study, the research highlights the impacts of maintenance management practices on automobile technicians' performance for building up strategic benefits for meeting the challenges posed by global competition in the maintenance management of automobiles. The results of this study have implications for automobile technicians to have mastered the various maintenance strategies with proactive strategies such as predictive and preventive maintenance and persistent strategies such as Total Productive Maintenance (TPM) to achieve world-class performance.

Based on the findings of the study, it is recommended that top management of the stations studied should devise ways of reducing the high maintenance costs in their stations. They need to explore the best maintenance management practices which are likely to improve their operational performance and increase the level of application of those practices. The stations' top management should also increase their level of support, especially on the human factor.

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SECTION THREE

ROLE OF COMPUTING AND INFORMATION & COMMUNICATION TECTHNOLOGY IN SUSTAINABLE DIGITAL TRANSFORMATION

Improved E-Banking Websites Quality Evaluation Approach Based Fuzzy Hierarchy Process Model

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Abstract
electronic banking (e-banking) enables user to access services virtually on banking platforms such as home, personal computer (pc), mobile and internet. it offers ease to use, convenience, low cost, fast delivery, time factor, and online bill settlement. website quality evaluation entails numerous dimensions and attributes from its conception. the evaluation processes are critical and complex requiring quality, accuracy and objectivity. in real-life scenarios, complex decisions making (such as e-banking websites quality evaluation) entail multiple criteria that are beyond the capacity of the human brain to synthesize effectively and intuitively. recently, the multi-criteria decision-making (mcdm) model became popular in which fuzzy analytical hierarchy process (fahp) was mostly preferred due its ability to expand numbers of decision-makers across multiple criteria/sub-criteria. the specific criteria are required to evaluate e-banking website quality, which best define good quality websites attributes. this paper developed an e-banking website evaluation model for nigerian banking sector using content and semantic analyses, and computerized approaches. the fahp model outcomes revealed that, ease of use, e-loyalty, e-satisfaction, e-trust, and product quality are most influencing criteria for evaluation e-banking websites. while, the best top-three criteria for evaluating e-banking websites are e-satisfaction, product quality, and e-trust.

Keywords: *multi-criteria decision-making, fuzzy ahp, website, quality, e-banking, evaluation, criteria.*

1.0 Introduction
The indispensability of the website in day-to-day lives of individuals globally have raised the concerns about websites quality evaluations. This kind of evaluation ventures attempt to measure the website by means of a set of quality requirements with the goal of fetching valuable feedback about necessary information needed to assist in the design and development of high quality and interactive websites. The term quality connotes to the degree to which objects adhere to a collection of inherent characteristics satisfies a set of requirements.

These intrinsic characteristics refer to the features available in an object or entity being evaluated to ensure that it attains the needs of users. One of the intrinsic characteristics is quality, which embodies the behavioural characteristics of the object (or system). Therefore, these factors or characteristics establish the non-functional requirements utilized in judging the operations of websites operations on the basis of the perception of the expert evaluators, developers and users (Orhionkpaiyo & Momodu, 2021).

Accordingly, five (5) key quality factors of website common to financial websites in terms of degree of importance include: up-to-date, accuracy, multiple sources, easy-to-navigate, and timeliness. In educational domain, quality factors of websites include: easy-to-navigate, search tool, accuracy, comprehensiveness, and layout. In the case of government websites, top quality factors include: easy-to-navigate, layout, up-to-date, search tool, and accuracy. In case of e-commerce website, the most sought-after quality factors include: security, easy-to-navigate, appropriate explanatory text, search tool, and product/service concerns. In health/medical website considers the following quality factor: accuracy, easy-to-navigate, search tool, up-to-date, and comprehensiveness. While, in the entertainment domain, the renowned quality factors are visual design, easy-to-navigate, responsiveness, multimedia, and up-to-date (Orhionkpaiyo & Momodu, 2021).

Websites and Internet technologies are now well-established and reliable elements of marketing communication. Websites are important in every organisation and tremendous effort is made to design websites that not only look and feel good, but are usable and of high quality. Nevertheless, one critical task is how to evaluate these websites to ensure that users are satisfied with its quality and usability (Bacik *et al.*, 2021). In this paper, multi-criteria and complex decision-making processes were developed by introducing some form of logical and scientific approach to decision making in determining criteria for e-banking website quality evaluation (Tseng *et al.*, 2021).

2.0 Literature Review

Al-Shammari & Mili (2019) implemented a FAHP multi-criteria decision model to enable customers of commercial banks to make choice of preferred bank. Five Bahraini retail commercial banks were utilised for the formulation of a decision problem designed in three-step hierarchies based on six criteria. Thereafter, the FAHP was utilised in arriving at the relative weights of the criteria of evaluation. The outcomes revealed that, most of preferred banks considered pricing strategy against facilities offered by the banks. Customers were mostly attracted to the banks using deposits and credits' interest rates alongside costs of transactions. This support decision makers in developing the appropriate strategies towards their preferences of customers.

Bacik *et al.* (2021) understudied the essence of website quality on the anticipated performance and the e-banking actual usage. A model was created that determine the effect of website quality on the e-banking usage. Use of technology, and Unified Theory of Acceptance and Use of Technology (UTAUT) served as theoretical underpins, the recognizing precise attributes of websites and their influence on the internet banking usage by tourists in destinations. From the outcomes obtained, the perceived website quality is a multi-dimensional problem. The website quality is indirect influence on the user's behaviour, often estimated as the internet banking- frequency of usage. This indirect influence is explained by the projected performance indicator. There is the problem of low acceptance of technology in banking sector and restricted scope (Islamic banking).

Sari & Pangaribuan (2019) attempted to estimate the website quality and agent satisfaction. The WebQual 4.0 technique was used to analyse 30 samples of listed agent. The main measurement criteria including: satisfaction of customers, and usability of website, while the sub-criteria include: emotional, service quality, cost, price, and product quality. The study revealed that, the payment website usability can be used to enhance satisfaction of agents. This implies that whenever online payment websites the quality is at the level of ease (usability); then, agent satisfaction rises correspondingly. But, there is the need to have standard website usability criteria in place especially e-banking websites.

Gill *et al.* (2021) noted that, top-quality online banking services are significant in retaining customers. E-banking services customers of top five Pakistani banks served as population of the study. A structural equation modelling was used for hypotheses analysis. There are significant influence of website design, reliability, and security on customer trust giving rise to more loyalty by means of theory of cognitive and motivational relation. Therefore, numerous practical and theoretical implications can be derived for management of banks in improving e-banking website design in order to win over trust of their customers, and reinforce loyalty.

Hammouri et al. (2021) developed a theoretical framework for examining the association between trust and security in terms of e-banking. Seven variables were collected in relation to the security issues in Internet banking including: availability, integrity, confidentiality, authentication, non-repudiation, authorization, and privacy. Thereafter, a research model was proposed for e-banking services without evaluation.

Reddy & Megharaja (2021) investigated the association between the factors of e-banking service quality and customer satisfaction for purpose of identifying dimension with most impact on satisfaction of customer. Data were obtained from Lebanese's bank customers through a survey instrument. The SEM and AMOS were used for analysis revealed that, service quality, and reliability as strong predicator of customer satisfaction.

Chhaya & Mittal (2021) attempted to identify factors mostly influencing the service quality in adopting e-banking services. The primary survey method was used to gather data across bank customers in the Indian banking sector. Using structural equation modelling (SEM) analyser, service quality factors greatly influence the service quality of e-banking such as ease of use and perceived security. Also, the quality of e-banking service remained one of the unavoidable components of the banking sector for increasing profits, reputation, and competitive edge through raising customer satisfaction levels.

Chaimaa, Najib & Rachid (2020) highlighted on e-banking concept, security risks, and challenges associated with technology usage. The different security solutions introduced were evaluated in order to differentiate between the e-banking user needs. Most security solutions for e-banking platforms are susceptible to attacks, complex to use and expensive. Therefore, these solutions proposed do not satisfy customer requirements for the Internet banking system.

Ullah (2021) examined the impact of e-banking service quality (EBSQ) factors on the loyalty of customer mediated by customer's trust. The data of 220 participants drawn from five commercial banks in Malaysia was obtained for study. Thereafter, website design, reliability, customer service and support were statistically significant; while security and privacy had impact on loyalty of customer. Again, customer trust mediated role had high influence in determining relationship between EBSQ attributes and customer loyalty.

Recently, fuzzy Technique for Order of Preference by Similarity to Ideal Solution (fuzzy-TOPSIS), and fuzzy Best–Worst Method (fuzzy-BWM) were combined in modelling the preference of m-banking platforms in (Roy and Shaw, 2022). It was found that, applications' convenience, functionality, and performance expectancy were important factors in choosing an m-banking platforms, trailed by security, performance quality, and compatibility. This enables complex decisions and ambiguity of identifying potential factors for choosing m-banking applications available by customers using fuzzy set theory approach.

The evaluation of e-banking website quality for 27 Poland banks were carried out using own conversion, Promethee II, PROSA and TOPSIS methods was conducted by (Chmielarz and Zborowski, 2022). The obtained results showed superiority of automated evaluation approaches against others for MCDM problems undertaken.

3.0 Methodology

This paper adopts the fuzzy analytical process (AHP) based quality criteria to assess the website quality. The AHP approach is a powerful tool in decision-making problems; though a group of analysts has alluded to the Saaty's AHP strategy's limitations including vulnerability (uncertainty) during the preparation of chiefs' judgment to number of alternatives uncovered by AHP. Also, the inclination and distinct leader's judgment have high influence on the outcomes of the AHP. To overcome these, the Saaty's AHP was accustomed and fuzzified to number to manage the vulnerability according to Kumar *et al.* (2021).

3.1 The Proposed Model

In the proposed FAHP, the soothing of the uncertainness of AHP strategy is to be achieved using the proportions of the fuzzy correlations. In 1996, Chang introduced a new method for dealing with pair-wise evaluation scale reliant on the three-sided (triangular) fuzzy values based on survey degree of investigation technique for determination of the pairwise correlation. More so, when contrasted with AHP, FAHP offers a decision maker better flexibility due to its capability to map a relative priority to different probable values (Chen & Wu, 2020).

The foremost phase in this method is to adopt three-sided fuzzy values for pairwise correlation through FAHP scale, and then, succeeding stage use degree investigation approach to realize needed loads through engineered degree esteems. The grid of fuzzy assessment measures is to be constructed by means of the pairwise correlation of different ascribes relevant to the overall target using the triangular fuzzy numbers, and semantic factors. The key components of the FAHP for selecting the relevant criteria in determining quality of websites in e-banking sector include: selection of website quality criteria, coding of criterion with possible indiscriminative values, application of relevant criteria in evaluating e-banking website quality, fuzzy judgement matrices for decision-making, outcomes of e-banking website quality evaluation (defuzzification). These are depicted in Figure 1.

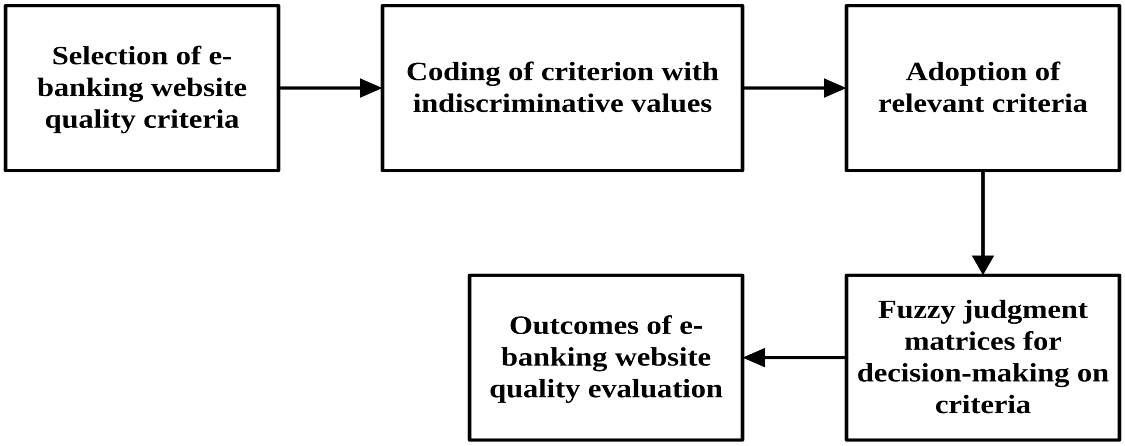

Figure 1. The proposed FAHP model for e-banking website quality evaluation.

3.2 Criteria selection

The steps for selecting criteria are provided as follows:

1st Step: The hierarchal structure is developed for converting the complex problem in a raw format.

2nd Step: The relative importance of each criterion is to be determined from the views of experts in order to construct the comparison matrix using membership functions of linguistic scale and fuzzy number presented in Table 1 (Al-Shammari and Mili, 2019; Kumar *et al.*, 2021).

Table 1: Linguistic scale and membership function.

Fuzzy number	Linguistic scale	Scale of triangular fuzzy	Scale of triangular fuzzy reciprocal
9	Extreme importance	9 9 9	1/9 1/9 1/9
8	Very, very strong	7 8 9	1/9 1/8 1/7
7	Very strong or demonstrated importance	6 7 8	1/8 1/7 1/6
6	Strong plus	5 6 7	1/7 1/6 1/5
5	Strong importance	4 5 6	1/6 1/5 1/4
4	Moderate plus	3 4 5	1/5 1/4 1/3
3	Moderate importance	2 3 4	1/4 1/3 1/2
2	Weak or slight	1 2 3	1/3 1/2 1
1	Equal importance	1 1 1	1 1 1

The pairwise comparison matrix is composed of all the items of the matrix (A_{gh}, B_{gh}, C_{gh}) denoting the important values of the criteria. The importance of analysing the gth data for the B target was determined in relation to these symbols as given by (1).

$$\begin{bmatrix} (1,1,1) & A_{21}B_{21}C_{21} & \dots & A_{1n}B_{1n}C_{1n} \\ A_{21}B_{21}C_{21} & (1,1,1) & \dots & A_{2n}B_{2n}C_{2n} \\ A_{n1}B_{n1}C_{n1} & A_{n2}B_{n2}C_{n2} & & (1,1,1) \end{bmatrix} \quad (1)$$

All of $(h: 1, 2, 3, \ldots, b)$ b_{kg}^{h} were fuzzy triangular members. Again, $Y = (y_1, y_2, \ldots, y_n)$ was the set of decision, and $Q = (q_1, q_2, \ldots, q_n)$ is the target matrix. The fuzzy membership triangular representation is represented in (2).

$$b_{k1}^{h}, b_{k2}^{h}, \ldots, b_{kn}^{h}, g = 1,2, \ldots, n. \qquad (2)$$

The fuzzy values in each criterion's entire target set are summed individually, and the $\sum_{g=1}^{h} b_{kg}^{k}$ values is realized as given by (3).

$$\sum_{g=1}^{h} b_{kg}^{k} = \left\{ \sum_{k=1}^{h} A_k , \sum_{k=1}^{h} B_k , \sum_{k=1}^{h} C_k \right\} \qquad (3)$$

For each fuzzy value in the decision set is summed up to obtain $\sum_{k=1}^{n} \sum_{g=1}^{h} B_{kg}^{k}$ as depicted in (4)

$$\sum_{k=1}^{n} \sum_{g=1}^{h} b_{kg}^{k} = \left\{ \sum_{g=1}^{n} A_k , \sum_{g=1}^{n} B_k , \sum_{g=1}^{n} C_k \right\} \qquad (4)$$

The corresponding inverse vector can be expressed by (5).

$$\left[\sum_{k=1}^{n} \sum_{g=1}^{h} b_{kg}^{k} \right]^{-1} = \left\{ \frac{1}{\sum_{g=1}^{n} A_k}, \frac{1}{\sum_{g=1}^{n} B_k}, \frac{1}{\sum_{g=1}^{n} C_k} \right\} \qquad (5)$$

The synthetic extent value, E_g, for each criterion can be computed by (6).

$$E_g = \sum_{g=1}^{h} b_{kg}^{k} . \left[\sum_{k=1}^{n} \sum_{g=1}^{h} b_{kg}^{k} \right]^{-1} \qquad (6)$$

Whereas, the degree of possibility of $b_1(A_1, B_1, C_1) \geq b_2(A_2, B_2, C_2)$ is given by (7).

$$U(b_1 \geq b_2) = \sup_{x \geq y} \left[\min(\omega_{b_1}(x), \omega_{b_2}(y)) \right] \qquad (7)$$

A function ω: R → [0, 1] is a *fuzzy number* if and only if there exists an x_0 such that ω $(x_0) = 1$ and all the upper-level sets of ω are convex, that is, the set $\{x \in R| \ \omega(x) \geq \Omega\}$ is convex for all $0 < \Omega \leq 1$. R is the rule lists for FAHP.

Consequently, the Triangular Fuzzy Numbers (TFNs) are expressed by three real numbers $(a, b, c) \in (A, B, C)$. The parameters a, b and c indicate the smallest possible value from the set $\{A, B, C\}$, the most promising number and the largest probable values explaining any fuzzy events.

3.3 Data Collection

Target population of customers who have bank accounts linked to the e-banking platform (that is, website) in Minna, Niger State. The study will collect data from the customers through online survey. In particular, consumers with third-party booking system experience were requested to partake in the online survey. Since the sampling frame was hard to obtain due to the Personal Information Protection Act that restricts financial institutions from releasing personal data concerning users, a non-random sampling approach is utilised for data collection. Respondents were enlisted over a link to online opinion poll of the selected banks websites (Al-Shammari & Mili, 2019; Chen & Wu, 2020; Karczmarek, Pedrycz & Kiersztyn, 2021; Tseng, Wang & Tsai, 2021).

3.4 Experimentation

The proposed model for evaluating e-banking websites is to be experimented on MATLAB R2019b on PC with the following specifications:

Hardware: Processor: AMD E1-1200 APU, Radeom™ Graphics 1.40 GHz.
RAM: 4.00 GB
System Type: x64-based processor, 64-bit Operating System.
Software: Rating: 3.5 Windows Experience Index
Windows Edition: Windows 8 Single Language 2012
Simulator: MATLAB R2019b.

4.0 Results and Discussions

The outcomes of multiple respondents on the main influencing criteria for evaluating the e-banking websites quality on the basis of the developed FAHP model developed are shown in Table 2.

Table 2: Weights and ranks of criteria for evaluating e-banking websites quality.

Criteria	Normalized Weight	Rank
Ease of use	0.2541	2
E-loyalty	0.3021	1
E-satisfaction	0.1421	5
E-trust	0.1569	3
Product quality	0.1449	4

From Table 2, the top three ranked criteria mostly influencing the decision of respondents evaluating e-banking websites quality are e-satisfaction, product quality, and e-trust. While, e-loyalty is least influencing criteria. Therefore, this paper selected the main criteria for evaluating e-banking websites based FAHP model as presented in Table 3.

Table 3: Optimal Criteria for evaluating e- banking websites quality.

Criteria	Rank
e-satisfaction	1
Product quality	2
e-trust	3

From Table 2, the overall performance of the criteria revealed that, most influencing e-satisfaction followed by product quality, and e-trust placed last as selected multiple respondents using the FAHP model.

5.0 Conclusion and Recommendations

This paper identified e-banking quality evaluation as complex endeavours comprising of several criteria and sub-criteria. It was found that, the different criteria exhibit dissimilar influences on the process of determining e-banking website quality. The FAHP model (a MCDM) was developed that is basically a hierarchical structure of criteria to realize the best combinations of criteria for evaluating e-banking websites quality.

It was found that, the overall performance of the criteria revealed that, most influencing criteria include: e-satisfaction, product quality, and e-trust as selected by multiple respondents. The future work can consider more criteria and sub-criteria for the FAHP model for the purpose of improving the MCDM process of e-banking websites quality evaluation.

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An Appraisal of Youths' Cybercrime in Nigeria: Challenges and Prospects

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Abstract

The paper focuses on youths' involvement in cybercrime. Computers and internet usage are basic essential utilities that assist people's life. Sadly, Some Nigerian youths have turned cyberspace into an arena for committing criminal activities. The present study aims at identifying the causes of cybercrime, the effect of cybercrime on peace and security of the country and the role of the government in addressing the problem of cybercrime. The study used a mixed method of data. This involved use of questionnaires and in-depth interviews. Therefore, three research questions and two hypotheses were formulated to guide the study. A total of 278 participants was utilised for the study and stratified random sampling technique was used to select the participants for the questionnaire. Similarly, 12 participants were engaged in an interview and purposive sampling was employed in the interview. The instruments used are self designed questionnaire tagged Youths Cybercrime Questionnaire (YCQ). The questionnaire has a reliability coefficient of 0.82. The t-test at 0.05 level of significance was used in testing the null hypotheses. The findings indicated that there is a significant relationship between youth involvement in cybercrime and social problems. The results show that the causes of cybercrime are a high rate of urbanization, unemployment, harsh economic condition, bad educational systems and weak implementation of cybercrime laws. The effect of cybercrime includes decreasing competitive edge of organizations, destroys the country's image and productivity losses and rising cost. Therefore, government plays an important role in bringing a lasting solution to the problem.

Key words: *Computer, cybercrime, fraud, internet, youths*

1.0 Introduction

Crime is viewed as a serious social problem threatening every human society. In Nigeria, crime patterns have changed from civil and capital crime to cybercrime. Cybercrime is a crime carried out with the aid of Information and Communication Technology (ICT) tools (Shehu, 2017). It refers to any unlawful behaviour committed by means of a computer system or network, including illegal possession and offering or distributing information through a computer system or network (Folashade et al, 2018).

Cybercrime has become a global problem and has caused immense loss to both businesses and individuals globally. Several studies and documents have examined the costs and losses caused by cybercrime globally (Tade and Aliyu, 2021). Most cybercrimes are carried out by the youths in order to be able to generate earnings for cybercriminals, others are carried out against computer devices directly to harm or disable them, at the same time as others use computers or network to spread malware, illegal information, images or other materials (Umo, 2020).

Notably, cybercrimes are of different classes in Nigeria; they comprise of internet frauds; hacking; software piracy; pornography; credit score card or Automated Teller Machine (ATM) fraud; denial of service attack; virus dissemination; phishing; cyber-plagiarism; cyber-stalking and cyber-defamation (Umana, 2015). The majority of the cybercrimes perpetrated in Nigeria generally are targeted at individuals and not necessarily computer systems, hence they require less technical expertise. The damage done manifests itself in the real world (Abdulhamid et al, 2021). Human weaknesses such as greediness, idleness and carelessness are generally exploited. The damage done is largely psychological and financial. These crimes are similar to theft, and the likes that have existed for centuries, even before the development of high-tech equipment. Through the internet, the same criminals or persons with criminal intents have simply been given a tool which increases their potential pool of victims and make them all the harder to trace and apprehend (Coomson, 2019).

The challenge in fighting cybercrimes today relates to the fact that cybercrimes have been in existence for only as long as the Global Information Infrastructure exists. This explains the unpreparedness of society and the world in general towards combating them. Numerous crimes are committed daily on the Internet with Nigerians at the forefront of sending fraudulent and false financial proposals all over the world. Criminals that involve in the Advance Fee Fraud schemes (419) are now popularly referred to as "yahoo-yahoo" in Nigeria (Adeniran, 2018).

Therefore, it is against this background that the paper will find out the causes of cybercrime by the youths, the effect of cybercrime on peace and security as well as the role of the government in solving the problem.

Objectives

The study aims to achieve the following objectives:

- To analyse the causes of cybercrime by the youths.
- To examine the effect of cybercrime on peace and security of the country.
- To identify the role of the government in addressing the problem of cybercrime.

Research Questions

The fundamental questions that require investigation are:

- What are the causes of cybercrime by the youths?
- How did cybercrime affect peace and security of the country?
- What is the role of the government in addressing the problem of cybercrime?

Hypothesis

The two null hypotheses were formulated to guide the study as follows:

$H0_1$: There is no significant relationship between youth involvement in cybercrime and social problems.

$H0_2$: There is no significant difference of the motives of cybercriminals to defraud innocent victims.

2.0 Literature Review

This section covers the nature and dynamics of cybercrime in Nigeria, types of cybercrimes in Nigeria and theoretical explanation.

2.1 The concept and nature of cybercrime in Nigeria

The usage of the internet is growing daily in Nigeria and is associated with the increasing availability of broadband connections due to the advent of mobile telecommunications and decrease in the subscription fee. Today, most Nigerians and their business are registered on several social networking platforms (Ajewole, 2020).

The prevalence of cybercrime in Nigeria is worrisome not only for the citizens of the country, but for the government, as the image of the country is tarnished as a result of this menace (Hassan et al, 2018). The nature of cybercrime in Nigeria is continually evolving with the emergence of new technologies. Therefore, Jaishankar (2021) posits that most cyber criminals in Nigeria use the computer and the internet as a tool to defraud and harm others instead of targeting the computers. He argues that this is so because Nigerians are yet to develop their technical knowledge to accommodate, perpetrate and target cybercrimes.

Cybercrimes in Nigeria are largely perpetrated by young men popularly called yahoo-boys. Most of these youths are undergraduates of Nigerian universities where they involved in hacking, cloning and defrauding unsuspecting victims using tools such as password cracker, key loggers, network sniffers, port scanners, vulnerability scanners, exploits and so on (Longe and Chiemeke, 2018). As an underworld criminal activity, cyber criminals in Nigeria plan their executions in some details, as their perpetrations are deliberate with their victim-system or network pre-chosen and identified deliberately and not randomly. Their targets are usually the gullible, avaricious, and inexperienced and those desperate for quick money, love or relationships (Martins, 2020).

2.2 Types of Cybercrimes in Nigeria

According to Kshetri (2019), cybercrimes in Nigeria are categorized into the followings:

2.2.1 Cyber Stalking: This kind of crime is generally considered as the use of internet, email or other electronic communications device to stalk or harass a person. Cyber stalking is a form of harassment or intimidation that makes use of modern technology like cell phones and other devices to pursue their victims. The intimidation may be in the form of sharing nude pictures of a victim and posted it to the public.

2.2.2 Cybersquatting: The Cybersquatting involves any person who intentionally takes or makes use of a name, business name, trademark, domain name or other word or phrase registered, owned or in use by any individual, body corporate or belonging to either Federal, State or local governments in Nigeria, on the internet or any other computer network for their own personal benefit.

2.2.3 Internet Pornography: This involves the use of the web for sexual abuse. It has been found that internet pornography is a disturbing trend, especially among the youths. It also involves using the internet to download and transmit pornographic pictures, photos, writings etc. Similarly, prostitutes now advertise their trade via internet by exposing their sensitive, sensual and private parts to internet users.

2.2.4 Identity Theft and Impersonation: This refers to the criminal act of fraudulently obtaining and using another person's identity in the form of impersonation. These acts can be carried out without the use of technical means as well as online by using internet technology. A computer's internet Protocol Address can be hijacked by what is known as Cyber Bullying. Also Media Coverage, Surveys, Online Voting Systems, Social Security Numbers and Online Payment Systems are major targets.

2.2.5 Phishing: This is a term coined by hackers who initiate legitimate companies in e-mails to entice people to share passwords or credit card numbers. This term comes from the fact that internet scammers are using increasingly sophisticated lures as they "fish" for "user" financial information and password data. One common ploy is to copy the web page code from a major site and use that code to set up a replica page that appears to be part of the company's site. A fake e-mail is sent out with a link to this page which solicits the user's credit and data or password when it is submitted. It sends the data to the customer while leaving the user on the computer site.

2.2.6 ATM/Credit Card Fraud: Automated Teller Machine (ATM) is an electronic cash dispensing machine which came to reduce the stress and trouble bank customers often encounter while trying to withdraw cash from their respective accounts or even to check their account balance. This machine has grown beyond the traditional role mentioned above. Through ATM card, one can purchase items online. ATM fraud is perpetuated through ATM machines and e-transaction system. Annually customers who have credit card numbers, lost large sums of money to cybercriminals stolen from online databases. At times, the criminals steal the PIN of the users and with their cards, use them to withdraw all the money in their accounts.

2.2.7 Cyber Piracy: This may also be described as intellectual property violations. Digital technology has made it very easy to perfectly copy creative products such as music or films and the internet provides a free and anonymous means of transmitting or exchanging these pirated materials around the world. Cyber piracy refers to the use of internet to copy a digital document without authorization. Some examples include: copying and distributing music or video without the copyright holder's permission or copying software onto a CD without paying for it.

2.2.8 Cyber Hacking: Cyber hacking is a term used to describe cybercrimes such as illegal access, defacing, hijacking, bombing, denial of service attack, diddling super zapping, eavesdropping, etc. Some internet users think that hacking is harmless fun and even quite clever, but it can be a serious invasion of privacy and a significant threat to e-commerce.

2.2.9 Illegal E-lotteries: The quest to get rich quick by most Nigerians is often exploited by online criminals who send all kinds of unsolicited and tempting messages of an existing lottery bonanza (though factitious), where participants can win all sorts of items and money-ranging from cars, houses, electronics, laptop, to mention but a few. This form of cybercrime is rampant in Nigeria. The victim may be ask to deposit a certain amount of money to an anonymous bank account or give bank sensitive information like BVN number, Account number, ATM card number or pin with the pretext that the winner will receive bank alert, after winning the E-lottery.

2.3 Theoretical Explanation

The theory related to cybercrime were analysed as follows.
The routine activities theory was propounded by Cohen and Felson in 1979. The theory points out the nexus between three variables that reflect the routine activities of a crime prone community or society. The motivation to commit crime and the supply of offenders is constant. That is, in every society, there are some people who are willing to break the law for gain, revenge, greed or some other motives (Siegel, 1992). Greed and gain from both perpetrators and victims has made cybercrimes to thrive in Nigeria. The relevance of this theory to this study is that, it provides a simple and powerful insight into factors that aid cybercrimes in higher institutions of learning. At its heart is the idea that in the absence of effective controls, offenders will prey upon attractive targets.

Differential association theory was propounded by Edwin H. Sutherland in 1939. The theory is based on the premise that criminal or deviant behaviour is a learned phenomenon (Bosiakoh and Andoh, 2020). The theory posits that, exposure to criminal association and definitions favourable to criminal tendencies motivates a person to take to criminal activities. These of course depend on the communication patterns, frequency, duration, priority and intensity of learning. In Nigeria’s higher institutions, those who engage themselves in "Yahoo-yahoo" or internet fraud usually learn this pattern of crime from their affiliates through social interaction. For Sutherland (1956), cyber criminals may not have been born criminals, they apparently learn how to carry out these nefarious acts through constant contacts and interaction with other existing criminals.

Finally, the rational-choice theory of crime was propounded by Derek Cornish and Ronald Clarke in 1986. The theory is anchored holistically on the crime scenario involving the perpetrator, his or her impetus and the act, (Adler et al, 1995). For Cornish and Clarke (1986), crime only occurs when a criminal has rationalized between different options, taking into consideration his/her costs and benefits before making a choice with certain criteria. According to them, before committing cyber theft, a cybercriminal may consider the following: (a) The pool of victims made possible by ICT and the porous nature of Internet (b) His or her proficiency in executing the crime (c) The financial gains involved (d) The available technicality (e) The period it will take to perpetrate the crime (f) The possibility of being caught (g) If caught, the weight of the punishment (Adler et al, 1995).

3.0 Methodology

The paper employed mixed method of data collection as a research design. Therefore the data was sourced through questionnaires which were administered to the youths currently studying in Kano tertiary institutions of learning such as Yusuf Maitama Sule University Kano, Federal College of Education Kano, Kano State Polytechnic and Sa’adatu Rimi College of Education Kumbotso. Similarly, the research was supplemented by a face to face interview with 12 participants. The questionnaires included both closed and open ended questions. The researchers employed the service of the research assistants to help the participants to answer the questionnaires. Similarly, the interview administered, gave the researcher the opportunity to have face to face discussions with the participants and also ask follow-up questions that are not contained in the interview schedule.

The questionnaires and interview schedule are the instruments used for data collection. The questionnaire was developed by the researchers and tagged the Youths Cybercrime Questionnaire (YCQ). Equally, the interview schedule comprises of the demographic information of the participants as well as the questions designed for the participants on youth cybercrime in Nigeria. Additionally, the in-depth interview conducted was semi-structured. The researchers employ purposive sampling as a technique for selecting participants for the interview in order to provide the desired information by knowing the minds, opinions, attitudes and feelings of the participants. The ideal population of the study consists of one thousand (1000) youths. The sample size for this research work are drawn from the ideal population and the research tolerates 5% margin error, thus 278 samples were used for the study based on the sample size determination of Krejcie and Morgan (1970). To ensure gender equality, one hundred and thirty nine (139) participants from both males and females were used to make a total of two hundred and seventy eight (278) participants. The stratified random sampling technique was used for the administration of the questionnaires and all the questionnaires were returned by the participants. The instrument was validated by the experts in the area of measurement and evaluation to ensure content validity. Meanwhile the reliability of the instrument was based on the Cronbach Alpha which produced reliability co-efficient of 0.82. The result showed that the instrument was good enough to be used. The data collected from the participant questionnaires were analysed using t-test analysis. While for the interview, the data collected were analysed using thematic analysis.

4.0 Discussion of Results

The results of the study are based on the data collected from the two instruments used in this research (i.e. Questionnaires and interview protocol).

4.1 Results

The two null hypotheses were tested using the t-test analysis below:

Hypothesis 1 ($H0_1$): There is no significant relationship between youth involvement in cybercrime and social problems.

Table 1: Showing the t-test analysis between youth involvement in cybercrime and social problems.

Variables	N	X	SD	DF	t.cal.	t.crit.	Decision
Youth involvement in cybercrime	192	2.63	1.17	276	6.034	0.136	Significant
Social problems	86	1.80	0.72				

The data in table one above indicated that the calculated t-test value of 6.034 is greater than the critical t-test value of 0.136 at 0.05 level of confidence. This implies that the null hypothesis which stated that there is no significant relationship between youth involvement in cybercrime and social problems, is rejected.

Hypothesis 2 ($H0_2$): There is no significant difference of the motives of cybercriminals to defraud innocent victims.

Table 2: Showing the t-test analysis of the motives of cybercriminals to defraud innocent victims.

Variables	N	X	SD	DF	t.cal.	t.crit.	Decision
Motives of cybercriminals	176	2.78	1.22	276	0.148	0.843	Not Significant
Innocent victims	102	2.66	1.18				

The result in table two above shows that the calculated t-test value of 0.148 is less than the critical t-test value of 0.843 at 0.05 level of confidence. This implies that the null hypothesis which stated that there is no significant difference of the motives of cybercriminals to defraud innocent victims, is accepted. In addition to that, the results of the interview gathered were presented and analysed. The views of the participants were examined based on the following subheadings:

4.1.1 The causes of cybercrime by the youths:

The participants gave their opinions on the causes of cybercrime by the youths. The themes that emerged from the participant's explanation includes: high rate of urbanization, unemployment, harsh economic condition, bad educational systems and weak implementation of cybercrime laws. Participant one (R1) mentions that high rate of urbanization leads to cybercrime by the youths. He further stated that:

> *Urbanization involves massive physical growth of urban areas as a result of rural-urban migration in search for a better life. Due to education and the emergence of information technology, youths find it lucrative to invest in cybercrime because it is a business that requires less capital to invest.*

While participant two (R2) explains that unemployment leads to cybercrime. She added that:

> *Cybercrime is associated with unemployment. A lot of cybercriminals are unemployed youths who use their time and knowledge as a platform for their criminal activity, in order to improve their livelihood and to make ends meet.*

Similarly, participant three (R3) narrates that harsh economic condition is another cause of youth cybercrime. He added that:

> *Economic conditions in a country represent a state of the economy that involves a persistent increase in unemployment, insecurity, youth restiveness, low output, slow economic growth, collapses in oil prices and a reduction in the standard of living of Citizens.*

In the same direction, another participant (R4) confirmed that bad educational systems were among the causes of youth cybercrime. He revealed that:

> *Education in Nigeria suffers from several challenges, including poor funding, inadequate classrooms, and teaching aids, a paucity of quality teachers and a poor learning environment. All these led to students' dropout and their subsequent involvement in cybercrime.*

Finally, participant five (R5) declares that weak implementation of cybercrime laws leads to cybercrime by the youths. He further stated that:

> *It saddens that Nigeria continues to experience the great effects of cybercrime. Internet fraud appears to be an everyday job of some Nigerians owing to weak implementation of cybercrime laws by agencies managing the Act's operation.*

4.1.2 The effect of cybercrime on peace and security of the country:

The participants gave their opinions on the effects of cybercrime on peace and security of the country. The themes that emerged from the participants clarification on the effects of cybercrime comprises of the decreasing competitive edge of organizations, destroys the country's image and productivity losses and rising cost. Therefore, participant one (R1) narrates that decreasing competitive edge of organizations is one of the effects of cybercrime on peace and national security. He continues that:

> *An organization can lose its competitive advantage and suffer losses when a hacker steals its confidential information and future plans and sells it to a competitors. So, time spent to rectify this harmful incident caused by cyber criminals could have been used to earn profit for the organization.*

Similarly, participant two (R2) reiterated that youth cybercrime in Nigeria bring damage to the image of the country. She confirmed that:

> *Cybercrime tarnishes a country's image. Once a country is labeled as a harbor for cybercrime activities, potential investors are cautious in investing in such countries.*

In the same direction, participant three (R3) opined that one of the effects of cybercrime on peace and national security is productivity losses and rising cost. She further stated that:

> *Cybercrime reduces the productivity of an organization, because businesses take measures by securing their networks from the viruses and malware. The organizations buy security software to reduce the chances of attacks. This consumes time, increases overhead cost and reduces profit margins.*

4.1.3 The role of the government in addressing the problem of cybercrime:

The participants gave their opinions on the role of the government in addressing the problem of cybercrime. The themes that emerged from the participants explanation on the role of the government in addressing the problem includes: provision of an effective legal framework on cybercrime, provision of intensive training for law enforcement agencies on ICT, creation of job opportunities for the unemployed youths, Setting up programmes by various tiers of governments aimed at re-orientating the youths towards positive thinking.

Therefore, participant four (R4) narrates that one of the roles of the government is to provide effective legal framework on cybercrime. He continues that:

> *There is the need for the government to provide an effective and comprehensive legal, regulatory and institutional framework for the prohibition and detection of cybercrimes in Nigeria. The legal framework needs to be constantly reviewed to align with dynamic nature of the cyber environment.*

Similarly, participant five (R5) opined that another role of the government in addressing the problem of cybercrime is to provide intensive training for law enforcement agencies on ICT. She further stated that:

> *Government needs to empower graduates through the provision of intensive training for law enforcement agencies on Information and Communication Technology to enable them track down cyber criminals.*

In the same direction, another participant six (R6) confirmed that creation of job opportunities for the unemployed youths is another role of the government in addressing the problem of cybercrime. He revealed that:

> *There is the need for the government to create job opportunities for the unemployed youths, to enable them become busy. Because, there is a popular saying "Idle mind is the devil's workshop"*

Finally, participant seven (R7) declares that the government has a greater role to play in addressing the problem of cybercrime, by setting up programmes aimed at re-orientating the youths towards positive thinking. He further stated that:

> *The social impact of cybercrimes is so critical that various tiers of governments have to come up with different programmes to rescue youths as future leaders. Several initiatives directed at protecting the interests of Nigerians in the cyberspace have to be put in place.*

4.2 Discussions

The findings of the study revealed that, the causes of cybercrime by the youths are the high rate of urbanization, unemployment and harsh economic condition. This is similar to the findings of Warner (2017) which insists that the activities of cybercrime are motivated by the influx of youths to the urban city where it is lucrative to be established. It's surprising to note that youths travel out of Nigeria to other countries for a hideout location to carry out their nefarious activities without an easy trace. Youths in Nigeria find it difficult to get white-collar jobs, therefore canvass for any means of survival.

Similarly, the study observes that the effects of cybercrime on peace and security of the country comprises of the decreasing competitive edge of organizations, destroys the country's image and productivity losses and rising cost. This is akin to the findings of Aransiola and Asindemade (2021) which insist that cybercrime leads to the erosion of confidence in genuine Nigerian commercial credibility and today many western countries have denied legitimate Nigerian businessmen and women, the rewards of e-commerce. In the same direction, this coincides with the findings of Adeniran (2018) which believe that the majority of cybercriminals use electronic e-mails, normally spam to defraud their victims. This involves sending sinister and deceptive e-mails using gmail, yahoo mail and the likes. In the same way, Ani (2021) believes that cybercrime attacks led to the upsurges in overhead cost and lower productivity of an organization. It also led to the consumption of network resources and the cost in human time because, more attention would be paid toward deleting unwanted messages.

The findings of the study also revealed that government play an important role in addressing the problem of cybercrime. This relates to the findings of Omodunbi et al, (2016) which observe that the government has a vital role to play in providing a lasting solution to the problem of cyber criminals and help the country regain her international reputation and promote the Nigerian economy. Regulating the abusive usage of the internet, will go a long way to check the excesses of cyber risk. The government of Nigeria can relate to advanced international bodies to establish enforcement agencies to regulate and checkmate cyber activities across the board.

5.0 Conclusion and Recommendations

The rising spate of cybercrime globally and its attendant negative consequences has continued to call for immediate actions. As technology advances, new methods are used to perpetrate cyber related crimes. Nigeria is not immune to these attacks. Cybercrime is no doubt providing a dent on Nigeria's image which remains a crucial source of national embarrassment for the country. The fear of cybercrime has made several persons to avoid the use of ICT. This has a negative impact on the welfare of the citizenry and investors.

There is therefore the need to take proactive steps to curb the menace. Cybercrime poses a great risk to the economy, hence the need to institute an effective risk management system and enhancement of the capacity to carry out forensic investigation to tackle it. Also, collaborative efforts of governments, corporate entities and the citizenry could play a vital role in checking cybercrimes. Cyberspace is a challenging environment that is fast and continuously evolving. Hence, the challenge is for those charged with the responsibility of security in various quarters to be abreast of developments in the cyber world. The economic vitality and national security largely depend on a stable, safe and resilient cyberspace.

However, the paper made certain recommendations on youth involvement in cybercrime, with the aim of providing a permanent solution to the problem in order to attain national security. The paper recommended as follows:

1. Establish a computer emergency response unit.
2. Initiate the cybersecurity unit in all sections of the country.
3. Encourage national capacity building on cyber-attack.
4. Adopt intensive cybercrime legislation and threat counter measures nationwide.
5. Provide measures to reduce national vulnerability and protect national infrastructure.

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Myocardial Infarction Detection Based Convolutional Neural Network-Enhanced Graph Neural Network Algorithm

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Abstract
A vital piece of medical technology that aids in the diagnosis of a number of heart-related disorders in patients is an electrocardiogram (ECG). To find significant episodes in long-term ECG data, an automated diagnostic method is needed. Cardiologists face a very difficult problem when trying to quickly examine long-term ECG records. To pinpoint critical occurrences, a computer-based diagnosing tool is necessary. Heart attacks, sometimes referred to as myocardial infarctions (MI), are medical conditions that happen when the blood flow in the coronary arteries suddenly stops or completely narrows. though lots of researches have been carried out with impressive performance record for detection of MI, However, existing approaches for MI detection can be improved upon for better results. In our paper we enhanced Convolutional Neural Network (CNN) algorithm with Graph Neural Network (GNN) to better select features which gave us an f1 score of 99.58%, precision of 99.5% and an accuracy of 99.72%.

Key words: *CNN, Deep learning, Feature selection, GNN, Machine learning, Myocardial infarction.*

1.0 Introduction

A heart attack, also known as Myocardial Infarction (MI), is a disorder in which one or more of the coronary arteries that supply the heart muscle are blocked or narrowed. Atherosclerosis is the primary cause of this illness (Pustjens *et al*., 2020). The hardening process starts early and progresses gradually as time goes on. A complex chain of events involving several blood cells, cholesterol, proteins, and hormones results in the development of a hardening plaque in the blood channel walls (Degerli *et al*., 2021). From a thin coating, this plaque expands into a mass of tissue that blocks the arterial lumen and restricts blood flow across it (Menyar, 2006).

The risk associated with this type of health issue is that it frequently comes on suddenly for the patient, needing quick action to end the crisis out of concern for death or serious cardiac injury. In order to effectively treat a MI, early diagnosis is therefore important (Degerli *et al*., 2021). A test called an electrocardiogram (ECG) enables the advancement of an electrical wave that controls the activity of the heart muscle. This electrical wave travels through the atria of a normal pacemaker, forcing them to constrict and facilitating blood flow from the atria to the ventricles (Hammad *et al*., 2022). Once the heart chambers have contracted as a result of the electrical signal, blood flows from the right ventricle to the lungs and from the left ventricle to the body tissues via the aorta. An ECG test can be used to identify any irregularities in the generation and transmission of electrical waves, which may be caused by issues with the heart conduction system (Hammad *et al*., 2020). Furthermore, whether they are recent or old, alterations in the ECG may be a sign of MI. The ECG processing methodology, in brief, can aid in the early detection of the most prevalent heart conditions, including arrhythmias, coronary heart disease, and heart attacks. However, analyzing ECG signals manually takes time and effort. Therefore, prompt diagnosis by physicians and clinicians depends greatly on accurate MI detection in the medical area. In order to create an accurate methodology for the automatic detection of MI, researchers are working on it.

2.0 Literature Review

This section covers the concept of myocardial infarction, detection techniques, performance, machine learning detection models.

2.1 The Concept of Myocardial infarction Detection

As previously indicated, the prior techniques can be divided into two groups: machine learning and deep learning approaches. Support Vector Machine (SVM) and K-Nearest Neighbor (KNN) (Sharma & Sunkaria, 2018), Fourier Decomposition Method (FDM) with SVM (Fatimah *et al*., 2021), and others are some of the different machine learning techniques that are described in the literature. To recognize various types of heart problems , Convolutional Neural Networks (CNNs), Recurrent Neural Networks (RNNs) (Jahmunah *et al*., 2021), residual networks (Śmigiel *et al*., 2021a) and capsule networks (Prakash *et al*., 2021) are also used. However, only deep learning-based approaches that are pertinent to the scope of the work presented have been included by the authors (Gupta *et al*., 2021).

Three deep learning techniques were created by (Śmigiel *et al*., 2021b) to automatically categorize main ECG signals. The first technique used CNN as its foundation, the second method used SincNet as its foundation, and the last way used CNN with entropy-based characteristics as its foundation. Using a CNN with entropy, they worked on five super classes from the PTB-XL dataset and got the best overall accuracy of 76.50%. (Śmigiel *et al*., 2021a) further used R-peak detection and deep learning techniques to automatically classify the ECG signals. They used the same database (PTB-XL) to work on five super classes, and their best overall accuracy was 76.20%. Few-Shot Learning (FSLapplicability)'s for categorizing ECG signals was determined by (Pałczyński *et al*., 2022). They took the QRS complex out of the ECG signals and classified the data with a deep CNN. They worked with the five super classes in the PTB-XL database and achieved the best overall accuracy of 79%. (Prabhakararao & Dandapat, 2021) developed a method for classifying arrhythmias into multiple categories using a CNN ensemble. To lessen the computing load and remove baseline artefacts, they employed data augmentation techniques and preprocessing. They assessed the 12-lead of the PTB-XL database on the five super classes and found that their technique had an overall accuracy of 85%. A multi-lead fusion approach for multi-class arrhythmia classification was proposed by (Zhang *et al*., 2021). The five super classes from the PTB-LX database that they worked on yielded an aggregate accuracy of 93.10%. Utilizing the five super classes for classification resulted in low accuracy for all of these earlier techniques. When compared to these methods, the suggested method on the five super classes had the best accuracy. A comparison of related literatures using various criteria is shown in Table 1.

Table 1: Literature Review Comparison

Literature	Year	Database	Classifiers	Remarks (Accuracy in %)
Śmigiel *et al*. (2021b)	2021	PTB-XL	CNN SincNet	72.00 73.00
Śmigiel *et al*. (2021a)	2021	PTB-XL	Neural networks	76.20
Pałczyński *et al*. (2022)	2022	PTB-XL	Neural networks	80.20
Prabhakararao & Dandapat (2021)	2022	PTB-XL CinC-training	DMSCE	84.50 88.30
Zhang *et al*. (2021)	2021	China Physiological Signal Challenge 2018	MLBF-Net	87.70
Prakash *et al*. (2021)	2021	PTB	GABORCNN	98.84
Tadesse *et al*. (2021)	2020	PTB	VGG-Net	99.20
Anand *et al*. (2022)	2022	PTB-XL	CNN	95.80
He *et al*. (2021)	2021	Combination of PTB and PTB-XL	Multi-feature-branch lead attention neural network (MFB-LANN)	94.19

Based on the study of ECG signals, several artificial intelligence (AI) techniques are used to identify MI by (Fatimah *et al*., 2021; Ibrahim *et al*., 2020; Sharma & Sunkaria, 2018). These are divided into two categories: machine learning and other techniques (Cho *et al*., 2020; Jahmunah *et al*., 2021; Sharma & Sunkaria, 2020) and for the deep learning approaches (Anand *et al*., 2022; He *et al*., 2021; Ramaraj, 2021). Particularly when working with massive amounts of data, deep learning techniques are regarded to be more dependable than traditional machine learning techniques. Deep learning techniques' multi-layer architecture also offers capabilities for efficient feature interpretation and pattern detection, both of which are essential for classifying sizable unstructured datasets. Although they have superior features, standard deep learning networks are known to have a number of disadvantages, such as the following:

- Misclassification in several circumstances of considerable interclass disparity.
- decreasing detection accuracy and, notably, sensitivity as a result of increasing data over-fitting caused by the depletion of datasets.
- utilising ineffective MI detection techniques and sophisticated signal processing techniques.
- Implementing these strategies in real-time applications leads to low accuracy.
- Requiring the QRS complex to be found.

Therefore, the goal of this work is to develop a unique method for MI detection based on deep learning approaches that will address the aforementioned shortcomings. Deep learning techniques have recently demonstrated success in a variety of applications, including pattern recognition (Khan *et al*., 2021; Srinivasu *et al*., 2021), internet of things (IoT), and medical (Almadhor *et al*., 2021).

3.0 Methodology

In this study, we first filter out the noise from the ECG readings. Then, to extract the deep features from the input signal, we suggest a deep learning model based on a convolutional neural network (CNN). The characteristics from the convolutional layers are then optimized and chosen. The CNN-GNN classifier is then fed the chosen characteristics to detect MI. The examination and inquiry of the PTB-XL database revealed that the suggested method surpasses current deep learning techniques (Wagner *et al*., 2020). This section provides a thorough explanation of the methodology and dataset (PTB-XL) used to assess the effectiveness of the proposed technique. The dataset contains several different diagnostic groups as well as a sizeable percentage of healthy records. PTB-XL is a sizeable dataset with exceptional variation that stands out for its superior signal quality. Rarely do clinical databases contain samples with such a wide range of pathologies, a wide variety of co-occurring disorders, and a high number of healthy controls. PTB-XL is an excellent option for training and testing algorithms in the real world, where machine or deep learning algorithms must perform consistently regardless of the recording environment or the caliber of the data.

In order to identify Myocardial Infarction (MI), the proposed CNN-enhanced GNN based MI detection model in Deep Learning and GNN analyzes 12-lead ECG signals. Following the preprocessing stage, the ECG signal pictures are normalized in accordance with the input specifications of the suggested models for greater research accuracy. ECG images of various sizes that are appropriate for the model are collected as input, divided into train, validation, and test portions, and then sent to the CNN model. Convolutional, pooling, and fully connected layers make up the majority of the CNN model's layers. The max-pooling layer does image subsampling and image size reduction, while the convolutional layer is utilized to create tensors by applying filters. The data is flattened and then passed through a compressed fully connected neural network for quick and accurate classification of MI affected class, normal class, history class, and abnormal class based on the ECG images after passing through a number of convolutional and max-pooling layers. A flow chart representation of the model that categorizes two classes is shown in Figure 1.

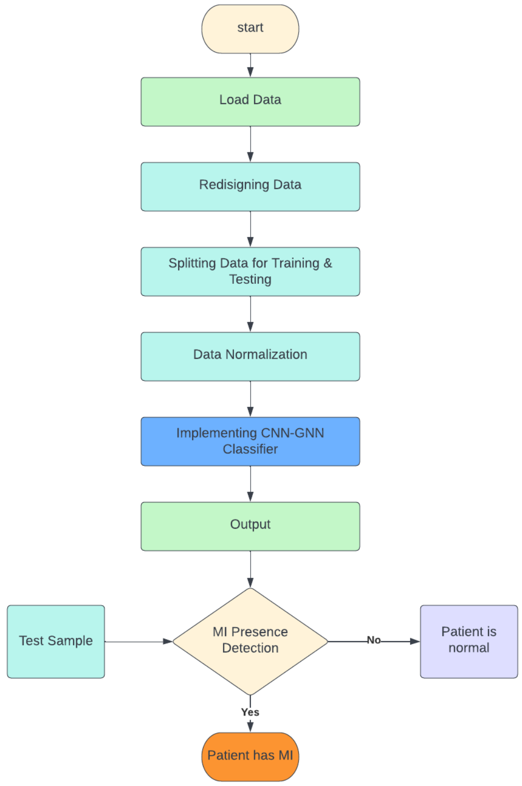


Figure 1: MI Detection Workflow

3.1 Description of ECG Dataset

The training and validation sets for this study were taken from the publicly available PTB-XL dataset (Wagner). 21,837 clinical 12-lead ECGs from 18,885 patients are included in the PTB-XL dataset. Each ECG signal lasts for 10 seconds. Only the 500-Hz ECGs were used as the dataset since the neural network required 4,096 samples from the signal of each ECG lead. The ptbxl database.csv file was extracted for the MI diagnosis.

3.2 MI Detection Process

I) Data Preprocessing

Each of the ECG is a 12 5,000 matrix, where the first (12) denotes the space dimension and the second (5, 000) denotes the time dimension (12 leads, 10 s length, 500 Hz sampling). From the signal of each ECG lead, we took 4,096 samples to utilize as the neural network's input. Prior to training, the raw ECG data were pre-processed. We first used a low-pass filter on the raw data to create a baseline and then zeroed the average value to make the baseline flat in order to remove ECG signal baseline drift and low-power noise. After that, we filtered the high-frequency signals to denoise the data.

II) Data Splitting

30% of the PTB-XL data were used to validate the model, while the remaining data were utilized to train the model.

Development of model

We employed a residual network with a convolutional neural network-like topology (He *et al*., 2016). Using this architecture, it is possible to train a deep neural network efficiently while including the graph convolutional layer with nonlinear activation. The network had four residual blocks, each with four convolutional layers, and a convolutional layer (Conv). The final block's output was returned to a dense fully linked layer with a sigmoid activation function. Batch normalization was used to rescale each convolutional layer's output before being fed into a rectified linear activation unit (ReLU).

4.0 Results and Discussions

The experimental environment for this study was on google collaborative platform and is essentially a python development environment. In this study, Keras was employed. On the machine learning platform Tensorflow, Keras is a high-level deep learning API. It is a platform for solving machine learning issues that focuses on contemporary deep learning. Keras can process enormous volumes of complex data with ease. It is user-friendly and allows users to concentrate more on certain aspects of the issue without experiencing a cognitive load. Low level TensorFlow operations on GPU and CPU are also reduced by Keras and TensorFlow.

4.1 Evaluation Metrics for Proposed Model

The measures utilized to assess the success of the proposed system are described in this section. The accuracy-based measures among them are as follows:

1) Confusion Matrix: This crucial measure is used to evaluate machine learning-based models. True Positive, True Negative, False Positive, and False Negative are the four (4) main parts of it. Table 2 gives the following descriptions of these elements:

Where:

True positive (TP): Indicates the total number of occurrences of harmful network traffic that the classifier "properly" categorized.

True Negative (TN): reflects the total number of occurrences of regular network traffic that the classifier "properly" identified.

False positive (FP): shows the total number of occurrences of regular network traffic that the classifier "incorrectly" labels as malicious.

False Negative (FN): Is the classifier's overall classification of instances of malicious network traffic as normal in error.

I) **Accuracy**: It gauges how well a model can distinguish between legitimate and malicious network data (intrusion). Equation (1) can be used to express it as follows:

$$Accuracy(ACC) = TP + TN/(TP + FP + FN + TN) \qquad (1)$$

II) **Sensitivity:** Also referred to as the detection rate. It is the proportion of total intrusion instances

Table 2: Confusion Matrix

		Predicted Class	
		Normal	Malicious
Actual Class	Normal Web page	TN	FP
	Malicious Web Page	FN	TP

present in the dataset to the total number of intrusion instances actually detected by the model. It can be said in the following way:

$$Sensitivity or (DR) = TP/TP + FN \qquad (2)$$

III) **Specificity:** This is the proportion of the total number of instances of network traffic accurately identified as normal to the actual amount of normal network traffic in the dataset. Equation (3) uses mathematics to convey the following:

$$Specificity = TN/TN + FP \qquad (3)$$

IV) **Precision:** This can be defined as a ratio between the total number of intrusion data (TP) instances that were correctly labeled and the sum of the total number of correctly classified intrusion (TP) and total number of intrusion (TP) instances that were incorrectly categorized as hostile network traffic (FP). Equation (4) gives the following expression for this:

$$Precision = TP/TP + FP \qquad (4)$$

V) **F1 Score:** this can be defined with the equation (5) given below:

$$F1 - score(F) = (2 * Precision * Sensitivity)/(Precision * Sensitivity) \qquad (5)$$

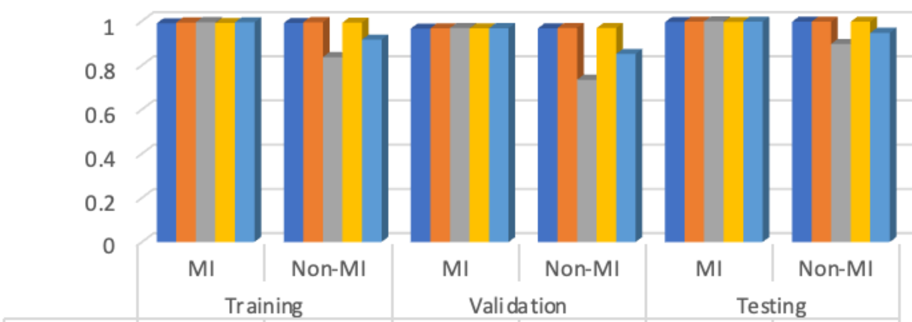
4.2 Analysis Comparison

The result generated from the experimental analysis is presented in Table 3, the composition of the result evaluation is; precision, sensitivity, specificity, F1 Score and accuracy for the training, validation, and testing phases.

Table 3: Summary of Results

		Precision	Sensitivity	Specificity	F1 Score	Accuracy
Training	MI	0.9894	0.9930	0.9945	0.9912	0.9938
	Non-MI	0.9906	0.9946	0.8364	0.9926	0.9155
Validation	MI	0.9657	0.9669	0.9680	0.9663	0.9675
	Non-MI	0.9669	0.9686	0.7337	0.9677	0.8512
Testing	MI	0.9950	0.9966	0.9978	0.9956	0.9972
	Non-MI	0.9963	0.9969	0.8960	0.9966	0.9465

The precision score achieved from the experimental analysis is 0.9894, 0.9657, and 0.9963 for training, validation, and testing respectively. While, sensitivity score of 0.9930, 0.9669, and 0.9969 was obtained for training, validation, and testing phase respectively. Specificity score of 0.9945, 0.9680, and 0.9978 was achieved for training, validation and testing respectively, 0.9912, 0.9663, and 0.9956 was achieved for F1 score, respectively for training, validation, and testing. Accuracy performance of 0.9938, 0.9675, and 0.9972 was achieved for training, validation, and testing respectively. The performance analysis summary of the study experiment is further presented in Figure 2.



	Training MI	Training Non-MI	Validation MI	Validation Non-MI	Testing MI	Testing Non-MI
Precision	0.9894	0.9906	0.9657	0.9669	0.995	0.9963
Sensitivity	0.993	0.9946	0.9669	0.9686	0.9966	0.9969
Specificity	0.9945	0.8364	0.968	0.7337	0.9978	0.896
F1 Score	0.9912	0.9926	0.9663	0.9677	0.9958	0.9966
Accuracy	0.9938	0.9155	0.9675	0.8512	0.9972	0.9465

Precision Sensitivity Specificity F1 Score Accuracy

Figure 2: Summary of Results

When we compared our results with other recent related works, our new model was observed to have a batter performance in terms of accuracy, precision and f1score as shown in Table 3.

4.3 Accuracy

The proposed model in our study achieved an optimal accuracy performance of 99.72% compared to 89.14%, 76.20%, 79.00%, 85.65%, 93.10%, and 99.20% respectively for Śmigiel *et al*. (2021b), Śmigiel *et al*. (2021a), Pałczyński *et al*. (2022), Prabhakararao & Dandapat (2021), Zhang *et al*. (2021), and Hammad *et al*. (2022). The performance of our proposed model indicates the efficiency in terms of accurately been able to detect MI as against the preceding listed baseline articles.

4.4 Precision

The precision score of 71.40%, 66.70%, 70.60%, 84.25%, 94.30%, and 98.20% was achieved by the following baseline articles Śmigiel *et al*. (2021b), Śmigiel *et al*. (2021a), Pałczyński *et al*. (2022), Prabhakararao & Dandapat (2021), Zhang *et al*. (2021), and Hammad *et al*. (2022), respectively. While our proposed model achieved an outperforming precision score of 99.50% which is far better than the score achieved by baseline article.

4.5 Recall

The recall score of 99.66% was achieved by our proposed model for MI detection, which outperform the precision score of baseline articles of Śmigiel *et al*. (2021b), Śmigiel *et al*. (2021a), Pałczyński *et al*. (2022), Prabhakararao & Dandapat (2021), Zhang *et al*. (2021), and Hammad *et al*. (2022) which scored 66.20%, 66.70%, 70.60%, 85.21%, 93.10%, and 99.20% respectively.

4.6 F-score

The F-score of 68.00%, 68.30%, 70.60%, 84.55%, 92.80%, and 98.60% was achieved by Śmigiel *et al*. (2021b), Śmigiel *et al*. (2021a), Pałczyński *et al*. (2022), Prabhakararao & Dandapat (2021), Zhang *et al*. (2021), and Hammad *et al*. (2022), respectively.

al. (2021), and Hammad *et al*. (2022) respectively, however, the F-score of our study outperforms the performance of all baseline article, with a record of 99.58%.

Table 3: Comparison of our proposed work with other works

Literature	Year	Database	Technique	***Acc*** **(in %)**	***Pre*** **(in %)**	***Rec*** **(in %)**	**F-Score**
Śmigiel *et al*. (2021b)	2021	PTB-XL	CNN and entropy-based features	89.14	71.40	66.20	68.00
Śmigiel *et al*. (2021a)	2021	PTB-XL	Deep learning and R-peak detection	76.20	66.7	66.7	68.30
Pałczyński *et al*. (2022)	2022	PTB-XL	Deep CNN and QRS complex detection	79.00	70.60	70.60	70.60
Prabhakararao & Dandapat (2021)	2021	PTB-XL	CNN ensemble	85.65	84.25	85.21	84.55
Zhang *et al*. (2021)	2021	PTB-XL	Multi-lead-branch fusion network	93.10	94.30	93.10	92.80
Hammad *et al*. (2022)	2022	PTB-XL	Deep CNN model with SVM classifier	99.20	98.20	99.20	98.60
Proposed Model	2022	PTB-XL	Deep CNN enhanced GNN	99.72	99.5	99.66	99.58

5.0 Conclusion and Recommendations

The performance of our proposed model in this study have proven efficient in the detection of MI, this will aid in effectively addressing the challenge of performance drawback in this domain of research, furthermore health institution can implement the proposed model in its health sector for effective performance output in terms of MI detection. Our model shows that f1 score, precision, and accuracy achieved optimal record using the proposed CNN enhanced-GNN model based on PTB-XL dataset. We further compared the result with other related works and it was observed to have a better performance.

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Assessment of the Impact of Information and Communication Technology (ICT) Sector on Economic Growth In Nigeria

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Abstract
In recent years, information and communication technology (ICT) has been indispensable tool in the entire process of economic progress of all national economies; Nigeria inclusive. Ironically, even when Nigeria fell in recession in 2016 and 2020, the ICT sector consistently recorded positive growth as reported in various reports of the National Bureau of Statistics (NBS). Thus, this study examines the short-run and long-run impact of ICT on economic growth (measured in real GDP) in Nigeria using time series data from 1981 to 2021. The Augmented Dickey-Fuller and Phillips-Perron unit root tests show that gross domestic product (GDP), value of information and communication technology services (ICT), as well as trade openness are stationary at first difference, I(1). Meanwhile, foreign direct investment (FDI) is stationary at level, I(0). The results from ARDL model indicate that both ICT and FDI have positive and significant impact on GDP in Nigeria. On the other hand, Trade openness has no impact on Nigeria's GDP within the period under review. Therefore, the study concludes that Information and Communication Technology (ICT) impacts positively on economic growth in Nigeria. It is thus, necessary for Nigerian government to increase its expenditure on ICT and attract more foreign investment particularly in ICT industry in order to boost productivity and achieve higher economic growth.

Keywords: *ICT, Trade Openness, FDI, Economic Growth, ARDL*

1. 0 Introduction

The growth of Information and Communication (ICT) sector over the past two decades has been phenomenal all over the world. In fact, the total global expenditure in ICT services has grown from USD 4.31 trillion in 2016 to USD 5.47 trillion in 2022, and is expected to reach an unprecedented USD 5.82 trillion by the end of 2023 (Statista, 2022). The emergence of ICT has brought a new era in communication industry. The internet, mobile phone and computer, have brought about a fundamental shift in patterns of communication, which is *sine quo non* to economic growth and development. It has reduced the globe into a village through reduction of time and space (Keil & Johnson, 2005, Offurum, 2009). Although the ICT market is dominated by the industrialized economies, with the United States, US, taking the lead, however, less-developed and emerging economies equally struggle for a share of the bounties in the sector. They are keen on that because the sector does not only contribute to the gross domestic product (GDP) of their economies but is equally essential for participation in increasingly competitive world markets and for attracting investments. The World Bank reported that the results have been particularly impressive in the sector, particularly where competitive regimes have been established

(Leila, 2019). This implies that as the level of private investment increases, the technological spillover on the entire economy also increases and that leads to a greater effect on economic growth.

The growth in the Nigeria's ICT sector had recorded significant revolution in volume and coverage with the introduction of Global Systems of Mobile (GSM) networks in the country at the inception of the 21st century. Since then, many investments were attracted into sector particularly by private investors from within and outside the country. This growth was triggered by deregulation and competition in the sector (Akinwale, Sanusi, & Surujlal, 2018). Subsequently, other ICT services such as internet networking, software and database development, information security, artificial intelligence, among others, have also penetrated the Nigerian market.

Interestingly, even when Nigerian economy fell into recession in 2016 and 2020, the ICT sector recorded a positive growth. In fact, the sector recorded a phenomenal 14.70 percent in the last quarter of 2020 even as the country suffered economic downturn during the period (NBS, 2020). Moreover, its share as percentage of GDP kept increasing particularly in the last three years. It contributed 12.1 percent of Nigeria's GDP in the last quarter of 2021 to the unprecedented 20.32 percent in the Third Quarter of 2022 (NBS, 2022). In spite of this astonishing performance of the ICT sector, its effects on GDP may be far-reaching than just the value of the sector's output. The sector possesses numerous multiplier effects on GDP as it brings about transformations in social, economic, cultural and psychological in the country. The sector is instrumental and a prerequisite for participation in increasingly competitive world economy and for attracting investments. However, it is observed that previous studies have not bothered much to investigate the long-run relationship between these two variables using appropriate techniques of analysis. Moreover, some of these studies have not controlled for appropriate mediating variables in the relationship. Thus, there is the need to investigate the actual size of its effects on the GDP which this paper intends to do. The findings of this research serve as policy inputs to Nigeria and countries with similar features. It also adds to the existing literature body on the topic.

The paper is organised in five sections including the Introduction. Section two reviews literature and section three presents the methodology adopted to achieve the objectives of the paper. Section four contains the presentation and analysis of the empirical findings and the final section concludes the paper.

2.0 Literature Review

Literature abounds on the relationship between ICT sector and economic growth and they employ different methods of analysis. Some of which are reviewed below.

Achimugu, Oluwagbemi, and Oluwaranti (2010) focused on how ICT diffusion has impacted the higher educational sector positively in Nigeria. The result of the study indicated that ICT is becoming a driving force for educational reforms and that ICTs have become an integrative part of national education policies and plans in Nigerian tertiary institutions. Oluwatolani, Joshua and Phillip (2011) examined the current trend in the application of IT in the banking industries in Nigeria and gave an insight into how quality banking has been enhanced via IT. The paper reveals that the deployment of IT facilities in the Nigerian Banking industry has brought about fundamental changes in the content and quality of banking business in the country.

Asogwa, Kelechi and Romanus (2013) examined the impact of telecommunication expenditure on economic growth in Nigeria using time series data from 1970 to 2010. The estimated results show that telecommunication, Foreign Direct Investment (FDI) and the degree of trade openness have positive impact on economic growth in Nigeria while unemployment has negative impact. Oyeniran and Onikosi-Alliyu (2016) examined the effect of investment in telecommunication infrastructure on economic growth in Nigeria. Using time series data from 1980 and 2012, the study employed autoregressive distributed lag (ARDL) and include Gross Domestic Product, Foreign Direct Investment in information and telecommunication, government Investment in information and telecommunication, capital and labour as variables in the model. The study found foreign direct investment in information and communication technology more effective in improving and raising economic growth in Nigeria than government investment.

Akinwale, Sanusi, and Surujlal (2018) examined the relationship and impact of ICT on economic growth in Nigeria. The outcome of the autoregressive distributed lag (ARDL) reveals that there is a cointegration between ICT and economic growth, which establishes the existence of a long-run relationship between them. The results suggest that there is a need for a strong political will to support an enabling environment and to propel the ease of doing business in the sector to attract private and foreign investment into the sector, as this would improve the secure internet server, increase the penetration of mobile usage to the rural communities, and increase the performance of other sectors of the economy that would foster the economic growth of Nigeria.

Nasab and Aghaei (2019) examined the relationship of investments in ICT and economic growth in the geographical configuration of the OPEC member countries by employing a Generalized Method of Moments (GMM). The estimates reveal a significant impact on economic growth of investments in ICT in the OPEC member countries. This implies that if these countries seek to enhance their economic growth, they need to implement specific policies that facilitate investment in ICT.

Bahrini and Qaffas (2019) evaluate the impact of information and communication technology (ICT) on the economic growth of selected developing countries in the Middle East and North Africa (MENA) region and the Sub-Saharan Africa (SSA) region by using a panel Generalized Method of Moment (GMM) growth model over the period 2007–2016. The results extracted from the econometric model show that except fixed telephone, other information and communication technologies such as mobile phone, Internet usage, and broadband adoption are the main drivers of economic growth in MENA and SSA developing countries.

Sepehrdoust and Ghorbanseresht (2019) investigate the impact of information and communication technology (ICT) and financial development on the developing economies of the petroleum exporting countries (OPEC) using panel- GMM type of growth model. The results extracted from the econometric model showed that an increment of one percent in the financial development index and ICT variables caused economic growth to increase by .048 and .050 percent, respectively. Moreover, the impact of variables such as inflation (negative), active labor force growth (positive), investment growth (positive), and growth of gross fixed capital formation (positive) on the economic growth of the countries.

Chimbo (2020) investigated the impact of ICT on economic growth and explored whether energy consumption and human capital development are channels through which ICT influences economic growth in Africa. The study used fixed effects, random effects, pooled OLS and the dynamic GMM and found that fixed and random effects show a significant positive relationship running from ICT towards economic growth, pooled OLS and the dynamic GMM produced results which show that ICT had a non-significant positive influence on economic growth in Africa.

Johnson, Olabisi, and Folake (2021) examined the impact of telecommunication on economic growth in Nigeria using Ordinary Least Squares techniques and Error Correction Model. The finding shows that labor employed, capital stock, real investment in telecommunication and electricity supply are statistically significant to economic growth in the short run equilibrium in Nigeria. The study recommends that positive economic growth is attainable when efficient and well-coordinated policies are implemented on labor productivity, price management, investment promotion and constant electricity supply.

It is observed from these studies that the long-run relationship between these two variables has not received attention. Moreover, some of these studies have not controlled for appropriate mediating variables in the relationship.

2.1 Theoretical Review

The modern conception of economic growth began with the critique of Mercantilism, especially by the physiocrats and with the Scottish Enlightenment thinkers such as David Hume and Adam Smith, and the foundation of the discipline of modern political economy. Stemming from the Recardian principle of diminishing returns to capital, economies will eventually reach a point at which any increase in capital will no longer create economic growth. This point is called a "steady state". The model also notes that countries can overcome this steady state and continue growing by inventing new technology. Solow (1994) explained three waves of interest in growth theory during the past 50 years, the first was associated with the work of Domar (1947) and Harrod (1948), while the second wave was the development of the neoclassical model (Solow, 1956) and the third began as a reaction to omissions and deficiencies in the neoclassical model. Some of these theories are Classical, Neoclassical, Exogenous and Endogenous growth theories. However, several other variants of these theories have been developed by various researchers' overtime.

De Long and Summers (1991) from their empirical studies on endogenous growth found that machinery and equipment investment has a strong association with GDP growth. That of Röller-Waverman (1997) found an endogenous relationship between telecommunications and growth in a more rigorous economic and econometric context. Romer (1986) argued that the rate of investment and the rate of return on capital may increase rather than decrease with a rise in the capital stock because of the intrinsic extremities. This research work is situated in the endogenous growth theory which believes that government policies can raise a country's growth rate if they lead to more intense competition in markets and help to stimulate products and processes (Riley, 2012).

The Solow (1957) approach of the growth accounting equation can be used to capture the factors that account for the growth in total output. According to Solow's growth accounting concept, the growth rate of total output depends on the growth rate of capital and labour weighted by their shares of income plus the level of technological progress. The equation below (in Cobb-Douglas form) represents total output(Y) as a function of total-factor productivity (A), capital input (K), labor input (L), while α and α-1 represent income shares of capital and labour respectively.

$$Y_t = AL_t^{1-\alpha}K_t^{\alpha}$$

The growth accounting equation, as presented in equation above, stated briefly the contribution of growth in inputs and improved productivity to the growth of output. Capital and labour each contribute an amount equal to the share of their income multiplied by their growth rates. The residual in the growth accounting equation, total factor productivity (TFP), is the technological level. Increase in TFP comes from improvement in the method of production which increases the efficiency of factor inputs; hence, more output is produced. Solow found that the growth in output outpaced the weighted average of increase in capital and labour inputs. This difference has often been termed the Solow residual.

3.0 Methodology

3.1. Model specification

The paper examines the impact of Information and Communication Technology (ICT) on Economic growth in Nigeria from 1981 to 2021. The functional form of the model is presented as follows:

$GDP\ f(ICT, TOPN\ and\ FDI)$……………..…………………………………………………..(1)

Where the Gross Domestic Product (GDP) is used as a proxy that measured economic growth, ICT is the information and communication technology measured as information and communication services, TOPN is the trade openness measured as total trade volume divided by GDP, FDI is the foreign direct investment measured as foreign direct investment net inflows as percentage to GDP. The choice of these variables is informed by the fact that ICT sector is external sector driven in Nigeria (NBS, 2022). Hence, for meaningful analysis one has to control for openness and FDI.

3.1 Auto Regressive Distributed Lag (ARDL) Model

For the purpose of achieving the objectives of the paper, the study employed Autoregressive Distributed Lag (ARDL) Model. When variables are found to be stationary at different order of cointegration then the suitable test for such model is ARDL (Asteriou & Hall, 2007). However, one must test for both cointegration and stability to ensure long-run relationship among the variables and that the data-generation process conforms to the model, respectively (Asteriou & Hall, 2007). If the variables are cointegrated then there is the need to test for Error correction model (ECM) which shows how much of the disequilibrium is being corrected over a period; what is called ‘adjustment effect’. Error correction model (ECM) possesses advantages of resolving the problem of spurious regression because it eliminates trend in the variables involved; and that the disequilibrium error term is stationary variable, which is prevented from exploding over time (Asteriou & Hall, 2007). The general autoregressive distributed lag (ARDL) ECM is presented in equation.

$\Delta y_t = \mu + \sum_{i=1}^{n-1} a_i \Delta y_{t-i} + \sum_{i=0}^{m-1} \Upsilon_i \Delta x_{t-i} - \pi \hat{e}_{t-1} + \varepsilon_t$………………………………….. (2)

Where Δ is the difference operator, y_t is a vector of dependent variable, $x_{t-1}$is the matrix of lag values of explanatory variables and π is the adjustment effect or error correction coefficient which is expected to be negative for the error to be corrected. Specifically, the ECM model to be tested is specified in equation.

$\Delta GDP_t = \mu + \sum_{i=1}^{n-1} a_i \Delta GDP_{t-1} + \sum_{i=0}^{m-1} \beta_i \Delta\, ICT_{t-i} + \sum_{i=0}^{m-1} \Upsilon_i \Delta\, TOPN_{t-i} + \sum_{i=0}^{m-1} u_i \Delta\, FDI_{t-i} +$
$\delta_1 GDP_{t-1} + \delta_2 ICT_{t-1} + \delta_3 OPN_{t-1} + \delta_4 FDI_{t-1} - \pi \hat{e}_{t-1} + \varepsilon_t$ ………………..…… (3)

If π = 1 then 100% of the adjustment takes place within single period (instantaneous/full adjustment). If $\pi = 0$ then there is no adjustment. Thus, any other value is interpreted accordingly; a value of π closer to 1 implies quick adjustment, and value closer to 0 implies slow adjustment.

The long run relationship among the variables of interest is tested using the following hypothesis:

Ho: δ_1=δ_2=δ_3=$\delta_4 = 0$ (No long run relationship).

H1:δ_1≠δ_2≠δ_3≠$\delta_4 \neq 0$ (there is long run relationship).

Decision rule: If F-statistics is greater than any of the critical values of all bounds, reject the null hypothesis otherwise to accept the alternative hypothesis.

4. 0Empirical Results and Discussion

Table 1: Descriptive statistics

Statistics	LRGDP	LICT	LFDI	TOPN
Mean	25.58773	3.938776	0.155366	18.99531
Median	25.33767	2.679990	0.121192	20.16017
Std. Dev.	0.951016	3.979928	0.757863	8.066847
Skewness	0.167703	0.203675	-0.042996	-0.044429
Kurtosis	1.478854	1.297980	2.544783	2.145946
Jarque-Bera	4.043970	5.104679	0.357695	1.228841
Probability	0.132392	0.077899	0.836234	0.540954
Observations	40	40	40	40

Source: researcher computation using E-views 10.

From Table 1, the results show that the standard deviations of the variables employed are not far away from their means except for real gross domestic product and trade openness. The result of Skewness indicates real gross domestic product and information and communication technology are positively skewed and less than one while foreign direct investment and trade openness are negatively skewed and less than one, this means that all the variables employed are normally distributed. The Kurtosis also indicates that all the variables under study are less than 3, this suggest that, the variables employed are normally distributed. The Jarque-Bera test for normality is also estimated. The distribution under the null hypothesis is that the series is normally distributed. If probability value of Jarque-Bera statistics is greater than 0.05 we do not reject the null hypothesis. The statistics in the Table 1 indicates that all the variables employed are normally distributed, because their probabilities values are greater than 5%.

4.1 Unit Root Test

Table 2: Augmented Dickey Fuller (ADF), Phillips Perron (PP) and KPSS

	Test at Level		Test at first difference	
Variables	**ADF test**	**PP test**	**ADF test**	**PP test**
LRGDP	-3.213612	-3.057577	-4.615482	-4.576053
LICT	-1.757509	-1.833366	-5.510430	-5.509069
LFDI	-3.328737**	-3.165019**	-	-
TOPN	-2.688367	-2.688367	-5.938198	-13.85557

Source: researcher computation using E-views 10.

, * *indicates stationary or non-stationary at 1% and 5% level of significance, respectively.*

Table 2 presents the results of unit root test of Augemented Dickey Fuller (ADF), and Phillips Perron (PP). The result shows that real gross domestic product, information and communication technology and trade openness are stationary at first difference i.e I(1) process while foreign direct investment is stationary at level, in other word it is I(0) process. Therefore, there is mixture of order of integration in ADF and PP test.

4.2 Bound Test for Long run

The test is conducted in order to ensure the existence of long run association among the variables employed.

Table 3: Result of Cointegration Bounds test

Statistics	Value		Critical bounds			
F-statistics	6.606076		1%	2.5%	5%	10%
		I(0) Bound	3.65	3.15	2.79	2.37
		I (1) Bound	4.66	4.08	3.67	3.2

Source: Researcher computation using E-views 10.

From Table 3, the result of co-integration bound test indicates a higher value of F-statistics than any of the critical values of all bounds 6.61. Therefore, there is a strong evidence of cointegration in the model. This provides evidence of adopting Autoregressive Distributed Lag (ARDL) model in the study.

4.3 Results of Autoregressive Distributed Lag (ARDL) model

As a result of unit root tests and bounds test conducted in the study which suggests the use of ARDL model. The appropriate model (number of lags) is selected automatically using *Akaike* Information Criterion (AIC) which is seen as more robust model. Below, both short run and long run parameters of the model are presented.

4.3.1 Short run Relationship

Below the result of short run parameters of the ARDL model is presented. AIC suggests a (4, 0, 0, 0, 4) model after testing for up to 500 different models.

Table 4: Lag Length of the ARDL model

Variables	Coefficient	Std. Error	t-Statistic	Prob.
Δ (LGDP(-1))	-0.212616	0.135371	-1.570617	0.1294
Δ (LGDP(-2))	0.201998	0.120782	1.672416	0.1074
Δ (LGDP(-3))	0.227878	0.118997	1.914993	0.0675
Δ (LFDI)	-0.136138	0.034846	-3.906891	0.0007
Δ (LFDI(-1))	0.017849	0.038585	0.462604	0.6478
Δ (LFDI(-2))	0.110962	0.036116	3.072410	0.0052
Δ (LFDI(-3))	0.150917	0.033398	4.518681	0.0001
R-squared	0.990310			
Adjusted R-squared	0.985869			
S.E. of regression	0.118524			
Sum squared resid	0.337149			
Log likelihood	32.99172			
F-statistic	222.9821			
Prob(F-statistic)	0.000000			
Durbin-Watson stat	1.299939			

Source: Researcher computation using E-views 10.

The result from Table 4 indicates negative and insignificant autoregressive of dependent variable i.e GDP at lag 1 while at lag 2 and 3 indicates positive of the dependent variables, it shows that gross domestic product depends largely on itself in short run. Foreign direct investment itself shows negative but statistically significant effect on gross domestic product in the short-run, while at lag 1, 2, and depicts positive effect on gross domestic product in Nigeria. The R-squared and its adjusted value are very high 0.99 this implies that 99% change in gross domestic product is explained by information and communication technology, foreign direct investment and trade openness. The p-value of f-statistics indicates (0.000), this means that information and communication technology, foreign direct investment and trade openness have 100% significance influence on the gross domestic product in Nigeria.

4.3.2 Long run and Error Correction Result

The result of bounds test confirms the existence of long run relationship among the variables of interest. We therefore generate the long run parameters of the model in Table 5.

Table 5: ARDL Long run form Results

Variables	Coefficient	Std. Error	t-Statistic	Prob.
LICT	0.270059	0.024962	10.81878	0.0000
TOPN	0.035739	0.022104	1.616869	0.1190
LFDI	0.562178	0.263046	2.137187	0.0430
ECM	-0.267578	0.058341	-4.586441	0.0001

Source: Researcher computation using E-views 10.

The result from Table 5 indicates that information and communication technology has positive and statistically significant impact on gross domestic product in Nigeria in the long run, this means that one unit increase in information and communication technology in Nigeria will cause 27% increase in GDP, all things being equal. The positive finding is in line with economic appriori expectation which assumed a positive relationship between information and communication technology and gross domestic product. Furthermore, the positive finding in the study concurred with the finding of Chimbo (2020) and Sepehrdoust and Ghorbanseresht (2019). Furthermore, foreign direct investment shows positive and statistically significant impact on gross domestic product in Nigeria in the long run, this means that single digit increase in foreign direct investment will bring about 56% increase in gross domestic product in Nigeria. Trade openness does not show any impact on GDP in Nigeria in the long run as it coefficient is statistically insignificant. The error correction term (ECT) meets all the theoretical and statistical requirements both in the sign and size. The ECT coefficient is -0.267578 and significant at 5% level. This indicates that at 26.76% of the disequilibrium due to the shock in the previous years is adjusted back to the long run equilibrium in the current year.

4.3.3 Post estimation tests

Table 6: Post estimation tests

Tests	P-value
Serial correlation	0.0854
Heteroscedasticity	0.3819
Normality	0.852950
Ramsey test	0.4759

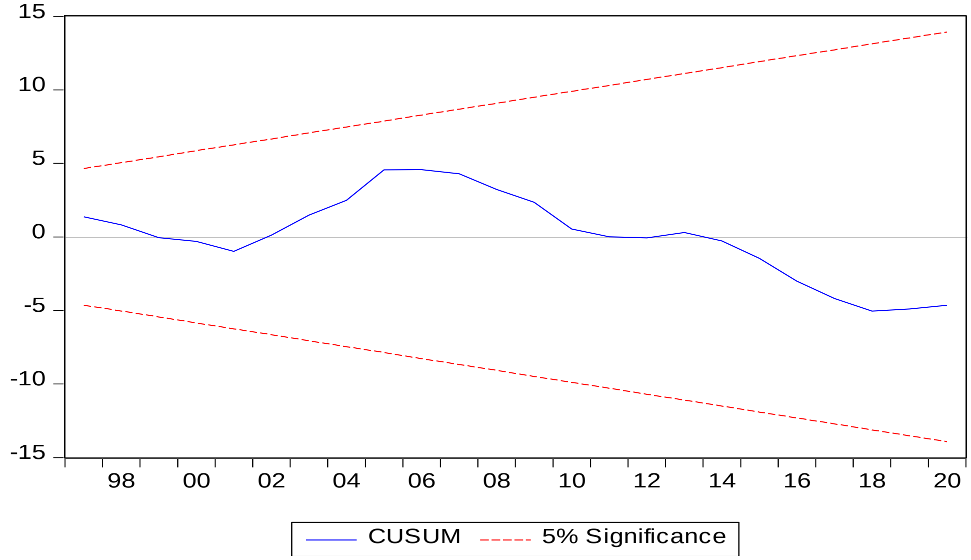
Source: Researcher computation using E-views 10.

The model passed all post estimation test such as serial correlation, Heteroscedasticity, Ramsey and normality test, as their probability values are greater than 5%. We can conclude that the model is robust.

4.3.4 Stability

Stability test of the model is employed in order to ensure the data generating process is compatible with the estimated coefficient of the model.

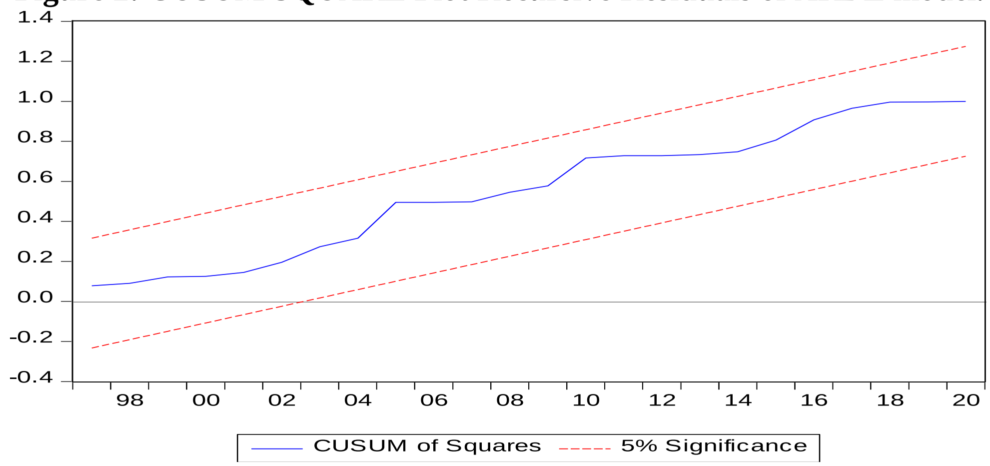
Figure 1: CUSUM Plot Recursive Residuals of ARDL model.



Source: Researcher computation using E-views 10.

From Figure 1, the CUSUM plot is within 5% level of significant, this means that the model is stable. This shows that there is no chance of having spurious regression.

Figure 2: CUSUM SQUARE Plot Recursive Residuals of ARDL model.



Source: Researcher computation using E-views 10.

From Figure 2, the Cumulative sum square plot is within 5% level of significant, this means that the model is stable. This shows that there is no chance of having spurious regression.

5.0 Conclusion and Recommendations

The paper examines the impact of Information and Communication Technology (ICT) on Economic growth in Nigeria from 1981 to 2021. The Auto-Regressive Distributive lag (ARDL) model is employed in the study. The result from ARDL model indicates that both Information and Communication Technology and Foreign Direct Investment have positive and significant impact on gross domestic product in Nigeria, unlike Trade Openness which seems not to aid gross domestic product growth in the country.

The paper therefore recommends the necessity for Nigerian government to increase its investment in the ICT sector to attract additional foreign investment in the industry in order to boost productivity and achieve higher economic growth. Nigerian government should also develop, strengthen and implement sound human capital development, including formal and informal training on ICT proficiency, in order to enhance the impact of ICT on economic growth.

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Use of Smart Technologies in Addressing Electricity Theft in Nigeria: A Case Study of Smart and Automatic Meter Readers

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Abstract
This study determined the possibility of eradicating electricity theft in Nigeria through the deployment of Smart Energy Meters. The research carried out a review of available literatures on pre-paid and smart meter technologies with a view of finding their contributions in ending energy theft. It was discovered during the research that, pre-paid meters which is currently been deployed as a billing system by Nigerian Electricity Distribution Companies (Discos), lacks not just the ability to address theft related issues, but is also limited in solving recharging issues, and has a fragile infrastructure that is prone to manipulations or modifications by electricity users. It was further discovered during the research that, Smart Meters, built with theft detectors can address electricity theft and solve recharging issues, currently experienced by pre-paid meter users. Smart Meters were also discovered to have capacity to provide remote monitoring and control, hence can be used to connect or disconnect a customer remotely and are equally useful in carrying out energy forecasting using historical data, obtained from customer's pattern of energy consumption. The study suggested the deployment of Smart Energy Meters as a solution to the lingering electricity theft challenge in the Nigerian Electricity Supply Industry (NESI).

Key words: *Economic growth, Electricity theft, NERC, NESI, Theft detector, Smart Meters.*

1.0 Introduction

Electricity theft is one of the most prevalent issues causing irregular and inadequate supply of electricity in Nigeria, with attendant revenue and economic losses (Olaleye 2017). Illegal electricity connections and modification of energy meters have been major issues in the Nigerian Power distribution (Osigwe 2018). Electricity theft is an attempt or act of utilizing electricity without sufficient payment for it through illegal means such as direct connection of conductor on electricity supplying source or by sidelining or manipulating the energy meter (Augustine 2018). Electricity meter tampering can either be intrusive when it involves opening the meter cover to physically modify the inner components or non-intrusive, when the modification occurs outside the meter infrastructure (Mesganaw 2018). Electricity theft has affected the sustainability and reliability of electricity, all over the world, especially in developing countries like Nigeria (Shokoya 2019).

NERC (2021) provides that the Nigerian power sector suffers 30.8% energy losses due to theft and sabotage, a situation that is very unhealthy for the growth of the power sector as well as the national economy. The economy prosperity of any nation, without doubt is depending on the prosperity of her electricity sector (Ukoima 2019). Huge financial loss of averagely N21 billion is annually experienced in the Nigerian power sector due to theft related activities (Augustine 2018). The significance of electrical energy cannot be compared with no other utility since electricity impacts and determines the prosperity of all other sectors of national development (Obi 2013). The Nigerian Power sector has been battling with the issue of revenue collection and energy accountability for some time due to billing and metering issues (Anyaehie 2018). Anyaehie posits that, some Nigerian electricity users are unwilling to pay for electricity because of the presumed high estimated bills that are mostly associated with unstable power supply.

This reluctant attitude of some electricity consumers in paying electricity bills sometimes leads to by-passing of meters and other illegal connection to the electricity supply source. Theft related activities in electricity industry is a major factor that brings about erratic and epileptic state of electricity in Nigeria (Shokoya 2019). Shokoya provides that for Nigeria to assume her rightful place in the global business community, her electricity dependability flaws, power insufficiency and abundant cases of electricity theft in the Nigerian power sector must be addressed. Shokoya suggested the deployment of Smart Technologies such as Smart Grid (SG), accompanied with other interconnected smart equipment like Smart Meters (SMs) in the Advanced Metering Infrastructure (AMI), as a dependable remedy towards ending electricity theft issues in the Nigerian Electricity Supply Industry (NESI).

The electricity meter also refers to as energy meter is described as an electrical equipment that is designed to measure and quantify the volume of electrical energy consumed in a specified time interval by an electrically powered component, residential home, commercial premises or industrial premises (Makanjuola 2019). The defunct PHCN introduced the digital pre-paid meter in the distribution sector in 2006 with operation, similar to that of a recharge card in the GSM technology, with an aim of ensuring efficiency and fairness in the billing system, as well as elimination of estimated billing NESI (Anyaehie 2018). Anyaehie argued that pre-paid meters generally, have limitations of internal structural disadvantages in areas like impedance mismatch, energy lost, fast meter reading disk, non-real time nature, vulnerability to theft or internal modifications. In addition, the pre-paid meters are non-responsive to billing errors and also lack ability to automatically reverse funds, debited with no unit appropriation to the customer. Prepaid meters have helped in providing ease to electricity bill payment/subscription, alertness on the status of the electricity subscription/bill, elimination of exorbitant estimated bills; however, the need to deploy advanced technologies like smart meters, a technology that is already available in other parts of the world, will add other benefits to the power sector like theft eradication and will also save energy through energy forecasting as well as address other irregularities that presently constituted a glitch in the Nigerian power sector (Orukpe 2013).

2.0 Literature Review

Smart meter which consists of Advance Metering Infrastructure (AMI) is an advance technology of conventional metering system, that is used to measure the electrical energy consumption and provide more data functions when compared to other traditional meters (Depuru et al., 2011). Smart electricity meters make it easier for the detection of electricity frauds and make it more difficult for theft activities to be perpetrated (Olatunde 2020). Prepayment Metering System can be described as a system of electricity payment, where a customer pays for energy before using it (Makkanjuola 2015). Apart from the measure of electricity consumption by the electricity user, Smart meters offers additional functions such as real-time communication, power interruption notification and quality monitoring (Orukpe 2013). The deployment of Smart Metering system into the power system consists of installation of more sophisticated software applications, hardware components and new technological techniques that will offer more security against theft and energy losses (Zahoor 2017). The Smart Metering Regulation stipulated by the NERC, basically provides standard for the nature and functions of meters to be implemented by the DISCOs and to maintain accuracy in the billing system (Olanrewaju 2020). Olanrewaju posits that a smart meter is an electronic component that stores accurate data on the consumption of electric energy in a given time interval and communicates the information to the utility provider or Disco for accurate billing, monitoring and control while providing two-way communication between the meter and the data collection system.

Table 1 shows the Aggregate, Technical, Commercial and Collection Losses (ATC&C) by Discos in Nigeria for third and fourth quarter, 2021.

Table 1 Aggregate Losses by Discos In 2021

Discos	**ATC&C (%)**	
	2021/Q3	2021/Q4
Abuja	41.76	44.81
Benin	51.61	54.67
Eko	24.91	27.06
Enugu	52.68	53.15
Ibadan	48.33	54.41
Ikeja	20.92	20.75
Jos	64.12	67.08
Kaduna	74.82	74.10
Kano	44.52	48.88
Port Harcourt	49.82	46.32
Yola	76.44	73.09
All Discos		
Average ATC&C	45.07	46.91
Technical & Commercial Losses	22.51	23.44
Collection Losses	29.11	30.66

Source: NERC fourth Quarter Report 2021

The design of a robust single-phase electricity meter with functionalities to detect and report any act of tampering or modification in NESI was also suggested by Amhenrior et al., (2017). Electricity theft has become an issue of great concern in Nigeria's power sector (Augustine 2018). Augustine provides that in 2014, the Ikeja Electricity Distribution Company (IKEDC) experienced serious cases of electricity theft where 43,000 prepaid meters out of 134,000 meters installed were discovered to have been manipulated or tempered with, by customers within a time interval of five years. Some smart meters have additional characteristics that enable them to send power notification, monitor power consumption and theft related activities to the power supplying company (Zahoor 2017). Zahoor states that Smart meters are also useful in carrying out other electricity operations like, forecasting and maintenance of the actual power forecasted by the electricity distribution company. Smart meters are modern compared to prepaid meters and can eliminate energy theft, facilitate remote monitoring of energy consumption and control, since they have capacity to offer two-way communication system (Fidelis et al. 2019). Smart meters help to create awareness or alarm on the energy usage of the consumer, thereby encouraging energy conservation (Niyonteze 2019). Smart meters have capacity to offer remote meter reading, energy consumption notice to both the utility provider and customers and can also be used to eliminate theft (Dahunsi 2021).

3.0 Methodology

The methodology used in this study included a review of available literature and an evaluation of existing publications or writings on electricity billing methods, smart meters and pre-paid meters. The majority of these materials were academic publications.

4.0 Results and Discussions

4.1 Pre-paid Meters and their Limitations

Pre-paid metering system was first deployed in South Africa in 1980s with main aim of providing electricity to low-income earners at affordable rate (Carolyne 2013). The prepaid meter was introduced in Nigeria as a way of improving financial collection and revenue generation by Power Holding Company of Nigeria (PHCN) in 2006 as well as to abolish estimated billing system (Orukpe 2013). Usman et al., (2016), posits that effective and fair metering and billing are major determinants of consumer protection. prior to the privatization of the power sector, the Federal Government introduced a mass metering program known as the National Prepaid Metering Program (NPPMP) as a way of addressing the metering gap in Nigeria, with a target on the implementation of the pre-paid metering system (Olanrewaju 2020).

Olanrewaju submitted further that, Contractors under the NPPMP were carefully selected with obligation to procure or design and install pre-paid metering system at zero cost to electricity users but the program was not well executed due to high cost of procuring the meters, lack of fairness in the contractors recruitment process, short project duration, lack of a coordinated meter procurement process, abundant cases of inferior meters, lack of proper standardization of meters and corruption. The present pre-paid meters in the Nigerian Electricity Supply Industry (NESI) have limitations of poor infrastructure, poor communication, lack of theft identification, inaccurate electricity measurement, recharge card and reading issues (Zahoor 2017).

Zahoor posits that the pre-paid meters currently deployed in the Nigerian Power industry lack a two-way communication structure that can send the meter readings to electric power supplier on the real time bases for accurate analysis and billing purposes and is also lacks the ability to control theft related cases, occurring at consumer’s premises, hence the need for a smart meter that is more robust and sophisticated in modern system of communication (bi-directional and real time communication system). Prepayment system of electricity charges require electricity users to hold credit and then use electricity until the credit value is exhausted which implies that, users can access electricity only when there is sufficient credit in their electricity account; and would have their electricity service, discontinued when such credit is exhausted (Carolyne 2013).

Makanjuola (2015) posits that the pre-paid meters currently deployed as a billing structure by the Nigerian power distribution Companies have some disadvantages, capable of limiting the growth of the power industry. Makanjuola mentions the limitations of pre-paid meters as lack of sufficient and skilled local manufacturers, high cost of procuring them abroad, over dependence on another vending infrastructure for recharge, lack of temper detector or theft proof, non-tripping of the contractors, vulnerable to manipulations by both Disco officials and the customers, challenges of recharging and abundant cases of billing errors. Makanjuola, who conducted a survey study on the challenges of the pre-paid meters, currently deployed as the billing system in the Nigerian Electricity Supplied Industry, provides that, pre-paid meters are Bypass frequently by consumers, customers also experience unnecessary delay in acquiring and installing prepaid meters by Discos or meter contractors after payment, there is an issue of single-phase overloading, difficulty in changing from one tariff band to another and recharge failure due to network challenges. Table 2 shows the limitations of prepaid meters, currently deployed for electricity billing purpose by Nigerian electricity distribution companies (Discos) according to various research works and available literatures:

Table 2 Limitations of Pre-Paid Metering System

Limitations	Source documents	Total
Lack of temper detector	Zahoor (2017), Carolyne (2013), Makanjuola (2015), Obafemi (2021), Augustine (2018), Shokoya (2020), Orukpe (2013), Makanjuola (2015), Dahunsi (2021), Olanrewaju (2020) Olaleye (2017)	11
One way communication system	Makanjuola (2015), Dahunsi (2021), Olanrewaju (2020), Zahoor (2017), Augustine (2018), Olaleye (2017), Anyaehie (2018)	7
Vulnerability to supplier or user's manipulations	Makanjuola (2015), Dahunsi (2021), Olanrewaju (2020) Olaleye (2017), Zahoor (2017), Carolyne (2013), Makanjuola (2015), Obafemi (2021), Augustine (2018), Shokoya (2020), Orukpe (2013), Anyaehie (2018)	12
Recharge/consumption error	Anyaehie (2018), Zahoor (2017), Makanjuola (2015), Orukpe (2013), Olanrewaju (2020), Dahunsi (2021) Makanjuola (2015), Orukpe (2013), Dahunsi (2021), Shokoya (2020), Anyaehie (2018)	6
Shortage of maintenance personnel	Makanjuola (2015), Orukpe (2013), Dahunsi (2021), Shokoya (2020), Anyaehie (2018)	5
Inability to support real time data communication	Zahoor (2017), Carolyne (2013), Makanjuola (2015), Dahunsi (2021),	4
Inability to identify tariff band and charge accordingly	Makanjuola (2015), Dahunsi (2021), Zahoor (2017), Adegboye (2013)	4
Dependance on another vending infrastructure	Makanjuola (2015), Zahoor (2017)	2
High cost of procurement	Makanjuola (2015)	1

4.2 Automatic Meter Readers

Automatic meter reading (AMR) is the collection of data at a remote central location, from consumption meters located at customers' premises via telecommunication links (Amritta 2020). Amritta posits that AMR offers other benefits to both the utility supplier (Disco) and the consumer such as theft detection, two-way communication system, reliability in recharges and energy consumption.

Smart Technology deployment is the technical remedy which will effectively mitigate against the persistent electricity theft and improve the quality of power supply in Nigeria (Shokoya 2019). The National Electricity Regulatory Commission (NERC) has put in place, policies and regulations that can help achieve successful smart metering regime in the Nigerian distribution system (Okoye 2014). Preliminary studies carried out by some electricity distribution companies (Discos) to experiment the workability of smart meters in Nigeria’s power sector, as well as to understand what it will take to achieve transition from prepaid meters to smart meters have been reported to be successful (Dahunsi 2021). Smart metering devices are more modern than prepaid meters and can be used to eliminate energy theft, to achieve remote monitoring and control due to their capability for a two-way communication system (Fidelis et al. 2019). Smart meters have the capabilities of eliminating theft and wastage in the electricity distribution system (Akpan et al., 2019).

Makanjuola et al., (2019) provides that the primary objective of the smart meter is the reduction of energy wastage through theft. The use of smart meters built with prepaid functionality has resulted in a decrease in the use of prepaid meters in developed nations (Dahunsi 2021). Niyonteze (2019) posits that smart meters are integrated with a home display to help create awareness on the energy usage of the consumer thereby encouraging energy conservation. Onohaebi (2014) states the advantages of smart meters as high efficiency, metering accuracy and reduced electricity theft which leads to increased revenue collection.

Khan et al (2020) suggested a software solution in electricity theft detection using Supervised Learning Techniques which is a software that could be built in Smart Meters using Machine learning/ Artificial Intelligence to detect and automatically disconnect customers involved in theft related offences. Through smart meters, Electricity Distribution Companies will be able to get sufficient information on how customers are using electricity and at the same time, also help customers solve issues relating to over-billing and recharges (Amuta 2018). To advance the power sector and curb theft related issues, NERC through Smart Meter Regulation: NERC/REG/4/2017, provide a technical standard that sets out criteria for, functional, physical interface and data requirements for the deployment of Smart Meters in the Nigerian power sector (Olanrewaju 2020).

Orukpe (2013) posits that, Smart Meters are capable of saving energy through automatic billing in line with customers band, alarm system once a heavy load is connected and load limiting functions. India for instance, a developing country with similar power structure and privatization, similar to that of Nigeria, it is reported that the North Delhi Power Limited (NDPL) of India, was able to limit energy losses from 53% to 15% within a period of five years, through the installation of Smart Meters at the locations of large electricity customers (Shokoya 2020).

Table 3 Advantages of Smart Meters Over Pre-Paid Meters

Limitations	Source documents	Total
Ability to detect theft	Dahunsi (2021), Shokoya (2020), Augustine (2018), Zahoor (2017), Olaleye (2017), Anyaehie (2018)	6
Two-way communication capabilities	Olanrewaju (2020), Zahoor (2017), Dahunsi (2021), Orukpe (2013), Shokoya (2020), Adegboye (2013)	6
Non-vulnerability to customers and supplier's manipulations	Shokoya (2020), Olanrewaju (2020), Zahoor (2017), Dahunsi (2021), Anyaehie (2018),	5
Ability to detect recharge/billing error	Zahoor (2017), Anyaehie (2018), Dahunsi (2021), Olanrewaju (2020)	4
Support real time data communication	Augustine (2018), Adegboye (2013), Orukpe (2013), Olanrewaju (2020), Shokoye (2020)	5
Ability to identify tariff/ band and bill accordingly	Orukpe (2013), Olanrewaju (2020), Zahoor (2017)	3
Forecasting capabilities	Obafemi (2021), Zahoor (2017), Amuta (2018),	3
Saves energy	Orukpe (2013), Shokoya (2020), Dahunsi (2021)	3
Remote monitoring and control (connection and disconnection)	Amuta (2018), Olanrewaju (2020), Shokoya (2020), Olayeye (2017), Adegboye (2013)	5

5.0 Conclusion and Recommendations

The present metering system in the Nigerian Electricity Supply Industry is in dire need of emergency response that could correct the increasing cases of electricity theft and dissatisfaction of electricity users about billing system. The present average losses in the NESI due to theft and other factors is 23.44 (NERC 2021). This is already an unhealthy situation for the sector as it will hamper the investment and growth of the Nigerian power sector. It was established during the research that; the prepaid billing system has solved the problem of estimated billing which is the leading cause of dispute between Discos and their customers. The prepaid meters, however, are not able to address the issues of electricity theft, remote monitoring of electricity consumption, wrong tariff placement, recharge errors and energy forecasting. This calls for the need to deploy tested and confirmed Smart Meter technologies that can remedy these identified limitations of pre-paid meters. With the stipulation of Smart Metering Regulation by the Nigerian Electricity Regulatory Commission, the study recommended the deployment of Smart Meters which are generally built with theft detection capabilities, two-way communication system that enable both the Discos and the user access information, concerning service supply and payment. Also, from the research conducted, it has been discovered that Smart meters can offer remote monitoring and control functions (for remote connection and disconnection), real-time communication, also address recharging issues experienced by pre-paid users and carry out energy forecast base on the energy consumption pattern of electricity users. The study also recommended that for Discos to adopt the installation of the Smart meters completely and effectively in the country, they must ensure that appropriate devices for the installations and skilled manpower are available as well as other venting technologies or software.

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Suitable Communication Channels for Digital Marketing Strategy Implementation in Architecture Practice: A Sustainable Professional Skills Capacity

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Abstract
Effective interpersonal communications are conveyed either virtually or physically without restrictions today. These are indications of globalisation and internet breakthrough. The factor of globalisation (technological advancement and pandemic restrictions inclusive) has been impactful on architectural firms' strategy for communications at local scale: architects must ethically compete among many sellers for work from comparatively few buyers. The paper explored the versatility of adopting digital marketing communication media (DMCM) in brand management in relation to local architecture practice with the view to establishing the most ethically recommended medium or mix of media for both local and global practices in the 21st century business environment. This paper is based on critical review of past works, with the search term "Ethically Recommended Digital Marketing Channels for Architects". The results (Websites, Instagram, Twitter, Blogs, etc), were mixed and included traditional media strategies targeting larger or global audiences implicitly on regional projects across the globe. The study found that effectiveness of marketing communication initiatives is determined by practice experiences, available information and committed exposure to organisational values including strategic plan to implement and accomplish objectives. Finally, meta-analysis revealed that websites or corporate websites adoption was cited repeatedly as being ethically recommended DMCM in each of the four selected studies. The DMCM of websites was adopted by star architects in global practices. This suggests that the adoption of websites by local practices may be sustainable. The study therefore suggests that the skills for development and management of websites be integrated into the training and continuous development programmes of architects in Nigeria to build sustainable professional skill capacity.

Key words: *Digital Media, Marketing Communications, Sustainable Skill Capacity, Traditional Media, Websites.*

1.0 Introduction

Ethical Conducts in interpersonal communications could be tracked in both virtual and physical encounter of architects with their clients in architecture practice by regulatory bodies today. Marketing communication in architecture required that architects must approach individual clients or group of clients and/or audiences directly for brand management: this calls for interactive interpersonal communications (NIA Code, 1985). Traditionally, marketing communication in architecture was initiated through words-of-mouth and printed media in marketing the services of an architect. The printed media are books, pamphlets, photographs, etc which were originally developed by the source (architects) while the words-of-mouth were made by influencers (previous clients). Both the source and influencer media flourished in 19th century among local and global architectural practitioners. Historically it was Le Corbusier the first to identify the need to develop a brand and business niche in architecture as he consciously developed a 'signature' especially by making use of publishing and media with glossy books bound in landscape format accommodating thus drawings and sketches in a more enticing format for the reader and using typography from pre-first world war, German art movement, the Werkbund providing promotional material to his ideas and practice (Boyer, 2011).

Traditional media practices have not been effective and efficient as business strategy in communicating the right messages to international audiences when it comes to serving foreign clients in their nations. The place of branding and communication management, being a significant field of project management during design conceptualisation, is distinctly overlooked by architects in the architectural industry. Analyses on specific marketing strategies recommended to be adopted in advertising to the foreign audiences must be explored. The phenomenon called globalisation is behind the cause of change along social, cultural and economic diversions arising from an interaction of ideas, technologies, capital and people. The concept is rightly defined by (Ocampo and Martin, 2003) as the growing influence exerted at the local, national and regional levels by financial, economic, environmental, political, social and cultural processes that are global in scope. The need for global business competition in the practice of architecture intensified since the rise of internet audience that encouraged use of digital communication media, when architects had to compete among themselves as sellers for work from comparatively few buyers or clients, which was the beginning of 20th century (Taleb, et al., 2017: Turner & Townsend, 2016: Norouzi, et al., 2015).

In the 21st century competition, the traditional communication media are no longer sufficient as marketing strategies even at the local markets when compared to the digital media adopted by the international consultant firms in taking over the opportunities from the local firms in sending the right marketing message through to the right medium at the right time, to achieve high volume of audiences. Local architectural practices acknowledged that marketing communication strategy for competing with global firms at local scale is paramount (Chayka, 2018: Davidson, 2017: Ingels, 2010: Chaffey *et al*, 2009). This scenario worsen as ethical codes have not properly guided the various local practices on how to embrace the emerging right values for virtual encounter with their clients: the daunting task is that they must acquire certain additional skills and knowledge to remain at least competitive in their local markets with the international consulting firms.

This paper explored digital marketing communication media (DMCM) as a form of marketing communication strategies in architectural practice for brand management in relation to local architecture practice with the view to establishing the most ethically recommended digital medium for both local and global practices in the 21st century business environment. Marketing strategies in architectural practice are ways of winning audiences and commissions in relation to symbolic building as product component or making supervision and giving expert advice as service component (Yang, 2019). Thus, the researchers paid particular attention to ethical marketing conducts with professionalism, integrity, and competence as guided by the provision of codes in various domestic nations (NIA Code, 2011; AIA Code, 2018 and RIBA Code, 2019).

2.0 Literature Review

This section covers the concepts of Internet audience, marketing communication strategy, digital marketing models applicable for architects and empirical studies on internet audience and digital marketing opportunities for architects.

2.1 Emergence of Internet Audience

Formally or informally, business people and business organizations engage in a vast numberof activities called “branding”. Branding and marketing have become increasingly vital for success. Service Industries communicate branding with their present and potential stakeholders and the general public in a B2C and B2B scenario. The question is not whether to communicate but rather what to say, how and when to say it, to whom, and how often. Today, potential clients can turn to hundreds of cable and satellite TV channels, thousands of magazines and newspapers, and millions of Internet pages. They are taking a more active role in deciding what communications they want to receive as well as how they want to communicate to others about the products and services they use (Kotler et al., 2012). This is the market that must also be harnessed by architects today. Brand management draws on many different scientific traditions such as economics, strategic management, organizational behaviour, consumer research, psychology and anthropology just to mention a few (Bjerre et al, 2008).

2.2 What is Marketing Communication Strategy?

To effectively reach and influence target markets, holistic marketers are creatively employing multiple forms of communications. Marketing communications are the means by which firms attempt to inform, persuade, and remind consumers—directly or indirectly—about the products and brands they sell (Kotler et al., 2012). In a sense, marketing communications represent the voice of the company and its brands; they are a means by which the firm can establish a dialogue and build relationships with consumers. By strengthening customer loyalty, marketing communications that can contribute to customer equity. Marketing communications also work for consumers when they show how and why a product is used, by whom, where, and when. Consumers can learn who makes the product and what the company and brand stand for, and they can get an incentive for trial or use. Marketing communications allow companies to link their brands to other people, places, events, brands, experiences, feelings, and things. They can contribute to brand equity—by establishing the brand in memory and creating a brand image—as well as drive sales and even affect shareholder value (Anderson and Narus, 2004).

Advertising	Sales Promotion	Events and Experiences	Public Relations and Publicity	Direct and Interactive Marketing	Word-of-Mouth Marketing	Personal Selling
Print and broadcast ads	Contests, games, sweepstakes, lotteries	Sports	Press kits	Catalogs	Person-to-person	Sales presentations
Packaging–outer	Premiums and gifts	Entertainment	Speeches	Mailings	Chat rooms	Sales meetings
Packaging inserts	Sampling	Festivals	Seminars	Telemarketing	Blogs	Incentive programs
Cinema	Fairs and trade shows	Arts	Annual reports	Electronic shopping		Samples
Brochures and booklets	Exhibits	Causes	Charitable donations	TV shopping		Fairs and trade shows
Posters and leaflets	Demonstrations	Factory tours	Publications	Fax		
Directories	Coupons	Company museums	Community relations	E-mail		
Reprints of ads	Rebates	Street activities	Lobbying	Voice mail		
Billboards	Low-interest financing		Identity media	Company blogs		
Display signs	Trade-in allowances		Company magazine	Web sites		
Point-of-purchase displays	Continuity programs					
DVDs	Tie-ins					

Figure 2.1: Common Communication Platforms
Source: Kotler and Keller, 2012

Figure 2.1, lists numerous communication platforms known as the **marketing communications mix** which consists of seven or eight major modes of communication with long time effect in direct and indirect implementations: Marketing communication activities contribute to brand equity and drive sales in many ways: by creating brand awareness, forging brand image in consumers' memories, eliciting positive brand judgments or feelings, and strengthening consumer loyalty.

2.3 Digital Marketing Tools for Architecture Practice

In Nigeria, studios with strongly developed and promoted brand identities could be attributed to the few global architectural firms (Oluwatayo and Amole, 2012) to qualify as objects for assessments on any digital media usage apart from the local architectural practices. A platform where registered professionals could be contacted digitally by prospective clients is not yet in existence. Digitalization in the field of marketing has prodded some innovative and creative professional service providers including architecture to seek for rebirth. Digital marketing tools composed of digital contents that are classified under two titles by Varnalı (2013): (1) marketing communication tools that create paid digital content and (2) marketing communication tools that create proactive digital content. Marketing communication tools that create paid digital content are defined as communication channels where content is shared in a controlled way and generally for a certain fee. In case of marketing communication tools that create paid digital content, just like traditional marketing communication tools (television, radio, newspaper, journal etc.), a specific area on digital environment is rented for a certain period for a certain fee and relevant content regarding the product/service being marketed is placed on that area (Varnalı, 2013). Corporate web sites, SMS, EMS, MMS, IVR, *banners*, sponsorships, micro-web sites, search engine advertisement, in app advertisement can be given as examples of marketing communication tools that create paid digital content.

Whereas, digital marketing tools that create proactive content has become possible by means offered with web 2.0. After launching Web 2.0, digital marketing concept emerged that enables two-way instead of one-way and simultaneous information sharing (Altındal, 2013). Digital marketing communication tools that create proactive content are paid keywords (SEO, Search Engine Optimization) and social media networks like Twitter, Facebook, Instagram, LinkedIn, and YouTube. The Web offers the advantage of *contextual placement,* buying ads on sites related to the marketer's offerings. Such professionals can also place advertising based on keywords from search engines, to reach people when they've actually started the buying process (Kotler and Keller, 2012). Using the Web also has disadvantages. Consumers can effectively screen out most messages. Professionals may think their ads are more effective than they are if bogus clicks are generated by software-powered Web sites (Anderson and Narus, 2009). Advertisers also lose some control over their online messages, which can be hacked or vandalized (Kotler and Keller, 2012).Customers define what information they need, what offerings they're interested in, and what they're willing to pay.

Table 2.1: Average Time Spent per Day with Media by US Consumers, 2009 (hrs: mins)

Online	4:13
TV and video	3:17
Music and radio	1:26
Mobile phone	1:18
Landline phone	0:36
Gaming	0:36
Reading	0:24

Source: Yankee Group, 2009

2.4 Empirical studies on Internet Audience across the globe

Realities depicted by the improvements on Internet Usage by computer users or potential clients as a Share of Total Population in each Nation of the world call for review on the traditional media as marketing communication channels recommended in architectural practice ethics.

Table2.2: Internet Usage by computer users as Share of Total Population in various Nations

Country	1998	2010
UK	13.7%	82.5%
Australia	22.4%	80.1%
Germany	9.9%	79.1%
Japan	13.4%	78.2%
USA	30.3%	77.3%
France	6.3%	68.9%
Argentina	0.8%	64.4%
Saudi Arabia	0.1%	38.1%
Brazil	1.5%	37.8%
China	0.2%	31.6%
Philippines	1.1%	29.7%
Nigeria	0.0%	28.9%
Uganda	0.1%	9.6%
Sri Lanka	0.3%	8.3%
India	0.1%	6.9%
Senegal	0.1%	6.6%
Malawi	0.1%	4.6%
Mozambique	0.1%	2.8%
Madagascar	0.1%	1.5%
Niger	0.1%	0.7%

Source: Adapted from www.internetworldstats.com

3.0 Methodology

For the purpose of critical review in this research, past works with the search term “Ethically Recommended Digital Marketing Channels for Architects” was used in searching for relevant publications to be selected. The searched results are categorised and selected based on the ethical recommendations on their recommendations to adopt some itemised marketing communication channels. Meta-analysis on the contents of searched result presented how websites or corporate websites adoption was cited across cases as dominantly the ethically recommended digital media channel in each of the four selected studies. As shown on the table below, the authors presented various means or modes of differentiation for local as well as global markets. Out of these means of differentiations, only data on adoption of corporate websites could be quantitatively related in analysis of marketing strategy effect on performance. The idea for venturing into similar studies was supported by key ARCON/NIA officials (NIA Lectures, 2018; Haruna, 2021).

4.0 Results and Discussions

Table3.1 EthicallyRecommendedDigitalMarketingCommunicationChannelsforAdoptionbyArchitectsand Design-relatedProsessionals

Authors	Problem Observed	Ethically Recommended Digital Marketing Channels in Architect’s Perspective
Mitrache, 2012	Authors observed that architectural culture of refusal to engage with marketing culture need rebirth	**Website**, blogs, representation non visually-oriented social media sites, application of mobile devices, virtual business cards on professional networks, mailinglists and newsletters were recommended for architects in Romania
Koren, 2005	When design firms were lagging behind in development of their marketing plans to increase business successes.	Provided valuable real-world guidance for architects, landscape architects, urban designers and interior designers across the globe to adopt the use of digital marketing tools including **Websites**.
Linton, Claryand Rost, 2005	Large and small architecture firms lack promotional materials to help market their services.	Brochures, books, slideshows, **Websites** and multimedia presentations were recommended by the authors.
Haupt and Kupitza, 2002	Architectural profession is undegoing transformation: market segments becoming narrower such that buildings alone are not sufficient as advertising channels.	Introduced architects to the fields of marketing strategies according to their objectives, and use communication on the media more professionally. Numerous digital marketing tools including use of **Websites** were recommended for personal advantages.
Haruna, 2021	Author observed the need to press the importance of marketing in architecture	The author used **Website** himself being architect to post some articles, lectures, etc for public access freely. Recommended that schools of architecture emphasise teaching the “how to get job”.

Source: Researcher’s Review, 2022

See Table3.1 Ethically Recommended Digital Marketing Communication Channels for Adoption by Architects and Design-related Professionals as the output of this study.

The table indicated that a digitally updated architecture studio must adopt marketing strategies on using variety of communication media such as digital marketing tools including use of **Websites** for implementing organisational objectives. The scenario of pandemic restrictions encouraged virtual rather than physical encounter, see heading 3.1 for recommended conceptualisations on possible digitally global branding. Other authors recommended use of brochures, books, slide shows, etc in addition to **Websites** and multimedia presentations.

5.0 Conclusion and Recommendations

Architectural firm chooses which forms of digital marketing mix and channel will be most cost-effective in achieving its communication and sales objectives. Some of the known formally recommended categories of digital channels are: (1) Web sites, (2) search ads, (3) display ads, and (4) e-mails. Marketing mix strategies correspond to the actions undertaken by an organization to market its products or service directly and effectively (Abril & Rodriguez-Cánovas, 2016). This study draws on the most common means of digital marketing communication in the marketing architecture literature – using marketing mix for architects termed as suitable digital marketing channels. To access architectural services markets globally, *corporate web sites* or more simply *web sites* which are digital marketing tool that create paid digital content for the target internet users could be the most cost-effective and ethically acceptable for professional service providers in architecture to adopt (Mitrache, 2012). Therefore, *this study argues that the quest for globalisation of marketing strategy through standardised and/or adapted websites content is indispensable for survival of the 21st centuarybusiness environment for architectural firms.*

Web sites are official showcases of companies on digital environment (Varnalı, 2013). Corporate web sites can be defined as the media where the most reliable digital content is available, which shall allow corporate identity for the brand to be seen. Web site content is, generally, the corporate identity of the company, product and services, communication information, history, company vision and mission. Companies must design Web sites that embody or express their purpose, history, products, and vision and that are attractive on first viewing and interesting enough to encourage repeat visits.

From Table 3.1., digital media channels were highlighted as ethically recommended marketing communication channels in Designers' or Architect's Perspective (Websites, Instagram, Twitter, Blogs, etc), in addition to traditional media strategies in targeting larger or global audiences on the internet. The study found that effectiveness of marketing communication initiatives is determined by practice experiences, available information and committed exposure to organisational values including strategic plan to implement and accomplish objectives to build sustainable professional skill capacity.

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Secure Data Transfer Through Inter-Planetary File System (IPFS) And Blockchain-Embedded Smart Contract Using Multi-Level Authority and Encryption

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Abstract
The introduction of Smart contract-embedded blockchain systems incorporated with building Information model (BIM) in construction projects brought about the transformation of public and corporate management. The system, although it has contributed to infrastructure development, still faces vulnerabilities such as eavesdropping, data tampering, and possible attacks, requiring a secure communication channel. This research aims to develop a secure system for transferring data through the Inter-Planetary File System (IPFS), BIM and a blockchain-embedded smart contract. The system will use multi-level authority and encryption to ensure the confidentiality, integrity, and availability of the transferred data. The use of IPFS and a smart contract will allow for decentralized and distributed storage and transfer of data, while the use of multi-level authority and encryption will provide additional security measures to protect against eavesdropping, data tampering and theft. The resulting system has the potential to revolutionize the way data is transferred and stored, with applications in various industries and contexts.

Key words: *Building Information Model (BIM), Inter-Planetary File System (IPFS), Smart Contract, Encryption.*

1.0 Introduction

By 2022, global construction spending is expected to reach 12.4 trillion US dollars (Li *et al.*, 2019). The introduction of new technologies such as Building Information Modelling (BIM) in the Architecture, Engineering, and Construction (AEC) industry has resulted in significant advancement, but this advancement comes with an increase in design cost and a steep learning curve (Chang *et al.*, 2017; Zhang *et al.*, 2013). Even though the construction industry has been evolving for centuries and researchers have been seeking innovative solutions for decades, numerous challenges remain in making the construction process faster, safer, cheaper, and more accurate (Zhang *et al.*, 2013).

When contracts are signed between a contractor and a client, the procuring entity provides various contract resources, including budgetary funds and relevant personnel for the contract's effective implementation (Zheng *et al.*, 2020). Payments are the lifeblood of construction projects, but in practice, consistent fund flows are rare, resulting in undesirable consequences such as delays, increased costs, poor performance, disputes, and bankruptcies, all of which could jeopardize the projects' success. Payment issues have been identified as one of the leading causes of construction project disputes (Ahmadisheykhsarmast & Sonmez, 2020). Although very little research has been put into developing smart contract systems for the security of payments, the introduction of embedded smart contract blockchain systems provided a solution to these problems (Ahmadisheykhsarmast & Sonmez, 2020).

Prior to this research, there exist a Blockchain-enabled smart contract that automates the conditioning of construction payments on the progress assessments. Enabled by an on-site reality-capturing Unmanned Automated Vehicle (UAV) to observe and get the progress from the job site. The system made use of IPFS and BIM (Hamledari & Fischer, 2021). Despite its advantages, IPFS (Inter Planetary File System) lacks a mechanism for content encryption. Instead, IPFS accesses shared content (data) by hashing the data. As a result, users cannot share sensitive information via IPFS (Alwis, 2020).

The most crucial aspects of data protection are secure communication and data confidentiality, which means guarding against unauthorised access or theft. By using data encryption and decryption, cryptography can help achieve these goals (Alenezi *et al.*, 2020). The importance of having a secure communication channel cannot be overstated as the channel can be vulnerable to attacks like man-in-the-middle (MitM) attacks (Mallik *et al.*, 2019), in which the perpetrator places himself between the UAV and the IPFS to either listen covertly or to impersonate one of the parties. He can then alter the data to the benefit or disadvantage of the contractor or the client while making it appear as though an ordinary exchange of information is taking place. To that effect, there is a need for the encryption of the channel of transfer of data from the supervisor (UAV) who inputs the progress of the construction to the IPFS.
The rest of this paper is organized as follows. Section 2 discussed the related literature, section 3 dived into the methodology used, section 4 discussed the result and finally conclusion in section 5.

2.0 Literature Review

The research and integration of blockchain smart contracts in other domains have been on the high side as the technology brings about a lot of possibilities, yet little research has gone into examining the feasibility and applicability of this promising tool in AEC. Before the integration of blockchain into construction management, previews research proposed measures to Improve construction contract management. For example, standard construction contracts have been proposed by many countries and regions as references for contract formalization for specific types of construction projects, such as the FIDIC contract (Nael, G., 2005). However, standard construction contracts focus on the improvement of the contract structure and are still difficult to interpret by individuals who are not lawyers by profession. To simplify contract management, e-contracts were proposed. E-contracts are created by analyzing relationships between the contract participants and contractual information, followed by modelling traditional textual contracts in XML format (Cardoso & Oliveira, 2008). However, current applications of e-contracts are mainly found in the electronics trade, where the complexity of relationships between parties, obligations, and activities is simpler compared to that in construction contracts.

Despite the availability of digitized progress data, payment automation in AEC is just beginning to receive attention as projects still rely on traditional payment applications that are time-consuming, information-intensive, and cannot support payment automation (Penzes *et al.*, 2018). Researchers over the years have tried to show how much impactful the integration of blockchain into the AEC. (Hamledari & Fischer, 2021b) who researched the role of Blockchain-Enabled Smart Contracts could play in Automating Construction Progress Payments, due stated that progress payment automation is still far from reality, the writer also presented the theory of social reality to identify the underlying barriers that hinder the automation. The writer also argued that the reliance on centralized control, execution mechanisms, and lack of guaranteed execution, the current payment applications, and their supporting contract documents, even when computerized, cannot support progress payment automation. The paper concluded that the introduction of blockchain-enabled smart contracts could bring about the automation of payments by converting product flow (the observation of as-built conditions) to cash flow (progress payments) without reliance on the role of intermediaries.

Few research has tried to store and automate the payment of contracts using blockchain smart contracts with reviews on how much impact blockchain will bring to the automation of payment systems. (Nanayakkara *et al.,* 2021) carried out a literature review using questionnaires on an expert forum of 24 members including the upstream and downstream of the construction supply chain and university academics to identify the payment and related financial issues in the construction supply chain and construction industry. Opinions were carefully compared and the writers concluded that blockchain and smart contract technologies could assist in overcoming payment-related issues, such as partial payments, payment delays, non-payments, cost of finance, long payment cycle, retention, and security of payment issues, to a great extent.

In the implementation of blockchain-based smart contracts, (Guo *et al.,* 2021) proposed a blockchain-based smart contract to manage contract documents, monitor the signing process, and provide automated contract execution and payment settlement. The system proposed will handle the signing, verification, and validation of certificates and saving contract files using blockchain smart contract technology. The system will ensure that the contracts are protected by digital signatures and certificates. The system proposed cuts the time it takes to sign a contract from 55 to 190 hours (for a conventional paper-based contract) to 16-46 hours. Also, the cost of signing a contract was reduced from RMB2363 to RMB229 per contract. (Ahmadisheykhsarmast & Sonmez, 2020) proposed a system using smart contracts to automate the payment of construction contracts from employers to contractors. Using solidity as the smart contracts design language, the system's architecture consisted of an add-on software developed in Microsoft Project 2019 to transfer the necessary schedule and cost data to the smart contract via a project management software and a smart contract-based decentralized application designed to be deployed on the Ethereum blockchain. The system will ensure direct payments on fixed periods (weekly or monthly) from the employer's wallet to the wallets of subcontractors and suppliers to improve cash flow and reduce payment issues.

(Luo & Cheng, 2019) proposed a smart contract-based blockchain framework to facilitate the automation of contract payment. The model was proposed to automate payments in the supply chain of construction projects by formalizing construction contracts into smart contracts. The contract logic formalization involved the contractor, inspector, quantity surveyor, engineer, and employer. The execution of the smart contract was done through a permissioned blockchain-based framework. Consists of an automated consensus process based on pre-defined conditions of the smart contract, storing information in 2 different locations; Ledger and a data model for tasks completed and payments, and a manual process that requires input from the authorized stakeholder.

The introduction of BIM in the construction sector brought about a huge turnaround. Said to be the most flourishing technology in the construction sector (Martínez-aires *et al.,* 2018), integrating the technology with blockchain and smart contracts will significantly make a huge impact. (Shojaei *et al.,* 2019) proposed a system that was to integrate BIM model into a smart contract and creates a cyber-physical space for administrating the project through the blockchain network. This study was carried out to test the feasibility of blockchain technology as the link between the BIM model and the physical world with the implementation of smart contracts as the business logic of the blockchain network. The system used a private, permission-based blockchain, using Hyperledger fabric due the cryptocurrency aspect of the blockchain was not used, monetary compensations were executed through traditional channels such as electronic deposits. The system used seven (7) participants (client, architect/engineer, General Contractor (GC), regulators, inspectors, suppliers, and sub-contractors). The writers concluded that due the research method used in the study is by no means optimal, and it is only adopted as a starting point to show the feasibility of the approach. (Ye *et al.,* 2020) proposed a framework for automated contract, invoice, and billing management from a BIM model mapped in a blockchain-enabled smart contract. The proposed system process payments automatically through the banks and use a Common Data Environment (CDE) as off-chain storage that handles all the payment-related files for which a BIM Contract Container (BCC) is used, which contains all payment-relevant data. The BIM model and a BoQ with QTO were used to create the billing model which is then automatically processed via smart contracts for payments to be automated thereby completely simplifying the payment process. (Liu *et al.,* 2019).

IPFS due to its limitations of not having content encryption has managed to be used by many sectors in relation to blockchain. The fact that IPFS is decentralized in nature and uses the Distributed Sloppy Hash Table (DFSH), has brought about its popularity. In the Identity management sector, (Liu *et al.,* 2019) proposed an identity management system on biometrics and blockchain/smart contracts to enable secure and privacy-preserving identity management. The proposed system used both the IPFS well-known one-way hashing algorithm and ground-truth information to verify an individual's identity (Access control).
As can be seen from the literature reviewed, there is no clear protection provided for the transfer of data between IPFS, BIM, and blockchain-enabled smart.

3.0 Methodology

The information transferred between IPFS and BIM may be compromised as a result of the identified research gap and considering IPFS architecture, there is no known data security. In order to secure the channel through which this data is shared in the IPFS network, this research suggests a cryptographic implementation. The system has two primary goals and at least one party for content sharing. They are data comparison and data exchange in BIM. Time spent adding data and time spent comparing data can be the analysis's parameters. The mechanism is used in this study to analyse the aforementioned test parameters while keeping the other variables constant.

3.1 System Design

The system design is a three-unit tunnelling system by the IPFS. The encryption key used to encrypt the data input by a supervisor is generated randomly by a key generator. The BIM, where the degree of completion is confirmed, receives the encrypted data next via IPFS. The data is further encrypted after verification, sent through IPFS, and then decrypted in the smart contract. After decryption, the data is analysed by the smart contract, and once payment authorization has been granted, the data is once again encrypted before being sent to the payment portal via IPFS. Figure 3.1 displays the procedure.

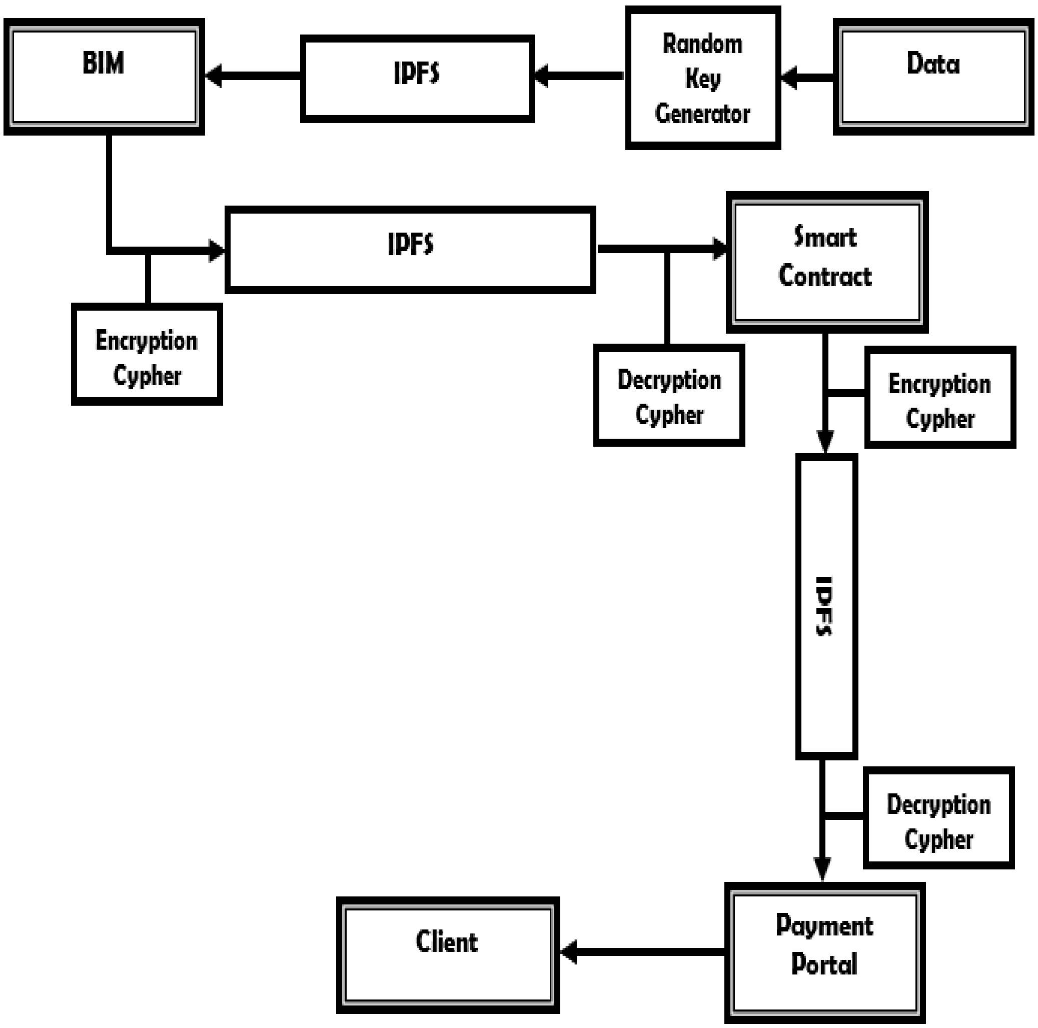

Figure 3.1: System Design

3.2 Encryption Flow Diagram

A detailed explanation of the proposed algorithm's operation is presented in the encryption flow diagram of figure 3.2.

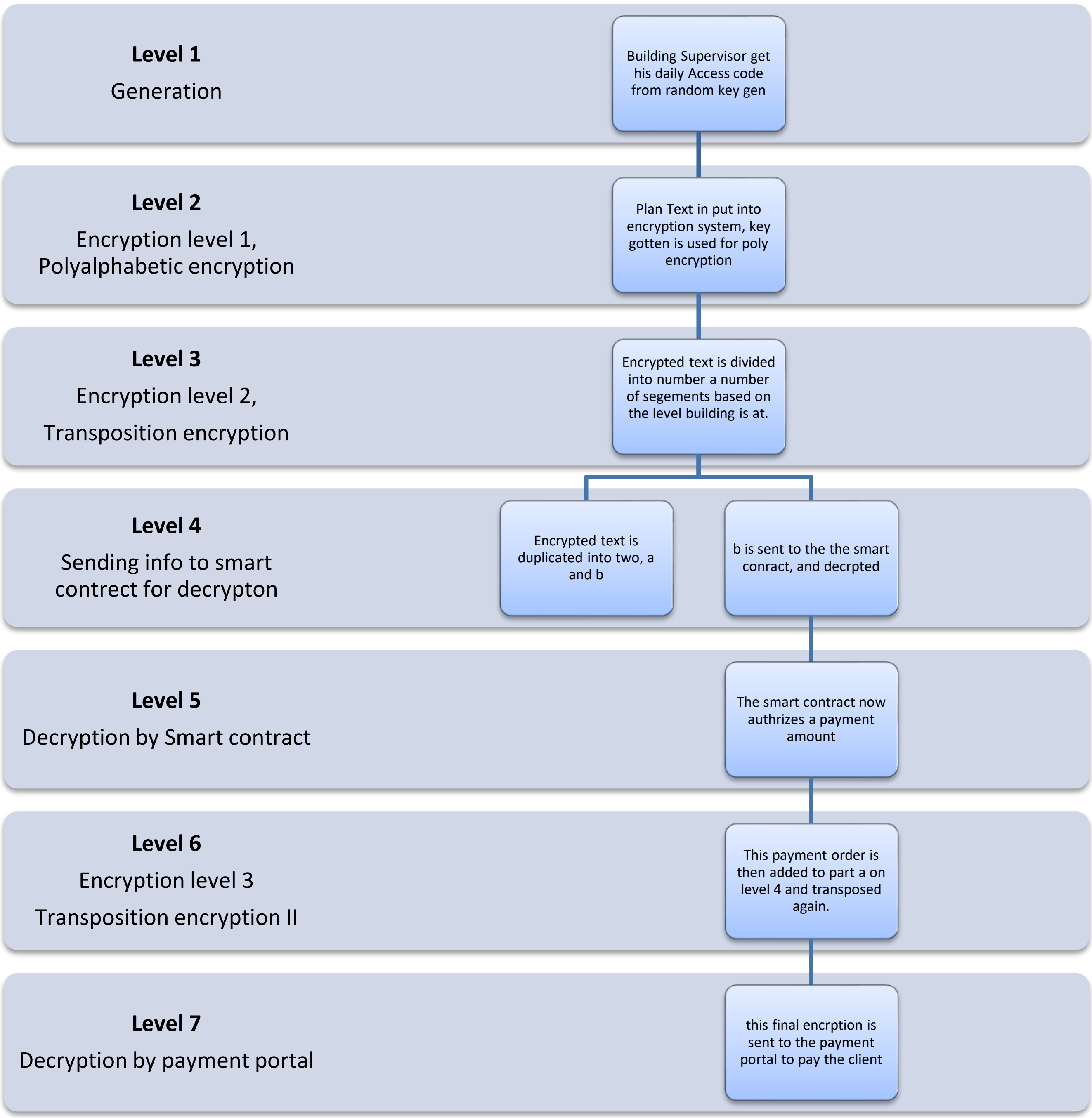

Figure 3.1: Encryption Flow Diagram

3.3 Algorithm and Mathematical Model

3.3.1 Algorithm

ALGORITHM 1: DATA ENCRYPTION

Input a: *Plaintext*
Input b: *Building Level*
P: *convert **a** to its digital equivalent*
R: *Random string of 1 – 6 is generated without repetition*
Foreach
$$Z = \sum_{1-\infty}^{P} R$$
end foreach
Km: *eliminate digits greater than **b** in **R***
*using **Km,** transpose* $\boldsymbol{Z \leftarrow Fx}$
Send Fx to Smart contract

3.3.2 Mathematical Model

A random code algorithm developed for the model is shown below;
Random code Algorithm
Random String (Count 1 – 6), Integer must be positive and no repetition allowed
Random Key = (R1, R2, R3, R4, R5, R6)
Encryption Level 1: Polyalphabetic Encryption
Plaintext = (P1, P2, P3, P4, P5)
Ef(x) = (P1+R1, P2+R2, P3+R3, …, P∞+R∞)
$= \sum_{1-\infty}^{P} R$ =Y1, Y2, Y3, …, Yn

Buildings are divided into levels; Level logged in by supervisor from levels 2 – 5. The number is then used to divide cypher text into the count e.g.; If count is 3, Y1, Y2, Y3 = Y11, Y22, Y33.
The key for this encryption is private and agreed on to the extent of levels 1 – 6, however, sequences are put in levels available. If the Key is 3, 5, 1, 4, 2 and the current count is 3, then the key will equal 3, 1, 2
Cipher Text 2 = Y3, Y1, Y2
Cipher text 2 is sent to the smart contract. After decryption, the smart contract adds another string to the cipher text, Pn. Y3, Y1, Y2, Pn. The same key is then applied again.
Encryption Level 2: Transposition Encryption
Transposition Y31, Y12, Y23, PN4
3, 5, 1, 4, 2, 6 → 3, 1, 4, 2
Y2, Y3, Pn, Y1 → Final cipher text sent to payment portal
Encryption Example:
Plaintext = f i r s t f l o o r c o m pl e t e d = 6 9 18 19 20 6 12 15 15 18 3 15 13 16 12 5 20 5 4
Random Key = 1, 3, 6, 4, 5, 2
Ef(x) = G L X W Y H M R U V H N S R I Y G E
Level logged in by supervisor = 4
From Key 136452, eliminate numbers greater than the Level logged in by supervisor = 1342
Cipher text 2 = G Y U S G L H V R E X M H I Ω W R N Y Ω
The smart contract will now add “make payment” and add another level
Final Cipher text = G L X W M A T Y H M R A Y B U V H N K M β S R I Y E E B G E Ω Ω β N β

We now proceeded to encrypt the final cipher text "firstfloorcompletedmakepayment" using a classical encryption method (transposition cipher) and a modern encryption method as well.
Transposition Cipher Text= rolamflmdafoeptiopmysreketcten
The key used was ZEBRAS
RSA Cipher Text =bT��?�itش4�%�NT����}�e�gH,�\TAlX,�l�?n¾yU

4.0 Results and Discussions

The developed algorithm was run in CrypTool 2.1 (Stable Build 9481.2) to test for its performance as a multilevel encryption tool. In order to extend IPFS with an access control mechanism, the following information security requirements need to be considered. They are confidentiality, integrity, availability, non-repudiation and authenticity. Table 4.1 shows the result generated.

Table 4.1: Analysis of results

CRYPTOSYSTEM	CRYPTO ANALYSIS USED	TEXT GOTTEN FROM CRYPTANALYSIS	PERCENTAGE CHARACTER PLACEMENT ACCURACY
Multilevel and Multi authority system	Known Cryptosystem attack	W X L G T A M R M H Y B Y A N H V U²Î M K I R S B E E Y©Î E G ²Î ©Î ²Î N	0%
Transposition cipher	Known Cryptosystem attack	amemtrcffkyiotolesoleemtrpanpd	13.3%
RSA Cipher	Dictionary Attack	�,��gX��?��4��}��U� ��� ��TeAnTl������ �?� l,%ϡ��ϡ�byTHiNt��\	0%
Transposition cipher	Brute Force	rpomlyasmrfelkmedtacftoeenptio	6.6 %
Transposition cipher	Dictionary Attack	lfmoypareomtinteerkecomaldpstf	7%
Multilevel and Multi authority system	Brute Force	GMKB LRMG XAβE WYSΩ MBRΩ AUIβ TVYN YHEβ HNE	0%
Multilevel and Multi authority system	Dictionary Attack	� G� B�ST YH WMAΩBK AEX E�V HI � L� GNRY � EN MRY �UM	0%
RSA Cipher	Brute Force	btT �,¾Tش� \�y�4�eTlU����A�?%�gl ��}HX?iN�, n	0%

4.0 Discussion of Results

The proposed system of this research ensures confidentiality through the cryptographic mechanism. The system would have additional multi-level Authority and encryption. Brute force was used to test the confidentiality of the system. Results show RSA, Multi-Level, and Multi Authority all produced the same outcome and showed no similarities to deciphered text from a cryptanalysis or plain text.

4.1. Integrity, non-repudiation and authenticity

IPFS is designed for the permanent web. It accesses the shared contents by the content hashes. Once the content is changed; the hash of the content also has to be changed. IPFS assign a unique node id for every node in the network and it verifies the sender of the data. Therefore integrity, non-repudiation and authenticity are already implemented within the IPFS protocol. The E-IPFS system also ensures these properties because it works on top of the IPFS (Alwis, 2020).

5.0 Conclusion and Recommendations

The use of BIM and IPFS in a smart contract allows for decentralized and distributed storage and transfer of data, while the use of multi-level authority and encryption will provide additional security measures to protect against eavesdropping, data tampering and theft. The algorithm developed from this research has the potential to revolutionize the way data is transferred and stored, with applications in various industries and contexts. For construction projects that require security but do not require the hassles of a complex system, we would advise using our model rather than the more complicated and resource-intensive RSA scheme.

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A Framework for Identity Verification Management System Using Blockchain for International Travel

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Abstract
The need for an Identity Management Systems with high level data integrity of online data cannot be overemphasized due to the presence and ubiquitous nature of online activities. Traditional biometrics-based identity management systems on the other hand, collect and store personal records and biometrical data in a centralized server or database, and an individual has no control over how and for what purpose her biometrics will be used. Such kind of systems can result in serious security and privacy issues for sensitive personal data. In this paper, we propose a novel approach to leveraging blockchain/smart contracts to enable secure and privacy- preserving identity management across multiple security agencies in a country, using Nigeria as a case study. The basic idea is to use blockchain to store an authority's attestation as well as an individual's transformed value. The blockchain data is then controlled by smart contracts that define various access control policies. The data owner has the flexibility to change the access control policies for any identity verifiers using a white list, a timer, and other methods. We implemented the proposed approach using the well-known sovrin ledger and tested the effectiveness and flexibility of various access control policies and data integrity benchmarks.

Key words: *Islamic banking, microfinance, Islamic microfinance, Entrepreneurship, development, Kano State*

1.0 Introduction

Digital Identity management has become one of the major problems in today's world, due to the continuous technological development, specifically the development of 5G and Internet of Things (IoT), the number of entities in the digital world have increased exponentially (Panait et al., 2020). The identification ecosystem of the past decades is complex and full of middlemen. Service providers have invested billions in system and infrastructure to be compliant with data security regulations. As of today, they are still facing challenges in managing user's identity, authenticating and authorizing users. Everyday online users are tasked with providing identity, entering credentials for online and cloud services that they access. These has generated huge volumes of user data with service providers and user private data is stored and left to the discretion of service providers (Lim et al., 2018) model, whereby banks generate profits from the margin earned from savers' deposits and demand deposits on the one hand and interest earned on funds lent to enterprises or individuals on the other hand (Ryu, Piao and Nami, 2012). The advocacy for the emergence of an alternative form of finance is based on the need to effectively address the financial needs of the poor and low-income earners, hitherto neglected by the conventional commercial banks (Onakoya, and Onakoya, 2013). Khan (2008) explains that microfinance refers to making small loans available to the poor with a focus on those not served by traditional institutions through programs designed specifically to meet their needs and circumstance. Microfinance can, therefore be regarded as the process by which low-income households will have a greater access to a variety of high quality financial services to finance their own small business enterprises. These services rendered by microfinance institution are not limited to credit facilities only, but it encompasses savings, insurance and money transfers. Typical microfinance clients include the poor and the low-income people who find it difficult to benefit from the conventional or formal financial institutions (Gumel, 2012).

The prohibitive interest charged by conventional microfinance irrespective of the result of operations may discourage small entrepreneurs to access funds from the banks. Dahiru and Zubair (2008) in Onakoya, and Onakoya, 2013) report that the major challenge of microfinance in Nigeria is that the microfinance institutions and programs have not achieved their objectives of reaching a greater number of people living in poverty. With the apparent failure of conventional microfinance, Islamic microfinance has been advanced as an alternative to conventional microfinance (Frasca, 2008).

Islamic finance as defined by Jobst (2007) is a financial relationship involving entrepreneurial investment which is subject to moral prohibitions. Islamic finance is based on principles that prohibit risk taking, interest earning, sinful activities, gambling, speculative trade and money lending to customers. It believes in trading based on real goods and services and a reward-sharing contract. Islamic microfinance focuses on providing an ethical financial system with a motive of wealth redistribution. Islamic micro finance may through arrangements like *Musharakah Mutanaqisah* help entrepreneurs who possessed the business skills but lack enough capital to set up the business. It might become an incentive to the entrepreneur to strive since they will be rewarded with equitable profit-sharing ratio if the business is profitable. Similarly, In the case of *Musharakah* mutanaqisah arrangement, the Islamic bank will receive income from its share with the *mudharib* for a business not like a conventional bank which will oppress the entrepreneur by charging interest on the loan. Similarly, the bank would become an active partner by assisting the entrepreneur not only with capital but also with business advice.

Nigeria has 986 microfinance banks that are licensed by the CBN to operate within the country with about 90% of these institutions located in the state capitals and the rest in some local government headquarters (Gaul, 2011). Therefore, the rural transformation if any is at low rate. Lagos has the highest share with 19.14% of the MFB and more than half of the MFB are in the South (79.62%).The Northern part of the country, with over 46% of the nation's population, has 20.38% (201 of 986) of the MFIs in the country. other reasons for the higher rate of unbanked people in the Northern zone is partly due to cultural, educational and religious factors which greatly affect their willingness to patronize and access the convention microfinance products and services to finance small and medium scale business (Abraham and Balogun, 2012).

An important feature of SME is their ability to create jobs. The total number of persons employed by the Micro, Small and Medium enterprises (MSME) sector in Nigeria as at December 2010 stood at 32,414,884. However, these enterprises are mostly characterized by inadequate capital base and low managerial and technical skills mainly caused by their poverty situation and inaccessibility to adequate investment capital (NBS, 2012 as cited in Abdullahi and Abdullahi, 2013).

The economic potential of Kano State is not contestable. With a population of over 9 million people, vast arable land for agriculture, mineral resources and a major commercial hub in northern Nigeria, the State is in a good strategic position to grow if it chooses to do so. The involvement of the State in commerce dates back to the 19th century and it progressively served as an important hub for Trans-

Saharan trade. The enormous population and the presence of skilled artisans tend to attract businessmen and industrialists into the State. The markets places where the bulk of the commercial activities take place have grown steadily over the years but their structures and mode of operations have remained greatly unchanged due to inadequate capital.

Capital is the blood life of every business. The main sources of capital in Nigeria are the financial institutions, precisely commercial banks. The lending procedures and collateral facilities are some of the obstacles hindering growth and development of SMEs in Nigeria. The formal banking system is beyond the reach of many who therefore patronize micro finance institutions. Similarly, the religious, vision and welfare objective determines the extent to which some entrepreneur patronize the informal banking system. Therefore, Islamic microfinance has emerged as a new financial innovation to substitute for conventional Microfinance. Scholars in Islamic finance often argue that religious belief in Islamic countries is against the conventional microfinance which is one reason why a *Shari'ah* compliant microfinance is needed and why it is flourishing (Ashraf and Hassan, 2013).

A number of studies have been conducted both at national and international level on various dimension of Islamic microfinance and entrepreneurship bordering on its applicability, effectiveness, performance and challenges (Hassan & Mohammed, 2008; Jamal & Sheik, 2013; Morsid & Abdullah, 2013; Muhammad & Zakaullah, 2013; Onakoya & Onakoya, 2013 and Gumusay, 2014). However, none of these studies seek to assess the potentials of Islamic micro finance on entrepreneurial development in Kano State.

The rest of the paper is organized into four sections. Section two presents a review of related literature on microfinance, Islamic microfinance, entrepreneurship and entrepreneurial development. Section three discusses the methodology adopted by this paper. Section four is on results and discussions. While, section five presents a summary, conclusion and recommendations arising from findings of the study.

2.0 Literature Review

Identity is the distinguishing attribute of an individual. It is widely referred to as the sum of attributes, such as biometrics, height, and birthdate, or the designed attributes.

2.1 Identity Management System

Digital identity plays an increasingly important role in our interconnected, digitalized society. Also with the continuous technological development, specifically the development of 5G and Internet of Things (IoT), the number of entities in the digital world increased exponentially. For example, most of us have a number of digital identities, associated with our workplace, our personal life, and other professional-related activities. This partly contributes to the growing reliance on identity information management (also referred to as identity management, identity management and access control), designed to manage and secure our identity information and to provide relevant services (Panait et al., 2020) (Liu et al., 2020). Identity management solutions are generally designed to facilitate the management of digital identities and operations such as authentication, and have been widely used in real-world applications (Meghana, Ramya Krishna, et al., 2020). Identity and Access Management refers to the processes, technologies, and policies that manage access of identities to digital resources and determine what authorization identities have over these resources (Hamza et al., 2018).

Identity Management (IdM) System is used for providing the security of user access, managing users, credential verifications and check whether the right persons are to access the resources provided by the services. Authentication of users is performed in different ways like password, bio- metrics, token-based or certificate based. In most organizations, the risk, cost and efforts towards managing identity increases along with the growth of the organization. For the proper management of the identities, every organization needs a well-defined identity management sys- tem. This helps the organization to reduce the risk associated with identity management as well as the cost and the time required to fulfill the employee's identity and access needs (Hamza et al., 2018).

Blockchain is the decentralized distributed database technology that is combined with guarantees against tamper-resistance of transactions/records using cryptographic methods. By using time-stamping of its trans- actions and messages, blockchain provides universally verifiable proofs for existence or absence of a trans- action in the distributed database and the underlying cryptographic primitives using hash functions and digital signatures provide guarantee that these proofs are computationally secure and verifiable at any point in time. Blockchain is decentralised, jointly maintained by a plurality of independent parties/nodes and achieves consistency of transactions among distributed nodes by using distributed consensus protocols (such as Byzantine fault tolerance algorithm without the need of having a central authority (Htet et al., 2020).

Blockchain technology is a data structure, which is represented by a list of blocks in a particular order, to establish, validate and share distributed ledger of different kinds of transactions through peer-to-peer (P2P) networks of computers (nodes). It is based on cryptographic hash functions, asymmetric-key cryptography and digital signature (Meghana, Krishna, et al., 2020). Blockchain is a networking technology, where nodes are directly connected to each other in a Peer-to-Peer (P2P) manner. It has eliminated the concept of centralization through consensus mechanisms. Decisions in the network are made after the consensus among all nodes. Furthermore, blockchain is also known as a distributed ledger technology. Ledger contains the record of transactions made in the network, and is distributed over all nodes. In Figure 2.2, the basic blockchain structure is presented.

In a typical workflow for a passenger leaving a country via a port of exit, the passenger would be required to swipe passport at a passport scanner which records the details and then an immigration officer validates and stamps the exit out of the country. The passenger now proceeds towards the boarding gates and takes the flight to the destination. The next stage is the submission of the Advanced Passenger Information System (APIS) data, which is the current Identity Management System used by many countries including the United State, Nigeria, India and so on. The APIS was introduced by the US Customs and Border Protection and is a required criterion for many nations. Common system operational in many countries including the United States are fast-tracked and quick-entry systems like the Global Entry Program. Global Entry allows rigorous background checks verified passport holders to skip lines and an immigration desk and walk to a Global Entry Kiosk to generate an exit pass. The kiosk scans the passports and collects fingerprints to verify authenticity of the passport holder. All of these systems have clearly contributed to ease of air-travel especially for citizens and have helped alleviate extensive screening and congestions at airports. Similar systems exist for entry through rail/sea. The downside being each of these systems have exposed us to new points of failures and security breaches (Patel et al., 2018).

3.0 Methodology

The designed framework depicts in Figure 3.1, presents the components involved, the external storage, and the blockchain. Our contributions begin with decentralizing the database for all the agencies involved and also introducing blockchain into identity management.

The three distinct components within the life cycle are the issuer, holder and the verifier. The immigration service, which is the point of user identity registration will be referred to as issuer, the individual to be registered will be referred to as holder and other agencies of government that interact with the user's information will also be referred to as verifier. A user authentication consists of three primary stages within the life cycle as illustrated in Figure i: smart contract construction or user registration, access control via smart contract, and retrieval and verification of user identity information. These will be discussed explicitly in the next stage.

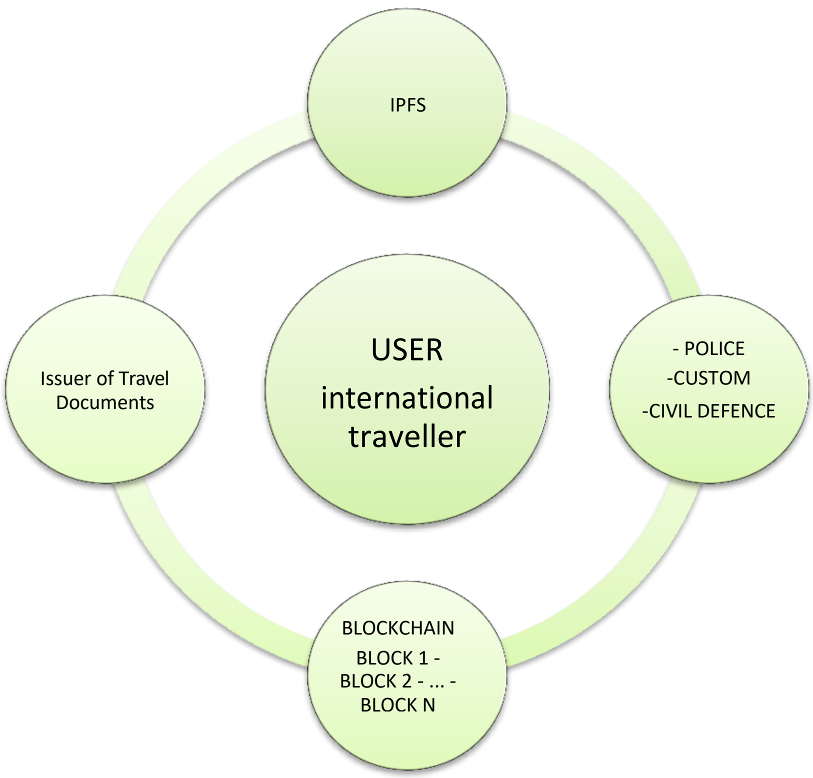
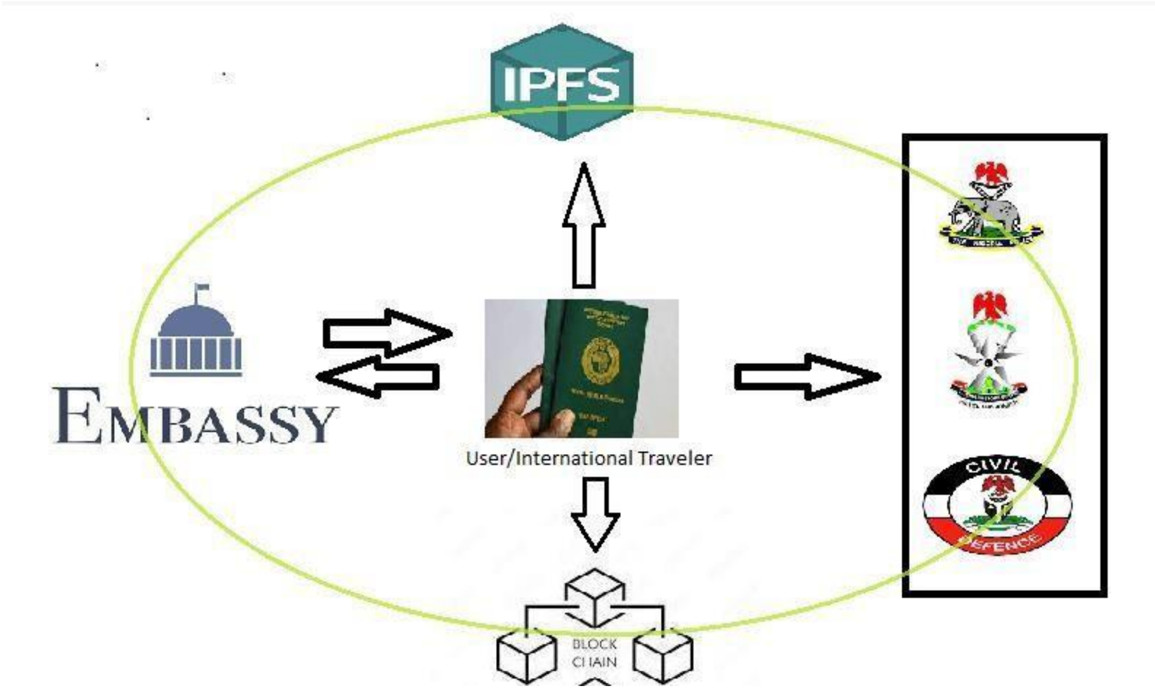


Figure i FRAMEWORK FOR USER IDENTIFICATION SYSTEM



4.0 Conclusion and Recommendations

We have designed a new identity management framework that can integrate a user's transformed individual data to a smart contract through blockchain platform. The frame work will enable data integrity because of the block chain distributed systems and public ledger, it will also ensure data privacy for individual data.

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Uwe, D., Stefan, J., & Sürmeli, J. (2019). Self-sovereign Identity – Opportunities and Challenges for the Digital Revolution. 6.

Development of an Integrated Feedback and Feed-Forward Algorithm for Smart Irrigation Based on Fuzzy Logic

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Abstract
Agriculture is the world's biggest water consumer, hence the consideration of creating water saving measures. This has led to increase in research on smart irrigation systems over the years. In traditional irrigation the crop is irrigated every day with a certain amount of water base on farmer's experience without putting the plant's water need into consideration, this leads to water wastage. Smart irrigation is the solution to this, smart irrigation uses sensors, actuators and internet of things (IoT) to efficiently irrigate in the right place, at the right time and in the right amount. In this work an integrated feedback and feedforward algorithm for smart irrigation based on fuzzy logic was developed. The algorithm employs sensors for feedback and a typical water balance method based on crop evapotranspiration (ETc) which ensures that the soil and plant water inputs must balance the expected output (evapotranspiration) for feedforward. The algorithm employs fuzzy logic controller to efficiently control the percentage of valve opening according to the effect of four input parameters; soil water content (SWC), ETc, air temperature and humidity, which are vital for crop growth making the algorithm efficient in practical scenario. The algorithm was simulated and evaluated using MATLAB and the results compared with existing related work, the result showed that the algorithm is cost effective as it greatly reduces manual labor, the algorithm saves water by 45% and has a higher crop yield as compared to traditional irrigation method.

Key words: *Evapotranspiration, Fuzzy logic, Smart Irrigation, Algorithm, MATLAB*

1.0 Introduction

Agriculture is one of the most important parts of survival for people around the world, In Nigeria, agriculture is one of the main sources of livelihood. Water plays a crucial role in plants life cycle, including germination, photosynthesis and nutrition processes. Most often, the water provided by natural precipitation is not enough to provide the amount of water needed by plants for a healthy growth (Sales et al., 2015). Water scarcity is one of the major concerns of today's agriculture, therefore efficient irrigation of agricultural land is important and can be accomplished with help of smart irrigation systems (Kokkonis et al., 2017). In agriculture, improving crop yield is crucial to meet up growing demand of food for population increase. In order to advance crop productivity, there is an urgent need to shift from manual methods to automation (Krishnan et al., 2020).

Smart irrigation is a process of scheduling water supply efficiently to an agricultural field with the aid of actuators, sensors and IoT with no or less human intervention. The decision for watering is based on data collected through wireless sensor networks (WSN) from sensors and actuators, the primary goal of a smart irrigation system is to reduce water waste and provide correct balance for optimal plant life (Hasan et al., 2019). Most of the existing methods for irrigation control can be classified into two namely (Casadesús et al., 2012) :

i. Feed-Forward Control: In feed-forward control the crop water need is estimated by water balance, where the soil and plant water inputs must balance the expected outputs (Casadesús et al., 2012).
ii. Feed-Back Control: Feed-back control is aimed at keeping the soil moisture of the soil or the plants' water stress within range. Example of irrigation control based on feedback is the use of sensors. It typically consists of managing irrigation in order to keep the crop water status within controlled range.

Agriculture remains the World's biggest water consumer, with farming and food production accounting for up to 70% (World Bank, 2018), In Nigeria agriculture is one of the main source of livelihood, especially for people living in the rural areas which constitutes 65% of the populace (Bashir & Kyung-Sook, 2018). Also, with the exponential population growth, there is need to meet up with food demand for the population. One of the major contributors to water wastage in agriculture is traditional irrigation and low irrigation efficiency, currently according to FAO, 60% of water diverted or pumped for irrigation is wasted via runoff into waterways or evapotranspiration through plant surface and soil (Alomar & Alazzam, 2019).

Fuzzy logic is a form of soft computing method which accommodates the imprecision of the real world, unlike traditional hard computing soft computing exploits the tolerance for imprecision, uncertainty and partial truth to achieve tractability, robustness and low solution cost (Wang, 2015). Fuzzy logic provides a convenient way to map an input space to an output space using a list of If-Then statements called rules and membership functions. According to Hasan *et al*., 2019 Fuzzy logic is basically representation of logic with many values, these values can be any real number between 0 and 1.

Unlike traditional logic, such as binary logic where variables may only take on two values True and False represented by 1 and 0 respectively, the variables in fuzzy logic may have a truth value that ranges in degree between 0 and 1. Instead of describing absolute Yes or No, the truth value or membership in fuzzy logic explains a matter of degree, 0 shows completely False, while 1 shows completely True, and any value within the range indicates the degree of True (Wang, 2015).

Some advantages of fuzzy logic include: fuzzy logic is easy to understand, Fuzzy logic is tolerant of imprecise data, fuzzy logic is flexible, it can model non-linear functions of arbitrary complexity, Fuzzy logic can be built on the experience of experts, fuzzy logic can be blended with conventional control techniques and it is based on natural language.

2.0 Literature Review

This section covers fuzzy set and fuzzy inference process and some related works on smart irrigation based on fuzzy logic.

2.1 Fuzzy Set and Fuzzy Inference Process

Fuzzy logic starts with the concept of a fuzzy set. A fuzzy set is a set without a clearly defined boundary, it contains elements with a partial degree of membership (Wang, 2015). In classical well-defined set, the membership of elements complies with binary logic, either the element belongs to the set or it does not belong to the set but in fuzzy set theory, it contains elements with degree of membership between completely belonging to or completely not belonging to the set. This is because a fuzzy set does not have a clearly defined boundary, its boundary is described by membership functions with degree of membership of elements ranging from 0 to 1.

An example of a fuzzy set is shown in figure 2.1 which describes the criterion for pass mark for students, a student with a score equal or greater than 70% is defined as an element in this set with full degree of membership, in this case a student with a score of 80% definitely has a full degree of membership (with value of membership = 1), another student with a score of 15% is far away from the pass mark (70%), so it has zero degree of membership (with value of membership = 0), in other words completely does not belong to the set, another student with a score of 60% fairly close to the pass mark and can be said to have partial degree of membership and a value of membership (0.8) is decided by the feature of membership function.

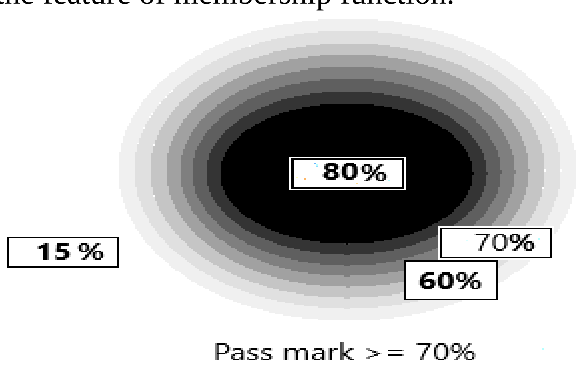


Figure I: Fuzzy Set ‘Pass Mark’

Source: Wang (2015)

Fuzzy inference is the process of mapping a given input variable to an output space using fuzzy logic based deducing mechanism which is comprised of If-Then rules, membership functions and fuzzy logical operations, Fuzzy inference systems have been successfully applied in fields such as automatic control, data classification, decision analysis, expert systems and computer vision (Wang, 2015). The

Mamdani type fuzzy inference process which was used in this work consists of five (5) steps as follows:
i. Fuzzify input variables
ii. Apply fuzzy operator
iii. Apply implication method
iv. Apply aggregation method
v. Defuzzification

2.2 Related Works on Smart Irrigation Based on Fuzzy Logic
In Alomar & Alazzam (2019), they proposed a system that consists of sensors and they employed fuzzy logic for irrigation control, they employed a Mamdani fuzzy logic controller to control water flow from a water pump, the used two inputs; soil moisture and air temperature and one output, water flow. Soil moisture and air temperature are continuously monitored using sensors and the water flow is adjusted accordingly, they basically used fuzzy logic to maintain the soil moisture at a preset value. Their work only considers feedback approach and doesn't employ feedforward approach, also their system utilizes only two input parameters which makes it difficult to capture some environmental factors that are necessary to predict irrigation need.

Krishnan *et al*. (2020) proposed a fuzzy based smart irrigation system that incorporates sensors, GSM technology and solar power, sensors to sense environmental factors, GSM technology to send SMS to farmers regarding conditions of the soil and motor status and the solar power to save energy. Data from sensors in the field are used to control a motor ON and OFF status using fuzzy logic controller. The algorithm works by initializing GSM modem as soon as power supply is turned ON, the processor checks the availability of solar energy with the help of a light dependent resistor (LDR), if solar energy is available the system is run using the solar power, the processor checks the soil water content whose threshold is set to a predefined value, once the soil moisture content is greater than the set threshold the motor is tuned ON, This system considers power saving by employing solar power to run the pump.

In Jaiswal & Ballal (2020), they employed fuzzy logic and IoT to perform irrigation using soil moisture, humidity, air temperature and reservoir water level as input parameters to control the percentage opening of a valve. Their work considered energy consumption by ensuring valve is open only at lower supply tariff, if tariff is high irrigation is rescheduled.

In the aforementioned research works, it can be seen that several authors Alomar & Alazzam, (2019); Kokkonis *et al*. (2017); Krishnan *et al*. (2020); Hasan *et al*. (2019); Munir *et al*. (2018) proposed smart irrigation systems that employed sensors and fuzzy logic for irrigation control, these works use only feedback mechanism from sensors to control irrigation. Their work can be improved by adopting a combination of feedforward and feedback mechanism.

Munir *et al*. (2018) proposed a fuzzy based smart irrigation system for a tunnel farm that uses internet of things (IoT) and sensors to capture field and plant parameters and their need for watering, the system includes a mobile phone application interface that is used to continuously monitor and control the system. The system uses fuzzy logic to decide the watering quantity of the field considering soil moisture level, humidity and temperature.

3.0 Methodology

The software used for simulation and evaluation is the MATLAB simulation tool from MathWorks, MATLAB is equipped with a toolbox for fuzzy logic implementation and MATLAB supports interoperability with other programming languages.

The Fuzzy Inference System (FIS) was built using the tool box available in MATLAB. The fuzzy logic implementation focuses on the decision-making of the Algorithm, the fuzzy system has four inputs: ETc, Soil moisture, Air Temperature and Humidity and one output: Valve control. The fuzzy inference system is shown in the figure I.

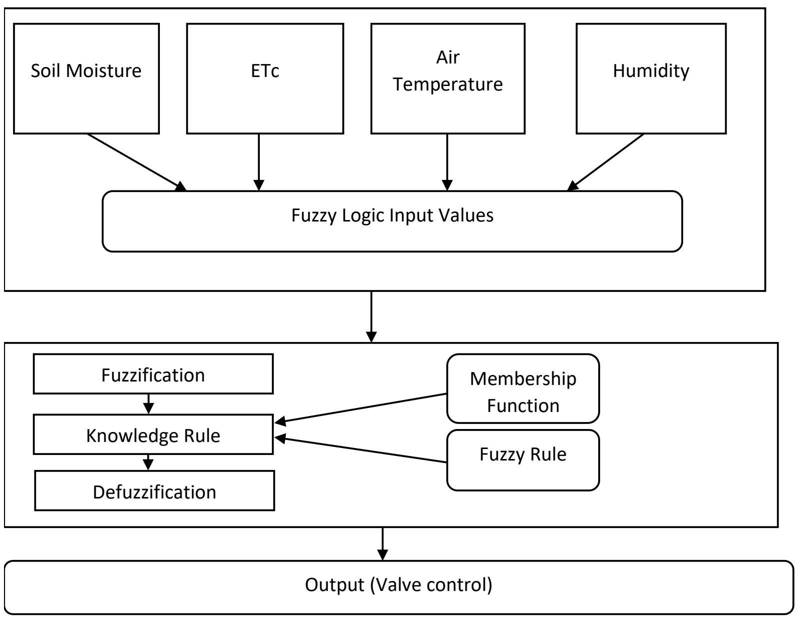


Figure II: Fuzzy Inference System (FIS)
Source: Lawrence et al (2023)

Each input parameter consists of three membership functions, the membership functions values and fuzzy rules are framed using the weighted methodology. The membership function for each parameter is given in Table I.

Table I: Inputs and Membership Functions

INPUTS	MEMBERSHIP FUNCTIONS		
ETc	Low	Medium	High
Soil Moisture	Dry	Medium	Wet
Air Temperature	Cold	Warm	Hot
Humidity	Dry	Medium	Wet

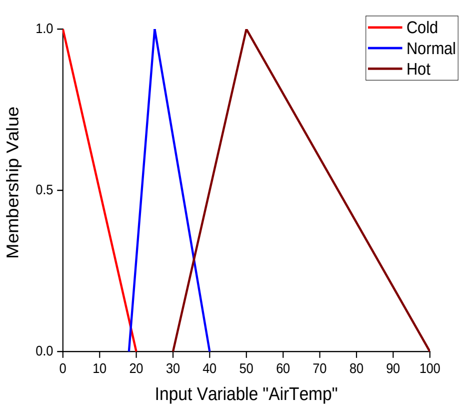
The number of fuzzy rules is given as Nm where N is the number of membership functions and m is the number of inputs. Since the FIS has four inputs with three membership functions each, 81 fuzzy rules were generated for the FIS.

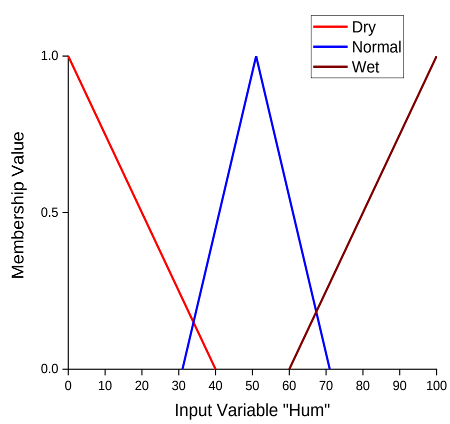
To evaluate the performance of the algorithm, the algorithm was simulated and evaluated using MATLAB and results were compared with the work of Jaiswal & Ballal (2020).
The metrics used to evaluate the performance of the algorithm are:

i. Soil Moisture: The soil moisture gives the indication of water in the soil; it is the most vital factor for deciding whether to irrigate or not. Soil moisture gives the water stress in the soil and it is needed to know the amount of water to be dispensed to the crop (Touati et al., 2013).
ii. Air Temperature: The air temperature gives the measure of the environmental temperature, it is important because many plants are sensitive to air temperature during irrigation especially in extreme weather conditions, at very hot weather condition irrigation should be avoided (Kokkonis et al., 2017).
iii. Humidity : This indicates the humidity of the environment, a high (wet) humidity is responsible for rise in the rate of precipitation which replenishes the ground water level and also reduces the crop irrigation need (Jaiswal & Ballal, 2020). Therefore, it is important to observe the humidity in order to make decisions on irrigation requirement.
iv. Crop Evapotranspiration : This is the evaporation from the soil surface and the transpiration through plant surface (Davis et al., 2009), it is an estimate of the loss of water from both the plant and the soil. This metric is important to estimate the amount of water lost so it can be complemented through irrigation.

4.0 Results and Discussions

The work Implements a fuzzy inference system (FIS) that evaluates four input variables for deciding the percentage of valve opening based on fuzzy logic. This section shows the result of the fuzzy logic implementation. As shown in figure III the triangular membership functions was used for the input variables and the trapezoidal membership function was used for the output variable. All membership functions were assumed to have a universe of discourse of 0-100. For the purpose of this work the bigger number represents a high value and the smaller number represents a low value. The rules were implemented using the weighted methodology of Wang,2015 where weights are introduced into the input variables. 81 fuzzy rules were developed for the system.





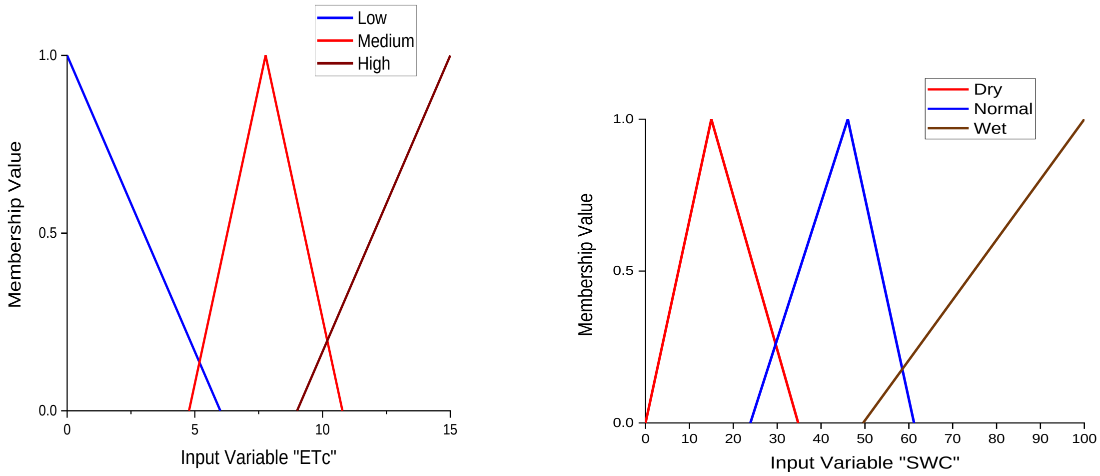


Figure III: Membership Function for The Inputs

Source: Lawrence et al (2023)

As can be seen in figure IV this work utilizes the Min-Max inference rule base with AND connectives between the inputs. These fuzzy rules are aggregated on the inputs to determine the percentage of valve opening for every possible scenario of input.

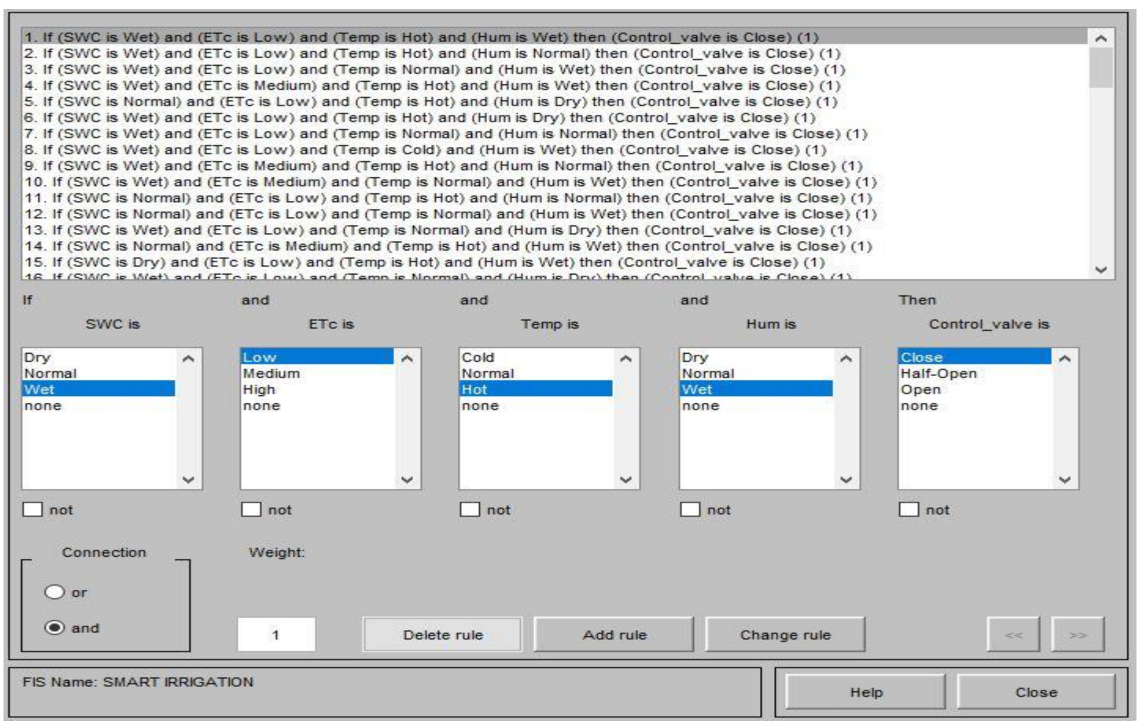
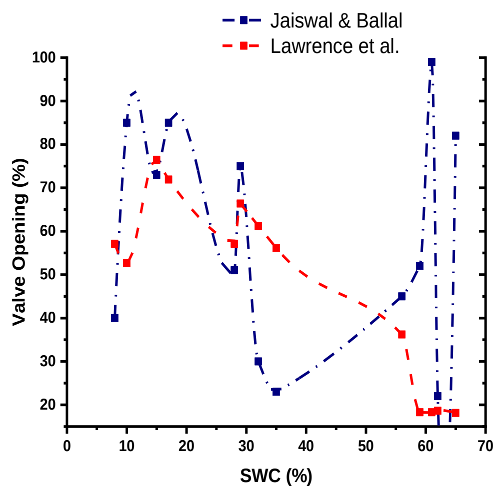
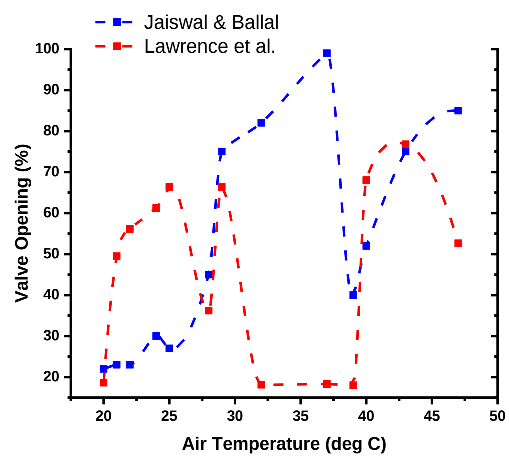


Figure IV: Rules settings for The FIS system

Source: Lawrence et al (2023)





(a) (b)
Figure V: Result Comparison of "SWC" and "Air Temp"

Source: Lawrence et al (2023)
Figure V (a) shows that when SWC is 8%, valve opening is 40% in the work of Jaiswal & Ballal and valve opening is 57.1% in this work. Figure V (b) shows that when air temperature is 390C, valve opening is 40% in the work of Jaiswal & Ballal and 18% in our work. Notice that in this work when temperature is high valve opening is low, this is because it is preferable to schedule irrigation at low temperatures when the weather condition is favorable.

5.0 Conclusion and Recommendations
In this work an integrated feedback and feed-forward smart irrigation algorithm based on fuzzy logic was developed. The developed algorithm uses sensor data for feedback and crop evapotranspiration (ETc) for feedforward. The fuzzy controller efficiently controls the percentage of valve opening based on soil water content (SWC), crop evapotranspiration (ETc), air temperature and humidity.

The evaluation and comparison of the algorithm shows that it is cost effective as it reduces manual labor to a great extent, the algorithm saves 45% water which is better as compared to other existing related research, the algorithm has a higher crop yield as compared to traditional irrigation method.

More work can be done to further improve the algorithm by incorporating artificial intelligence and machine learning to enable the algorithm perform irrigation needs prediction and irrigation dose (volume) prediction, this way even if the sensors fail the system will be able to predict future irrigation needs and their dosage. Energy consumption can also be considered in future works, where energy supply tariff can be included as an input parameter and irrigation is scheduled only at low tariffs and rescheduled at high tariff.

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Design and Evaluation of an Improved Mobile-Based Application for Enhancing Elderly Exercise

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Abstract
The Elderly want to live longer, and with advancement in technology everyone is getting a edge on health and living longer. In today's world technology assist in not just tracking your health in real time but also have the intelligence to partner with you and ensure you keep fit and healthy. The elderly population however constitute a small demographic of our population, this restrains firms from investing a huge part of their research and development budget to developing systems that take care of the needs of the elderly. The aim of this research is to design a system that ensures tracking, motivation and security of the elderly, their data and their health. The principles of Human Computer Interaction and persuasive technology are employed to make the system is not only suitable for the elderly but also persuades them to continuous use.

***Keywords**: Persuasive Technology, Human Computer Interaction, Elderly, Health and Exercise.*

1.0 Introduction

The study of the design, evaluation and implementation of interactive computing systems for human use and the major phenomena surrounding them, it consists of three parts: the person, the computer, and the ways they work together. Human Computer Interaction (HCI) involves the study, planning, and design of the interaction between users and computers (Esteban, 2012; Kaindl, 2020). There has been changes in the way products work, look, act and react to the people who use them. In the last decade, many developments had taken place in this area. (Esteban, 2012) HCI refers to the scientific field of interaction between humans and computing technology. HCI science recognizes the importance of understanding the centrality of the user interaction with the investigated system within a particular context or setting and with a goal of building a computer system that works in an intended way (Søgaard Neilsen and Wilson, 2019).

As the large generations born during the time of high fertility are living longer, and the subsequent generations born at the time of fertility decline are smaller, the population as a whole is ageing. All countries will experience this process eventually. The most frequently used indicators to demonstrate this are the percentage of people above a certain age (60 or 65), and the median age of the population (UNECE, 2007). This goes to tell us how much the aging population is increasing, and how much we need to keep them active.

The emergence and application of the information and communication technologies have changed the tools that people use in their daily life. However not all the collectives use the technology in the same way. One case to take especially into account is older people. For them technology should be an inclusive factor, but it can be also exclusive. The use of mobile devices and mobile apps by older people is an example of this. The devices and the apps are not always adapted for the special abilities or features of older people; moreover, they do not always meet their needs (García-Peñalvo, Conde and

Matellán-Olivera, 2014). The researcher intends to develop an effective and efficient mobile based communal application and by extension persuasive algorithm for the elderly in Nigeria. This would focus on collecting the elderly in a communal manner using geographic and crowd-sourcing technologies thereby providing a niche for the elderly to collaborate during exercise.

2.0 Literature Review

2.1 Ageism and Technology

The development of information and communication technology (ICT) has begun since the end of 1990. This phenomenon is supported by developments in the field of telecommunications, especially wireless technology. The existence of ICTs has an impact on all sectors because ICTs have the benefit of increasing efficiency and effectiveness. In addition, ICTs encourage innovation and change the working paradigm (Ani, 2020).

As life expectancy increases, it is imperative that the elderly take advantage of the benefits of technology to remain active and independent (Androutsou *et al.*, 2020). The population of people over 60 years old is rapidly growing in developed countries and thus a number of social and economic changes need to be addressed in the direction of inclusive societies. In order to maintain social cohesion and to balance the burden on health and care systems, this trend of aging population highlights the need for simultaneous extension of active aging (Androutsou *et al.*, 2020).

2.2 Barriers to use of technology

Physical Barriers Technology use is affected by physical barriers such as changes in skills or functions resulting from the normal aging process. These include changes in motor, cognitive, or sensory abilities. Older adults may not experience all of these changes; however, each may have a significant impact on their ability to use technology and therefore, warrant careful consideration (Wallace, 2015).

2.3 Benefits of Technology for older adults

Explaining the benefits of technology for the elderly user is a straightforward process: computers can do a number of things for the older user, from helping them remember to take medications to allowing them to stay in touch with friends and family. However, these many benefits can be whittled into four main categories: improving user abilities to make up for physical and cognitive age-related impairments, entertainment and education, medical use, and improving social interactions(Williams, 2014).

2.4 Mobile Health Technology

Mobile health, or mHealth, is an aspect of electronic health or eHealth that focuses on the delivery of health care services via mobile communication devices. There is no unified definition of mHealth, but WHO has described it as “medical and public health practice supported by mobile devices, such as mobile phones, patient monitoring devices, personal digital assistants (PDAs), and other wireless devices”. It is based on use of mobile technology or wireless devices and sensors that are intended to be worn, carried, or accessed by the person during normal daily activities (Helbostad *et al.*, 2017).

2.5 Ageing and Elderly Health

Elderly people or senior citizens is similar terminology for expressing older people. While the context of the definition of the term "older people or elderly people" differs between several countries or regions. For example, there are differences in the age range for elderly people between regions in Africa and

Europe. Some regions or countries in developing countries define senior citizens as people who have 65-year age or more (Ani, 2020).

We are in the midst of an unprecedented transition in a global demography. The world's population is aging rapidly, and older adults compose a larger proportion of the world's population than ever before a share that will only increase over the next century. By 2050, the percentage of the United States' population that is aged sixty years and older will grow from the current figure of about 20 per- cent to 27 percent. The global number of centenarians worldwide those aged one hundred years and older is expected to more than double by 2030, with projections of nearly 3.4 million by 2050.Three major factors are driving this transition: decreasing fertility, increasing longevity, and the aging of large population cohorts (Bloom, Canning and Lubet, 2015; Mostaghel, 2016). The world ageing population is growing rapidly and by 2020, 1 out of 4 citizens in Europe will be over 60 year old (Far, 2015).

2.6 Healthy Ageing

Healthy ageing is a lifelong process optimizing opportunities for improving and preserving health and physical, social and mental wellness, independence, quality of life and enhancing successful life-course transition. In Sub-Saharan Africa, it is estimated that the number of elderly persons will rise from about 37.1 million in 2005 to 155.4 million in 2050. The elderly population in Nigeria is estimated at 4 percent and is expected to triple by the year 2020. The increasing number of the older population will increase the burden on the health resources (Babatunji *et al.*, 2015).

2.7 Barriers to Elderly Exercise

There is a vast body of literature in fields such as preventive medicine, environmental psychology, sports medicine, gerontology, etc., detailing barriers to physical activity. Many people face personal and environmental barriers that disrupt plans to perform physical activity in their daily routines. The most common barrier across all adults is perceived lack of time, but for those aged 60-75, injury or poor health is the top barrier. Indeed, as older adults' physical health declines, they are more likely to be physically limited and less confident in their ability to perform physical activity (Fan, Forlizzi and Dey, 2012).

2.8 Benefits of Exercise to the Elderly

Different types of exercise bring about different changes to elderly. Moderate intensity physical activities such as stretching, swimming, brisk walking or water exercises are of great advantage to elderly people. They improve their balance, flexibility, coordination, endurance, mental health, cognitive function and muscle tone. This greatly enhances their functional independence.

Physical benefits include significant reduction of body fat which lowers the probability of obesity. Regular exercise also decreases blood pressure; improves lipid profile hence reduced risk of hypertension. Weight-bearing exercise as one of the most popular physical activity creates stronger skeleton and reduce the risk of hip fractures in later life.

2.9 Healthy fitness apps

An App is defined as "software applications usually designed to run on a Smartphone or tablet device and provide a convenient means for the user to perform certain tasks(Angosto *et al.*, 2020). health, fitness and physical activity Apps represent 5.18% of the total market, being used daily by 35% of people and several times a week by 40% (Angosto *et al.*, 2020).

2.10 Persuasive Technology

The use of interactive technology for changing, shaping or reinforcing attitude or behaviour which is commonly known as persuasive technology is currently attracting attention in information systems research. Persuasive technology combines the positive attributes of interpersonal interaction and mass communication to achieve optimal persuasion. It aims to accommodate individual difference during persuasion: a situation which is not commonly characterized with mass media persuasion (Wiafe, 2016).

2.11 An Interface

An interface sits between you and technology, and nearly every technology has one. Yet when we say the word interface, we inevitably think of the UI between a user and a computer, Smartphone, tablet, or similar device. They can be physical devices such as keyboards, mice, touch screens, and virtual objects such as screen icons and menus, voice-driven natural language assistants, gesture recognition devices, and more.

Text-based UIs ushered in the Graphical User Interface (GUI) we use on display screens, and navigate with mice, stylus, and fingers. GUIs came of age with Xerox PARC's 1970's desktop metaphor to the left, PCs, the internet, and websites.1 Today, UIs are rooted in our user experience and include colors, device or screen appearance, content, responsiveness, and more. We lose interest or even make mistakes with slow or complex UIs, so a great deal of effort goes into improving them (Yellin,2018).

3.0 Methodology

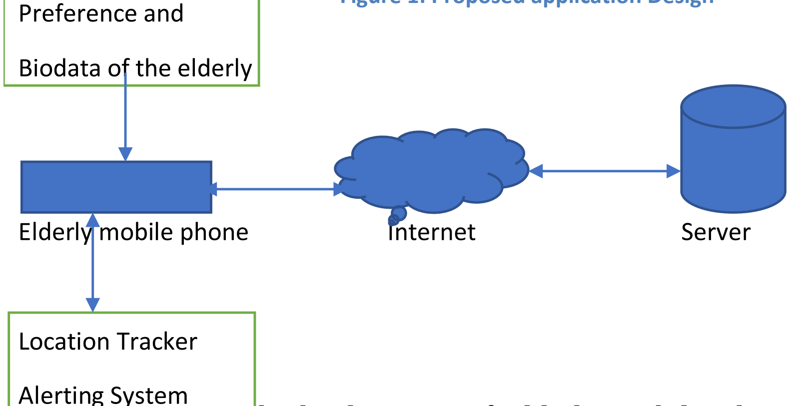
3.1 Sampling Method

Seifert in 2017 in their study" The use of mobile devices for physical activity tracking in older adults' everyday life", used a sample size of adults above the age of 50 years and a random sampling technique. Due to similarities in research, same method would used in this study. There were no restrictions on upper age, current mobile device use or area. The study included a representative sample of all age groups examined, gender, education, and language region.

3.2 Design and Implementation

This research is aim to help the elderly people to be able to improve the health from elderly people. The applications will be divided into two parts: applications that will be used privately by the elderly people and a communal part for members of the elderly community. The application design system could be seen in figure 1.

Figure 1: Proposed application Design



The app can search the location of elderly mobile phone (tracker) using GPS and Google Maps technology. Also search the nearest elderly based on the current user location using Google Maps technology. The app will display a map containing the location of this user along with the location (marker) and proposed distance for walk, and walking route to all the users join in the walk. It would be built to run on android based platforms.

3.2 System Architecture

The author's proposed solution isa mobile communal exercise application for the elderly using persuasive algorithm and geographic techniques. The architecture of the system is illustrated below:

Algorithmic design

1. Logon to App on Mobile Device
2. Select number of minutes (Time) you would like to exercise
3. Select Route or Direction you would take
4. Click Start
5. Application prompts you on how many users you would like to share information of the route with
   (Minimum Amount of user route can be shared with = 2)
   (Maximum is all the people with the App in the area (calculated using some geographic libraries))
6. Show the number of users online and their location on the App and the route they are taking if they are active
7. Start walking, show the progression of other users, opportunity to align to their route
8. End.

3.3 Location Provider Client

Fused Location is Google Play location service which combines GPS location, network location and Wi-Fi to achieve balance between location accuracy and battery consumption. It's an upgraded type of location service which reduces battery usage and provides you the accurate location by different basis.
This technology will be utilized to provide accurate locations of every active user of the application and allow for 'JOIN' requests.

3.4 Geocode

This is a package used to translate latitude and longitude points into street addresses. This would be utilized to convert locations provided by Location Provider Client into street addresses for easy identification and location.

3.5 Development Tools/Technologies

The development tools show a detailed overview of the tools used for development and their descriptions. These tools have been used to efficiently develop and improve the quality output of the system. The tools and their descriptions are shown in Table 1.

Table 1: Development tools and their descriptions

Tools	Description
Kotlin for android app	Creates an environment that facilitates the development of applications. Language, framework, and runtime support are all included in the tool suites.
Spring Boot for backend	Used for the backend logic of the application and real-time updation of an active user's current location
JetPack compose	Android's modern toolkit for building native UI. It simplifies and accelerates UI development on Android.
Google Play Services	Provides packages like google maps, google places, google directions, FusedLocationProviderClient for location services
MySQL Database	Supports complex queries, foreign keys, and multi-version concurrency control.
Push Notifications	Used for receiving notifications on the android device
Visual Paradigm for UML Enterprise edition and Visio	Used for the designing the functional diagrams of the system

4.0 Discussion of Results

The system was subjected to integration and unit testing of business logic using well-crafted pre-written test scripts. Monkey and smoke testing of builds were also carried out to ascertain the most crucial functions of the project work.

The system was then shared amongst ten people between age fifty and seventy in the Suleja Area Local Government of Niger State for a one-month period, and about four were women and the following are the results.

Table 2: Result

User Code	Previous km/week	Current km/week	Previous number of minute walking per week	Current number of minute walking per week	Previous Health Status	Current Health Status	Amount of new friends gained in the week
Sul01	3	8	40	90	Fair	V.Good	3
Sul02	4	7	45	75	Fair	Good	2
Sul03	2	5	30	50	Fair	Good	2
Sul04	1	5	20	70	Fair	Good	3
Sul05	3	6	40	80	Poor	V.Good	3
Sul06	0.5	3	15	40	Fair	Fair	1
Sul07	1	4	15	60	Poor	Good	2
Sul08	2	6	20	65	Poor	Good	3
Sul09	1	3	15	50	Poor	Good	2
Sul10	3	3	35	35	Poor	Fair	1

5.0 Conclusion

We can conclude from the table above that the software has improved ninety percent of the physical health of the participants and one hundred percent of the participants had improved social health.

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