



**COLLEGE OF BUSINESS ANALYSIS AND COMPLIANCE  
STUDIES, UYO, NIGERIA**

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**THEME:**

**“STRENGTHENING REGIONAL ECONOMIES AND  
SUSTAINABLE DEVELOPMENT: THE ROLE OF  
BUSINESS ANALYSIS AND COMPLIANCES”**

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**3RD – 4TH SEPTEMBER, 2024**

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## **CONFERENCE INTRODUCTION**

In an era defined by rapid globalization, technological advancements, and shifting economic landscapes, the need for robust regional economies has never been more critical. Regions that can adapt to these changes while maintaining sustainable development practices stand to thrive in an increasingly competitive global market. To achieve this, the integration of business analysis and strict adherence to regulatory compliances are essential components that can drive regional economic resilience and long-term sustainability.

The International Virtual Conference on Strengthening Regional Economies and Sustainable Development: The Role of Business Analysis and Compliances brings together thought leaders, industry experts, policymakers, and academics to explore the vital role that business analysis and compliance play in fostering regional economic growth. This conference aims to provide a comprehensive platform for the exchange of ideas, strategies, and best practices that can help regions develop robust, compliant, and sustainable economic policies.

Business analysis serves as a critical tool for understanding market dynamics, identifying opportunities, and mitigating risks. It enables regions to optimize resource allocation, enhance operational efficiency, and make data-driven decisions that promote sustainable growth. Furthermore, adherence to regulatory compliances ensures that economic activities are conducted within the framework of laws and regulations, safeguarding against risks that could hinder regional development.

The role of business analysis and compliance is particularly significant in the context of sustainable development. By aligning business strategies with sustainability goals, regions can achieve economic growth that is not only prosperous but also environmentally and socially responsible. This conference will delve into the intersections of these disciplines, examining how they can be leveraged to strengthen regional economies and contribute to the broader objectives of sustainable development.

Over the course of this conference, participants will engage in discussions on a wide range of topics, including the impact of regulatory frameworks on regional economies, the use of business analysis in sustainable development planning, and the challenges and opportunities of implementing compliance measures in diverse regional contexts. Through keynote presentations, panel discussions, and interactive sessions, attendees will gain insights into the latest trends, tools, and methodologies that can be applied to strengthen regional economies in a sustainable and compliant manner.

As we navigate the complexities of the modern economic environment, it is essential to recognize that the future of regional development depends on our ability to integrate sound business analysis with rigorous compliance practices. This conference is a timely and valuable opportunity for stakeholders to collaborate, share knowledge, and develop strategies that will drive regional economic success while ensuring sustainability and compliance in the long term.

We look forward to your active participation in this event and to the meaningful collaborations that will emerge from our discussions. Together, we can pave the way for stronger, more resilient regional economies that are well-equipped to meet the challenges and opportunities of the future.

## **CONFERENCE OBJECTIVES**

The International Virtual Conference on Strengthening Regional Economies and Sustainable Development: The Role of Business Analysis and Compliances aims to achieve the following

### **KEY OBJECTIVES:**

1. Promote Understanding of the Role of Business Analysis in Regional Development
2. Highlight the Importance of Regulatory Compliance in Economic Sustainability
3. Facilitate Knowledge Sharing and Collaboration
4. Examine the Intersections of Business Analysis, Compliance, and Sustainability
5. Address the Challenges of Implementing Compliance Measures in Diverse Regions
6. Develop Actionable Strategies for Sustainable Regional Economic Growth
7. Encourage Policy Development and Advocacy

By achieving these objectives, the conference aims to contribute to the global discourse on regional economic development, offering participants the tools and knowledge they need to drive sustainable and compliant growth in their respective regions.

## **CONFERENCE THEMES**

1. Economic Diversification and Regional Development
2. Business Analysis for Sustainable Development
3. Corporate Governance and Compliance
4. Innovation and Technology in Regional Economies
5. Public-Private Partnerships (PPPs)
6. Sustainable Supply Chain Management
7. Financial Inclusion and Economic Empowerment
8. Environmental Sustainability and Economic Growth
9. Human Capital Development
10. Policy and Regulatory Frameworks
11. Sustainable Tourism and Regional Economies
12. Agriculture and Rural Development
13. Corporate Social Responsibility (CSR)



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# CIRCULAR ECONOMY IN CONSTRUCTION: ENGINEERING STRATEGIES FOR RESOURCE EFFICIENCY AND WASTE MINIMIZATION

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## ABSTRACT

*The construction industry is important for the world economy to grow, but it is being closely watched because it uses a lot of natural resources, makes a lot of waste, and releases greenhouse gases. The sector made up about 13% of the world's GDP in 2022, which shows how important it is to the economy. Traditional conventional practices, on the other hand, like the "take-make-dispose" method, cause waste and damage to the environment. Using the ideas of the circular economy (CE) could cut CO<sub>2</sub> emissions by as much as 38% by 2050. CE focusses on making the best use of resources, reducing waste, and making things last longer by recycling, reusing, and remanufacturing them. By cutting down on the need for new materials and waste management, this approach could lead to a 30% drop in waste production and a 32% drop in material consumption. This would save a lot of money. Also, CE practices help the economy grow by opening up new business opportunities in recycling and remanufacturing, which creates jobs in those areas. CE also makes the economy more stable by using long-lasting and flexible building methods like modular construction and design for disassembly (DfD), which make changes easier and cut down on waste. Digital tools like Building Information Modelling (BIM) make it easier to manage resources and run a business more efficiently. Overall, using CE principles in building can have a positive effect on the environment while also boosting economic growth, efficiency, and adaptability, which is good for the development of the world economy.*

**KEYWORDS:** Circular Economy, Sustainable Construction, Economic Impact, Environmental Sustainability, Waste Minimization

## Introduction

The construction industry is a major consumer of natural resources and plays a significant role in generating waste and carbon emissions. The construction industry contributes approximately 39% of worldwide carbon emissions, as stated by the World Green Building Council. Out of this, 28% can be attributed to operational emissions, while the remaining 11% is a result of materials and construction processes (World Green Building Council, 2023). Incorporating circular economy (CE) principles into construction practices provides a revolutionary method for tackling these environmental challenges. If the construction sector widely adopts a circular economy, there is the potential to achieve a 38% reduction in CO<sub>2</sub> emissions by 2050, according to the Ellen MacArthur Foundation (2022). This is consistent with previous research conducted by Pearce and Turner (1990) that demonstrated the advantages of resource efficiency and sustainability in mitigating environmental impacts. The construction industry is a prominent catalyst for global economic expansion, making a substantial contribution to both GDP and employment. The construction industry represented approximately 13% of the global Gross Domestic Product (GDP) in 2022, underscoring its significant economic significance (Global Construction Perspectives, 2023).

Nevertheless, it is also accountable for substantial levels of resource utilisation, generation of waste, and emissions of greenhouse gases. Research findings suggest that the industry utilises approximately half of the world's raw materials and produces around one-third of the overall waste, making a significant contribution to the deterioration of the environment (Jones et al., 2023; European Commission, 2023). Traditional construction practices typically adhere to a linear economy model, where resources are extracted, utilised, and then discarded. This approach often results in inefficiencies and unsustainable practices. The linear model is linked to substantial devaluation caused by waste, pollution, and avoidable resource depletion (Geissdoerfer et al., 2023). This statement refers to the previous study conducted by Pearce and Turner (1990), which highlighted the drawbacks of using linear models to achieve long-term sustainability.

The circular economy (CE) is a concept that promotes the ongoing utilisation of resources through recycling, reuse, and remanufacturing. This approach offers an alternative way to conduct economic activity that is in line with environmental sustainability. According to Pomponi and Moncaster (2022), implementing the Circular Economy (CE) model in construction has the potential to achieve a significant reduction in material consumption, up to 32%, and a substantial decrease in waste generation, up to 50%. In addition, implementing Circular Economy (CE) principles can result in substantial economic advantages, including reduced costs and increased employment opportunities, in addition to environmental benefits (Stahel, 2023). These benefits align with previous findings by Gertler (1988) regarding the potential economic benefits of implementing more sustainable practices. This research article examines the concept of the circular economy in the construction industry, with a specific focus on engineering strategies that improve resource efficiency and reduce waste. Recent research has demonstrated that incorporating sustainable materials, employing innovative design methods, utilising digital tools, and implementing supportive policy frameworks can effectively decrease waste production and enhance the reuse of construction materials (Ginga et al., 2023; Wang et al., 2022). The transformative potential of sustainable materials and practices in industries was emphasised by Roodman and Lenssen's (1995) foundational work. The results indicate that implementing Circular Economy (CE) principles not only decreases the negative impact on the environment, but also generates economic benefits and enhances the ability of the construction industry to withstand and recover from challenges. Utilising digital tools such as Building Information Modelling (BIM) improves the capacity to efficiently utilise resources and reduce waste, facilitating the construction industry's shift from a conventional linear model to a more environmentally-friendly circular model (Pacheco-Torgal, 2022).

## **Circular Economy Principles in Construction**

The circular economy (CE) signifies a fundamental change from the conventional linear economy model of "take, make, dispose" to a more sustainable system where resources are consistently recycled and reintegrated into the economy. The shift towards addressing the environmental impacts of linear practices has received considerable attention in recent years (Geissdoerfer et al., 2023). Implementing circular economy principles in the construction sector can substantially decrease resource utilisation, mitigate waste generation, and reduce greenhouse gas emissions. Studies have shown that implementing Circular Economy (CE) principles in construction can result in a significant 30% decrease in the amount of waste generated from construction and demolition activities (Pomponi & Moncaster, 2022). Circular construction prioritises the preservation of the value of materials and components for an extended period of time, with the aim of promoting sustainability, economic feasibility, and environmental resilience. By incorporating circular strategies, such as implementing disassembly-oriented design and utilising recyclable materials, it is possible to establish a built environment that is more environmentally sustainable (Minunno et al., 2023).

## **Principles of Circular Economy in Construction**

### **1. Design for Longevity and Flexibility**

Emphasising longevity and flexibility is a core principle in implementing circular economy practices in the construction sector. This approach prioritises the creation of durable buildings and infrastructure that can withstand the test of time, accommodate evolving requirements, and reduce the necessity for resource-intensive renovations or demolitions. The objective is to improve the lifespan of buildings by integrating durability, adaptability, and flexibility into their design, ultimately decreasing environmental effects and promoting sustainable development (Crowther, 1999). One of the main approaches to achieve long-lasting design is by employing resilient materials and construction techniques that increase the longevity of buildings. Structures can endure prolonged use and require minimal upkeep due to the use of durable materials like reinforced concrete, high-quality steel, and sustainable wood. Studies have demonstrated that the utilisation of long-lasting materials can substantially diminish the environmental impact linked to maintenance and replacement. This is because these materials necessitate less frequent repairs and replacements in comparison to less durable alternatives (Pomponi & Moncaster, 2022). By utilising high-performance concrete that has the ability to withstand corrosion and weathering, the lifespan of a building can be prolonged. This reduces the need for new materials and aligns with the principles of a circular economy (Allwood et al., 2023). Brand (1994) introduced the concept of "long-life, loose-fit, low-energy" to highlight the importance of constructing buildings that have a long lifespan, can easily be modified, and consume minimal energy for operation and adaptation.

### **2. Adaptability and Flexibility in Building Design**

Adaptability and flexibility are essential components of sustainable building design. Architectural structures that are intentionally designed to be readily modified, expanded, or repurposed possess the ability to adjust to changing requirements without necessitating significant renovation or demolition. This approach not only prolongs the functional lifespan of buildings but also preserves resources and minimises waste generation. For instance, the utilisation of open floor plans and modular design elements enables the effortless rearrangement of spaces to suit various purposes as time progresses (Ghisellini et al., 2023). Research has indicated that integrating flexibility into the design of buildings can result in substantial cost reductions in terms of both materials and energy consumption throughout the lifespan of the building. This is especially relevant in urban areas where there is a frequent and rapid fluctuation in usage patterns. CIBSE (2000) further supports the notion that buildings designed with adaptability in mind are more likely to easily accommodate future changes without requiring significant modifications.

### **3. Modular Construction and Design for Disassembly (DfD)**

Modular construction and Design for Disassembly (DfD) are novel methodologies that advocate for durability and adaptability. Modular construction entails the production of standardised building elements that can be easily put together, taken apart, and reconfigured in various arrangements, thereby increasing the capacity to adjust buildings to future requirements. Studies have shown that modular construction decreases the duration of construction, minimises waste generation, and enables convenient replacement or upgrading of individual modules, thereby extending the lifespan of a building (Schraven et al., 2022). The use of DfD facilitates the achievement of circular economy objectives by enabling the efficient deconstruction of buildings at the end of their life cycle. This ensures that materials and components can be repurposed or recycled instead of being thrown away (Durmisevic, 2022). The concept of Design for Disassembly (DfD), which originated in the late 1990s, centres around the creation of buildings

that are designed to be easily dismantled. This enables the reuse of components and reduces waste generation (Guy & Ciarimboli, 2005).

#### **4. Digital Tools for Longevity and Flexibility**

There is a significant contribution that digital tools, such as Building Information Modelling (BIM) and digital twins, make to the construction industry in terms of enabling longevity and flexibility. Building information modelling (BIM) involves the creation of a digital representation of the physical and functional characteristics of a building. This representation enables detailed planning, management, and modification throughout the lifecycle of the building. Digital twins go one step further by creating digital replicas of physical buildings in real time. This allows for predictive maintenance, optimisation of resource use, and improved decision-making regarding renovations or repurposing of buildings (Parn et al., 2023). These tools contribute to the principles of a circular economy by improving the capacity to manage and maintain buildings in an effective manner, which ultimately results in the extension of the buildings' operational life and a reduction in waste. Previous works on Building Information Modelling (BIM) by Eastman (1999) have established the foundation for the advancements that are currently being made, highlighting the potential for digital tools to revolutionise construction practices.

#### **5. Policy Frameworks and Incentives**

In order to further the cause of design for longevity and flexibility in construction, it is essential to have policy frameworks and incentives that provide support. By establishing building codes and standards that prioritise sustainability, adaptability, and resource efficiency, governments and regulatory bodies have the ability to encourage the adoption of these practices. Developers can be motivated to incorporate these principles into their projects by offering incentives such as tax breaks, grants, or certifications for buildings that meet specific criteria regarding their longevity and flexibility (Stahel, 2023). By incorporated circular economy practices into everyday life, effective policy measures have the potential to hasten the transition towards a built environment that is more environmentally friendly. In addition, the idea of product-service systems (PSS), which was first introduced in the late 1990s, lends support to this shift by proposing new business models in which ownership and responsibility for the product lifecycle are separated (Mont, 2002).

#### **6. Closed-Loop Systems for Resource Recovery**

Closed-loop systems offer a revolutionary method for effectively managing resources and waste in diverse industries, with a particular focus on the construction sector. These systems are specifically designed to ensure the continuous recycling of materials and resources, thereby minimising waste and promoting sustainability. Closed-loop systems, in contrast to traditional linear models, strive to establish a circular resource flow that maintains the value and usefulness of materials over time, rather than extracting, using, and discarding them.

The fundamental principle of closed-loop systems revolves around resource recovery, which entails the retrieval and reuse of materials from products that have reached the end of their lifespan, as well as from construction waste and industrial by-products. This process not only decreases the requirement for new resources but also lessens the environmental consequences linked to waste disposal. Closed-loop systems contribute to the establishment of a sustainable cycle by capturing and reprocessing materials, ensuring that resources are continuously reintegrated into the economy. Closed-loop systems can be highly efficient in the construction industry. Buildings that are designed with disassembly in mind facilitate the effortless extraction and reutilization of components and materials. This approach starkly differs from traditional construction practices, which frequently result in substantial waste upon the completion of a building's lifespan. Through

the adoption of closed-loop strategies, such as modular construction and Design for Disassembly (DfD), the industry can effectively diminish the amount of waste disposed in landfills and decrease the need for new materials.

### **Benefits of Circular Economy Principles in Construction**

There are a multitude of advantages that can be gained from implementing circular economy (CE) principles in the construction industry. These advantages go beyond the conventional methods of sustainability. The construction industry has the potential to improve environmental performance, drive economic efficiency, and contribute to social well-being if it adopts a circular approach rather than a linear "take-make-dispose" model. According to Geissdoerfer et al. (2017), this transformative shift holds significant promise for addressing the substantial resource consumption, waste generation, and greenhouse gas emissions that are associated with the sector.

1. **Environmental Benefits:** Circular economy principles have the potential to significantly lessen their negative effects on the environment, which is one of the most compelling advantages of these principles. Implementing circular construction practices, which include recycling and reusing materials, results in a reduction in the demand for virgin resources as well as a decrease in the amount of waste generated by construction and demolition. Research has demonstrated that the implementation of circular strategies can reduce the amount of waste generated by as much as fifty percent and the amount of carbon emissions by as much as thirty percent (Pomponi & Moncaster, 2022). Circular construction helps to significantly preserve the environment by reducing the amount of waste that is sent to landfills and the amount of emissions that are produced. According to the Ellen MacArthur Foundation (2013), the concept of "closing the loop" on material cycles has been shown to have a lower impact on the environment when compared to linear models.
2. **Economic Benefit:** The principles of a circular economy also have significant economic benefits, which are also noteworthy. Through increased resource efficiency and decreased expenses related to waste management, circular construction practices have the potential to result in cost savings when implemented. According to Schraven et al. (2022), modular construction and design for disassembly (DfD) have the potential to reduce the costs associated with construction and renovation operations by simplifying the reuse of materials and reducing the amount of labour that is required. Furthermore, the utilisation of reclaimed and recycled materials frequently proves to be more cost-effective than the procurement of new materials, resulting in a reduction of the overall costs associated with the project (Kibert, 2008). The creation of new business opportunities and employment opportunities in the recycling and remanufacturing sectors is another factor that contributes to the economic viability of circular practices (Stahel, 2020).
3. **Social Benefit:** The principles of a circular economy also offer significant social benefits, such as the promotion of healthier living environments and the development of community resilience. According to Zuo and Zhao (2014), buildings that are designed with circular principles in mind typically have improved indoor air quality, better energy efficiency, and enhanced comfort, all of which directly contribute to the mental and physical well-being of the building's occupants. Furthermore, circular construction practices encourage the use of sustainable materials and the sourcing of materials from local sources, which can help support local economies and reduce the impacts related to transportation (Bocken et al., 2016). While addressing the long-term needs of communities and working to improve living conditions, the principles of a circular economy contribute to the development of urban environments that are more resilient and sustainable.

4. **Resources Efficiency:** Through the extension of resource utilisation and the reduction of waste, circular construction places an emphasis on maximising the value of resources. According to Brand (1994), the utilisation of techniques such as adaptive reuse and modular design makes it possible for buildings to be modified or repurposed in a more straightforward manner, thereby extending the useful life of the buildings and reducing the need for new construction altogether. By enabling precise planning and management throughout the entirety of a building's lifecycle, the incorporation of digital tools, such as Building Information Modelling (BIM) and digital twins, contributes to an increase in resource efficiency (Parn et al., 2023). In addition to providing additional support for the objectives of the circular economy, these tools make it possible to accurately quantify materials, effectively manage waste, and allocate resources in the most effective manner.
5. **Resilience and Flexibility:** Adopting the principles of a circular economy makes construction projects more resilient and flexible because of their increased flexibility. Buildings that are designed with circularity in mind are more adaptable to future changes, whether those changes are shifts in usage patterns or advancements in technology (Ghisellini et al., 2023). For instance, modular construction and design for disassembly make it possible for buildings to be easily upgraded or reconfigured, which improves their capacity to adapt to changing requirements without requiring significant overhauls or generating a lot of waste (Durmisevic, 2022). This flexibility is especially valuable in urban environments that are constantly changing, where adaptability is essential for ensuring long-term sustainability.

## Conclusion

The incorporation of circular economy (CE) principles into the construction sector signifies a notable transformation that brings about considerable economic and environmental advantages. Due to the sector's significant impact on greenhouse gas emissions and resource consumption, it is imperative to promptly implement more sustainable practices. The conventional linear model of "take-make-dispose" has resulted in inefficiencies and environmental damage. However, the principles of Circular Economy (CE) can effectively tackle these issues by advocating for the continuous recycling, reuse, and remanufacturing of resources.

From an environmental perspective, implementing Circular Economy (CE) principles can significantly diminish the carbon emissions produced by the industry. The possibility of substantial decreases in CO<sub>2</sub> emissions underscores the environmental benefits of this approach. CE practices contribute to the reduction of environmental impacts caused by construction activities by efficiently utilising resources and minimising waste. Empirical data indicates that adherence to these principles can result in significant decreases in waste and material usage, thereby promoting resource preservation and mitigating landfill waste. From an economic standpoint, adopting a circular model presents a multitude of benefits. Cost savings result from decreased material usage and reduced expenses related to waste management, effectively tackling some of the financial difficulties faced by the industry. In addition, the implementation of circular economy practices leads to the emergence of fresh business prospects in the fields of recycling and remanufacturing, which in turn promotes economic expansion and facilitates job creation.

Furthermore, the principles of Construction Engineering (CE) improve the adaptability and durability of construction projects. Modular construction and Design for Disassembly (DfD) enable more convenient alterations and enhancements, thereby prolonging the lifespan of buildings and reducing the necessity for new construction. Building Information Modelling (BIM), a type of digital tool, enhances resource management and operational efficiency, thereby providing additional support for sustainable practices.



Ultimately, incorporating circular economy principles into the construction industry effectively tackles important environmental issues and provides substantial economic advantages. Adopting CE practices decreases the environmental impact, saves money, and promotes economic growth, in line with worldwide sustainability objectives and enhancing the industry's overall role in economic advancement.

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## ENVIRONMENTAL COST ACCOUNTING IN THE AGRICULTURAL SECTOR: IMPLICATIONS FOR RESOURCE MANAGEMENT AND SUSTAINABILITY

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### ABSTRACT

*The aim of this research was to strategically assess environmental cost accounting in the agricultural sector: implications for resource management and sustainability. Ex-Post Facto research design was adopted for the study. The population of the study comprised all the employees from 4 selected farm in Warri, Delta State and random sampling technique was used to select the sample size of (61) sixty-one respondents used for the study. The Main Instrument used in this study was a questionnaire titled "Environmental Cost Accounting in the Agricultural Sector: Implications for Resource Management and Sustainability Questionnaire (ECAASIRMSQ)". The researcher subjected the data generated for this study to appropriate statistical techniques such as descriptive statistics and percentage analysis for answering the research question and Pearson moment correlation for testing the hypothesis. The test for significance was done at 0.05 alpha levels. It was established in the study that there is significant relationship between environmental cost accounting and resource management and sustainability. The study concluded that the adoption of environmental cost accounting practices can help farmers and agricultural businesses recognize the hidden costs associated with environmental degradation, such as soil erosion, water pollution, and loss of biodiversity, and take proactive steps to mitigate these impacts. Alternatively, one of the recommendations made, along with others, is that Awareness among stakeholders, including farmers, agricultural companies, policymakers, and local communities, about the importance of environmental cost accounting and sustainable resource management should be encouraged.*

### Introduction

Environment and environmental issues have become topical topics in most countries and globally in recent years. The business community has continuously raised awareness of the need to manage resources and achieve sustainability in order to reduce the environmental impact of activities they cause. Sustainability is the process of development that meets the needs of the present generation without harming the interests of future generations. Sustainability represents a balance between economic growth and protecting the environment from destruction, mainly by using natural resources rationally and responsibly. As an essential part, enterprises have the responsibility to value, playing a key and decisive role in sustainable economic development. In the contemporary business landscape, the emergence and importance of environmental costing within sustainable

accounting practices have become increasingly prominent. This shift reflects a growing recognition of the critical role that environmental considerations play in the long-term viability and ethical responsibility of businesses (Ayinla, et al., 2024). The integration of environmental costs into financial statements is not just a trend but a fundamental change in how companies view their operations and impact on the world.

Environmental cost accounting is a tool used to calculate environmental costs and to evaluate information needed to make decisions (Doorasamy & Garbharran, 2015). Therefore, most of the products during their production stages and until they are ready for use have harmful effects on the environment (Baumann, et al., 2015). By implementing environmental accounting will help managers to track and eliminate environmental costs with a better understanding for more accurate performance and pricing of products with overall support to the environmental management system (Hoque, 2002 cited in Hussein & Elsahookie, 2020). While environmental cost accounting has its principles that provide information to environmental management it's a kind of framework that contains costs of environmental impacts and management strategies that will enhance the environmental performance, productivity, and profitability of the company (Tsai, et al., 2010; Rakos & Antohe, 2014).

Environmental accounting provides financial and non-financial information that helps managers to make decisions on identifying those responsible for pollution, estimated environmental effects, and expenditures control at the same time allocating resource for environmental costs, cost measurements, and capital budgeting (Duma, et al., 2013). In other words, an environmental cost accounting system is an extension of the traditional decision-oriented flow-based accounting system. It is based on cause and effect analysis that helps to correctly identify the cost of environmental impacts for the perpetrators (Letmathe & Doost, 2000 cited in Hussein & Elsahookie, 2020). However, the implementation of environmental cost accounting to the agricultural sector would prevent pollution plus economic return especially when it becomes something useful in the area such as fertilizer. Therefore, cost reduction, finding alternative raw materials, minimizing waste, and implementing an energy-saving approach are some measures used by the industry to reduce risks (Diacono, et al., 2019).

Selvaraj (2023) highlights the significance of green business practices, particularly in micro and small enterprises. The study emphasizes the criticality of environmental parameters in business operations, underscoring the need for companies to balance financial progress with environmental protection and social responsibility. This balance is not merely a compliance issue but a strategic approach that can lead to competitive advantages. The research by Selvaraj (2023) reveals that incorporating green practices into business operations is not only beneficial for the environment but also enhances the company's reputation and stakeholder relations, ultimately contributing to long-term profitability and sustainability. Similarly, Afiat et al. (2023) delve into the interplay between environmental and financial management in the energy industry. Their case study in the West Java energy sector demonstrates how sustainable business models that integrate environmental and financial objectives can lead to competitive profitability, risk mitigation, and improved access to capital. This study is particularly relevant as it showcases the practical application of environmental costing in a sector that is both economically significant and environmentally sensitive. The findings from Afiat et al. (2023) suggest that companies that commit to sustainable practices, including the adoption of clean technologies and emissions reduction, can achieve financial prosperity while also fulfilling their environmental responsibilities. Furthermore, the work of Sianipar, Lindrianasari, and Syaipudin (2023) explores the impact of environmental accounting on company value. Their literature review indicates that viewing environmental costs as strategic investments can enhance a company's reputation and long-term value. This perspective is crucial in understanding the importance of environmental

costing in modern business practices. By recognizing environmental costs as investments rather than mere expenses, companies can align their business strategies with sustainable development goals, thereby creating value for both the company and society. Adoption of environmental cost accounting system will help in the proper identification, recognition and allocation of these environmental costs to products, processes and services that gave rise to them and also be considered in appraising projects to avoid making wrong choices

### **Statement of the Problem**

Environmental cost accounting (ECA) is critical in the agricultural sector, particularly in Warri, Delta State, where agricultural activities significantly impact natural resources and the environment. The agricultural sector in Warri faces several environmental challenges arising due to unsustainable farming practices, overuse of chemical fertilizers and pesticides, and inadequate waste management strategies. Despite the critical importance of ECA in mitigating these issues, there is limited adoption and application of environmental cost accounting practices among agricultural businesses and stakeholders in Warri.

The lack of implementation of ECA in the agricultural sector of Warri impedes effective resource management and sustainability. Many agricultural stakeholders in the area do not account for environmental costs associated with their activities, such as soil erosion, greenhouse gas emissions, and water contamination. This lack of accounting leads to inefficient resource use, increased environmental degradation, and, ultimately, a decline in agricultural productivity. Furthermore, the absence of ECA makes it challenging to identify and allocate costs for environmental conservation measures, limiting the ability to make informed decisions about sustainable agricultural practices (Adams & Behrens, 2022).

Current studies have shown that ECA can provide valuable insights into the hidden environmental costs and benefits of agricultural activities, promoting better decision-making for sustainable practices (Chen et al., 2021). Without the adoption of ECA, the agricultural sector in Warri risks unsustainable practices that could lead to long-term ecological damage and loss of livelihood for the local population.

The problem, therefore, is the inadequate adoption of environmental cost accounting in the agricultural sector in Warri, Delta State, which poses significant implications for resource management and sustainability. Addressing this problem requires a comprehensive understanding of the barriers to ECA adoption, its potential benefits for sustainable resource management, and the development of strategies to promote its integration into the agricultural sector (Johnson et al., 2023). In the light of the above, this study aims to investigate environmental cost accounting in the agricultural sector: implications for resource management and sustainability using three farms in Warri, Delta State as case study.

### **Objectives of the Study**

The Main objective of this study is therefore to examine the environmental cost accounting in the agricultural sector: implications for resource management and sustainability in Warri, Delta State. In view of this, this study specifically intends to;

- i. Examine the extent of adoption of environmental cost accounting practices by farmers in the agricultural sector in Warri, Delta State.
- ii. Identify the factors affecting the adoption of environmental cost accounting practices in the agricultural sector in Warri, Delta State.

- iii. Evaluate the relationship between environmental cost accounting in the agricultural sector and implications for resource management and sustainability in Warri, Delta State.

## **Research Questions**

Based on the above specific objectives, the following research questions were formulated to guide the researcher;

- i. What is the extent of adoption of environmental cost accounting practices by farmers in the agricultural sector in Warri, Delta State?
- ii. What are the factors affecting the adoption of environmental cost accounting practices in the agricultural sector in Warri, Delta State?
- iii. What is the relationship between environmental cost accounting in the agricultural sector and implications for resource management and sustainability in Warri, Delta State?

## **Research Hypothesis**

To answer the above research questions posed for the study this hypothesis was also formulated in a null form;

**H<sub>0</sub><sup>1</sup>:** There is no significant relationship between environmental cost accounting in the agricultural sector and implications for resource management and sustainability in Warri, Delta State.

## **Literature Review**

### **Environmental Cost Accounting**

An extensive area of accounting is environmental accounting offers two different report types: Initially, it is used internally and produced environmental data to assist management in deciding on pricing, cost management, and capital planning. The second is for external use and the publication of environmental data that the general public and the financial sector may find interesting. Internal use of the term environmental management accounting is preferable (Bartolomeo et al., 2000 in AL Anssari, 2023).

Environmental accounting (EA) has improved with the development of Environment Cost Accounting (ECA). The definition of cost accounting is the use of the accounting record to analyse the costs of activities and goods directly. This method accounts for expenditures by identifying their individual causes. The foundational database of environmental performance, on which environmental cost accounting is based and which pertains to all environmental costs, is comprised of the Environmental Accounting System (ECA) and the Environment Management System (EMS) (Lally, 1998 in AL Anssari, 2023). According to the authors Tai Jashnev and Akmentov (2018), environmental cost accounting is "a tool concerned with the financial side of pollution and environmental protection in the institution." The authors focus in their research on the oversight function of environmental cost accounting by analyzing environmental costs and identifying their size and flows. The two authors present a summary of their opinion on environmental cost accounting as follows:

- It is an internal tool for the company that totals the expenses associated with the effect the company and its goods have on the environment.
- Environmental cost accounting depends on the current accounting system in the organization.

- There is no legal obligation or standard that obliges institutions to choose a specific accounting system for environmental costs” (Vekehr, 2005 in AL Anssari, 2023).

In this context, environmental cost accounting makes use of particular environmental management techniques that enable a thorough examination of how a company's operations affect the environment (e.g. environmental budgets).

**Environmental Cost (EC):** The environmental cost of any company is the sacrifice incurred by society in the form of resources consumed by the company as a result of carrying out its activities. As well as the importance of the process of measuring the damage it causes to the environment. Environmental cost therefore is the price of the management actions that organisations take or are required to take for the environmental impact that results from the organization's activity (Zaho, 2013).

**Features of Environmental Costs (EC):** Environmental expenses differ from standard production costs in the following ways (Yan 2014);

*Continuity:* Not just during the manufacture or sales phase but throughout the entire life cycle of a product, environmental costs should be measured. As a result, there is a continuous characteristic to environmental cost measurement.

*Potentiality:* The environmental effects of present corporate activity may become apparent over time, but they will not be instantly obvious together with the incidence of economic activity.

*Hysteresis slowdown:* Unlike cost elements (such as materials of production) that occur equally and directly in the production process, environmental costs will inevitably occur at a particular time and place. But as soon as a quantitative change turns into a qualitative one, damage to the environment is inevitable.

**Classification of Environmental Costs:** The classification of environmental costs serves as the foundation for precise environmental cost measurement. Environmental costs can be divided into several categories. The following categories apply to the environmental expenses that businesses incur to time and purpose:

According to the correlation among the environmental cost and the relevant user, environmental components are allocated into internal use costs, and external use costs specific categories as shown in the table.

According to the duration of impact time, whether through the stage or not, environmental components are allocated into long-term environmental costs and short-term environmental costs" (Shine, 2010).



**Table 1**

Time	Goal	
	Internal Use External Use	Internal Use External Use
Long- Term	Environmental prevention costs	Environmental contingent costs
Short-Term	Environmental operation costs	Environmental compensation costs

**Source: AL Anssari, 2023**

Environmental prevention costs or Environmental Defense Costs: Avoiding and reducing environmental pollution is a long-term environmental cost that includes all costs associated with environmental protection, from the procurement of equipment and raw materials to the manufacturing process (this aspect represents the voluntary work of the organization). Initial expenses for environmental defence include: choosing a supplier, investing in environmental protection tools, designing enterprise environmental protection products, recycling waste, and paying for research and development for reuse, among other things; Costs associated with creating an environmental management system, measuring environmental load, establishing new environmental protection rules and regulations, and certification. Environmental defense costs in the production and operation process include: Cost of "green" packaging for products and recycling utilising the cost of old packaging. Cost of waste treatment, cost of running a recycling system, alternative cost of environmental pollutant materials, cost of energy-saving equipment and cost of functioning sustainably.

Environmental operating costs (short term cost): When an enterprise concurs with environmental protection laws and regulations in the production process, there are several environmental costs for raw materials and labour that happened during the production process, raw material inputs, and equipment operation to prevent or minimize the possibility of environmental implications for the enterprise due to bad appearance. It mostly consists of a variety of the following costs: opportunity costs associated with using this money, equipment repair costs, enterprise environment audit costs, costs associated with sustaining environmental equipment operations, and so forth.

Conditional (potential) environmental costs (Long term cost): A conditional environmental cost is a form of future cost expense resulting from management or production management concerns, and it can be hidden. It is an unpredictable cost that may or may not materialise and must be determined by future occurrences. They primarily consist of the following: costs associated with compensating victims of certain environmental accidents, costs associated with paying fines imposed by the appropriate government agencies, costs associated with compensating victims of bodily harm and property damage caused by environmental accidents, and costs associated with treating those victims.

The costs of environmental compensation: Environmental compensation costs are a specific category of expenses incurred to boost a company's reputation in the public eye or to make up for a loss brought on by environmental degradation, which often takes place after the production process.

### **Implication of Environmental Cost Accounting Practices on Agricultural Sector**

Environmental cost accounting is an aspect of environmental management accounting that places emphasis on the acknowledgement and re-classification of environmental impacts and costs to aid

in better decision making. It points emphatically at designing an environmentally- friendly cost accounting system in every organization which will help in gathering information on material flows, reclassification of costs to isolate environmental costs from overhead and accounting for costs in relation to efforts towards sustainable development. The adoption of Environmental Cost Accounting (ECA) practices in the agricultural sector has significant implications for sustainability, financial performance, and overall operational efficiency. ECA, a practice that integrates environmental costs into traditional accounting systems, helps in identifying, quantifying, and managing costs associated with environmental impacts. This accounting method is becoming increasingly important as agricultural activities are closely linked to environmental health, given their reliance on natural resources.

ECA practices in agriculture can lead to enhanced environmental sustainability. By identifying and quantifying costs related to environmental degradation, such as soil erosion, water pollution, and greenhouse gas emissions, ECA enables farmers and agribusinesses to recognize the environmental impacts of their activities. This awareness encourages the adoption of sustainable farming practices, such as organic farming, crop rotation, and reduced use of chemical fertilizers and pesticides (Bebbington et al., 2021). This can lead to more sustainable practices, as farmers may be more likely to adopt environmentally friendly techniques that reduce these costs. According to Schaltegger & Burritt, (2020) ECA practices help improve cost management and resource efficiency in the agricultural sector. By providing a comprehensive understanding of the hidden costs associated with environmental impacts, it allows farmers to make more informed decisions regarding resource allocation. ECA practices can equally help agricultural businesses identify opportunities for waste reduction, recycling, and reusing resources, thus minimizing costs and promoting a circular economy approach. Over time, these cost savings can improve profitability and provide a competitive advantage in the marketplace (Deegan, 2019; Akinyemi et al., 2023).

### **Factors Affecting the Environmental Cost Accounting**

Environmental Cost Accounting (ECA) is an approach that integrates environmental considerations into the financial decision-making processes of businesses. It includes tracking and reporting environmental costs and savings associated with resource use, waste management, and pollution prevention. ECA helps organizations identify cost-effective ways to reduce their environmental impact while maintaining financial sustainability. Several factors affect the effectiveness and implementation of ECA within organizations including size of enterprise, regulatory frameworks, organizational culture, stakeholder pressure, technological capabilities, and economic considerations.

#### **Size of Enterprise**

The size of an enterprise significantly impacts Environmental Cost Accounting (ECA). Larger enterprises typically have more resources to implement comprehensive ECA systems, enabling detailed tracking and management of environmental costs. They often face stricter regulatory scrutiny, encouraging them to adopt advanced accounting practices to reduce environmental impact (Burritt et al. 2019). Smaller enterprises, however, may lack resources and expertise, resulting in less emphasis on ECA. This size-related discrepancy affects the ability of companies to identify, allocate, and manage environmental costs effectively, potentially leading to underreported environmental impacts and higher operational risks (Schaltegger & Zvezdov, 2015). Therefore, enterprise size plays a crucial role in the adoption and sophistication of ECA practices.

**Regulatory Frameworks:** Regulatory frameworks are a primary factor influencing the adoption and effectiveness of Environmental Cost Accounting. Environmental laws and regulations impose compliance requirements on companies, driving them to account for their environmental costs. For instance, stricter pollution control laws may necessitate the adoption of ECA to manage costs related to waste disposal, emissions control, and resource consumption. Studies have shown that organizations operating in regions with stringent environmental regulations are more likely to implement ECA practices to avoid penalties, gain compliance benefits, and achieve sustainability goals (Nash & Ehrenfeld, 2018). Regulatory frameworks create an external pressure that encourages firms to integrate environmental costs into their financial accounting systems.

**Organizational Culture:** The organizational culture plays a crucial role in shaping the adoption and success of ECA. Companies with a strong culture of sustainability and corporate social responsibility (CSR) are more likely to integrate environmental costs into their decision-making processes. A supportive culture that values transparency, ethical behavior, and environmental stewardship can drive the adoption of ECA practices (Hartmann & Perego, 2018). Conversely, a culture that prioritizes short-term financial gains over long-term sustainability may hinder the implementation of ECA. The commitment of top management to environmental goals, along with employee engagement and awareness, significantly affects the integration of environmental costs in accounting practices.

**Stakeholder Pressure:** Stakeholder pressure, including that from investors, customers, employees, and environmental advocacy groups, is another critical factor affecting ECA. Stakeholders increasingly demand transparency regarding environmental impacts and the costs associated with them. Companies that face higher levels of stakeholder scrutiny are more likely to adopt ECA practices to demonstrate their commitment to environmental sustainability and enhance their reputation (Kumar & Firoz, 2020). For example, investors may require detailed environmental cost disclosures before making investment decisions, while consumers may prefer products from companies that are transparent about their environmental impact. Therefore, stakeholder pressure acts as a significant motivator for organizations to adopt ECA.

**Economic Considerations:** Economic considerations significantly impact the adoption of Environmental Cost Accounting. Organizations are more likely to adopt ECA practices if they perceive a potential for cost savings or competitive advantage. ECA can help organizations identify inefficiencies in resource use and waste management, leading to cost savings through reduced resource consumption, waste disposal, and emissions (Deegan, 2019). However, the initial costs associated with implementing ECA, such as investing in new technologies, training employees, and developing new reporting systems, may deter some organizations, especially small and medium-sized enterprises (SMEs) with limited financial resources.

**Market Dynamics:** Market dynamics, including competition and industry practices, also influence the adoption of ECA. In highly competitive markets, companies may adopt ECA to differentiate themselves from competitors and gain a competitive edge. For instance, companies that demonstrate a strong commitment to environmental sustainability may attract environmentally conscious consumers, investors, and business partners (Schaltegger & Wagner, 2017). Moreover, industry standards and practices play a role in influencing ECA adoption. If industry leaders adopt ECA practices, other companies may follow suit to remain competitive and relevant.

**Manager's Perception:** The perception of managers toward environmental issues significantly impacts ECA. Managers who view environmental costs as an essential factor for long-term sustainability are more likely to adopt comprehensive ECA practices. Conversely, managers who perceive environmental costs as non-critical may neglect them in financial reporting. Research

indicates that managerial attitudes towards environmental responsibility influence how deeply environmental costs are integrated into accounting practices (Burritt et al., 2011).

**Relationship Between Costs and Benefits:** The perceived balance between environmental costs and their associated benefits is another vital factor. When the benefits, such as reduced waste, enhanced brand reputation, or compliance with regulations, are viewed as outweighing the costs, firms are more inclined to implement robust ECA practices. However, if the costs are seen as too high relative to the benefits, environmental costs may be underreported or ignored (Jasch, 2003).

**Qualifications of Accountants:** The qualifications and expertise of accountants in handling environmental costs significantly affect ECA practices. Accountants with specialized training in environmental accounting are better equipped to accurately identify, measure, and report environmental costs. Their expertise ensures that environmental costs are appropriately allocated, fostering transparency and compliance (Schaltegger & Burritt, 2017).

### **Effect of Environmental Cost Accounting on Resource Management and Sustainability**

Environmental Accounting is the generation, analysis and use of miniaturized environmentally related information in order to improve corporate Environmental and economic performance. In the opinion of Raymond A. Ezejiofor, Environmental Accounting does not only focus on internal and external environmental accounting but links environmental and financial performance more visibly. Environmental accounting assists in getting environmental sustainability embedded within an organization's culture and operations (Ezejiofor, 2016). The aim is to provide decision makers with the information that enable the organization to reduce costs and business risks and to add value (Ibemgbor, 2011).

The need for Environmental Accounting has become the concern and focus of nations and responsible corporate management and sustainability. It became one of the foremost issues on the agenda of nations and businesses and the reasons for this were varied emanating from both within and outside of the firm and particularly at the global level (Okoye and Ngwakwe, 2004 in Ezejiofor, 2016). Environmental accounting is an inclusive aspect of accounting and it generates reports for both internal use, providing environmental information to help make management decisions on controlling overhead, capital budgeting and pricing, and external use, disclosing environmental information of interest to the government, public and to the financial community. Qian et al., (2018) emphasized that the impact of business activity on the environment is found in several forms: air, water, underground pollution, drinking water, land and habitat for endangered and threatened species, oceans, atmosphere, land-mass etc. An array of pollutants, including toxic, hazardous and 'warming' is accountable to business activities.

Environmentalists agree that it could be more cost-efficient and beneficial for companies to acquire pollution prevention or clean technology than those of pollution clean-up. It is also observed that in environmental regulations, there is a shift from the 'command and control' approach to market-driven forms in which pollution prevention alternatives are replacing pollution cleaning approach. It follows, therefore, that determining the appropriate pollution prevention approach may lead to additional decisions to be taken by management. Environmental issues for purpose of economic and cost accounting have also been controversial even though the topic has been identified for discussions for decades. Scholars have highlighted that the industrial revolution has brought economic improvement for most people in industrialized societies. Many enjoy greater prosperity and improved health. They opined that there have been costs, caused by factory pollutant ion that harmed the natural environment.

However, the application of machinery and science to agriculture has led to greater land use and therefore, extensive loss of habitats for animals and plants. These factors, in turn, have caused many species to become extinct or endangered (Ezejiofor, 2016; Qian et al., (2018; Deegan, 2020).

However, accounting for environmental costs, farmers and agricultural businesses can make informed decisions about the allocation of resources such as water, fertilizer, and energy. This informed decision-making leads to more efficient resource use, reducing waste and minimizing the negative impact on the environment (Bebbington et al., 2019). For example, farmers who adopt ECA practices can identify areas where water usage is excessive or energy consumption is inefficient, allowing them to implement measures to reduce these impacts. This not only lowers costs but also enhances the sustainability of agricultural practices. The alignment with environmental standards further supports sustainable development goals, as it encourages the adoption of eco-friendly practices that protect natural resources for future generations (Deegan, 2020).

## **Empirical Review**

Ayinla, et al., (2024) studied to provide a comprehensive review of the integration of environmental costs into financial reporting within the framework of sustainable accounting. Employing a systematic literature review and content analysis methodology, the study analyzed peer-reviewed journal articles, industry reports, and policy documents from 2013 to 2023. Key findings reveal a significant evolution in environmental accounting, transitioning from a marginalized practice to a mainstream component in financial reporting. The study concludes with strategic recommendations for business leaders and policymakers, emphasizing the adoption of environmental accounting as a strategic business approach and the development of comprehensive environmental accounting standards. This study contributes to the understanding of environmental costing within sustainable accounting, highlighting its growing importance in the corporate world.

Salih, (2021) work aimed to explain the importance of environmental cost accounting through the difficulties and benefits of declaration of environmental costs in financial statements. To achieve this goal, 30 questionnaires, each one includes 15 questions, were distributed to Basra Municipality Department, 27 questionnaires were retrieved valid for statistical analysis. Percentages, iterations, arithmetic means and standard deviations were used for each question in the questionnaire. T test was also used to analyze the research hypothesis, the important conclusions were: There are benefits in the declaration of environmental costs accompanied by difficulties. There are no legislations or procedures that obligate a institution to declare the environmental costs. The important recommendations are the necessity of development of legislations and procedures that obligate economic or service institutions to declare the environmental costs in their financial statements. The holding of educational programs or courses that deal with environmental accounting to provide enough qualified staff who distinguish between financial and environmental costs.

Ezejiofor, et al., (2016) conducted a study to assess the effect of sustainability accounting measure on the performance of corporate organizations in Nigeria. Ex post facto research design and time series data were adopted. Data for study was collected from annual reports and accounts of the company in Nigeria. Formulated hypotheses were tested using Regression Analysis with aid of SPSS Version 20.0. Based on the analysis, the study 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. Based on this the researcher recommends that Indigenous and multi-national firms should ensure that strict policies as regards environmental accounting are adhered to, in order to enable stable organizational performance.

Osemene, Kolawole, and Oyelakun, (2016) studied to provide an insight into the effect of accounting for the environment and companies' attitudes towards the sustainability of the environment. The objective of this study is to examine the relevance of environmental accounting practices to sustainable development and performance of listed manufacturing companies in Nigeria. Data was collected from annual reports and accounts of thirty-six randomly selected quoted companies in Nigeria. The data were analyzed using panel data regression analysis. Results revealed that there is significant positive relationship between sustainable development and return on equity (ROE) and return on assets (ROA); a significant positive relationship between environmental accounting and return on equity (ROE). Based on this, the study recommends that quoted manufacturing companies should account for, and report the effects of their economic activities on the environment to stakeholders in order to enjoy an improved and robust net profit and earnings per share.

Hung, (2022) work focused on the factors affecting the implementation of environmental accounting in manufacturing enterprises, from the perspective of stakeholders. The results of the analysis of 185 survey samples from managers, chief accountants, accountants in 102 manufacturing enterprises in Vietnam, by quantitative research and regression analysis show that 5 key factors have a significant influence on the implementation of environmental accounting in manufacturing enterprises are arranged in descending order, as follows: Pressure from stakeholders; Business sector; Qualification of accounting staff; Managers' perception of environmental accounting; and Enterprise size. At the same time, the study also examined the differences in the perception of surveyed subjects about the level of influence of factors on the implementation of environmental accounting in enterprises. The findings from the empirical research are the basis for the author to make recommendations and suggestions to stakeholders to increase the implementation of environmental accounting in manufacturing enterprises in Vietnam in the coming time.

Okafor, (2018) study aimed at ascertaining the effect of environmental costs on firm performance. To achieve this objective, the study made use of financial reports of Oil and Gas Companies quoted in the Nigerian Stock Exchange Market from years 2006-2015. Regression analysis was employed with the aid of Statistical Package for Social Sciences (SPSS). The results of the statistical analysis indicate that better environmental performance positively impact business value of an organization. Moreover, environmental accounting provides the organization an opportunity to reduce environmental and social costs and improve their performance.

Bassey, Effiok & Eton (2013), in their work whose objective is to examine the impact of environmental accounting and reporting on organizational performance of selected oil and gas companies in Niger Delta region of Nigeria, found that firms which are environmentally friendly will significantly publish environmental related information in their financial statements and other reports of the business.

Hoan, (2022) conducted a study to determine the degree of influence of factors on the application of environmental accounting by small and medium enterprises in Vietnam. The study used both qualitative and quantitative methods. Qualitative research is used first with the case method through discussion techniques, interviews, and saturation points. Quantitative analysis is used to verify the model. Research results show that there are four factors affecting environmental accounting: (1) pressure from stakeholders; (2) manager's perception; (3) the relationship between costs and benefits; (4) qualifications of accountants. On that basis, the study makes some recommendations to encourage small and medium enterprises to apply environmental accounting and, at the same time, proposes research directions for the future.

## Methodology

### Research Design

For this investigation, the survey approach was used. This strategy was deemed to be the most suitable since it aided the researcher in describing, inspecting, documenting, analysing, and interpreting the variables discovered throughout the investigation. They highlighted that the words "descriptive" and "survey" are interchangeable in order to refer to the above-described study kind.

### Source of Data

The data of the research are of two kinds; primary and secondary data. Graham (2009: 141) agrees that the primary data contains a direct or original account of event or phenomena given by someone who actually observed the event or phenomena. These are relevant information obtained from the works of others. The following sources provided the information which are: Textbooks, journals, magazine and unpublished articles; Research and project reports in a related field; Manuals containing policy statement of the selected companies.

### Population of the Study

The population of the study consisted of all the employees working in Okele Farms Enterprise, KM1 Ugbusis Emmadaja Road, Warri, Delta; Arapel Agro Farms Limited, No. 7 Atikan Street, Iyara Street, Warri ; Aragmfam Farms, No 10, Aragmfam Farms Street, By PipeLine Road, Agbarho, Oghrerhe, Delta; and Amehinola Farm, No. 121 Sapele Rd, Tori, Warri, Delta.

### Sample and Sampling technique

The sample size for the study was employees working in different selected 4 farms in Warri, Delta state using Kracjie and Morgan (1970) formula. Also, proportional sampling techniques was employed in selecting the 61 respondents from the four selected farms.

### Data Analysis

The data obtained were analyzed using Descriptive and Pearson moment correlation analysis.

## DATA ANALYSIS AND DISCUSSION

### Research Questions One:

The research question sought to find out the extent of adoption of environmental cost accounting practices by farmers in the agricultural sector in Warri, Delta State. To answer the research question, percentage analysis was performed on the data, (see table 2).

**Table 2: Percentage analysis of the extent of adoption of environmental cost accounting practices by farmers in the agricultural sector in Warri, Delta State**

EXTENTS	FREQUENCY	PERCENTAGE
VERY HIGH EXTENT	24	39.34**
HIGH EXTENT	15	24.59
LOW EXTENT	13	21.31
VERY LOW EXTENT	9	14.75*
<b>TOTAL</b>	<b>61</b>	<b>100%</b>

\*\* The highest percentage frequency

\* The least percentage frequency

**SOURCE:** Field survey

The above table 2 presents the percentage analysis of the extent of adoption of environmental cost accounting practices by farmers in the agricultural sector in Warri, Delta State. From the result of the data analysis, it was observed that the highest percentage (39.34%) of the respondents affirmed that the extent of adoption of environmental cost accounting practices by farmers in the agricultural sector is very high, while the least percentage (14.75%) of the respondents stated that the extent of adoption of environmental cost accounting practices by farmers in the agricultural sector is very low.

### Research Questions Two:

The research question sought to find out the extent of factors affecting the adoption of environmental cost accounting practices in the agricultural sector in Warri, Delta State. To answer the research question, percentage analysis was performed on the data, (see table 3).

**Table 3: Percentage analysis of the extent of the factors affecting the adoption of environmental cost accounting practices in the agricultural sector in Warri, Delta State**

EXTENTS	FREQUENCY	PERCENTAGE
VERY HIGH EXTENT	19	31.15**
HIGH EXTENT	17	27.87
LOW EXTENT	14	22.95
VERY LOW EXTENT	11	18.03*
<b>TOTAL</b>	<b>61</b>	<b>100%</b>

\*\* The highest percentage frequency

\* The least percentage frequency

**SOURCE:** Field survey

The above table 3 presents the percentage analysis of the extent of factors affecting the adoption of environmental cost accounting practices in the agricultural sector in Warri, Delta State. From the result of the data analysis, it was observed that the highest percentage (31.15%) of the respondents affirmed that there is factors affecting the adoption of environmental cost accounting practices in the agricultural sector, while the least percentage (18.03%) of the respondents stated that there are factors affecting the adoption of environmental cost accounting practices in the agricultural sector is very low.

### Research Questions Three:

The research question sought to find out the relationship between environmental cost accounting in the agricultural sector and implications for resource management and sustainability in Warri, Delta State. To answer the research question, Descriptive analysis was performed to determine the relationship between the two variables, (see table 4).



**Table 4: Descriptive statistics of the relationship between environmental cost accounting in the agricultural sector and implications for resource management and sustainability in Warri, Delta State**

Variable	N	Arithmetic mean	Expected mean	R	Remarks
environmental cost accounting	61	16.00	12.5	0.90*	*Strong to perfect Relationship
resource management and sustainability		17.56	12.5		

**Source: Field Survey**

Table 4 presents the result of the descriptive analysis of the relationship between environmental cost accounting in the agricultural sector and implications for resource management and sustainability in Warri, Delta State. The two variables were observed to have strong to perfect relationship at 87%. The arithmetic mean for environmental cost accounting (16.00) was observed to be greater than the expected mean score of 12.5. In addition to that, the arithmetic mean as regards resource management and sustainability (17.56) was observed to be higher than the expected mean score of 12.5. The result therefore means that there is remarkable relationship between environmental cost accounting and resource management and sustainability.

### Hypothesis One

The null hypothesis states that there is no significant relationship between environmental cost accounting in the agricultural sector and implications for resource management and sustainability in Warri, Delta State. In order to answer the hypothesis, Pearson Product Moment Correlation analysis was used to analyze the data (see table 5).

**Table 5: Pearson Product Moment Correlation Analysis of the relationship between environmental cost accounting in the agricultural sector and implications for resource management and sustainability in Warri, Delta State**

Variables		$\Sigma X$	$\Sigma X^2$	$\Sigma Xy$	$r$
		$\Sigma y$	$\Sigma y^2$		
environmental cost accounting	(X)	3179	50445	53699	0.65*
resource management and sustainability	(y)	3396	57458		

**\*Significant at 0.05 level; N=61; df =59; Critical r – value = value = 0.138**

Table 5 presents the obtained r-value as (0.65). This value was tested for significance by comparing it with the critical r-value (0.113) at 0.05 levels with 59 degree of freedom. The obtained r-value (0.90) was greater than the critical r-value (0.113). Hence, the result was significant. The result therefore means that there is significant relationship between environmental cost accounting and resource management and sustainability. The significance of the result caused the null hypothesis to be rejected while the alternative one was accepted.

## Discussion of the Findings

The result of the data analyses in table 4 shows that the two variables have strong perfect relationship at 87%. The arithmetic mean for environmental cost accounting (16.00) was observed to be greater than the expected mean score of 12.5. In addition to that, the arithmetic mean as regards resource management and sustainability (17.56) was observed to be higher than the expected mean score of 12.5. The result therefore means that there is remarkable relationship between environmental cost accounting and resource management and sustainability. The result is in agreement with the opinion of Ezejiofor, (2016) who opined that Environmental Cost Accounting does not only focus on internal and external environmental accounting but links environmental and financial performance more visibly. Environmental accounting assists in getting environmental sustainability embedded within an organization's culture and operations. The significance of the result caused the null hypothesis to be rejected while the alternative one was accepted.

The results of the data analyses in tables 5 indicated that the obtained r-value as (0.65). This value was tested for significance by comparing it with the critical r-value (0.113) at 0.05 levels with 59 degree of freedom. The obtained r-value (0.90) was greater than the critical r-value (0.113). Hence, the result was significant. The result therefore means that there is significant relationship between environmental cost accounting and resource management and sustainability. Therefore, the result is cognate to the study of Bebbington et al., (2019) argue that accounting for environmental costs, farmers and agricultural businesses can make informed decisions about the allocation of resources such as water, fertilizer, and energy. This informed decision-making leads to more efficient resource use, reducing waste and minimizing the negative impact on the environment. The alignment with environmental standards further supports sustainable development goals, as it encourages the adoption of eco-friendly practices that protect natural resources for future generations (Deegan, 2020). Therefore, the significance of the result caused the null hypothesis to be rejected while the alternative one was accepted.

## Conclusion

This paper assesses the environmental cost accounting in the agricultural sector: implications for resource management and sustainability. Nevertheless, the present study was able to demonstrate significant effects of environmental cost accounting report, strategies and operations on both resource management and sustainability impacts. It was observed that the adoption of environmental cost accounting practices can help farmers and agricultural businesses recognize the hidden costs associated with environmental degradation, such as soil erosion, water pollution, and loss of biodiversity, and take proactive steps to mitigate these impacts.

Furthermore, integrating environmental cost accounting into agricultural practices supports informed decision-making, encouraging investments in eco-friendly technologies and sustainable farming methods. This approach can lead to better resource allocation, reduced environmental damage, and improved long-term profitability.

Ultimately, the implementation of environmental cost accounting in Warri's agricultural sector has the potential to drive a shift towards sustainable practices, ensuring the preservation of natural resources for future generations. This can foster resilience within the local agricultural community and contribute to the broader goals of environmental conservation and sustainable development in Delta State.

## Recommendations

Based on the findings and conclusions above, the paper made the following recommendations:

1. Agricultural stakeholders in Warri should adopt a comprehensive environmental cost accounting framework that incorporates direct, indirect, and intangible environmental costs.
2. Farmers and agricultural businesses in Warri should adopt sustainable farming practices such as organic farming, agroforestry, and conservation tillage.
3. Regulatory bodies should monitor and evaluate the environmental impact of agricultural practices and impose fines or sanctions on those that do not comply with environmental standards.
4. Awareness among stakeholders, including farmers, agricultural companies, policymakers, and local communities, about the importance of environmental cost accounting and sustainable resource management should be encouraged.

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# FROM BUREAUCRACY TO AUTOMATION: THE ROLE OF AI IN TRANSFORMING GOVERNMENT OPERATIONS

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## ABSTRACT

*Artificial Intelligence (AI) is transforming bureaucratic processes and government operations by enhancing efficiency, accuracy, and responsiveness. This study explores the role of AI in transitioning from traditional bureaucratic systems to automated, data-driven operations, emphasizing its impact on administrative procedures, decision-making, service delivery, and overall governance. AI technologies, such as robotic process automation (RPA) and machine learning, offer significant potential to streamline tasks, reduce errors, and provide actionable insights through advanced data analytics. Despite these benefits, the adoption of AI faces several challenges, including technical and infrastructure requirements, high implementation costs, a shortage of skilled professionals, data privacy concerns, ethical considerations, regulatory complexities, and resistance to change. This study examines these challenges and proposes recommendations for successful AI integration in bureaucratic systems. Key recommendations include investing in modern infrastructure, developing training programs to bridge the skills gap, implementing robust data privacy and security measures, establishing ethical guidelines, staying updated on regulatory developments, managing change effectively, facilitating integration with legacy systems, and setting realistic expectations for AI projects. By addressing these barriers, organizations can better harness the transformative potential of AI to drive more efficient, transparent, and responsive governance. The findings underscore the need for a strategic approach to AI adoption, balancing technological advancements with ethical and organizational considerations. Effective AI implementation can lead to substantial improvements in government operations, ultimately contributing to more effective and responsive public administration.*

**KEYWORDS:** Artificial Intelligence (AI); Bureaucratic Processes; Government Operations; Administrative Efficiency

## Introduction

The evolution of government operations in Nigeria has mirrored broader global trends, transitioning from traditional bureaucratic structures to increasingly automated systems. This transformation is largely driven by the adoption of Artificial Intelligence (AI), which promises to revolutionize the efficiency, transparency, and responsiveness of public administration. The Nigerian public sector, historically characterized by its hierarchical and rigid bureaucratic processes, faces mounting pressures to modernize in order to better serve its citizenry and compete in a rapidly evolving digital landscape.

Historically, Nigerian government operations have been rooted in bureaucratic principles. Max Weber's bureaucratic model, which emphasizes a hierarchical structure, standardized procedures, and impersonal relationships, has long influenced Nigerian administrative practices (Weber, 1946). This system, while ensuring order and consistency, often suffers from inefficiencies such as slow decision-making processes, excessive paperwork, and limited responsiveness to citizen needs (Ogunyemi, 2017). These inefficiencies have been compounded by issues such as corruption, inadequate infrastructure, and a lack of skilled personnel, which have further impeded the effectiveness of public administration (Ibrahim & Hassan, 2021).

In recent years, there has been a growing recognition of the need for reform within Nigerian government operations. The global shift towards digital governance and the rise of AI technologies have underscored the potential for transformative change. AI, with its capabilities in data processing, machine learning, and predictive analytics, offers a promising alternative to traditional bureaucratic approaches. By automating routine tasks, analyzing large volumes of data, and providing real-time insights, AI can address many of the inefficiencies inherent in bureaucratic systems (Brynjolfsson & McAfee, 2014).

The Nigerian government has initiated several efforts to embrace digital transformation. For instance, the National Information Technology Development Agency (NITDA) has spearheaded various projects aimed at integrating technology into public services. The establishment of the National Data Protection Regulation (NDPR) and the Digital Economy Policy and Strategy (DEPS) reflects a commitment to leveraging technology for improved governance (NITDA, 2020). However, the implementation of AI in government operations remains uneven and faces numerous challenges, including infrastructural constraints, limited technical expertise, and resistance to change (Ezeani, 2022).

The role of AI in transforming government operations is multifaceted. One of the primary advantages of AI is its potential to enhance administrative efficiency. Automation of routine tasks such as data entry, document processing, and record management can significantly reduce the burden on human resources and minimize errors (Mann, 2019). For example, the adoption of AI-driven chatbots and virtual assistants can streamline citizen interactions with government agencies, providing instant responses and reducing wait times (Guszcza et al., 2018). Furthermore, AI can facilitate more effective decision-making by analyzing large datasets and generating actionable insights, which can inform policy development and resource allocation (Davenport & Ronanki, 2018).

Despite these potential benefits, the integration of AI into government operations in Nigeria is fraught with challenges. The successful implementation of AI requires a robust digital infrastructure, including reliable internet connectivity, advanced hardware, and secure data storage solutions. Nigeria's infrastructure deficit poses a significant barrier to the widespread adoption of AI technologies (Adewale & Onuoha, 2021). Additionally, there is a need for capacity building and training to ensure that government personnel are equipped with the skills required to effectively utilize AI tools (Ojo, 2023). Resistance to change, stemming from entrenched bureaucratic norms and fear of job displacement, further complicates the transition to automated systems (Ibrahim & Hassan, 2021).

In addressing these challenges, it is essential to consider the broader socio-political context. The successful integration of AI into government operations requires a supportive policy environment and a strategic approach to change management. Government policies should focus on creating an enabling environment for digital innovation, including incentives for technology adoption, investment in digital infrastructure, and the development of a skilled workforce (NITDA, 2020).

Furthermore, engaging stakeholders, including government officials, civil society organizations, and the private sector, is crucial for fostering collaboration and ensuring that AI initiatives align with the needs and priorities of the Nigerian populace (Adewale & Onuoha, 2021).

In conclusion, the transition from bureaucracy to automation in Nigerian government operations represents a significant shift towards modernizing public administration. AI holds the potential to enhance efficiency, transparency, and responsiveness, offering a viable solution to many of the challenges associated with traditional bureaucratic systems. However, realizing the full potential of AI requires addressing infrastructural, technical, and cultural barriers, and fostering a supportive policy environment. As Nigeria continues to navigate this transformative journey, it is crucial to adopt a strategic approach that leverages AI's capabilities while addressing the unique challenges and opportunities within the Nigerian context.

### **Concept of Artificial Intelligence (AI)**

Artificial Intelligence (AI) is a branch of computer science dedicated to creating systems capable of performing tasks that typically require human intelligence. These tasks include learning from experience, reasoning, problem-solving, understanding natural language, and perception. AI systems leverage algorithms and computational models to simulate human cognitive functions, enabling them to analyze data, recognize patterns, and make decisions.

AI encompasses a broad range of technologies and approaches designed to emulate various aspects of human intelligence. The term itself was first coined by John McCarthy in 1955 during the Dartmouth Conference, which is considered the birth of AI as a field of study (McCarthy et al., 1956). AI systems can be categorized into several types based on their capabilities and functionalities:

- **Narrow AI (Weak AI):** These systems are designed for specific tasks, such as facial recognition, voice assistants, or recommendation engines. Narrow AI is currently the most prevalent form of AI and excels in performing predefined tasks but lacks general cognitive abilities (Bostrom, 2014).
- **General AI (Strong AI):** This hypothetical form of AI would possess general cognitive abilities similar to human intelligence, allowing it to understand, learn, and apply knowledge across a wide range of tasks. General AI remains a theoretical concept and has not yet been realized (Goertzel & Pennachin, 2007).
- **Artificial Superintelligence:** This is a theoretical future stage where AI surpasses human intelligence across all domains, including creativity, problem-solving, and emotional intelligence. It is the subject of significant debate and speculation regarding its potential impact on society (Bostrom, 2014). AI systems are built upon several core components that enable them to function effectively:
- **Machine Learning (ML):** ML is a subset of AI focused on developing algorithms that allow computers to learn from and make predictions or decisions based on data. Machine learning techniques include supervised learning, unsupervised learning, and reinforcement learning (Mitchell, 1997). Supervised learning involves training models on labeled data, while unsupervised learning deals with finding hidden patterns in unlabeled data. Reinforcement learning involves training models to make decisions through trial and error.
- **Natural Language Processing (NLP):** NLP enables computers to understand, interpret, and generate human language. It involves tasks such as speech recognition, text analysis,



and language generation. NLP is crucial for applications like chatbots, virtual assistants, and translation services (Jurafsky & Martin, 2020).

- **Computer Vision:** This field of AI focuses on enabling machines to interpret and understand visual information from the world, such as images and videos. Computer vision techniques are used in facial recognition, object detection, and autonomous vehicles (Szeliski, 2010).
- **Robotics:** Robotics combines AI with physical machines to create robots that can perform tasks autonomously. This includes applications in manufacturing, healthcare, and exploration (Siciliano & Khatib, 2016).

## AI Techniques and Approaches

Several approaches are used in the development of AI systems:

- **Rule-Based Systems:** These systems use a set of predefined rules and logic to make decisions. They are typically employed in expert systems where knowledge is codified into if-then rules (Jackson, 1999).
- **Neural Networks:** Inspired by the human brain, neural networks consist of interconnected nodes (neurons) that process information in layers. Deep learning, a subset of neural networks, uses multiple layers to analyze complex patterns and features (LeCun, Bengio, & Hinton, 2015).
- **Evolutionary Algorithms:** These algorithms use principles of natural evolution, such as selection, mutation, and crossover, to solve optimization problems. They are used in scenarios where traditional methods are not feasible (Holland, 1975).

## Relationship Between AI Applications in Government Operations

The integration of Artificial Intelligence (AI) into government operations marks a significant shift in how public administration functions, transforming traditional processes and enhancing the efficiency, transparency, and responsiveness of government services. The relationship between AI applications and government operations is multifaceted, influencing various aspects of public administration, from decision-making and service delivery to policy formulation and citizen engagement. This dynamic interplay highlights AI's potential to address longstanding challenges in public sector management while also presenting new opportunities and considerations.

### 1. Enhancing Administrative Efficiency

One of the primary benefits of AI in government operations is its ability to enhance administrative efficiency. Traditional bureaucratic systems often involve complex and time-consuming processes, characterized by slow decision-making, excessive paperwork, and manual data handling. AI applications, such as automation and machine learning, can significantly streamline these processes. For example, robotic process automation (RPA) can handle repetitive tasks such as data entry, document processing, and record management, reducing the burden on human resources and minimizing errors (Brynjolfsson & McAfee, 2014). By automating routine administrative functions, AI frees up valuable time for government employees to focus on more strategic tasks, thereby improving overall operational efficiency.

## **2. Improving Decision-Making and Policy Formulation**

AI's ability to analyze vast amounts of data and extract actionable insights is transforming decision-making and policy formulation within government operations. Machine learning algorithms can process and analyze data from diverse sources, including social media, public surveys, and economic indicators, to identify trends and patterns that inform policy decisions (Davenport & Ronanki, 2018). For instance, predictive analytics can help forecast future trends and outcomes, enabling policymakers to make data-driven decisions and develop more effective policies (Mann, 2019). Additionally, AI-driven simulations and scenario analysis can support strategic planning by modeling the potential impacts of different policy options, allowing for more informed and proactive governance.

## **3. Enhancing Public Service Delivery**

AI applications are revolutionizing public service delivery by improving accessibility, responsiveness, and personalization. Chatbots and virtual assistants powered by natural language processing (NLP) technologies can provide instant responses to citizen inquiries, offer guidance on various services, and resolve common issues without the need for human intervention (Guszcza et al., 2018). This not only reduces wait times and enhances user experience but also ensures that citizens receive timely and accurate information. Furthermore, AI can be used to personalize services based on individual needs and preferences, improving the overall quality of public service delivery and fostering greater citizen satisfaction.

## **4. Supporting Transparency and Accountability**

AI can play a crucial role in promoting transparency and accountability within government operations. By leveraging AI for data analysis and visualization, governments can provide citizens with clearer and more accessible information about public spending, program performance, and policy outcomes (Ezeani, 2022). For example, AI-powered tools can analyze financial data and generate detailed reports on government expenditures, enabling greater scrutiny and oversight. Additionally, AI can facilitate real-time monitoring of government activities, helping to detect anomalies, identify potential fraud, and ensure compliance with regulations (Adewale & Onuoha, 2021). These capabilities contribute to building trust and confidence in public institutions by enhancing their transparency and accountability.

AI offers numerous benefits, its integration into government operations also presents challenges and ethical considerations. One of the primary concerns is data privacy and security, as AI systems often require access to sensitive and personal information. Ensuring that data is handled securely and in compliance with privacy regulations is essential to maintaining public trust and safeguarding citizens' rights (Zuboff, 2019). Additionally, the potential for bias in AI algorithms raises concerns about fairness and equity. AI systems can perpetuate existing biases present in training data, leading to discriminatory outcomes in areas such as law enforcement and social services (O'Neil, 2016). Addressing these challenges requires implementing robust safeguards, conducting regular audits, and fostering transparency in AI decision-making processes. The relationship between AI applications and government operations is dynamic and multifaceted. AI has the potential to significantly enhance administrative efficiency, improve decision-making, and revolutionize public service delivery. However, its integration also presents challenges related to data privacy, bias, and ethical considerations. By addressing these challenges and leveraging AI responsibly, governments can harness its capabilities to advance public administration, foster transparency, and engage citizens more effectively.

## **The Role of Automation in Transforming Government Operations**

The advent of automation in government operations marks a transformative shift in public administration, redefining how government agencies execute their functions and deliver services. Automation, which involves using technology to perform tasks with minimal human intervention, offers significant opportunities to enhance the efficiency, accuracy, and responsiveness of government operations. By streamlining processes, reducing administrative burdens, and improving service delivery, automation is poised to address many of the challenges faced by public sector organizations while fostering more effective governance.

One of the most impactful roles of automation in government operations is the streamlining of administrative processes. Traditional bureaucratic systems often involve complex, time-consuming procedures that can result in delays and inefficiencies. Automation technologies, such as robotic process automation (RPA), are designed to handle repetitive and routine tasks with greater speed and accuracy than manual processes (Brynjolfsson & McAfee, 2014). For example, RPA can automate data entry, document processing, and record management, significantly reducing the need for human intervention. By automating these routine tasks, government agencies can improve operational efficiency, reduce errors, and free up valuable resources to focus on more strategic and value-added activities.

Automation also plays a crucial role in enhancing accuracy and reducing errors in government operations. Manual processes are often prone to human error, which can lead to costly mistakes and inefficiencies. Automated systems, on the other hand, operate based on predefined rules and algorithms, ensuring consistent and accurate execution of tasks. For instance, automated systems can handle complex calculations, process large volumes of data, and generate reports with a high degree of precision. This reduces the likelihood of errors and ensures that government operations are conducted in a more reliable and dependable manner. Additionally, automation can help minimize discrepancies and inconsistencies in data, leading to more accurate and trustworthy information for decision-making and policy development.

## **Improving Service Delivery and Citizen Experience**

The integration of automation into government operations has the potential to significantly enhance service delivery and improve the overall citizen experience. Automation technologies, such as chatbots and virtual assistants, enable government agencies to provide more efficient and responsive services to the public. These tools can handle a wide range of citizen interactions, including answering inquiries, processing requests, and providing information on government services. By offering 24/7 availability and instant responses, automated systems enhance accessibility and convenience for citizens, reducing wait times and improving overall satisfaction (Guszcza et al., 2018). Furthermore, automation can enable personalized services by analyzing citizen data and preferences, allowing government agencies to tailor their interactions and offerings to individual needs. Additionally, automation can facilitate better monitoring and auditing of government processes, helping to detect anomalies, identify potential fraud, and ensure compliance with regulations. This increased transparency and accountability foster trust and confidence in public institutions, enhancing their legitimacy and effectiveness.

The role of automation in facilitating data-driven decision-making is another key aspect of its impact on government operations. Automation technologies can process and analyze large volumes of data quickly and efficiently, providing valuable insights for decision-making and policy formulation. For example, predictive analytics and machine learning algorithms can analyze historical data and identify trends, enabling policymakers to anticipate future developments and

make informed decisions (Davenport & Ronanki, 2018). By leveraging automated data analysis, government agencies can improve their strategic planning, optimize resource allocation, and develop more effective policies and programs.

Automation offers numerous benefits, its implementation in government operations also presents challenges and considerations. One of the primary concerns is the need for a robust digital infrastructure to support automated systems. Reliable internet connectivity, advanced hardware, and secure data storage are essential for the successful deployment of automation technologies (Adewale & Onuoha, 2021). Additionally, there is a need for capacity building and training to ensure that government personnel are equipped with the skills required to manage and utilize automated systems effectively (Ojo, 2023). Resistance to change and potential job displacement are also important factors to consider, as automation may lead to shifts in workforce dynamics and require careful management to mitigate negative impacts (Brynjolfsson & McAfee, 2014). As automation technologies continue to evolve, their role in transforming government operations will likely expand further. Future advancements in automation, such as artificial intelligence and machine learning, have the potential to enhance government capabilities and revolutionize public administration (LeCun, Bengio, & Hinton, 2015). Governments must remain proactive in exploring and adopting emerging automation solutions while addressing associated challenges and ethical considerations. Collaboration between government agencies, technology providers, and stakeholders will be crucial in ensuring that automation is harnessed effectively to improve governance and public service delivery.

The role of automation in transforming government operations is profound and multifaceted. By streamlining administrative processes, enhancing accuracy, improving service delivery, and facilitating data-driven decision-making, automation offers significant opportunities to enhance the efficiency and effectiveness of public sector organizations. However, its successful implementation requires addressing challenges related to infrastructure, training, and workforce dynamics. As governments continue to navigate the evolving landscape of automation, a strategic approach that leverages its capabilities while managing its impact will be essential for achieving transformative and sustainable outcomes in public administration.

### **Impact of AI on Bureaucratic Processes**

The integration of Artificial Intelligence (AI) into bureaucratic processes represents a paradigm shift in how governmental and administrative functions are carried out. Bureaucracies, characterized by their hierarchical structures, standardized procedures, and formalized rules, have traditionally operated in a slow and methodical manner. The introduction of AI into these systems has the potential to revolutionize their operations, enhancing efficiency, accuracy, and responsiveness while addressing some of the inherent challenges of bureaucratic management. One of the most significant impacts of AI on bureaucratic processes is the streamlining of administrative procedures. Traditional bureaucratic systems often involve lengthy processes with multiple layers of approval and documentation. This can lead to inefficiencies, delays, and excessive paperwork. AI technologies, particularly robotic process automation (RPA), can automate routine and repetitive tasks, such as data entry, form processing, and document management. By automating these functions, AI reduces the manual workload of government employees and accelerates administrative processes, leading to faster decision-making and improved operational efficiency (Brynjolfsson & McAfee, 2014).

**Enhancing Accuracy and Reducing Errors:** AI's ability to enhance accuracy and reduce errors is another crucial impact on bureaucratic processes. Manual handling of bureaucratic tasks is often prone to human error, which can result in costly mistakes and inconsistencies. AI systems, driven

by sophisticated algorithms and data processing capabilities, can perform tasks with high precision and consistency. For example, AI can automate data validation and verification, ensuring that information is accurate and up-to-date. This reduction in errors not only improves the reliability of bureaucratic processes but also contributes to more accurate record-keeping and reporting (Davenport & Ronanki, 2018).

**Improving Decision-Making and Policy Formulation:** AI's impact on decision-making and policy formulation within bureaucracies is profound. Traditional decision-making processes in bureaucratic systems can be slow and cumbersome, often relying on manual analysis of data and information. AI, through advanced analytics and machine learning, can analyze vast amounts of data quickly and provide actionable insights. For instance, predictive analytics can forecast trends and outcomes based on historical data, enabling policymakers to make more informed decisions (Mann, 2019). By leveraging AI, bureaucracies can enhance their ability to formulate effective policies, optimize resource allocation, and address emerging issues proactively.

**Enhancing Service Delivery:** AI has the potential to significantly enhance service delivery within bureaucratic systems. In traditional bureaucracies, service delivery can be hampered by slow response times, complex procedures, and limited accessibility. AI-driven solutions, such as chatbots and virtual assistants, can improve the efficiency and effectiveness of service delivery by providing instant responses to inquiries, guiding users through complex processes, and handling routine requests (Guszcza et al., 2018). This not only enhances the accessibility of services but also improves overall citizen satisfaction by reducing wait times and simplifying interactions with government agencies.

**Promoting Transparency and Accountability:** AI contributes to greater transparency and accountability in bureaucratic processes by facilitating better data management and reporting. Automated systems can generate real-time reports on various aspects of bureaucratic operations, including financial expenditures, program performance, and policy outcomes (Ezeani, 2022). These reports can be made accessible to the public, allowing for greater scrutiny and oversight of government activities. Additionally, AI can assist in monitoring compliance with regulations and detecting anomalies, helping to ensure that bureaucratic processes are conducted in a fair and transparent manner (Adewale & Onuoha, 2021).

The integration of AI into bureaucratic processes also presents several challenges and ethical considerations. One of the primary concerns is the potential for job displacement as AI systems automate tasks previously performed by human employees. While AI can enhance efficiency, it may also lead to shifts in workforce dynamics and require strategies for managing transitions and supporting affected employees (Brynjolfsson & McAfee, 2014). Additionally, there are concerns about data privacy and security, as AI systems often require access to sensitive information. Ensuring that data is handled securely and in compliance with privacy regulations is essential to maintaining public trust (Zuboff, 2019).

In the words of (LeCun, Bengio, & Hinton, 2015) as AI technologies continue to evolve, their impact on bureaucratic processes is expected to grow even further. Emerging technologies, such as artificial general intelligence and advanced machine learning models, have the potential to further enhance the capabilities of AI in bureaucratic settings. Governments and bureaucratic organizations must remain proactive in exploring and adopting these technologies while addressing associated challenges. This includes investing in digital infrastructure, providing training for personnel, and establishing ethical guidelines for AI deployment.

The impact of AI on bureaucratic processes is transformative and multifaceted. By streamlining administrative procedures, enhancing accuracy, improving decision-making, and elevating service delivery, AI has the potential to address many of the inefficiencies and challenges associated with traditional bureaucratic systems. However, its integration also requires careful consideration of potential challenges and ethical issues. As AI continues to advance, its role in shaping the future of bureaucratic processes will be crucial in driving more effective, transparent, and responsive governance.

## **Challenges and Barriers to AI Adoption**

The adoption of Artificial Intelligence (AI) presents transformative opportunities across various sectors, but it is not without its challenges and barriers. Despite its potential to revolutionize industries and enhance operational efficiency, AI adoption faces significant hurdles that can impede its effective implementation. These challenges span technical, organizational, ethical, and regulatory domains, each contributing to the complexities of integrating AI into existing systems and processes.

### **1. Technical and Infrastructure Challenges**

One of the foremost challenges in AI adoption is the technical and infrastructure requirements. Implementing AI solutions often necessitates advanced computational resources, including powerful servers and high-speed internet connectivity, which may not be readily available in all settings (Brynjolfsson & McAfee, 2014). Additionally, AI systems require substantial amounts of data to train and operate effectively. Ensuring data quality, relevance, and integration with existing databases can be a complex and resource-intensive process. Organizations may face difficulties in acquiring and maintaining the necessary infrastructure and data management systems to support AI technologies (Davenport & Ronanki, 2018).

### **2. High Costs of Implementation**

The high costs associated with AI implementation pose another significant barrier. Developing and deploying AI solutions often involves substantial financial investment in technology, software, and skilled personnel. Organizations may need to invest in specialized hardware, software licenses, and ongoing maintenance, which can be prohibitive, especially for small and medium-sized enterprises (SMEs) or public sector institutions with limited budgets (Guszcza et al., 2018). The cost of hiring or training data scientists, machine learning engineers, and AI specialists further adds to the financial burden. These high costs can create a barrier to entry for many organizations, limiting their ability to harness the benefits of AI.

### **3. Lack of Skilled Workforce**

The shortage of skilled professionals is a critical challenge for AI adoption. AI technologies require expertise in areas such as machine learning, data analysis, and software development. The demand for skilled AI practitioners often exceeds supply, creating a competitive job market where organizations struggle to find and retain qualified talent (LeCun, Bengio, & Hinton, 2015). Furthermore, existing employees may require extensive retraining to adapt to new AI tools and methodologies, adding to the complexity of workforce management. This skills gap can hinder organizations' ability to effectively implement and leverage AI solutions.

#### **4. Data Privacy and Security Concerns**

Data privacy and security concerns are significant barriers to AI adoption. AI systems often rely on large volumes of personal and sensitive data to function effectively, raising concerns about data protection and privacy. Organizations must ensure that AI implementations comply with data protection regulations, such as the General Data Protection Regulation (GDPR) in Europe or various national privacy laws (Zuboff, 2019). Ensuring the secure handling, storage, and processing of data is critical to preventing data breaches and maintaining public trust. Additionally, the potential for AI systems to be exploited or manipulated poses risks to data security, necessitating robust safeguards and security measures.

#### **5. Ethical and Bias Issues**

Ethical considerations and bias in AI systems represent significant challenges. AI algorithms can inadvertently perpetuate existing biases present in training data, leading to discriminatory outcomes in areas such as hiring, law enforcement, and lending (O'Neil, 2016). Addressing these biases requires careful design and continuous monitoring of AI systems to ensure fairness and equity. Furthermore, ethical issues related to AI, such as the potential for job displacement and the misuse of AI technologies, must be addressed proactively. Organizations need to establish ethical guidelines and governance frameworks to navigate these challenges and ensure that AI is deployed responsibly and equitably (Ezeani, 2022).

#### **6. Regulatory and Compliance Issues**

Navigating the regulatory and compliance landscape for AI adoption can be complex and challenging. Governments and regulatory bodies are still developing frameworks and guidelines for AI technologies, leading to uncertainty and variability in regulatory requirements (Adewale & Onuoha, 2021). Organizations must stay abreast of evolving regulations and ensure that their AI implementations comply with relevant laws and standards. This includes considerations related to data protection, transparency, accountability, and algorithmic fairness. The lack of standardized regulations and the potential for regulatory changes can create uncertainty and complicate the adoption process.

#### **7. Resistance to Change**

Resistance to change is a common barrier to AI adoption, particularly within established organizations and bureaucratic systems. Employees and stakeholders may be apprehensive about adopting new technologies, fearing job displacement or disruptions to existing workflows. Organizational culture and resistance to technological change can impede the successful implementation of AI solutions (Brynjolfsson & McAfee, 2014). Overcoming this resistance requires effective change management strategies, including clear communication, stakeholder engagement, and demonstrating the benefits of AI adoption to all affected parties.

#### **8. Integration with Legacy Systems**

Integrating AI with existing legacy systems presents another challenge. Many organizations rely on outdated technology and infrastructure that may not be compatible with modern AI solutions. The process of integrating AI with legacy systems can be complex and costly, requiring significant modifications or overhauls to existing infrastructure (Davenport & Ronanki, 2018). Ensuring seamless integration and interoperability between new AI technologies and legacy systems is essential to maximizing the benefits of AI while minimizing disruptions.

## **9. Managing Expectations and Realizing Value**

Finally, managing expectations and realizing the value of AI investments can be challenging. Organizations may have high expectations for AI technologies but may not fully understand the time and resources required to achieve desired outcomes. The complexity of AI projects and the need for iterative development and testing can lead to delays and unmet expectations. Ensuring that AI projects are aligned with organizational goals, setting realistic expectations, and evaluating the return on investment are crucial to achieving successful outcomes (Guszcza et al., 2018).

The adoption of AI is accompanied by a range of challenges and barriers that can impact its effective implementation. Technical and infrastructure issues, high costs, lack of skilled workforce, data privacy and security concerns, ethical and bias issues, regulatory complexities, resistance to change, integration with legacy systems, and managing expectations are all significant factors that organizations must address. Navigating these challenges requires a strategic approach, including investment in technology and skills, adherence to ethical and regulatory standards, and effective change management practices. By addressing these barriers, organizations can better harness the transformative potential of AI and drive innovation and efficiency in their operations.

### **Conclusion**

The integration of Artificial Intelligence (AI) into bureaucratic processes and government operations represents a significant evolution in public administration and organizational efficiency. AI offers the potential to streamline administrative procedures, enhance accuracy, improve decision-making, and elevate service delivery. However, the journey towards effective AI adoption is fraught with challenges and barriers that must be navigated carefully. Technical and infrastructure requirements, high costs, lack of skilled professionals, data privacy concerns, ethical considerations, regulatory complexities, resistance to change, integration with legacy systems, and managing expectations are all critical factors that influence the successful implementation of AI technologies.

Despite these challenges, the transformative benefits of AI for bureaucratic and governmental operations are substantial. By addressing these obstacles proactively and strategically, organizations can harness AI's capabilities to drive more efficient, transparent, and responsive governance. Effective AI adoption requires a multifaceted approach that includes investment in technology and training, adherence to ethical and regulatory standards, and robust change management practices.

### **Recommendations**

1. **Invest in Infrastructure and Technology:** To overcome technical and infrastructure challenges, organizations should invest in modern technology and ensure that their IT infrastructure can support AI systems. This includes upgrading hardware, enhancing data management systems, and ensuring high-speed internet connectivity. Organizations should also consider cloud-based solutions to reduce upfront costs and increase scalability.
2. **Allocate Resources for Training and Skill Development:** Addressing the shortage of skilled professionals requires investing in training and skill development programs. Organizations should provide opportunities for existing employees to acquire new skills related to AI and data analytics. Additionally, collaboration with educational institutions and industry partners can help bridge the skills gap and build a pipeline of future AI talent.



3. **Implement Robust Data Privacy and Security Measures:** Ensuring data privacy and security is crucial for successful AI adoption. Organizations should implement comprehensive data protection measures, including encryption, access controls, and regular security audits. Compliance with data protection regulations and standards should be prioritized to build trust with stakeholders and avoid legal complications.
4. **Set Realistic Expectations and Measure ROI:** Managing expectations involves setting realistic goals for AI projects and understanding the time and resources required to achieve desired outcomes. Organizations should establish clear metrics for measuring the return on investment (ROI) and regularly evaluate the performance and impact of AI initiatives. This helps ensure that AI investments align with organizational objectives and deliver tangible benefits.

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# **AUTOMATION AND ACCOUNTABILITY: EVALUATING THE IMPACT OF AI ON GOVERNANCE IN NIGERIAN LOCAL GOVERNMENT ADMINISTRATION**

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## **ABSTRACT**

*This paper examines the potential impact of artificial intelligence (AI) and automation on governance and accountability in Nigerian local government administration. The study provides a comprehensive review of the historical context of local governance in Nigeria, from pre-colonial times through independence to the present day, highlighting the persistent challenges of corruption, inefficiency, and lack of transparency. It explores how AI technologies could be leveraged to address these issues and enhance public service delivery, financial management, and data-driven decision-making at the local level. The research considers both the opportunities presented by AI, such as improved transparency through automated record-keeping and more efficient service delivery, as well as the challenges, including infrastructure constraints, digital literacy gaps, and ethical concerns. The paper also examines the interplay between AI-driven accountability mechanisms and traditional accountability systems rooted in local cultural practices. By analyzing the potential benefits and risks of AI integration in local governance, this study contributes to the ongoing discourse on modernizing public administration in developing countries and offers insights into the future of grassroots governance in Nigeria.*

## **Introduction**

The study and application of artificial intelligence and robotics in the public and private sector is generating global interest among scholars and practitioners. This has become necessary as the world of world keep changing to meet the demands of an emerging new normal that calls for the integration of information and communication technology in workplaces and public governance. The tech world has revolutionized the workplace dynamics compelling businesses, governments and non-governmental organizations and individuals to adjust to the emerging changes and challenges. Artificial Intelligence (AI) has become an essential tool in public management and governance across the globe. AI is an advanced technology that can process massive amounts of data, make predictions, and provide insights that can inform decision-making processes. In both developed and developing market economies, governments are increasingly adopting AI in public management and governance to improve efficiency, transparency, and accountability. However, AI adoption also presents challenges, including ethical considerations, bias, data privacy and security concerns, and high costs. This paper provides a comprehensive review of the opportunities and challenges of automation leveraging AI and how it can foster accountability in local government administration in Nigeria.

Local government has been the concern of every responsive political system in the world. This is because; local government basically, is the involvement of grassroots people in the provision of

social and economic amenities to the local areas. It is based on the principle that local problems and needs can be understood by the people of the locality better than by Central or State government (Arowolo, 2008:4). The existence of local government has always been defended on the basis that it is a crucial aspect of democratization and intensification of mass participation in the decision-making process. No political system is considered complete and democratic if it does not have a system of local government (Shah, 2006:15). In Nigeria, the local government system is operated as the third and lowest tier of government. It is government at the grassroots level (Isiaq, 2008). The local government is subordinate to the central and state government. Local government was created to bring government closer to the grassroots and give people sense of belonging, to help Nigerians to see the workings of the government and also to harness the glut of resources available in the Nigeria rural sector to develop a sound basis for overall development. As surmised by Abiola & Ogedengble (2024) the local government system as grass root government has become a necessity because there are certain needs which are of direct concern to a particular locality and are best dealt with locally. Ola (2021) opined that the existence of local government is the presumed capacity of local people to understand and conduct their local affairs. There is no doubt that local government has become permanent phenomena as grassroots government in modern governance.

### **Overview of Local Government Administration in Nigeria**

Local government system exists in every country with variations in its structures, nomenclature and functions. Some countries operate single-tier system, where one local government authority exercises all the powers and performs all the functions within a locality, while other structural framework allows for two or more local government to share responsibilities for providing a range of services to the citizens in a defined area. Local government serves a two-fold purpose. The first is the administrative purpose of supplying goods and services; the other purpose is to represent and involve citizens in determining specific local public needs and how these local needs can be met. Local representative government is a process that span and connects representation and administration at local levels within local government structures (Appadorai, 2004:287). Successive administrations in Nigeria have experimented with different systems of local government since the amalgamation of the northern and southern parts of the country in 1914. The operation of local government administration in Nigeria dates back to pre-colonial period. The existence of emirate systems of Sokoto and Borno caliphates in the north and other kingdoms in the south gave birth to the local government system of governance. In these kingdoms, Emirs, Obas and Chiefs held sway over the governance of their respective domains. Also, in these areas, there were smaller districts, villages and wards that were subject to the kingdom and emirate government. These smaller or subordinate levels of government could be seen or described as local government. Then was the emergence of indirect rule system of British colonialist.

Following the treaty of cession in 1861, a British Colonial Administration was established over the kingdom and Empires in Nigeria. The common law of England, doctrines of Equity in force in England, Statute of General Application, local statutes and those specially enacted for the colony or British dependences were made applicable to areas now known as Nigeria (Ola & Tonwe, 2009). Under colonial administration, local government was known as Native Administration or Indirect rule system (Monday & Wijaya, 2022). This can be traced to the Native Authority Ordinance of 1916, which was passed by the British colonial government ostensibly to leverage the existing traditional administrative systems in the different regions of the area now known as Nigeria (Fowowe, 2024). The ordinance was the first legal framework to operationalize a system of indirect rule. It was meant to govern the people through the native chief. The idea was to preserve and use the authority of the local rulers, local institutions, traditions and habits rather than attempt to impose totally new unfamiliar ideas from outside (Agagu, 2004). It has also been argued that it

was meant for the British's economies and administrative convenience advantage to save huge personnel costs that might have arisen by employing British officials to govern these local societies (Ajayi, 2022). It is crucial to acknowledge that from its inception, the framework of local government in Nigeria was primarily crafted to cater to colonial interests and expedite the exploitation of the Nigerian populace and resources (Adetiba, 2017). Indirect rule, in essence, relied heavily on the authority of the local ruler, typically the chief. The localization policy aimed to strengthen his control over local governance, while adhering to local customs, presumably to maintain harmony. Their primary responsibilities included upholding law and order, preventing crimes, and apprehending offenders. Ensuring law and order was of paramount importance to British administration as it played a crucial role in fostering commercial activities (Amah, 2018). The local governance structure consists of the British Resident Officer, who oversees and manages affairs, the Native Authority typically led by a Chief and often assisted by a council of elders, the Native Treasury, and the Native Court comprising representatives from the Native Administration (Ejitu & Ecoma, 2016). However, the system was predominantly founded upon influential chiefs. The authority and power of these chiefs varied significantly, ranging from the highly centralized and autocratic rulers of the Hausa emirates to the partially democratic chiefs of the South-West, and to the leaderless, decentralized, and egalitarian societies of the South-East (Alao et al., 2015).

### **Nigeria Local Government Administration after Independence**

The 1960 Local Government Law replaced the native administration and indirect rule. Additionally, it implemented the committee system within council management, focusing on areas such as finance, medical services, and health. The business of the council was to be presided over by an elected chairman. Through numerous challenges and experimental phases, the initial endeavor to establish modern local government administration in the Eastern Region endured until the collapse of the First Republic (Adegbite, 2019). As far back as 1958, it was obvious that the experiment in the western region had run short of expectation, just like that of the eastern region. The political crisis in the region between 1962 and 1965, which emanated from the split in the leadership of the Action group, also contributed immensely to the problems of the operation of local government in the region (Ojo, 2012). In the northern regions, the Emirs remained at the helm but were required to function through the chief in council or chief and council structures (Tonwe & Osemwota, 2012). While in the chief-and-council setup, the traditional ruler maintained complete autonomy, in the chief-and-council arrangement, the traditional leader had to acknowledge the shared aspirations of the chiefs. These reforms persisted with slight modifications until the military assumed control in 1966. Following the 1966 military coup and ensuing civil unrest, various forms of local government administrative systems were implemented (Odinkalu, 2001). Due to military interference in politics, the emphasis at the local level shifted from expanding political participation to administrative restructuring and consolidation (Emenyeonu, 1997). Taking a decisive step in this direction, military Governors appointed Divisional Officers as Sole Administrators. The creation of 12 states in 1967, along with further administrative adjustments, resulted in the local councils losing nearly all skilled personnel to the states, which were better equipped to provide favorable conditions of service. The Eastern region of Nigeria, being the epicenter of conflict, experienced significant turmoil in local administration, hindering any substantial development or progress. Different systems were adopted in the Eastern States following the civil war. In war-torn areas, the fundamental principle of local government revolved around a centralized system that delegated powers and functions to headquarters from the state center. This approach, known as development administration, was notably implemented in the South-Eastern and Bendel States. Meanwhile, the Mid-West and Western regions became stages for dramatic local administration scenarios (Monday & Wijaya, 2022). For example, the Western State adopted the Sole Administrator system, which relied on force and the exigencies of the

period. This system was primarily geared towards mobilizing support for wartime efforts rather than fulfilling substantial duties. This arrangement was later replaced with one tier system of local government under a system known as the Council Manager system. In the Northern Region, structural and administrative changes occurred with the creation of states in 1967 (Decree No. 8 of 1967). The divisional administration and Native Authority system were abolished. In their place were, two-tiered pyramidal structure consisting of a local authority and subordinate district authorities (Baum, 1972). The Emir's towering image was reduced in the new dispensation. Between 1966 and 1976, a wave of experimentation unfolded in Nigeria, introducing new philosophies, structures, innovations, and changes nationwide. Despite these endeavors, disparities persisted in the functioning of local governments across the country. Despite the innovative approaches and experiments, local administration continued to lack a unified national focus and the esteemed value system necessary to fully realize its potential role in national development.

Despite tumultuous colonial history and the military coup, Nigeria's modern local government system started with the reform of local government in 1976. The objective of this reform was to overhaul and modernize local government administration, aspiring to elevate it to a standard comparable to the best in Africa. The 1976 reform was driven by noble intentions, including the aspiration to decentralize governance by bringing it closer to the grassroots, and to establish a consistent framework for local government administration nationwide. This reform marked a pivotal moment, as it achieved a unified system of local government for the first time in Nigeria's history. The 1976 Guidelines for Local Government is the most important document in the local government. Although, after the adoption of that document, eight more have been signed; The 1979 Constitution of the Federal Republic of Nigeria; The 1984 Dasuki Report on the Nigerian Local Government system; The 1988 Civil Service Reforms in the Local Government system; The 1989 Constitution of the Federal Republic of Nigeria; The 1992 Handbook on Local Government Administration; The 1989 Constitution of the Federal Republic of Nigeria; The 1999 Constitution of the Federal Republic of Nigeria and The 2003 Review of Local Government Councils in Nigeria.

### **Constitutional Function of Local Government in Nigeria**

Some of the Constitutions were silent on the Local Government whereas the others highlighted the relevance of the Local Governments. The Constitutions of 1979 and 1999 significantly discussed the Local Government provisions, particularly with the Local Government Reform. The 1976 Local Government Reform is the most notable reform in the history and development of the local government in the constitutional platform of Nigeria. Section 7 of the 1999 Constitution of Federal Republic of Nigeria provides for the establishment of local government and their duty:

- Making recommendations to State Economic Planning Commission
- Maintaining of public facilities and services such as cemeteries, burial grounds, destitute homes, slaughter house, markets, motor parks, and public conveniences, street lighting, drains, parks, gardens, and open spaces, public conveniences, sewage, and refuse disposal.
- Licensing and regulation of outdoor advertising, hoarding, trucks, shops, kiosks, restaurants, bakeries, and other places for sale of food.
- Carry out administrative functions such as naming roads and streets, numbering of houses, registering of births, deaths, and marriages and assessing privately owned houses or tenements for levying rates.

## Challenges facing Nigerian Local Government Administration

Local government administration in Nigeria, despite its intended role as the third tier of government closest to the people, faces numerous challenges that hinder its effectiveness and ability to fulfil its constitutional mandate. These challenges have persisted since the post-independence era and continue to undermine the potential of local governments to drive grassroots development. This section examines three key challenges: corruption, inefficiency, and lack of transparency:

**Corruption:** Corruption remains a pervasive issue in Nigerian local government administration, severely hampering its ability to deliver services and promote development at the grassroots level. The misappropriation of funds, embezzlement, and abuse of office by local government officials have become endemic problems that drain resources meant for community development (Abiola & Ogedengbe, 2024). This corruption often manifests in the form of inflated contracts, ghost workers on payrolls, and diversion of funds meant for public projects. As Agagu (2004) noted, the continuity of corrupt practices in local government administration has contributed significantly to the politics of underdevelopment in Nigeria. The persistence of corruption not only depletes financial resources but also erodes public trust in local government institutions, making it difficult for them to effectively engage with and serve their communities.

**Inefficiency:** Inefficiency in Nigerian local government administration is characterized by poor service delivery, inadequate utilization of resources, and a lack of skilled personnel. This inefficiency stems from various factors, including insufficient funding, inadequate training of staff, and political interference. As highlighted by Ola (2021), the presumed capacity of local people to understand and conduct their local affairs is often undermined by these inefficiencies. Local governments frequently struggle to implement projects, maintain infrastructure, and provide basic services due to bureaucratic bottlenecks, lack of technical expertise, and poor planning. The inefficiency is further exacerbated by the frequent changes in leadership and policies, which disrupt continuity and long-term planning in local government administration.

**Lack of Transparency:** The lack of transparency in Nigerian local government administration poses a significant challenge to effective governance and accountability. This issue manifests in various forms, including opaque budgeting processes, limited public access to information, and inadequate reporting mechanisms. The absence of transparent processes makes it difficult for citizens to monitor and participate in local government activities, fostering an environment conducive to corruption and mismanagement. As Isiaq pointed out, the subordinate nature of local government to central and state governments often results in a lack of clear accountability structures (Isiaq, 2008). This lack of transparency not only hinders public scrutiny but also impedes the ability of higher tiers of government and oversight bodies to effectively monitor and evaluate local government performance.

## Traditional Accountability System

Traditionally, accountability in Nigerian local government administration have evolved from pre-colonial systems and continue to play a significant role in grassroots governance. These mechanisms, deeply rooted in cultural practices and customary law, often complement formal governmental structures and provide alternative means of ensuring responsibility and answerability in local affairs (Olowu & Erero, 1995). Despite the establishment of modern local government structures, many communities still look to their traditional leaders for guidance and dispute resolution. These leaders, often regarded as custodians of cultural heritage, serve as intermediaries between the people and local government officials, holding the latter accountable

for their actions and decisions (Tonwe & Osemwota, 2013). Another significant traditional mechanism is the use of community assemblies or town hall meetings. These gatherings provide a platform for direct interaction between local government officials and community members, allowing for public scrutiny of government actions and facilitating participatory decision-making (Adeyemi, 2019). Such forums enable citizens to voice their concerns, demand explanations for government actions, and contribute to local policy formulation. The practice of oath-taking, deeply ingrained in many Nigerian cultures, also serves as a traditional accountability mechanism. Local government officials may be required to swear oaths before traditional deities or on sacred objects, pledging to serve honestly and diligently. This practice, while not formally recognized in the legal system, carries significant weight in many communities and serves as a deterrent to misconduct (Okafor, 2006). However, it is important to note that while these traditional means can enhance accountability, they also face challenges in the modern context. Issues such as the erosion of traditional authority, urbanization, and the increasing complexity of local governance can limit the effectiveness of these traditional approaches (Ola & Tonwe, 2009).

### **AI Applications in Nigerian Local Governance**

Artificial intelligence (AI) offers promising opportunities to enhance governance and public service delivery at the local level in Nigeria. By leveraging AI technologies, local governments can potentially improve efficiency, transparency, and citizen engagement. However, successful implementation will require addressing challenges around infrastructure, skills, and regulatory frameworks (Medaglia et al., 2021). The following subsections explore key areas where AI could be applied in Nigerian local governance.

***Automated Financial Management Systems:*** AI-powered financial management systems could help local governments in Nigeria improve budgeting, revenue collection, and expenditure tracking. Machine learning algorithms could analyze historical financial data to make more accurate revenue projections and identify areas for cost savings (Ajunwa, 2023). Automated systems for tax assessment and collection could increase efficiency and reduce opportunities for corruption. Additionally, AI tools could flag unusual transactions or spending patterns to enhance financial oversight and auditing processes.

***AI-Powered Public Service Delivery:*** Local governments could leverage AI to enhance the delivery of public services like waste management, water supply, and public transportation. For example, machine learning models could optimize waste collection routes and schedules based on real-time data. AI chatbots and virtual assistants could provide 24/7 citizen support for accessing government services and information (Medaglia et al., 2021). In healthcare, AI diagnostic tools could expand access to medical expertise in underserved areas.

***Data Analytics for Decision-Making:*** AI and machine learning techniques could help local officials make more data-driven policy and planning decisions. Predictive analytics could forecast trends in areas like population growth, traffic patterns, or disease outbreaks to inform proactive policymaking (Gil-Garcia et al., 2024). Natural language processing could analyze citizen feedback from multiple channels to identify key concerns and priorities. Geographic information systems (GIS) combined with AI could optimize the siting of public facilities and infrastructure.

### **Impact of Automation and AI on Accountability in Local Government Administration**

The integration of AI technologies in Nigerian local governance has the potential to significantly enhance accountability mechanisms. By automating processes, providing insight from data and reducing human intervention in certain processes, AI can contribute to more transparent, efficient, and equitable governance practices:

**Enhanced Accountability and Transparency Through Automated Record-Keeping:** AI-powered systems can vastly improve the accuracy, completeness, and accessibility of government records. Automated record-keeping can create a more comprehensive and tamper-resistant audit trail of government activities and decisions. Through blockchain-based AI systems records could be marked with timestamp on all government transactions and decisions, making them immutable and easily verifiable (Medaglia et al., 2021). This enhanced transparency could significantly minimize opportunities for record falsification and corruption and increase public trust in local government operations.

**Efficiency in Service Delivery:** AI systems can automate and streamline government processes and service delivery, potentially reducing delays, bottlenecks, and opportunities for corruption. Automated systems can process applications, payments, and other transactions more quickly and consistently than human operators. AI-powered chatbots could be deployed to handle routine citizen inquiries 24/7, freeing up human staff for more complex tasks (Gil-Garcia et al., 2024). This increased efficiency can enhance accountability by ensuring services are delivered in a timely manner and reducing the discretion of individual officials in service provision.

**Data-based Policy-Making:** with AI analytics local officials can access a more accurate and comprehensive data to inform policy decisions and resource allocation. Machine learning algorithms can analyze large datasets to identify patterns, trends, and correlations that might not be apparent through traditional analysis methods. This data-driven approach can lead to more evidence-based policy-making and help ensure that public resources are allocated where they are most needed or will have the greatest impact (Ogunleye, 2021).

**Reduction of Human Errors and Biases:** AI systems, when properly designed and implemented, have the potential to reduce human errors and biases in decision-making processes. Unlike humans, AI algorithms don't get tired, distracted, or influenced by personal prejudices. For instance, AI could be used to screen job applications or allocate public housing in a more consistent and unbiased manner (Medaglia et al., 2021). This could lead to fairer outcomes and increased accountability in areas where human discretion has traditionally played a large role. However, it's crucial to recognize that AI systems can also perpetuate or amplify existing biases if they are trained on biased data or designed with flawed assumptions. Regular auditing and testing of AI systems for fairness and bias is essential (Gil-Garcia et al., 2024).

### **Implication Challenges and Limitations of AI in Local Government Administration**

While AI presents significant opportunities for improving local governance in Nigeria, there are several challenges and limitations that need to be addressed for successful implementation. These range from infrastructural issues to ethical concerns, and they require careful consideration and strategic planning to overcome:

**Infrastructure Constraints:** One of the primary challenges in implementing AI systems in Nigerian local governance is the inadequate technological infrastructure. Many local government areas lack reliable electricity supply, high-speed internet connectivity, and modern computing hardware necessary for running sophisticated AI systems (Ogunleye, 2021). The "digital divide" between urban and rural areas further exacerbates this problem, potentially leading to uneven development and application of AI technologies across different regions. Significant investments in basic ICT infrastructure, including broadband internet and stable power supply, are prerequisites for widespread AI adoption in local governance (Medaglia et al., 2021).

**Digital Literacy among Local Government Staff:** The successful implementation and use of AI systems require a certain level of digital literacy among both government staff and citizens. Many



local government employees in Nigeria may lack the necessary skills to effectively operate and interpret AI systems, which could lead to underutilization or misuse of these technologies (Ike, 2024). Similarly, low digital literacy among citizens could result in limited engagement with AI-powered e-government services. Comprehensive training programs for government staff and digital literacy initiatives for citizens are crucial to bridge this knowledge gap and ensure equitable access to AI-enhanced services (Gil-Garcia et al., 2024).

**Data Privacy and Security Concerns:** The use of AI in governance inevitably involves the collection, processing, and storage of large amounts of citizen data. This raises significant concerns about data privacy and security, especially given Nigeria's relatively weak data protection framework (Ajunwa, 2023). There are risks of data breaches, unauthorized access, and potential misuse of personal information. Moreover, the use of AI for predictive policing or social scoring could infringe on citizens' privacy rights. Robust data protection laws, stringent security measures, and transparent data governance practices are essential to address these concerns and build public trust in AI-powered governance systems (Medaglia et al., 2021).

### Case Studies of AI Implementation in Local Governance

Examining real-world applications of AI in governance, particularly in developing countries, can provide valuable insights for Nigerian local governments. While Nigeria is still in the early stages of AI adoption in governance, there are relevant examples from other countries and some promising pilot projects within Nigeria. Several developing countries have successfully implemented AI in local governance, offering potential models for Nigeria:

- **India:** The city of Surat implemented an AI-powered flood warning system that analyzes data from various sources to predict flood risks and alert citizens. This system has significantly improved the city's disaster preparedness (Medaglia et al., 2021).
- **Kenya:** Nairobi County uses AI-powered chatbots to improve citizen engagement. The 'Zuri' chatbot provides information on county services, handles complaints, and even assists in bill payments, enhancing service delivery efficiency (Gil-Garcia et al., 2024).
- **Brazil:** The city of São Paulo employs AI for predictive maintenance of infrastructure. Machine learning algorithms analyze data from IoT sensors to predict when roads, bridges, and other structures need maintenance, optimizing resource allocation (Ogunleye, 2021).
- **Indonesia:** Jakarta uses AI-powered traffic management systems to reduce congestion. The system analyzes real-time traffic data to optimize traffic light timing and suggest alternative routes (Ike, 2024).

### Conclusion

The integration of AI and automation in Nigerian local government administration presents both significant opportunities and challenges. While AI has the potential to enhance efficiency, transparency, and accountability in governance, its successful implementation requires careful consideration of the existing infrastructure, digital literacy levels, and ethical implications. AI-powered systems can transform financial management, public service delivery, and data-driven decision-making in local governments. Automated record-keeping and streamlined processes can increase transparency and reduce opportunities for corruption. However, the successful adoption of AI in Nigerian local governance faces significant challenges. These include infrastructure constraints, particularly in rural areas, low digital literacy among government staff and citizens, data privacy and security concerns.

To harness the benefits of AI while mitigating its risks, a comprehensive strategy is needed. This should include investments in digital infrastructure and literacy programs, development of robust data governance frameworks, and careful consideration of the ethical implications of AI in governance. It's crucial to ensure that AI implementation doesn't exacerbate existing inequalities or create new ones. Furthermore, the integration of AI should complement rather than replace traditional accountability mechanisms, including those rooted in local cultural practices. A hybrid approach that combines the efficiency of AI with the cultural sensitivity of traditional systems could provide a more holistic and effective accountability framework. While AI holds great promise for improving local government administration in Nigeria, its successful implementation will require a thoughtful and measured approach. By addressing the challenges head-on and leveraging the opportunities, Nigerian local governments can harness AI to enhance accountability, improve service delivery, and ultimately better serve their citizens.

### **Recommendations for AI implementation in Local Government Administration**

To effectively harness the potential of AI in Nigerian local governance while addressing the associated challenges, a strategic and holistic approach is necessary. The following recommendations provide a roadmap for successful AI adoption:

- A phased approach to AI implementation is crucial for Nigerian local governments, given the complexity of the technology and the existing infrastructural challenges. This strategy should involve starting with pilot projects in specific areas where AI can address specific local issues, such as traffic management or waste collection (Ogunleye, 2021). through evaluations of these pilots' successes, challenges, and opportunity can be identified.
- To address the digital literacy gap and ensure effective use of AI systems, comprehensive capacity building initiatives are essential by designing and developing tailored training programs for local government staff at all levels, covering basic digital skills, AI literacy, and specific skills needed to operate and interpret AI systems
- A robust legal and regulatory framework is crucial to govern the use of AI in the public sector and address concerns around data privacy, security, and ethical use by developing comprehensive data protection legislation that addresses the specific challenges posed by AI and establishing clear guidelines for the ethical use of AI in local governance.
- Given the technical complexity of AI and the resource constraints faced by many local governments, partnerships with the private sector can be crucial for successful AI adoption and collaborating with tech companies and startups to develop AI solutions tailored to local governance needs, leveraging their technical expertise while ensuring solutions align with public sector requirements

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## ASSESSING SOCIAL ACCOUNTING AND PERFORMANCE OF NIGERIA BREWERIES MANUFACTURING FIRM

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### ABSTRACT

*This study investigates the impact of social cost on the performance of Nigerian manufacturing firms, with a focus on Nigeria Breweries Plc. The research employs an ex post facto design, analyzing data from 2007 to 2016 using secondary sources such as annual financial reports. The study measures performance through indicators like profit after tax (PAT), earnings per share (EPS), dividend per share (DPS), and return on assets (ROA). The primary statistical technique used is ordinary least squares (OLS) regression to assess the relationship between social cost and performance metrics. Results indicate that social cost does not have a significant effect on any of the performance indicators, as the p-values for all regression models exceed 0.05. The study concludes that, during the period analyzed, social cost was not a major determinant of financial performance for Nigeria Breweries. The findings suggest that while social cost is crucial, it has limited direct influence on financial outcomes. The study recommends that Nigeria Breweries should enhance corporate social responsibility efforts to improve community relations, which may indirectly benefit overall performance.*

**KEYWORDS:** Social Cost, Corporate Social Responsibility, Financial Performance, Manufacturing Firms, and Nigeria Breweries.

### 1. Introduction

The state of the world's environment and the impact of mankind on the ecology of the world at large have led to the increased public concern and scrutiny of the operations and performances of companies. Companies are now expected to be able to demonstrate that they are aware and addressing the impact of their operations on the environment and society in general. The rapid growth in business activities has brought the need for companies to disclose their' environmental and social activities in the annual report and accounts under corporate social responsibility. In this regard, businesses are expected to take into cognizance a wide array of social interests and expenditure on environmental activities.

In the light of increasing deleterious effects of environmental pollution, great importance is attached not only to the financial aspects (profitability) of companies but also to its social impact. The understanding of Corporate Social Responsibility (CSR) and its wide coverage made it to emphasize on responsibility towards the company's employees, local community, society and the future generation, (Malgorzata and Agnieszka, 2013). Environmental accounting is helpful in presenting in a transparent manner, the utilization of natural resources of the country, the cost incurred to use them and the income earned there from. It helps in measuring the contribution made by various companies in fulfilling their social responsibilities (Maheshwari, 2013). With the present regulations on management in Nigeria, manufacturing companies are subjected to comply with the social regulation. By so doing, they incur costs, whether this cost improves or reduce financial performance is the central question that will be explored by this research.

The quest for sustainability and the preservation of existing resources mandates that organizations must develop new ways and attitudes of doing business in terms of social sustainability. Social sustainability has become a pressing issue across the globe. The world population has been over-exploiting the available planetary resources. The increase in global social awareness and the campaign for sustainable economic development is redirecting the attention of business organizations towards environmental conservatism (Acti, Lyndon and Bingilar, 2013; Uzoh, 2022). This social 'cost' assumption has been tested against a wide range of financial measures within the plethora of literature. Recent empirical and analytical research shows that there is a clear correlation between environmental performance and corporate profitability (Murphy, 2002). Currently it is widely believed that social responsibility reporting, sustainable development reporting and environmental-protection reporting constitute an effective and efficient way to understand social performance and social risks, which naturally seek the goodwill of neighbouring communities, employees, stockholders, investors, financial institutions, local government and citizens (Kai, 2015). Such characteristics according to the author need to be communicated to the stakeholders of the company in a social report. The report comes in different areas such corporate social responsibility (CSR report), social performance report (SPR), and sustainability report (SR). The reports have quantifiable social disclosures that lead to better social performance and economic performance. Global awareness of stakeholders on corporate environmental performance has already made traditional reporting redundant. Companies run into the risk of loss of faith of their stakeholders, if in future, environmental performance information is not included in their main stream reporting (Swift, 2001). It is against this background that the study intends to examine the effect of social cost on performance of manufacturing firms in Nigeria. One of the most fundamental characteristics of externality is that the associated costs, known as the social cost, should be borne by the agent who causes the externality.

## **1.2 Statement of the Problem**

The need for corporate organizations to develop social cost responsiveness and to disclose in annual financial reports environmental information has become of great importance.

Corporate neglect and avoidance of social costing leave gap in financial information reporting. There is no completeness and correctness of fair view to users of financial information, such as shareholders, environmental regulatory agencies, socialists and potential financial investors. For example, degradation or other negative impact on the society could affect corporate financial statement such as create actual or contingent liabilities and may have adverse impact on asset values. Consequential effect on corporate organizations may result in incurring future capital expenditure and cash flows which may impinge on the going concern of business organizations.

Also, the limited awareness of social costing principles and methodology has become an important issue to be addressed. If vital social issues and activities are not disclosed, financial statement cannot be said to reveal 'true and fair view of affairs'. It is important too, to note that ethical investors will only invest in ethical companies and therefore, will watch out for these ethically responsible companies. Ethical companies therefore, have marketing advantage if they strategically position themselves socially. Companies that comply with ethical standard stand have an advantage over other companies. Also, the challenge of cost and valuation for damage, depletion and degradation of the society is a critical problem which continues to demand attention. Unfortunately, many social goods, including clean water, wilderness, indigenous cultures, and biodiversity, are not traded on markets, and so alternative means are needed to assess their value. Over the past several decades, economists and others have devoted considerable effort to devising the necessary techniques. Davies and Okorite (2007) opine that where the social activities of organizations are fairly reported in the financial statements, duly audited and attested to and published by the organization for all to see, some of the problems would be minimized, if not eliminated.

More so, most corporate organizations do not keep proper record of their social cost. Their financial statements do not capture the presence of social and environmental cost. Since current requirement for reporting on social issues is voluntary, it is observed from most financial statements of corporate organizations that it has engendered disclosures of information which totally exclude social issues. Social disclosures have become critically important to an informed public and financial stakeholders. Also, pertinent is the difficulty of evaluating social remediation for social degradation where social costs do exist.

### **1.3 Objectives of the Study**

The main objective of the study is to examine the effect of social cost on performance of manufacturing firms in Nigeria.

The specific objectives of the study are:

- (i) To examine the effect of social cost on profit after tax of manufacturing firms in Nigeria breweries.
- (ii) To determine the relationship between social cost and earnings per share of manufacturing firms in Nigeria breweries.
- (iii) To ascertain the relationship between social cost and dividend per share of manufacturing firms in Nigeria breweries.
- (iv) To examine the effect of social cost on return on asset of manufacturing firms in Nigeria breweries.

### **1.4 Research Questions**

The following questions will guide the study:

- (i) How does social cost affect profit after tax of manufacturing firms in Nigeria breweries?
- (ii) What is the relationship between social cost and earnings per share of manufacturing firms in Nigeria breweries?
- (iii) What is the relationship between social cost and dividend per share of manufacturing firms in Nigeria breweries?
- (iv) To what extent does social cost affect return on asset of manufacturing firms in Nigeria breweries?

## 1.5 Research Hypotheses

For the purpose of the study, the following hypotheses will be tested in null form:

**H<sub>01</sub>:** Social cost has no significant effect on profit after tax of manufacturing firms in Nigeria.

**H<sub>02</sub>:** There is no significant relationship between social cost and earnings per share of manufacturing firms in Nigeria.

**H<sub>03</sub>:** There is no significant relationship between social cost and dividend per share of manufacturing firms in Nigeria.

**H<sub>04</sub>:** Social cost has no significant effect on asset of manufacturing firms in Nigeria.

## 2. LITERATURE REVIEW

### 2.1 Conceptual Framework

Social cost accounting, social accounting otherwise known as (social accounting and auditing, social and environmental accounting, corporate social responsibility reporting, non-financial reporting or accounting) “is the process of communicating the social and environmental effects of organizations’ economic actions to particular interest group within the society and to society at large” (Gray, Owen, & Mannders, 1987). They further emphasized that the social accounting entails corporate accountability. In the words of Crowther (2000), social accounting is an “approach to reporting a firm’s activities which stresses the need for the identification of socially relevant behaviour, the determination of those to whom the company is accountable for its social performance and the development of appropriate measures and reporting techniques.

On the other hand, environmental accounting according to Gray, Owen, and Adams (1996) “is a subset of social accounting, focuses on the cost structure and environmental performance of a company”. It principally describes the preparation, presentation and communication of information related to an organization’s interaction with the natural environment. They further stated that environmental accounting is most commonly undertaken as voluntary self-reporting by companies, third-party reports by government agencies NGOs and other bodies posit to pressure for environmental accountability. Accounting for impacts on the environment may occur within a company’s financial statements, relating to liabilities, commitments and contingencies for the remediation of contaminated lands or other financial concerns arising from pollution.

More specifically, the high expected values reflect a right-skewed distribution of damages. It is well known that skewed distributions and tail events can influence the expected value of the benefits of mitigating climate change (e.g., Gollier 2008; Weitzman 2011, 2014). Under constant discounting, such tail events are very rich futures with associated large amounts of consumption at risk from climate change. Yet constant discounting treats each dollar of cost to those wealthy future generations the same as a dollar of cost to a relatively poor future. Hence, with constant discounting, the effects on the future rich inappropriately dominate the expected value of the SCC, leading to a strong upward bias in the SCC estimate. This problem is recognized in the finance literature as the result of ignoring the risk properties of an investment—namely, the correlation of an uncertain payoff with the stochastic discount rate. Stochastic growth discounting addresses this by discounting the high-growth, high damage states at a higher rate. By discounting high-growth states more, stochastic discounting stabilizes the mean and variance of the SCC, as documented in (Newell, William, and Brian. 2021).



### **2.1.1 Benefits of Implementing Social Accounting Practices by Companies**

Social accounting for the purpose of management control is designed to support, and facilitate the achievement of an organization's own objectives. In the words of (Gray, 2000), organizations are seen to benefit from implementing social accounting practices in a number of ways, example: Increased information for decision making, More accurate product or service costing, Enhanced image management and public relations, Identification of market development opportunities, Maintaining legitimacy.

The society is also seen to profit from the implementation of a social and environmental accounting in many ways, thus: Honouring stakeholders' rights of information, balancing corporate power with corporate responsibility, increasing transparency of corporate activity, identifying social and environmental costs of economic success (Gray, Owen and Adams, 1996). In contributing to their quota Adediran, and Alade (2013) pointed out a few benefits of environmental costs accounting to entities as follows: It can be significantly reduced or eliminated as a result of a business decision, environmental cost can be offset by generating revenues through sale of waste, by-products or transferable pollution allowances or licensing of clean technologies,

Better management of environmental costs can result in improved environmental performance and significant benefits to human health as well as business success. Understanding the environmental costs and performance of processes and products can promote more accurate costing and pricing of products and can aid companies in the design of more environmentally preferable processes, products and services for the future. From the foregoing, analyzing it implies that the environmental and social cost accounting ensures accountability and transparency of companies activities which affect different stakeholders.

### **2.1.2 Environmental Disclosure**

Many companies in Nigeria attempt to disclose the measures they take in environmental protection for instance, Air emission information, water discharge information, Solid waste disposal information. Environmental policies; Conservation of natural resources, Recycling plant of waste products, Installation of effluent treatment plant, Anti-litter and conservation campaign; Land reclamation and forestation programs. Environmental accounting is an important issue in the present day financial reporting. It has become necessary for corporations to formulate methods of promoting environmental causes for the present and the future (Oladejo, et al 2019). Green/environmental accounting helps to promote a sustainable future for business which brings green public procurement and green research and development into the big picture (Rout 2010). Poor environmental attitude may have adverse impact on the business finances. It could attract fine if regulation is in place, degradation of land, loss of sales, consumer boycotts as in advanced countries, damage to corporate image etc.

### **2.1.3 Environmental Costs**

Environmental costs are costs that the organization incurs to prevent, monitor and report environmental impacts (KASNEB, 2014). US EPA (1995) defines five tiers of environmental costs namely; convectional, hidden, contingent, image and relationship and societal. These costs are broadly divided into two: private costs and societal costs. Private costs are borne by the firm whereas societal costs are borne by the society. Environmental costs are generally defined narrowly. Environmental costs are those costs incurred in compliance with, or prevention of breach of, environmental laws, regulations and company policy. However, the true environmental costs to a firm can be far broader, including; costs of resources both those directly related to production

and those involved in general business operations; waste treatment and disposal costs; the costs of poor environmental reputation; and the cost of paying an environmental risk premium.

Branco (2007), categorise environmental costs into two major dimensions. Those that directly impact on a company's bottom-line; they referred to as private costs. The other encompasses the cost to individuals, society, and the environment for which a company is not accountable; which they called societal cost. They can be classified as: Conventional Costs; Potentially Hidden Costs; Contingent Costs; and Image and Relationship Costs.

Environmental costs can be analyzed as relating to prevention, appraisal, internal failure and external failure activities (KASNEB 2014). Prevention activities are activities that solve environmental problems before they occur or convert problems into opportunities. Cost of prevention activities are investment costs as they minimize future cost outlays and provide long-lasting benefits. Appraisal activities are activities that monitor the levels of environmental impact, for instance, auditing supplier performance, inspecting processes and products and measuring damage. Internal failure activities are activities that correct mishaps/ breakdowns noticed in appraisal activities. These costs include, cost of cleaning the plant after spillage, occupational health and safety claims of employees. External failure activities are activities which occur when resolution and remediation efforts fall outside the organization management. They include costs of cleaning polluted sites, fines and penalties for environmental damage and reduction of profits as a result of reputational injury (KASNEB, 2014). Environmental disclosure may result in long term sustainability of the firm as there is decreased wastage and improved efficiency hence resulting into low costs. Lethmate & Doost (2000), Labarn (2011) and Iheduru (2018) listed the different categories of environmental cost.

#### **2.1.4. Societal Cost**

These are costs that an organization imposes on others for which they may not be held legally responsible and which cannot be compensated for in the legal system (KASNEB, 2014). For instance, damage caused to a river because of polluted waste water discharge, or to ecosystems from solid waste disposal or to asthmatics because of air pollutant emissions are all examples of external costs for which an industry often does not compensate (Uwaloma, 2011).

#### **2.1.5 Corporate Environmental Ethics**

Many tasks of industry, such as procuring raw materials, manufacturing and marketing, and disposing of wastes, are in large part responsible for pollution. This is not because any industry or company has adopted pollution as a corporate policy. When raw materials are processed, some waste is inevitable. It is usually not possible to completely control the dispersal of all byproducts of a manufacturing process. The cost of controlling waste can be very important in determining a company's profit margins.

Protecting the environment involves meeting the need of both current and future generations. (Freedman and Reed, 2003), examines the various approaches to environmental policy to get businesses to improve their environmental performances, and how business itself influences that policy. These approaches according to him are: the free market approach and self-regulation; the reformist approach and financial incentives; and the interventionist approach and legislation.

#### **2.1.6 Why Environmental Accounting?**

There are several reasons why businesses may consider adopting environmental accounting as part of their accounting system. As stated by Hackson and Milne (1996), these include.

- (i) Possible significant reduction or elimination of environmental costs.
- (ii) Environmental costs and benefits may be over looked or hidden in overhead accounts.
- (iii) Improved environmental performance which may have a positive impact on human health and business success.
- (iv) May result in more accurate costing or pricing of products and more environmentally desired processes.
- (v) Possible competitive advantages as customers may prefer environmentally friendly products and services.

### **2.1.7 The Need for Environmental Reporting**

There has been a growing recognition of the importance of transparency for economic growth and social development. Also, there have been calls from civil society and a broader range of stakeholders for greater transparency and accountability to aid decision-making (Gilani, *et al*, 2011). In Nigeria, an initiative encouraging transparency which can help strengthen reporting in the extractive industry sectors is Nigeria Extractive Industries Transparency Initiative (NEITI) launched in February, 2004. While substantial efforts have already been undertaken in the reporting area, continued action is necessary to strengthen transparency. It is essential that environment accounting reporting should be given a pride of place, as it is relevant to Risk Management, Government, Legal Needs, Accounting Requirements, Competition, Communities, Certification Need, Investors' interest, Contractors and Environmental Groups. If environmental accounting is the enabling vehicle to form a common basis for the users of the environment; both internal and external; the effective vehicle is environmental reporting (Gotherstorm, 2012).

### **2.1.8 Applicability of Environmental Accounting**

Towards the attainment of corporate goal of wealth maximization of a firm, environmental accounting should be applied in its operations - cost allocation, capital budgeting and process/product design. Numerous observers have recognized the complexity, consequences and necessity of rationalizing accounting systems to ensure proper allocation of costs to the sources within the firms that are responsible for such costs (Miler, 1994, World Bank, 2017).

Through the application of environmental accounting; management in particular, and other concerned stakeholders can identify environmental cost. Hence, they are motivated to find ways of reducing or avoiding those costs while at the same time improving environmental quality. This is the conceptual cornerstone of Activity Based Costing (Ali and Rizwan, 2013).

It may be easier to include environmental cost in capital budgeting, if existing processes; system and products are already being assigned environmental costs in cost accounting systems. Integrating environmental accounting into capital budgeting involves:

- Quantifying environmental costs;
- Allocating and projecting environmental costs and benefits;
- Using appropriate financial indicators;
- Setting reasonable time horizon that captures environmental benefits.

The design of a process or product would certainly have significant impact on environmental costs and performance. Hence, many companies are adopting “*Life cycle design*” programmes to take environmental considerations into account at an early stage (Holand and Foo, 2012).

### 2.1.9 Main Environmental Laws in Nigeria

According to Solomon and Lewis (2002), the main environmental laws in Nigeria include:

The National Effluent Limitation Regulation S.1.8 of 1991, which makes it mandatory for industrial facilities to install antipollution equipment.

- (a) The Pollution Abatement in Industries and Facilities Generating Wastes-Regulations S.1.9, of 1999, which among other things impose restriction on the release of toxic substances and stipulates requirements for monitoring of pollution; to ensure that permissible limits are not exceeded as well as spelling out generator's liability.
- (b) The Solid and Hazardous Waste Management Regulation S.1.15 of 1991, which regulates the collection, treatment and disposal of solid and hazardous waste from municipal and industrial sources. The regulation also provides a list of over 1000 hazardous chemicals to be controlled by FEPA by toxicity category
- (c) The Harmful Wastes (Criminal Provisions) Act 42 of 1988, which sentences individuals who trade, dispose, or transport toxic waste in Nigeria or its Exclusive Economic Zone to life imprisonment. Koko toxic dump in Delta State in 1988 gave rise to this Act.
- (d) The Environmental Impact Assessment (EIA) Act 86 of 1992, which provides the procedure for conducting an EIA of any major development. The sectoral guidelines for the EIA Act have now being developed for oil and gas, mining, agricultural, manufacturing and infrastructure sectors.
- (e) The Sea Fisheries and Inland Fisheries Act, 1992, which control access to fisheries resources. The Act includes wide provisions for the regulation of catch species, sizes and fishing zones. The regulation sets minimum net size for both finfish and shrimp.
- (f) Federal Environmental Protection Agency (FEPA) Act, No. 58 of 1988. The Act specifies establishment, membership, functions and powers of the Federal Environmental Protection Agency and National Environmental Standards. In 2007, the National Environmental Standards and Regulations Enforcement Agency (NESREA) Act repealed the FEPA Act. NESREA has amongst other functions the power to enforce compliance with laws, guidelines, policies and standards on environmental matters. An improved environmental regulation resulting from appropriate political institutions is likely to improve environmental sustainability. The worries are how effective has the Agency been in the enforcement of compliance and also of note is the lack of jurisdiction over environmental matters emanating from the Oil and Gas sector.

### 2.2 Theoretical Framework

We might reasonably assume that it is this thinking which produces the sort of voluntary social and environmental disclosure we currently see in the annual reports of organizations. Despite its serious limitations, stakeholder theory does help. It defines the influencing/ influenced groups and explicitly defines what accountability the organization itself is willing to recognize and discharge.

To deny the organization any role in definition of social account seems inappropriate and largely indefensible (Francis, 2010).

As indicated above, he presents stakeholder power as the first dimension of the model. He explains this by indicating that the firm will be responsive to the intensity of stakeholder demands. The more critical the stakeholder resources are to the continued viability and success of the corporation, the greater the expectation that the stakeholder demands will be met.

The second dimension is the firm's strategic posture toward corporate social responsibility activities. Strategic posture describes the mode of response of a company's key decision makers concerning social demands. A company whose management tries to influence their organizations status with key stakeholders through social responsibility activities possesses an active posture.

The third dimension concerns the company's past and current economic performance. The importance placed on meeting social responsibility goals may be secondary to meeting the economic demands that impact directly on the company's continued viability. Economic performance directly affects the financial capability to institute social responsibility programs. Therefore, given certain levels of stakeholder power and strategic posture, the better the economic performance of a company, the greater its social responsibility and disclosures.

### **2.2.2 Legitimacy Theory**

The legitimacy theory, like a number of other theories such as political economy theory, the accountability theory and the stakeholder theory, is considered to be a systems- oriented theory. Within a systems- oriented perspective, the entity is assumed to be influenced by, and in turn to have influence upon the society in which it operates (Watts *et al.*, 2016). Corporate disclosure policies and practices are considered to represent one important means by which the management can influence external perceptions about their organizations. The idea of legitimacy can be directly related to the concept of a social contract, consistent with the view that organizations are part of a broader social system, legitimacy theory assumes that organizations are not considered to have any inherent right to resources, or in fact, to exist.

Organizations exist to the extent that the particular society considers that they are legitimate, and if this is the case, the society confers upon the organization the state of legitimacy. Social contract exists between corporations and individual members of society (Mathews, 2013).

Legitimacy theory directly relies upon the concept of "social contract". Specifically, it is considered that an organization's survival will be threatened if society perceives that the organization has breached its social contract. Where society is not satisfied that the organization is operating in an acceptable or legitimate manner, the society will effectively revoke the organization's contract to continue its operations. This might be evidenced through consumers reducing or eliminating demand for the business products of the organization, factor suppliers eliminate the supply of labour and financial capital to the organization, or constituents lobbying the government for increased taxes, fines or laws to prohibit those actions which do not conform to the expectations of the society.

Legitimacy theory would suggest that whenever managers consider that the supply of the particular resource is vital to organization survival, then they will pursue strategies to ensure the continued supply of the resource. Such strategies may include targeted disclosures, or perhaps, controlling or collaborating with other parties who in themselves are considered to be legitimate.

### 2.2.3 Accountability Theory

Accountability theory is concerned with the relationship between groups, individuals, organizations and the rights to information that such relationships bring about.

Accountability is an act of being responsible or answerable for one's own decisions or actions with the expectation of explaining and justifying them when asked to do so. Simply stated, accountability is the duty to provide an account of the actions for which one is held responsible (Gray *et al.*, 2011). The natures of the relationships and the attendant rights to information are contextually determined by the society in which the relationship occurs. It is absolutely true that some sort of relationship will exist between an organization and each of its stakeholders. Part of this relationship may be economic in nature and the terms determined by the parties as reflecting their relative powers in the relationship. The information flowing through the relationship will be determined by the power of the parties to demand it (a power which, where it exists, could arise from either the intrinsic abilities and power of the groups concerned or from the legislative processes of the society) and/or the willingness/desire of the organization to provide it (Gray *et al.*, 2017).

Society as a whole stands expressing a concern that all such relationships and their attendant information rights should not be left entirely to the parties and particularly to the organization. The most noticeable manifestation of this societal concern is statute law and standards established by statutory bodies such as environmental protection agency and health and safety at work inspectorate (Gray *et al.*, 2017). Additionally, other mechanisms such as voluntary codes of practice will from time to time enter the public domain as an agreed or, at least, negotiated part of the stakeholder relationship to which the organization must be accountable for. These empirical, beyond law determinants of accountability have been referred to as quasi-law. The existing formal laws plus the quasi-laws therefore represent the first and major element in the construction of the organizational obligations and consequently its accountability to the society (Stone, 2015).

It is, of course, naive to assume a simple one-to-one mapping of a society's beliefs about the nature of relationships and the attendant information rights and extant law even with the addition of quasi-law. On the other hand, rights to information must reflect asymmetries of power and essential lags between a society's views and the enactment of law. The rights of information can be argued to comprise both positive (legal) and normative (moral) rights. These moral rights must, in some manner, be added to the positive rights to reflect current views of accountability. However, the study will be anchoring on accountability theory. Accountability theory is concerned with the relationship between groups, individuals, organizations and the rights to information that such relationships bring about. In this study, the accountability theory will help to keep all the necessary books and records that relates to environmental cost.

## 2.3 Empirical Review

Adediran and Alade (2013), researched on the impact of environmental and social Accounting on corporate performance in Nigeria used fourteen (14) randomly selected quoted companies in Nigeria. Data were collected from annual report analyzed using Regression Analysis. They discovered that there is negative relationship between Environmental Accounting and Return on Capital Employed and Earning per Share and a significant relationship between Environmental Accounting and Net Profit Margin cum Dividend per Share. Daniel (2013), who carried out similar study on effect of environmental regulations on financial performance of manufacturing companies in Tanzania. The study used regression analysis with a sample of five (5) selected listed manufacturing companies. The findings indicated that Environmental compliance has no

significant effect on the financial performance of listed financial companies in Tanzania. Odatayo, Adeyemi, and Sajuyigbe (2014), carried out similar study on impact of corporate social responsibility on profitability of Nigerian banks. The study is an empirical investigation which sampled six(6) banks in Nigeria from 2003-2012 using annual report and with the use of simple regression analysis reviewed that there is a significant relationship between expenditure on social responsibility and profitability of banks in Nigeria. Nabhan (2015), surveyed the social accounting disclosures in published annual financial statements. The population consisted of companies listed at the then Nairobi Stock Exchange (NSE) during the period 1990-1994. The companies were further to be located in the Nairobi area. This gave a sample of 43 companies which represented about 77 percent of the population. The study relied on both primary and secondary data. Secondary data was obtained from annual financial statements of sample companies over the period 1990 – 1994. The data was then analyzed through data analysis instruments such as the mean, standard deviation and coefficient of variation. The conclusion reached was that all companies in one way or another engaged in one form of social accounting disclosure.

Okeyo (2004), carried out a study on the rationale and factors that determined the levels of corporate social responsibility (CSR) among firms in Nigeria. The research was carried about between the years 1997 to 2001 using a questionnaire. A sample of eighty three firms was chosen out of which fifty nine responded. Correlation analysis was used to analyse the data. The research found out those firms in Nigeria exhibited high levels of involvement in CSR. This high level of involvement was mainly driven by the use of CSR as a long term strategy. In conclusion average profitability, industry sector and management style were found to be the factors that determined levels of CSR involvement among Nigeria firms.

Oduol (2009), surveyed the social accounting and reporting practices adopted by the mobile phone service providers in Nigeria. The population of the study covered four mobile firms that were operating in Nigeria by the year 2009. The study used both primary and secondary data. Primary data was collected by way of questionnaires. Content analysis method was used in analyzing the data via statistical package for social sciences software. He came to a conclusion that all the companies in the mobile phone services industry participated in social responsibility activities and had put in place to systematically channel their contributions to the communities in which they operated. He further observed that what was reported was what would be regarded as good news and that social reporting practices were generally not accounted for separately but were seen just as an extension of the conventional accounting system.

Obusubiri (2009), in a study on CSR and portfolio performance also found a positive relationship between CSR and portfolio performance. He attributed this relationship to the good corporate image that comes with CSR making investors prefer such companies implying that good CSR behavior has a reputational benefit for the practicing firm.

Jerotich (2013), carried out a research to establish the relationship between corporate social responsibility and financial performance of firms in the Manufacturing, Construction and Allied Sector of the Nairobi Securities. One major finding of the study was that there is a strong relationship between the independent variables (CSR practice, efficiency and capital intensity) used in the model and the dependent variable (ROA).

It can thus be concluded from the findings of the above researches that there is a growing interest in researching about various issues in social and environmental accounting and reporting. In the absence of any guideline or frame work that makes it mandatory to report social issues it remains dominantly voluntary in nature and the information that is disclosed is mainly positive in nature.

Therefore, the researches reviewed give a further understanding of the topic under study and tries to answer the specific objectives of the study.

### **3. METHODOLOGY**

#### **3.1 Research Design**

In this research, *ex post facto* research design will be adopted. This is defined as a “systematic empirical enquiry in which the researcher does not have direct control of independent variables because their manifestations have already occurred. This method measures the impact of events after the events have occurred.

#### **3.2 Nature and source of data**

This refers to where the information originates. In carrying out this study, the researcher will make use of secondary sources of data. The secondary source of data includes textbooks, journals, magazines, internet language.

#### **3.3 Population of the study**

Population of the study refers to the number of people or group of people or object that have similarities in one way or more that form the subject matter of the research project. The population is made up of the Nigeria breweries which include 124 manufacturing firms in Nigeria.

#### **3.4 Sampling of the study**

According to Kothari and Gard(2014), sampling is defined as the selection of some part of an aggregate or totality on the basis of which a judgment or inference about the aggregate or totality is made in other words it is a process of obtaining information about the entire population by examining only one part of it

#### **3.5 Sample size determination**

The study will adopt judgmental sampling in generating its data. However, Nigeria breweries Plc were selected for the study. The study will also be limited to 10 years ranging from 2007 to 2016.

#### **3.6 Statistical technique**

In testing the hypotheses, ordinary least square based simple regression analysis will be used.

#### **3.7 Decision Rule**

Reject null hypotheses when p-value of the f-statistic is less than 0.05 and accept the alternative hypothesis, otherwise we accept the null hypothesis.

#### **3.8 Research Instruments**

The instrument for data collection is annual report and accounts of Nigeria breweries Plc. The annual report will be used to ascertain the values of profit after tax, earnings per share, return on asset, dividend per share and social and environmental cost of the company.

##### **3.8.1 Validity of the Instrument**

Validity refers to the ability of a test to measure what it purports to measure. Aczel and Sounderpandian (2006). The data used for the study is extracted from various annual report of



Nigeria breweries Plc. The instrument is reliable reports on the fact that it was audited by established external auditors and known. They are therefore approved by the relevant government agencies. The annual report are also established to have been used by different financial analyst and other accredited researchers. They are therefore assumed to be valid and reliable for the purpose of this study.

### 3.8.2 Reliability of the Instrument

A test is considered reliable if we get similar result repeatedly Azika (2006). Instrument that will be used by the researcher is reliable on the fact that data that is used will be accurately collected from the Nigeria Breweries Plc Annual Report and other relevant materials.

### 3.9 Model Specification

The models for this study are stated as follows;

$$PAT = f(SC) \text{ -----(1)}$$

$$PAT = \beta_0 + \beta_1 SC + e \text{ -----(2)}$$

Where;

PAT = profit after tax

SC= social cost

$\beta_0$  =Intercept term

$\beta_1$  =Slope coefficient

e = error term

$$EPS = f(SC) \text{ -----(3)}$$

$$EPS = \beta_0 + \beta_1 SC + e \text{ -----(4)}$$

Where;

EPS= earnings per share

SC = social cost

$\beta_0$  =Intercept term

$\beta_1$  =Slope coefficient

e = error term

$$DPS = f(SC) \text{ -----(5)}$$

$$DPS = \beta_0 + \beta_1 SC + e \text{ -----(6)}$$

Where;

DPS= dividend per share

SC = social cost

$\beta_0$  =Intercept term

$\beta_1$  =Slope coefficient

e = error term

$$ROA = f(SC) \text{ ----- (7)}$$

$$ROA = \beta_0 + \beta_1 SC + e \text{ ----- (8)}$$

Where;

ROA= return on asset

SC = social cost

$\beta_0$  =Intercept term  
 $\beta_1$  =Slope coefficient  
 $e$  = error term

## 4. PRESENTATION, ANALYSIS AND INTERPRETATION OF DATA

### 4.1 Presentation of data

Data is a secondary data collected from Nigeria Brewery Financial statement from 2007 to 2016. The data contains values for profit after tax, earnings per share, dividend per share, return on asset and the social cost respectively.

### 4.2 Analysis and interpretation of data

The data was analyzed using statistical package for social sciences (SPSS), and the tool used is the linear regression analyzing the total relationship between the variables being considered to give the required result respectively.

The linear regression gives the following output that is defined below:

**Model Summary:** this table shows the R and R<sup>2</sup> values. The R value represents the simple correlation. The R<sup>2</sup> value indicates how much of the total variation in the dependent variable can be explained by the independent variable.

**ANOVA:** This ANOVA table indicates reports on how well the regression equation fits the data (i.e. predicts the dependent variable). The significance of the study is given using the P-Value on the table. The hypotheses as stated above in 1.5 is used and the decision rule given in 3.7 above stated as reject null hypotheses when p-value of the f-statistic is less than 0.05 and accept the alternative hypothesis, otherwise we accept the null hypothesis.

**Coefficient:** this table helps us get the regression model that best describes the relationship using the coefficient of the variables given in the table.

#### 4.2.1 Output of Linear Regression Analysis for PAT on SC

This R gives as 0.489 which indicates a positively weak correlation.

The R<sup>2</sup> value indicates how much of the total variation in the dependent variable (PAT) can be explained by the independent variable (SC). In this case, 23.9% can be explained, which is small.

#### Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.489 <sup>a</sup>	.239	.144	7408483.223

a. Predictors: (Constant), SC

**H<sub>01</sub>:** Social cost has no significant effect on profit after tax of manufacturing firms in Nigeria.

This ANOVA table indicates reports on how well the regression equation fits the data (i.e. predicts the dependent variable (PAT)). Since  $p < 0.151$  is greater than 0.05, we accept the null hypothesis

and state that Social cost has no significant effect on profit after tax of Nigeria brewery for the relevant years.

#### ANOVA<sup>b</sup>

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1.383E14	1	1.383E14	2.519	.151 <sup>a</sup>
	Residual	4.391E14	8	5.489E13		
	Total	5.773E14	9			

a. Predictors: (Constant), SC

b. Dependent Variable: PAT

#### Coefficients<sup>a</sup>

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.952E7	3.268E6		9.034	.000
	SC	.260	.164	.489	1.587	.151

a. Dependent Variable: PAT

The regression equation is given as  $PAT = 2.952E7 + 0.564 (SC)$

#### 4.2.2 Output of Linear Regression Analysis for EPS on SC

##### Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.452 <sup>a</sup>	.204	.105	1.00340

a. Predictors: (Constant), SC

This R gives as 0.452 which indicates a positively weak correlation.

The  $R^2$  value indicates how much of the total variation in the dependent variable (EPS) can be explained by the independent variable (SC). In this case, 20.4% can be explained, which is small.

#### ANOVA<sup>b</sup>

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	2.066	1	2.066	2.052	.190 <sup>a</sup>
	Residual	8.054	8	1.007		
	Total	10.120	9			

a. Predictors: (Constant), SC

b. Dependent Variable: EPS

**H<sub>02</sub>:** There is no significant relationship between social cost and earnings per share of manufacturing firms in Nigeria.

This ANOVA table indicates reports on how well the regression equation fits the data (i.e. predicts the dependent variable (EPS)). Since  $p < 0.190$  is greater than 0.05, we accept the null hypothesis and state that Social cost has no significant effect on earnings per share of Nigeria brewery in the relevant years.

#### Coefficients<sup>a</sup>

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	3.901	.443		8.814	.000
SC	3.182E-8	.000	.452	1.432	.190

a. Dependent Variable: EPS

$$\text{EPS} = 3.901 + 3.1822\text{E-}8 (\text{SC}) \dots$$

#### 4.2.3 Output of Linear Regression Analysis for DPS on SC

##### Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.216 <sup>a</sup>	.047	-.073	1.60264

a. Predictors: (Constant), SC

This R gives as 0.216 which indicates a positively weak correlation.

The  $R^2$  value indicates how much of the total variation in the dependent variable (DPS) can be explained by the independent variable (SC). In this case, 0.47% can be explained, which is very small.

#### ANOVA<sup>b</sup>

Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	1.005	1	1.005	.391	.549 <sup>a</sup>
Residual	20.548	8	2.568		
Total	21.553	9			

a. Predictors: (Constant), SC

b. Dependent Variable: DPS

**H<sub>03</sub>:** There is no significant relationship between social cost and dividend per share of manufacturing firms in Nigeria.

This ANOVA table indicates reports on how well the regression equation fits the data (i.e. predicts the dependent variable (DPS)). Since  $p < 0.549$  is greater than 0.05, we accept the null hypothesis and state that Social cost has no significant effect on dividend per share of the Nigeria brewery in the relevant years.

#### Coefficients<sup>a</sup>

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	3.100	.707		4.385	.002
SC	2.219E-8	.000	.216	.626	.549

a. Dependent Variable: DPS

$$\text{DPS} = 3.100 + 2.219\text{E-}8 (\text{SC}) \dots\dots$$

#### 4.2.4 Output of Linear Regression Analysis for ROA on SC

##### Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.394 <sup>a</sup>	.155	.050	.064643166775

a. Predictors: (Constant), SC

R tells us that the correlation between ROA and SC is given as 0.394, which implies positively weak correlation and the  $R^2$  value indicates how much of the total variation in the dependent variable (ROA) can be explained by the independent variable (SC). In this case, 15.5% can be explained, which is small.

#### ANOVA<sup>b</sup>

Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	.006	1	.006	1.473	.260 <sup>a</sup>
Residual	.033	8	.004		
Total	.040	9			

a. Predictors: (Constant), SC

b. Dependent Variable: ROA

**H<sub>04</sub>:** Social cost has no significant effect on asset of manufacturing firms in Nigeria.

This ANOVA table indicates reports how well the regression equation fits the data (i.e. predicts the dependent variable (ROA)). Since  $p < 0.260$  is greater than 0.05, we accept the null hypothesis and state that Social cost has no significant effect on returns on assets on the Nigeria brewery for the relevant years.

### Coefficients<sup>a</sup>

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	.201	.029		7.052	.000
SC	-1.737E-9	.000	-.394	-1.213	.260

a. Dependent Variable: ROA

ROA = 0.201 – 1.737E-9 (SC) .....

## 5.1 Summary of Findings

This section is the summary of what was discovered in the analysis and the objective sought to find out the relationship between social cost and performance on Nigerian Brewery. Under the performance, the profit after tax, dividend per shares, earnings per shares, and return on assets were used to define the performance used in this project work.

The  $H_0$  stated in 1.5 was analyzed using linear regression for all the variables considered, and this gave a various results. For the observation of the PAT on SC, we had that the correlation strength was 0.489 which is considered to be positive but weak. And the p-value was greater than the 0.05 so we accepted the null hypothesis that stated that there is no significant effect of social cost on profit after tax. For the observation of the DPS on SC, we had that the correlation strength is considered to be positive but weak. And the p-value was greater than the 0.05 so we accepted the null hypothesis that stated that there is no significant effect of social cost on dividend per shares. For the observation of the EPS on SC, we had that the correlation strength is considered to be positive but weak. And the p-value was greater than the 0.05 so we accepted the null hypothesis that stated that there is no significant effect of social cost on earnings per shares.

For the observation of the ROA on SC, we had that the correlation strength is considered to be positive but weak. And the p-value was greater than the 0.05 so we accepted the null hypothesis that stated that there is no significant effect of social cost on dividend per shares.

And these observations for the years being considered implies that social cost generally on Nigerian brewery's financial statement from 2007 – 2016 was not a major determining factor to the performance.

## 5.2 Conclusion

This study has shown the relationship between social cost and performance on Nigerian brewery. In chapter one, introduction of the topic being worked was done, statement of the problem to be worked on, objectives and aims, then the hypothesis and research questions were stated as well. Chapter two contains the literature review where other works done as regards the study was considered and gave precedence to the tools use in this work.

## 5.3 Recommendation

The society is one factor the company cannot deal without, and social cost has a vital role to play in the valuation of the company in its various locations. So therefore this work recommends that

Nigerian Brewery should consider the environments where their various companies are and play a major role in enhancing lives and properties relating to the indigenes of the locations.

The geographical location should benefit also from what is gotten from the company as such, so it is also recommended that the region of production and industries should engage in more corporate social responsibility such as safety precautions and sensitisation which can be included in the social cost hence affecting the performance of the company.

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# FROM CONVENTIONAL TO COLLABORATIVE: RETHINKING OFFICE LAYOUTS FOR ENHANCED COMMUNICATION AND ADAPTABILITY IN NIGERIA AFTER COVID-19

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## ABSTRACT

*The study examines the relationship between conventional and collaborative office layouts and their correlation with communication and adaptability, drawing on data from 202 respondents in Nigeria. Descriptive statistics reveal moderate correlations between conventional office layouts and communication/adaptability, whereas collaborative layouts demonstrate stronger positive correlations, aligning with prior research. These findings underscore the importance of reevaluating office design strategies to create spaces conducive to effective collaboration and flexibility in navigating post-pandemic uncertainties. Recommendations for organizations include transitioning to collaborative layouts, prioritizing flexibility, leveraging technology for communication, promoting employee engagement, providing training and support, and regularly evaluating and adapting workspace design. Implementing these recommendations can enhance productivity, creativity, and resilience in the evolving work landscape. Ultimately, the study contributes to understanding the significance of office layouts in fostering communication and adaptability post-COVID-19, providing practical insights for organizations seeking to optimize their work environments in the face of ongoing changes.*

**KEYWORDS:** Office layouts, conventional, Collaboration, Communication, Adaptability, Post COVID-19, Workplace design.

## Introduction

Prior to the COVID-19 pandemic, office layouts predominantly followed traditional models characterized by cubicles, private offices, and centralized meeting rooms. These layouts were largely influenced by principles of efficiency and hierarchy, drawing from management theories such as scientific management and bureaucratic organizational structures (Taylor, 1911; Weber, 1922). The cubicle, introduced in the 1960s, became emblematic of this era, offering employees semi-private spaces for focused work while still maintaining a sense of openness within the office (Nelson & Khazanchi, 2008). Private offices, often reserved for managers and executives, reinforced hierarchical structures and delineated status within the organization. Additionally, centralized meeting rooms served as designated spaces for collaboration and decision-making, albeit often underutilized due to the dominance of individual-focused work. These traditional office layouts were designed to optimize individual productivity and control, with limited consideration for employee collaboration, creativity, or well-being (Bosticco & Kunda, 2011). However, as organizational dynamics evolved and research on workplace psychology advanced, criticisms emerged regarding the limitations of these conventional setups. Issues such as reduced communication, diminished employee satisfaction, and decreased innovation became more

apparent, prompting calls for alternative office designs that prioritize collaboration, flexibility, and employee well-being (Hernandez, 2020).

The COVID-19 pandemic has triggered a seismic shift in office environments worldwide, fundamentally altering how work is conducted and office spaces are utilized. With the imperative of social distancing and health safety measures, organizations swiftly embraced remote work arrangements, leading to a rapid transition away from traditional office setups (Merkle, 2020). This shift necessitated a redefinition of the purpose and design of physical office spaces, with a newfound emphasis on collaboration, flexibility, and employee well-being. As a result, companies have been compelled to implement enhanced health and safety protocols within office environments, including increased cleaning, physical distancing measures, and the installation of protective barriers (CDC, 2020). Additionally, the pandemic accelerated the digital transformation of office environments, with organizations investing in technologies to support remote work, such as video conferencing platforms, collaboration tools, and cloud-based solutions (Bughin et al., 2020).

COVID-19 pandemic has underscored the importance of creating flexible and adaptable work environments to ensure business continuity and employee safety (Odu, 2020). As organizations in Nigeria navigate the challenges posed by the pandemic, rethinking office layouts becomes imperative to accommodate remote work arrangements, promote physical distancing, and implement enhanced health and safety measures within office spaces (KPMG, 2020). Moreover, there is growing recognition of the impact of office design on employee productivity, creativity, and well-being. By reimagining office layouts to prioritize collaboration, innovation, and employee comfort, organizations in Nigeria can create environments conducive to high performance and employee satisfaction (Adeniran & Bhamjee, 2019).

This work is to investigate and propose innovative solutions for rethinking office layouts in Nigeria in the aftermath of the COVID-19 pandemic. With the recognition of the profound impact of office design on employee well-being, productivity, and organizational performance, this study aims to address the unique challenges faced by Nigerian organizations in adapting their office environments to the changing dynamics of work. By examining global trends, local contexts, and emerging best practices, the study seeks to provide insights and recommendations that can inform the development of flexible, collaborative, and adaptable office layouts tailored to the needs of Nigerian businesses. Ultimately, the goal is to contribute to the creation of workspaces that promote communication, creativity, and resilience, positioning organizations in Nigeria for long-term success in the post-pandemic era. Due to these facts, this study specifically sought to address the following questions:

1. How do conventional office layouts in Nigeria hinder communication and adaptability in post-COVID-19 work environments?
2. How do collaborative office layouts in Nigeria contribute to increased communication and adaptability in post-COVID-19 work environments?

## **Hypotheses**

H<sub>0</sub>: Conventional office layouts in Nigeria do not hinder communication and adaptability in post-COVID-19 work environments.

H<sub>0</sub>: Collaborative office layouts in Nigeria do not contribute to increased communication and adaptability in post-COVID-19 work environments.

## Literature Review

Office layouts encompass a range of designs and configurations that dictate how physical workspaces are organized to support various functions and activities within an organization. Traditional office layouts typically feature cubicles or individual offices arranged in a hierarchical fashion, reflecting a focus on individual work and privacy (Nelson & Khazanchi, 2008). In contrast, open-plan layouts emphasize collaboration and interaction by removing physical barriers between employees and fostering a sense of shared space (Richardson et al., 2017). Hybrid layouts combine elements of both traditional and open-plan designs, offering a balance between individual work areas and communal spaces to accommodate diverse work styles and preferences (Ponte & Carneiro, 2015). Open-plan layouts feature a large, open space where employees work together without physical barriers, promoting interaction and flexibility (Zhang & Bartol, 2010). Cubicle farms, on the other hand, consist of individual workstations separated by partition walls, providing employees with a degree of privacy while still maintaining a sense of openness within the office (Nelson & Khazanchi, 2008).

Additionally, the emergence of flexible and activity-based layouts allows employees to choose from a variety of work settings based on the specific tasks they need to accomplish, promoting autonomy and flexibility in how work is performed (Leesman, 2018). Cellular offices, characterized by enclosed individual offices, prioritize privacy and concentration but may inhibit communication and collaboration among team members (Zimring et al., 2000). However, the landscape of office layouts has evolved in response to changing organizational needs and advancements in workplace design theory. Emerging trends include activity-based working (ABW), which emphasizes providing employees with a variety of work settings tailored to different tasks and preferences (De Been et al., 2015). This approach aims to optimize space utilization, enhance employee well-being, and foster collaboration by offering a range of environments conducive to focused work, collaboration, and relaxation. Another notable trend is the integration of biophilic design principles, which incorporate natural elements such as greenery, natural light, and views of nature into office spaces to improve employee satisfaction, creativity, and productivity (Browning et al., 2014).

The shift towards collaborative workspaces globally reflects a broader evolution in organizational culture and workplace design, driven by the recognition of the benefits of collaboration for innovation, creativity, and productivity (O'Neill & Xiao, 2018). Collaborative workspaces are characterized by open layouts, flexible furniture arrangements, and shared amenities, fostering spontaneous interactions and interdisciplinary collaboration among employees (Carayannis & Campbell, 2006). This shift is underpinned by research demonstrating the positive impact of collaboration on organizational performance, employee satisfaction, and retention (Hinds & Mortensen, 2005). Moreover, technological advancements, such as video conferencing, cloud computing, and project management tools, have facilitated remote collaboration and enabled teams to work seamlessly across geographical locations (Bughin et al., 2018).

Several factors are influencing office layout design post-COVID-19, reshaping the traditional workplace landscape to adapt to the new normal. Firstly, health and safety considerations have become paramount, leading to the implementation of physical distancing measures, increased ventilation, and the incorporation of hygiene stations within office spaces to minimize the risk of virus transmission (CDC, 2020). Flexible and modular furniture arrangements are being adopted to enable easy reconfiguration of workspaces in response to changing public health guidelines and employee needs (Steelcase, 2021). Additionally, the widespread adoption of remote work during the pandemic has accelerated the shift towards hybrid work models, where employees split their time between working from home and the office. This has prompted organizations to reevaluate

the purpose of physical office spaces, with a focus on creating environments that foster collaboration, team cohesion, and employee well-being (Haworth, 2020). As a result, office layouts are being redesigned to prioritize shared amenities, informal meeting spaces, and technology-enabled collaboration zones that facilitate seamless communication and connectivity among remote and in-office workers (Knoll, 2021). Furthermore, technological advancements play a crucial role in shaping office layout design post-COVID-19. The integration of smart building technologies, touchless interfaces, and digital tools for room booking and occupancy management are enabling organizations to create safer and more efficient work environments (JLL, 2021). Additionally, the use of data analytics and sensors allows organizations to monitor occupancy levels, air quality, and employee interactions, providing valuable insights for optimizing space utilization and enhancing the overall workplace experience (CBRE, 2021).

Several case studies highlight successful office layout transitions that have occurred in various organizations, showcasing different approaches and strategies for adapting to changing work dynamics. One notable example is Microsoft's redesign of its headquarters in Redmond, Washington, known as the "Modern Workplace Transformation" project. Microsoft transformed its traditional office layout into a more flexible and collaborative environment, featuring open workspaces, adjustable furniture, and advanced technology infrastructure to support remote collaboration and innovation. The redesign aimed to create a more inclusive and dynamic workplace that fosters creativity, teamwork, and employee well-being (Microsoft, 2021). Another case study is the transition of Airbnb's headquarters in San Francisco to a "Flexible Workspace" model. Airbnb redesigned its office layout to accommodate diverse work styles and preferences, incorporating a mix of open workspaces, private meeting rooms, and informal collaboration areas (Airbnb, 2021). The company prioritized flexibility and autonomy, allowing employees to choose where and how they work based on their tasks and preferences. This transition enabled Airbnb to enhance collaboration, communication, and employee satisfaction while supporting remote work and distributed teams. Additionally, the transformation of Google's offices worldwide provides insights into successful office layout transitions. Google's "Activity-Based Working" approach emphasizes providing employees with a variety of work settings tailored to different tasks and work styles (Google, 2021).

Nigeria grapples with frequent power outages, forcing businesses to invest in costly alternative power sources such as generators or inverters, significantly inflating operational costs and affecting work continuity (Agbana & Madu, 2020). Moreover, inadequate infrastructure, including poor road networks and limited access to high-speed internet, hampers communication and connectivity within and outside the office premises, hindering collaboration and timely completion of tasks (Obansa, 2019). Another pressing challenge faced by conventional office setups in Nigeria is bureaucratic red tape and corruption. Cumbersome bureaucratic processes delay decision-making and hinder business operations, stifling growth and innovation (Ezenekwe, 2019). Additionally, rampant corruption permeates various levels of government and business transactions, leading to inefficiencies, distrust, and increased operational risks for companies (Adelakun & Ajisafe, 2021). These issues not only impede the ease of doing business but also deter foreign investments, exacerbating the country's economic challenges. Furthermore, the lack of skilled manpower and inadequate training pose significant challenges to conventional office setups in Nigeria. Despite the country's large population, there is a shortage of qualified professionals in various fields, particularly in technology and specialized industries (Egunjobi & Olorunniwo, 2020). Additionally, limited access to quality education and vocational training programs exacerbates the skills gap, leaving businesses struggling to find and retain competent employees (Onodugo & Eze, 2019). Addressing these challenges necessitates comprehensive

reforms in the education system and workforce development initiatives to equip Nigerians with the requisite skills for the modern workplace (Nweke & Akinlabi, 2021).

The COVID-19 pandemic has catalyzed significant changes in office layouts across Nigeria, reshaping traditional work environments to prioritize employee health and safety. One of the most notable impacts has been the adoption of remote work arrangements and flexible schedules to adhere to social distancing guidelines and reduce the risk of virus transmission (Adeyemi & Omoare, 2020). Consequently, many companies have implemented hybrid models, allowing employees to work from home part-time while utilizing redesigned office spaces for collaborative activities and meetings (Alao et al., 2021). This shift towards remote and flexible work arrangements has necessitated the reconfiguration of office layouts to accommodate new technological infrastructure and support seamless communication between remote and in-office teams (Odukoya & Eguavoen, 2020). Moreover, the COVID-19 pandemic has prompted the implementation of strict health and safety protocols in office layouts throughout Nigeria. Companies have invested in measures such as installing hand sanitizing stations, implementing regular disinfection protocols, and reconfiguring workstations to ensure adequate spacing between employees (Ojo & Akinlabi, 2021). Additionally, the adoption of touchless technology, such as automatic doors and motion-sensing lights, has become more prevalent to minimize surface contact and reduce the risk of viral transmission (Oyedele et al., 2020). These changes reflect a heightened emphasis on employee well-being and underscore the importance of creating healthy and hygienic work environments in the wake of the pandemic. Furthermore, the COVID-19 pandemic has accelerated the adoption of agile and adaptable office layouts in Nigeria. Companies are prioritizing modular furniture and flexible workspace designs that can easily be reconfigured to accommodate changing needs and evolving health guidelines (Ogbomon et al., 2021). This shift towards agile office layouts not only enhances employee safety and comfort but also fosters collaboration, creativity, and innovation (Adeniji & Ewuoso, 2020).

## **Theoretical Framework**

### **Systems Theory**

Systems Theory is a comprehensive framework for understanding the interconnectedness and dynamics of complex systems across various disciplines, including sociology, psychology, biology, and engineering. At its core, Systems Theory posits that systems consist of interconnected elements that interact with each other and their environment to produce emergent properties and behaviors. Developed by Ludwig von Bertalanffy in the 1940s, Systems Theory emphasizes the holistic perspective, viewing systems as more than the sum of their parts. It underscores the importance of feedback loops, hierarchical organization, and the exchange of information within systems. Key concepts within Systems Theory include system boundaries, inputs and outputs, feedback mechanisms, equilibrium, and adaptation. This theoretical framework has been widely applied in diverse fields, ranging from organizational management to ecological studies. In organizational contexts, Systems Theory provides insights into the complex relationships between individuals, groups, and the larger organizational structure, highlighting the importance of communication, collaboration, and adaptation for achieving organizational goals (Scott & Davis, 2007). Moreover, Systems Theory has been instrumental in understanding ecological systems, emphasizing the interdependence of species within ecosystems and the dynamic balance necessary for ecosystem resilience and sustainability (Capra, 1997). Overall, Systems Theory offers a versatile approach for analyzing and addressing complex phenomena across various domains, contributing to a more holistic understanding of interconnected systems and their behaviors.

By incorporating Systems Theory principles, organizations in Nigeria can redesign office spaces to promote open communication, flexibility, and innovation. This may involve creating multifunctional areas that facilitate both formal meetings and informal interactions, implementing flexible work arrangements to accommodate diverse employee needs, and leveraging technology to enable seamless collaboration across different locations (Kendrick, 2020). Furthermore, Systems Theory highlights the importance of feedback loops and adaptation in response to changing environmental conditions. In the context of office layout redesign, this entails continuously gathering feedback from employees regarding their preferences, needs, and challenges in the new work environment. By fostering a culture of open communication and participation, organizations can harness the collective intelligence of their workforce to iteratively improve office layouts and policies. Additionally, Systems Theory underscores the interconnectedness between the physical workspace and organizational culture, recognizing that changes in one aspect can have ripple effects throughout the entire system. Therefore, efforts to reconfigure office layouts should be accompanied by initiatives to foster a collaborative and inclusive organizational culture that values transparency, trust, and mutual respect (Flood & Jackson, 1991). Through the application of Systems Theory principles, organizations in Nigeria can create office environments that not only promote communication and adaptability but also enhance employee engagement, creativity, and overall well-being in the post-COVID-19 era.

## **Methodology**

This research adopts survey design methodology, combining qualitative and quantitative data collection methods. The study population comprises of 50 organizations selected from the south west region of Nigeria. A total of 205 respondents, who were identified as employees of these organizations, were randomly selected for the study. The research employs convenience and snowball sampling techniques for participant selection. The research used a questionnaire as a means of assessing how conventional and collaborative office layouts in Nigeria hinders or increased communication and adaptability in Nigeria After COVID-19. The tools were used to gather data pertaining to the dependent and independent variables included in the investigation. The research used Likert's (1932) modified scale of measuring. Each variable was assessed using a 4-point internal scale of measurement, consisting of the following categories: Strongly Agreed (SA), Agreed (A), Disagree (D) and Strongly Disagreed (SD) respectively. The questionnaires were distributed using Google Forms and administered to sampled respondents via WhatsApp group and email and their responses were included in the study. The snowball sampling method prevented researchers from visiting organizations in person to collect information. As participants were already linked to one another, the snowball method was effective in locating them. The researcher used the Pearson Product Moment Correlation (PPMC) analysis in order to assess the reliability of the instruments. During the trial testing phase, a sample of 50 respondents who were not originally included in the main study were randomly chosen from the study region. The selected respondents were then subjected to the administration of the instruments. Respondents who properly filed and submitted the e-questionnaire 202 and were all included in the study. The collected data were analyzed using appropriate statistical technique such as regression analysis to test the null hypothesis.

## **Data Analysis and Discussion of Findings**

**Question 1:** How do conventional office layouts in Nigeria hinder communication and adaptability in post-COVID-19 work environments?

### Descriptive Statistics

Variables	N	Mean	Std. Deviation
Conventional office layouts	202	2.98	2.033
Communication and adaptability	201	2.23	1.545

**Hypothesis 1:** Conventional office layouts in Nigeria do not hinder communication and adaptability in post-COVID-19 work environments.

### Correlations

Variables		Conventional office layouts	Communication and adaptability
Conventional office layouts	Pearson Correlation	1	.324**
	Sig. (2-tailed)		.675
	N	202	201
Communication and adaptability	Pearson Correlation	.324**	1
	Sig. (2-tailed)	.675	
	N	201	201

\*\*. Correlation is significant at the 0.01 level (2-tailed).

**Question 2:** How do collaborative office layouts in Nigeria contribute to increased communication and adaptability in post-COVID-19 work environments?

### Descriptive Statistics

Variables	N	Mean	Std.
Collaborative office layouts	202	2.55	1.784
Communication and adaptability	201	2.06	1.418

**Hypothesis 2:** Collaborative office layouts in Nigeria do not contribute to increased communication and adaptability in post-COVID-19 work environments.

### Correlations

		Collaborative office layouts	Communication and adaptability
Collaborative office layouts	Pearson Correlation	1	.437**
	Sig. (2-tailed)		.000
	N	202	202
Communication and adaptability	Pearson Correlation	.437**	1
	Sig. (2-tailed)	.000	
	N	202	202

\*\*. Correlation is significant at the 0.01 level (2-tailed).

For research question 1 and hypothesis 1, it shows the descriptive statistics of conventional office layouts and communication and adaptability in the post COVID-19 work environments with a mean response of 2.98 and standard deviation of 2.033 for Conventional office layouts and a mean response of 2.23 and standard deviation of 2.025 for communication and adaptability from a total



of 202 number of respondents. Carefully observing the standard deviation values, there is no much difference in terms of the standard deviation scores. The implication of this is that there is almost the same variability of data points between the dependent and independent variables. The Pearson Correlation Coefficient for conventional office layouts and communication and adaptability in the post COVID-19 work environments has the correlation coefficient to be 0.324. This value indicates that correlation is significant at 0.05 level (2tailed) and that implied that there is a relationship between conventional office layouts and communication and adaptability ( $r = 0.324$ ). The computed correlations coefficient is greater than the table value of  $r = 0.159$  with 202 degrees of freedom ( $df. = n-2$ ) at alpha level for a two-tailed test ( $r = 0.324, p < 0.05$ ). This finding is in agreement with the work of (Adeloye, 2019; Ezejiofor & Okorie, 2021) who stated that with the onset of the COVID-19 pandemic, traditional setups have only exacerbated existing challenges. The need for physical distancing and hygiene protocols has further isolated employees, making it difficult for them to collaborate effectively and adapt to rapidly changing work environments. Moreover, the rigid nature of conventional layouts often limits the flexibility needed to accommodate new working arrangements, such as hybrid or remote work options, which have become increasingly popular in the wake of the pandemic. As a result, many organizations in Nigeria are reconsidering their office design strategies to create spaces that foster better communication and adaptability post-COVID-19.

For research question 2 and hypothesis 2, shows the descriptive statistics of collaborative office layouts and communication and adaptability in the post COVID-19 work environments, with a mean response of 2.55 and standard deviation of 1.784 for collaborative office layouts and a mean response of 2.06 and standard deviation of 1.418 for communication and adaptability from a total of 202 number of respondents. Carefully observing the standard deviation values, there is no much difference in terms of the standard deviation scores. The implication of this is that there is almost the same variability of data points between the dependent and independent variables. The Pearson Correlation Coefficient for collaborative office layouts and communication and adaptability in the post COVID-19 work environments has the correlation coefficient to be 0.437. This value indicates that correlation is significant at 0.05 level (2tailed) and that implied that there is a relationship between collaborative office layouts and communication and adaptability ( $r = 0.437$ ). The computed correlations coefficient is greater than the table value of  $r = 0.159$  with 202 degrees of freedom ( $df. = n-2$ ) at alpha level for a two-tailed test ( $r = 0.437, p < 0.05$ ). This finding is in agreement with the work of Olorunfemi & Salau (2020) who opined that collaborative office layouts offer a promising solution to the communication and adaptability challenges faced by Nigerian workplaces in the post-pandemic era. These layouts prioritize open spaces, shared work areas, and collaborative zones that encourage interaction among employees. By fostering a sense of community and interconnectedness, collaborative layouts facilitate spontaneous communication and idea-sharing, essential for driving innovation and problem-solving in today's fast-paced work environments. Furthermore, the adaptable nature of these layouts allows for easy reconfiguration to accommodate changing needs and working preferences, whether it be accommodating physical distancing measures or supporting hybrid work models. As organizations in Nigeria adapt to the new normal, collaborative office layouts present a viable option for promoting communication and adaptability while ensuring the health and safety of employees in the post-COVID-19 era.

## Conclusion

In conclusion, the findings from this study shed light on the crucial relationship between office layouts and communication and adaptability in the post-COVID-19 work environments. The analysis of conventional office layouts revealed a moderate positive correlation with communication and adaptability, indicating that traditional setups may pose challenges to effective collaboration and flexibility, particularly exacerbated by the pandemic's constraints on physical

proximity and interaction. Conversely, collaborative office layouts demonstrated a stronger positive correlation with communication and adaptability, aligning with prior research suggesting that open, shared spaces foster a conducive environment for spontaneous communication and idea exchange. These layouts not only promote connectivity among employees but also offer flexibility to adapt to evolving work dynamics, essential in navigating the uncertainties brought about by the pandemic.

The implications of these findings are significant, especially for organizations in Nigeria and beyond, as they navigate the transition to post-pandemic work settings. It underscores the importance of reevaluating office design strategies to create spaces that not only prioritize health and safety but also facilitate effective communication and adaptability in the face of ongoing changes. Moving forward, it is essential for organizations to consider adopting more collaborative and flexible office layouts tailored to their specific needs and workforce dynamics. By embracing innovative approaches to workspace design, businesses can enhance employee engagement, foster creativity, and ultimately thrive in the evolving landscape of work post-COVID-19.

## **Recommendations**

Based on the findings and conclusions drawn from the study on office layouts and communication/adaptability in the post-COVID-19 era, the researchers drawn the following recommendations:

- Consider transitioning from traditional, compartmentalized office setups to more collaborative layouts that promote interaction and idea-sharing among employees. This may involve creating open workspaces, shared areas, and collaborative zones to foster a sense of community and interconnectedness.
- Design office spaces with flexibility in mind to accommodate changing needs and working preferences. This could involve incorporating modular furniture, flexible seating arrangements, and adaptable layouts that can easily be reconfigured as necessary, whether to support physical distancing measures or hybrid work models.
- Leverage technology to facilitate communication and collaboration in both physical and remote work environments. Implement tools such as video conferencing platforms, project management software, and collaboration apps to bridge the gap between in-person and virtual interactions, enabling seamless communication and teamwork regardless of location.
- Create opportunities for employees to engage with one another and contribute to the organization's goals. This could involve organizing team-building activities, collaborative projects, and cross-functional initiatives that encourage collaboration, creativity, and innovation.
- Offer training programs and resources to help employees adapt to new office layouts and work dynamics. Provide guidance on how to effectively utilize collaborative spaces, communicate with colleagues, and navigate changes in the work environment to maximize productivity and satisfaction.

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# IMPACT OF PARAMETRIC DESIGN ON ENVIRONMENTAL SUSTAINABILITY AND ECONOMIC GROWTH

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## ABSTRACT

*Parametric design, which employs algorithms to generate architectural forms according to predetermined parameters, has become a revolutionary method in architecture and construction, greatly influencing environmental sustainability. This study examines how parametric design can improve environmental sustainability by optimising building performance, reducing material waste, and minimising energy consumption. Parametric design utilises data-driven techniques to not only create visually pleasing structures but also encourage environmental stewardship. This research cited some structures or buildings to demonstrate the role of parametric design tools in enhancing energy efficiency, optimising material usage, and integrating renewable energy systems. These illustrate that the implementation of parametric design can result in significant decreases in energy consumption and material inefficiency, thereby promoting the objectives of sustainable development. The paper also examines the potential economic advantages of integrating parametric design, such as decreased operational expenses, improved building performance, and assistance in achieving net-zero energy objectives. Although parametric design faces obstacles such as expensive upfront expenses and the requirement for specialised expertise, its capacity to promote sustainability in the construction industry is clearly apparent. With advancements in technology and increased data availability, further highlights that parametric design is expected to have a growing influence in the development of environmentally sustainable and economically feasible buildings.*

**KEYWORDS:** Parametric Design, Environmental Sustainability, Circular Economy, Resource Efficiency, Economic Growth

## Introduction

Parametric design represents a significant shift from traditional architectural design methods. Utilizing algorithms and computational tools, designers can explore a vast array of forms, structures, and layouts based on predefined parameters such as material properties, environmental conditions, and spatial constraints (Oxman, 2008; Gane & Haymaker, 2021). This approach enables the creation of highly optimized and sustainable buildings that respond dynamically to their environment. This paper aims to assess the impact of parametric design on environmental sustainability, with a focus on its potential impact of economic growth by considering factors like reduce energy consumption, optimize material use, and enhance overall building performance.

Parametric design is a digital design methodology that allows designers to manipulate and analyse complex geometries through algorithms and parameters. Unlike conventional design processes,

which often rely on static blueprints and drawings, parametric design is dynamic, allowing for continuous iteration and optimization (Tadesse et al., 2023). The key features of parametric design include:

- a) **Algorithmic Modelling:** Utilizing algorithms to define relationships between different elements of a design (Al-Douri & Mohammed, 2023; Lee et al., 2022).
- b) **Data-Driven Decision Making:** Leveraging environmental data (e.g., sunlight, wind, and temperature) to inform design choices.
- c) **Optimization Capabilities:** Iteratively refining design parameters to achieve the best possible outcomes for energy efficiency, material usage, and environmental impact (Burry, 2011; Elhassan et al., 2023; Kwon et al., 2024).

The Al Bahar Towers in Abu Dhabi serve as a prime example of how parametric design can be used to improve environmental sustainability. The building features a responsive facade that adjusts to the sun's position, reducing solar heat gain. This advanced shading system, created through parametric modelling, significantly lowers the building's energy consumption for cooling in the hot desert climate (Pachauri & Meyer, 2014; Hassan & Ahmed, 2022). Another notable example is One Angel Square in Manchester, UK, which utilizes parametric design to achieve sustainability goals. The building's design is optimized to maximize natural light and ventilation, thereby reducing energy consumption. The use of parametric design tools allowed for the optimization of the facade, creating a thermally efficient envelope that minimizes the need for heating and cooling (Schlueter & Thesseling, 2010; Perez-Garcia et al., 2023). Parametric design also enables the seamless integration of sustainable energy sources into buildings. For instance, parametric models can determine the optimal placement and orientation of solar panels to maximize energy generation throughout the year. This approach is crucial for developing net-zero energy buildings, which are capable of producing as much energy as they consume (Oxman, 2008; Jiang et al., 2024).

## The Key Roles of Parametric Designs

### 1. Energy Efficiency

Parametric design can significantly enhance energy efficiency in buildings. By simulating various environmental conditions and optimizing building orientation, facade design, and natural ventilation systems, parametric models can reduce the reliance on artificial heating, cooling, and lighting (Schlueter & Thesseling, 2010; Rossi et al., 2022). This aligns with the principles of passive design, which uses the building's architecture to maintain thermal comfort without relying on mechanical systems.

Parametric tools can optimize the placement and size of windows to maximize natural daylight while minimizing heat gain, thus reducing the energy load for lighting and cooling. These simulations can also optimize the shape and form of buildings to enhance airflow and natural ventilation, reducing the need for HVAC systems.

### 2. Material Optimization

One of the most impactful aspects of parametric design is its ability to minimize material waste through precise optimization. Traditional construction methods often result in significant waste due to imprecise calculations and manual adjustments. Parametric design, however, allows for exact specifications of material quantities and cuts, reducing waste and cost (Oxman, 2008;

Mandorli et al., 2023). This approach is particularly beneficial when using sustainable materials, as parametric tools can analyse the structural properties of various materials and optimize their use in construction. By doing so, the design not only reduces waste but also promotes the use of environmentally friendly materials.

### **3. Building Performance**

Parametric design tools enable the creation of high-performance buildings that respond to their environment in real time. Adaptive facades designed using parametric models can change their configuration based on the time of day, weather conditions, or occupancy levels. This dynamic adaptability improves the overall energy performance of the building and aligns with sustainable development goals related to climate action and responsible consumption (Burry, 2011; Antoniadis et al., 2024).

### **4. Carbon Footprint**

The construction industry is a major contributor to greenhouse gas emissions, accounting for approximately 38% of global energy-related CO<sub>2</sub> emissions (United Nations, 2019). Parametric design can help reduce the carbon footprint of buildings by optimizing energy use, reducing material waste, and incorporating renewable energy systems into the design (Yao & Zhang, 2023).

## **Environmental Sustainability and Economic Growth**

Environmental sustainability is the responsible management and utilisation of natural resources to satisfy current requirements without prejudicing the capacity of future generations to satisfy their own needs. The protection of ecosystems, the responsible use of resources, and the minimisation of environmental degradation are all part of this process. The relationship between environmental sustainability and economic growth has garnered substantial attention as concerns regarding climate change, biodiversity loss, and pollution continue to escalate. The relationship is intricate and multifaceted, as economic growth can be either stimulated or constrained by environmental sustainability, contingent upon the context and approach. This paper investigates the benefits, challenges, and potential pathways to achieving a balance between ecological health and economic development in order to investigate the impact of environmental sustainability on economic growth.

The conventional viewpoint on economic growth centres around augmenting production, consumption, and GDP. Nevertheless, this growth model frequently results in the excessive utilisation of natural resources, degradation of the environment, and pollution, all of which can have detrimental long-term impacts on economic stability and quality of life. On the other hand, environmental sustainability focusses on optimising resource utilisation, reducing waste, and safeguarding ecosystems. Effective implementation of sustainability practices can stimulate economic growth through the facilitation of innovation, enhancement of resource efficiency, and generation of new markets and employment opportunities in environmentally-friendly industries (Stern, 2018).

The relationship between environmental sustainability and economic growth can be classified into three primary categories:

- a) Trade-offs: Environmental regulations have the potential to restrict specific economic activities, such as mining or logging, which could result in a temporary slowdown of economic growth.



- b) Synergies: The implementation of sustainable practices, such as the adoption of renewable energy, can result in economic advantages, such as lower energy expenses, enhanced public health, and the creation of employment opportunities.
- c) Transition dynamics refer to the process of economies shifting towards sustainable practices. This transition may involve incurring short-term costs, but it can lead to long-term benefits in terms of resilience and innovation, as stated by the OECD in 2020.

## **Benefits of Environmental Sustainability for Economic Growth**

1. Innovative and environmentally friendly technologies.  
Environmental sustainability promotes the development of green technologies and sustainable practices, which can stimulate economic expansion. Investments in renewable energy technologies, such as solar, wind, and hydropower, have resulted in the emergence of new industries and markets. IRENA reported that the global renewable energy industry employed 12 million individuals in 2020, and this figure is projected to experience substantial growth in the future (IRENA, 2021). These advancements not only contribute to the reduction of carbon emissions but also foster energy self-sufficiency, lower energy expenses, and stimulate economic development.
2. Resources Efficiency  
Implementing sustainability practices frequently results in enhanced resource management and increased efficiency. Adopting circular economy models, which prioritise recycling, reuse, and waste reduction, can effectively lower production costs and decrease reliance on raw materials. Businesses that implement circular economy strategies can decrease their expenses for resources and waste management, resulting in higher profitability and competitiveness. According to McKinsey & Company, the circular economy has the potential to create trillion dollars in economic advantages by 2030 by improving resource efficiency and promoting innovation (McKinsey & Company, 2016).
3. Employment Generation  
The shift towards a sustainable economy has the potential to generate substantial employment opportunities across multiple industries, such as renewable energy, sustainable agriculture, waste management, and green construction. According to a report from the World Economic Forum (WEF), the transition to a more environmentally friendly economy has the potential to generate more than 24 million jobs worldwide by 2030. This is due to the growing demand for sustainable products and services (WEF, 2018). Additionally, green jobs frequently offer higher salaries and improved working conditions, thereby contributing to the overall economic expansion and stability.
4. Improve Public Health  
Implementing environmental sustainability practices, such as mitigating air and water pollution, preserving natural resources, and advocating for sustainable agriculture, can result in substantial improvements in public health. Improved air and water quality decrease the occurrence of respiratory and water-related illnesses, leading to reduced healthcare expenses and enhanced workforce efficiency. According to the World Health Organisation (WHO), taking measures to decrease environmental risks could potentially prevent more than 13 million deaths every year. This would have significant economic advantages as it would reduce healthcare expenses and enhance the productivity of workers (WHO, 2018).

Achieving a balance between economic growth and environmental protection remains a critical challenge. Rapid economic growth in developing countries often comes at the expense of environmental degradation. For instance, deforestation for agricultural expansion, mining, and urban development can lead to biodiversity loss, soil erosion, and water pollution, undermining

long-term economic prospects. Policymakers must carefully balance development needs with environmental protection to ensure sustainable economic growth (Dasgupta, 2021).

The Global Commission on the Economy and Climate estimates that investing in sustainable infrastructure could yield a global economic gain of \$26 trillion by 2030 (The New Climate Economy, 2018). Revenues generated from such policies can be reinvested in sustainable development projects, further stimulating economic growth (Stiglitz & Stern, 2017). Promoting resource efficiency, reducing waste, and encouraging the use of sustainable products and services. Governments, businesses, and consumers all play a role in fostering a culture of sustainability that supports economic growth while minimizing environmental impacts (UNEP, 2020). Governments and private sectors must collaborate to fund and promote innovations in renewable energy, sustainable agriculture, waste management, and other areas. Public-private partnerships can facilitate knowledge sharing and accelerate the commercialization of green technologies, leading to economic growth and environmental sustainability (OECD, 2021).

## **Conclusion**

Parametric design is a paradigm shift in building and architecture, benefiting economic growth and sustainability. Its ability to boost building performance, cut waste, and boost energy efficiency shows how well it supports sustainable development.

Sustainability is greatly impacted by parametric design. Parametric design uses algorithms to simulate environmental conditions and fine-tune design parameters to create more resource- and energy-efficient structures. Parametric design also reduces material waste by precisely defining quantities and cuts. Parametric design ensures accurate material use, unlike manual adjustments and inaccurate calculations that waste a lot in traditional construction. This accuracy boosts sustainability and cost-effectiveness.

Environmental sustainability and economic growth interact in a complex but beneficial way. Sustainable practices may incur short-term costs, but they have long-term economic benefits. Sustainable practices and green technology investments boost innovation and market growth. For instance, the renewable energy industry has created millions of jobs and is expected to grow, supporting economic growth. Sustainability also improves resource efficiency, lowering costs and increasing competitiveness. Recycling and waste minimisation in circular economy models can drastically reduce production costs and raw material dependence. Circular economy projections suggest significant economic benefits by 2030. Environmental sustainability also reduces pollution-related illnesses and diseases, lowering healthcare costs and increasing worker productivity.

However, balancing environmental protection and economic growth remains difficult. Rapid economic growth, especially in developing nations, can degrade the environment. Policymakers must strike this balance for long-term economic stability and sustainable development. Sustainable infrastructure is needed to unlock environmental sustainability's economic potential. The Global Commission on the Economy and Climate expects these investments to generate high economic returns and fund sustainable development. Sustainability and environmental protection require collaboration between governments, businesses, and consumers.

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# **RELEVANCE OF HUMAN RESOURCE MANAGEMENT ON ORGANIZATIONAL PERFORMANCE: A STUDY OF INNOSON GROUP OF COMPANIES ENUGU STATE SOUTH EAST NIGERIA**

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## **ABSTRACT**

*This study aims at investigating on importance of human resource management on organizational performance, of INNOSON Group of Companies in Enugu. Primary data was employed in this study. Two hundred and forty (240) respondents were used. A survey research design was employed and a simple random sampling technique was adopted. The findings revealed that HRM practices have a significant relationship on employee's turnover. The study therefore recommends that training and development which contribute to the profitability of the organisation should be uphold seriously by Innoson.*

## **INTRODUCTION**

### **Background of Study**

The management of people within the organization has become an increasingly recognized important focus for researchers, over the past decades in the history of businesses in West Africa and the globe at large. Organizations are seeing and gaining significantly from the dividends of human resource development, practices and management, by becoming more aware of important role human resource management plays in the success of their organizations to achieve the best set goal / target and colossal performance. As a result, organizations are becoming more employee-centric by focusing on enhancing employees' engagement and organizational commitment.

It is important for organization to adopt human resources management (HRM) system that optimizes workforce as it enables organization to achieve competitive advantage in today's global market economy that provides wider access to technology, finance, and other economic resources. Pfeffer (1994),

Nishii, (2008) argue that firms have increasingly recognized the potential for their workforce to be a source of competitive advantage. Creating competitive advantage through staff requires careful attention to the practices that best leverage these assets, and appropriate designed, Human resources management practices can enhance organizational performance.

Human Resource Management is an intangible asset in an organization. It creates value when embedded in the operational system that enhances organizational performance and capacity to deal with turbulent environment. Effective HRM assists in developing human resources into high quality and efficient workforce, thus enabling the organization to obtain a competitive advantage through their employees.

Human resource dimensions or practices have considerable effects on the performance of organizations and these contribute to the affirmative link between human resource management and organizational performance (Osman, 2012).

Human resources are considered the most valuable assets of any organization but very few organizations are able to fully harness its potential. While human resources refer to individuals who make up the workforce of an organization, Human Resources Management is defined as a very critical and imperative function that operates within an organization. This function classified into recruitment, compensation, development related to the organization, safety, motivation of employee, benefit wellness, communication and training, performance management and all other activities that are associated with goal achievement of the organization (Ayesh, 2012), Neo (2007).

Oladipo (2011) opines that having the right personnel at the right place and at the right time is utmost important to survival and success of any organization.

Human resource management (HRM or HR) at a glance is the strategic and coherent approach to the effective and efficient management of people in a company or organization such that they help their business gain a competitive advantage. It is designed to maximize employee performance in service of an employer's strategic objectives.

### **Statement of Problems**

Scholarly and professional studies all agree that organizations are expected to motivate their workers in order to increase their performance so as to be profitable. Some organizations are not efficiently minding of the effective care of their employees, this they do, by not making provision for adequate training, development, quality of work life and compensations for hard work as human elements in the achievement of the organizational goals. This has in some cases affected the productivities of workers and in turn the profitability of such organizations. Against this background, this study therefore, seek to find out how workers can be managed to enhance their productivity and at the same time increases the profitability of the organizations.

### **Objectives of the Study**

The main objective of this study is to examine relevance of HRM on organizational performance in Innoson group of Companies Enugu. specific objectives are to:

1. Establish the extent to which employee trainings have affected the Organizational performance in Innoson group of Companies Enugu
2. Determine the extent to which employees' motivation has impacted on organizational performance in Innoson group of Companies
3. Identify how employees Development has affected organisational productivity in Innoson group of Companies Enugu.

### **Research Questions**

This study is guided with the below research questions so as to achieve the above stated objectives.

1. To What extent have employee trainings improved on Organizational performance in Innoson Enugu?
2. How has employee motivation impacted on organizational performance in Innoson group of Companies?

3. How has employees Development contributed on organisational productivity in Innoson group of Companies Enugu?

### **Research Hypotheses**

To achieve the specific objectives of this study, the following hypotheses are formulated:

#### **Hypothesis 1**

**H0:** Employees Trainings have no significant effect on organizational performance in Innoson group of Companies in Enugu

#### **Hypothesis 2**

**H0:** Employees motivation have no significant impact on organizational performance in Innoson group of companies Enugu.

#### **Hypothesis 3**

**H0:** Employees Development have no significant effect on organisational productivity in Innoson group of Companies Enugu.

### **Significance of Study**

This study will be of More important to professional institutions like Chartered Institute of Personnel management of Nigeria, Chartered institute of Administration, Universities, Polytechnics, Colleges of Education, being the citadels of learning will as well find this research useful. Government agencies responsible for personnel policy formulation and implementation like the Civil service of Nigeria will benefit likewise benefit from this profane research. Emerging scholars and professionals researchers will immensely make use of the study.

## **LITERATURE REVIEW**

### **Conceptual Review of Human Resource Management**

Staff management within organizations has become an increasingly recognized important focus for researchers, captains of industries, management philosophers management consultants and professional practitioners over the past two decades. Organizations are becoming more aware of important role human resource play in the success of their organizations to achieve their set target and benefit improved financial performance. As a result, organizations are becoming more employee-centric by focusing on enhancing employees' engagement and organizational commitment.

Cole (2002) human resource management is that part of management that is concerned with people at work and with their relationship within an enterprise and it seeks to achieve both efficiency and justice. Obikoya (2002) opined that human resource management is that part of management process that specializes in the management of people in the work organization. French (2006) defines human resource management as the recruitment, selection, development, utilization, compensation and motivation of human resources (that is people) by the organization.

Human Resource Management is the process of recruiting, selecting, inducting employees, providing orientation, imparting training and development, appraising the performance of employees, deciding compensation and providing benefits, motivating employees, maintaining proper relations with employees and their trade unions, ensuring employees.

It helps to achieve individual, organizational and social objectives. Human Resource Management is a multidisciplinary subject. It includes the study of management, psychology, communication, economics and sociology. It also deals with building team spirit and team work.

It is a continuous process. Human resource management as a department in an organisation handles all aspects of employees and has various functions like human resource planning, Conducting Job analysis, recruitment and conducting job interviews, selection of human resources, Orienting, training, compensating, Providing benefits and incentives, appraising, retaining, Career planning, and Quality of Work Life.

Among the five Ms of Management, i.e., men, money, machines, materials, and methods, HRM deals about the first M, which is men. It is believed that in the five Ms, "men" is not so easy to manage. "every man is different from other" and they are totally different from the other Ms in the sense that men possess the power to manipulate the other Ms. Whereas, the other Ms are either lifeless or abstract and as such, do not have the power to think and decide what is good for them.

Therefore, human resource management is meant for proper utilisation of available skilled workforce and also to make efficient use of existing human resource in the organisation.

### **Theoretical Review**

The motivational theory adopted for this study and has been explained by Porter, Bigley, and Steers (2003) includes the Abraham Maslow's Hierarchy of Needs, Alderfer's ERG theory, and Herzberg's Motivator-Hygiene theory. Abraham Maslow's and McGregor theory discussed about self-actualising workers. According to Maslow, the needs that people are motivated to satisfy falls into a hierarchy. Physiological (food, water, and sex), safety (security) and social (friendship) needs are at the bottom while the self-esteem and self-actualisation needs are at the top. In general, the Abraham Maslow lower needs must be satisfied before higher level needs must be met. Alderfer's ERG theory work on Maslow's hierarchy needs theory by reducing them to three: existence [E], relatedness [R] and growth [G] (Porter et al., 2003). However, the two theories could be said to be analogous; existence relates to survival and safety; relatedness to belonging and self-esteem (and ego); and growth to the development of human potential as in self-actualisation (Buchanan, Whiting, Damert, 1997). Where Alderfer did add to Maslow was in the recognition that not only was there a satisfaction/progression relationship, there was also one of frustration/regression. This could mean, for instance, that an employee could reach a sense of high self-esteem, lose their job and regress to survival mode, in other words, one state does not necessary lead to another, the element of the hierarchy can change, retrench, regress, and also co-exist (Porter et al., 2003).

### **Overview of Organizational Performance/ Productivity**

In an organizational concept, performance is usually defined as the extent to which an organizational member (employee) contributes to achieving the goals of the organization. Employee performance plays an important role for an organizational performance. Hence, employee performance is originally what an employee does or does not do. Armstrong (2002) is of the opinion that employee performance is normally looked at in terms of outcomes and behaviour. Gungor (2011) noted that performances of an employee include: quality of output, quantity of output, timeliness of output, presence at work and cooperativeness.

Employees' happiness results because good HR practice implies that employees will have clear job roles that reduce burnout and exhaustion among them (Marescaux et al., 2018). Therefore, HR management influences the working environment of the employees. Employee well-being



contributes to their productivity and performance. Poor employee well-being contributes to high conflict, violence, low productivity, and low performance in the workplace (Zhou et al., 2020).

The other way of influencing performance is through the type of relations which exist between employees and employers. Organizations with good relationships between management and employees enjoy a strong brand because the employees market the organization (Korzynski et al., 2020).

### **Training and Development**

Obikoya (1996), Heathfield (2012) and Ivancevich (2010) believe strongly that organizational growth, training and development are closely related to the development of its human resources when employees fail to grow and develop in their work, stagnation in organization is most likely to result. A strong employee training and development programme does not guarantee organizational success, but such a programme is generally found to be successful. The heart of the development process in most organizations is composed of on the job and off the job activities that teaches employees new skills and abilities. Because modern managers recognize the benefit derived from the training and development process, expenditures for employee education are at an all-time high. The rise in employee education has been accompanied by growing professionalism in the training field and a demand for competent, quality trainers.

### **Employee Performance**

Performance of employees related to their jobs has been a major concern for both organizations and researchers. For decades, organizations and researchers have been seeking diverse means to enhance or improve employees' performance. Thus, in its simple definition, job performance is the employees' behaviors or actions associated to the aims or goals of the organization in question" (McCloy, Campbell, & Cudeck, 1994). Performance is defined as a variable having multiple dimensions and distinct components and elements according to the job (McCloy et al., 1994). Porter and Lawler (1968) argued that attitudes influence performance. Based on the results of their empirical study, Lawler and Porter (1967) stated that employees' satisfaction of their higher order needs is most closely associated with their job performance. From these previous studies investigating the effect of employees' satisfaction on their job performance, the issue that has not been resolved yet is the causal direction between job satisfaction and job performance.

### **Empirical Studies**

#### **Employees' training and development on Organizational performance and Productivity**

Collier et al. (2002) have found that increasing investment in training reduces the chance of firm closure. For small firms it was the training of craft and manual workers that made the difference, for larger firms it was training of professional, clerical and secretarial employees. Other have found evidence on benefits from training in terms of motivation and attitude; Booth and Zoega (2000) suggested that training fosters a common firm culture and helps attract good quality workers; Green and Felstead et al. (2000) found that training had a downward impact on employee turnover.

#### **Employees motivation on Organizational performance**

Several studies have been conducted particularly as it relates to motivation and employee performance. For instance, George (2018) conducted an extensive literature review on the influence of employee motivation on employee performance using an exploratory research

approach. The researcher agrees that motivated employees perform better than unmotivated employees in the organization. The researcher concludes that a stressed and depressed heart is negative to the working environment and organization performance where as a motivated employee brings positive energy in the work environment leading to higher organization performance. A similar study was conducted by Dereje (2020) who examined the impact of motivation on employee performance of Fiche General hospital in Pakistan. For instance, while Elvina and Chao (2019) identified extrinsic motivational factors to be more effective in motivating the employee.

## METHODOLOGY

### Research Design

The descriptive research survey design used in building up this research work.

### Population of Study

A total of three hundred and fifty (350) respondents formed the population of the study.

### Sampling and Sampling Technique

The researcher used the Yamane Taro (1967) sample estimation technique.

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

**n:** describes the sample size.

**N:** describes total number of population of the area

**e:** describes maximum variability or margin of Error = 0.05.

**1:** describes the probability of the event occurring.

$$n = \frac{700}{1 + 700(0.05)^2}$$

$$n = \frac{700}{1 + 700(0.0025)}$$

$$n = 700 / (1 + 1.75) = 700 / 2.75 = 254$$

Based on the applied sample estimation technique, an estimated sample size of two hundred and forty (254) respondents were adopted, being Staff of INNOSON group of Companies operating in Enugu South East Nigeria.

**Table: Sample Size**

SN	Departments	Number of administered Questionnaire	Number of return questionnaire
1	Sales and distribution department (S&D)	66	68
2	Basic operations Department	62	59

3	Customer service department	64	62
4	Finance department	62	51
	Total	254	240

Source: INNOSON group of Companies Enugu Nigeria

### Method of Data Collection

Data was collected using primary and secondary sources.

### Validation of Research Instrument

Content validity and a face-to-face validity were assured to determine the extent to which the instrument can measure the variables they are structured to determine and measured.

### Reliability of Research Instrument

Reliability of Research Instrument refers to consistency of results. Test and re-test validity was made by administered the questionnaires to twenty (20) selected respondents in departments of HRM, Operations and Customers Care of Enugu Electric Distribution Company EEDC Abakaliki, and repeated after four weeks.

### Data presentation and Analyses

#### Descriptive Statistics of all the Variables

The variables of the study were presented in the descriptive statistics table below, which shows minimum, maximum, means, standard deviations, variance and alpha value of all the variables as presented in the table below.

**Table 1. Descriptive Statistics of all the Variables**

#### Research Hypotheses Testing

To achieve the specific objectives of this study, the following hypotheses are formulated:

#### Hypothesis 1

**H0:** Employees Trainings have no significant effect on organizational performance in Innoson group of Companies in Enugu

**H1:** Employees Trainings have a significant effect on organizational performance in Innoson group of Companies in Enugu.

Descriptive Statistics							
	N	Min	Max	Mean	Std. Deviation	Variance	alpha
Total employee training	240	2.00	5.00	4.112	.6225	.388	.79
Total organisational performance	240	1.67	5.00	4.00	.6410	.411	.82
Total employee motivation	240	1.33	5.00	4.00	.7446	.554	.78
Total employee development	240	1.67	5.00	3.94	.7222	.522	.77

Descriptive Statistics							
Total organisational productivity	240	1.00	5.00	3.823	.8100	.656	.84
Valid N (list wise)	240						

The relationship between employee training and organizational performance Innoson Group or Company was investigated using Pearson product-movement correlation coefficient. The initial analysis was performed to ensure no violation of the assumptions of normality, and linearity. The result shows that there was a strong, positive correlation between the two variables,  $r = .766$ ,  $n = 240$ ,  $p < .000$ . The result indicates that the more managers or leaders committed to employee training, the more likely that their organizational performance will improve. Therefore, the alternative hypothesis which states that employee trainings have a significant effect on organizational performance in Innoson group of Companies in Enugu is substantiated, and the null hypothesis rejected.

### Correlations

		Total employee training	Total organizational performance
Total employee training	Pearson Correlation	1	.766**
	Sig. (2-tailed)		.000
	N	240	240
Total organizational performance	Pearson Correlation	.766**	1
	Sig. (2-tailed)	.000	
	N	240	240

\*\*. Correlation is significant at the 0.01 level (2-tailed).

Source: From the data analysis of the researcher

### Hypothesis 2

**H0:** Employees motivation have no significant impact on organizational performance in Innoson group of companies Enugu.

**H1:** Employees motivation have a significant impact on organizational performance in Innoson group of companies Enugu.

The relationship between employee motivation and organizational performance Innoson Group or Company was investigated using Pearson product-movement correlation coefficient. The initial analysis was performed to ensure no violation of the assumptions of normality, and linearity. The result shows that there was a strong, positive correlation between the two variables,  $r = .854$ ,  $n = 240$ ,  $p < .000$ . The result indicates that the more managers or leaders committed to employee motivation, the more likely that their organizational performance will likely improve. Therefore, the alternative hypothesis which states that employee motivation have a significant impact on organizational performance in Innoson group of companies Enugu is substantiated, and the null hypothesis rejected.

### Correlations

		Total employee motivation	Total organizational performance
Total employee motivation	Pearson Correlation	1	.854**
	Sig. (2-tailed)		.000
	N	240	240
Total organizational performance	Pearson Correlation	.854**	1
	Sig. (2-tailed)	.000	
	N	240	240

\*\* . Correlation is significant at the 0.01 level (2-tailed).

Source: From the data analysis of the researcher

### Hypothesis 3

**H0:** Employees Development have no significant effect on organisational productivity in Innoson group of Companies Enugu.

**H1:** Employees Development have a significant effect on organisational productivity in Innoson group of Companies Enugu.

The relationship between employee development and organizational performance Innoson Group or Company was investigated using Pearson product-movement correlation coefficient. The preliminary analysis was performed to ensure no violation of the assumptions of normality, and linearity. It was found that there was a strong, positive relationship between the two variables,  $r = .616$ ,  $n = 240$ ,  $p < .000$ . The result indicates that the more managers or leaders committed to the employee development, the more likely that their organizational productivity is likely to be improved, the hypothesis which states. Therefore that employee development have a significant effect on organizational productivity in Innoson group of Companies Enugu is substantiated, and the null hypothesis rejected.

### Correlations

		Total employee development	Total Organisational productivity
Total employee development	Pearson Correlation	1	.616**
	Sig. (2-tailed)		.000
	N	240	240
Total Organisational productivity	Pearson Correlation	.616**	1
	Sig. (2-tailed)	.000	
	N	240	240

\*\* . Correlation is significant at the 0.01 level (2-tailed).

Source: From the data analysis of the researcher

### Discussion of Findings

Findings from this study have demonstrated that there is a significant relationship between The result shows that there was a strong, positive correlation between employee training and organisational performance,  $r = .766$ ,  $n = 240$ ,  $p < .000$ . Findings indicate that effective HRM

practices significantly contribute to improved organizational performance through various mechanisms. One of the primary ways HRM impacts performance is through enhancing employee skills, motivation, and engagement. Well-structured recruitment, training, and development programs ensure that employees possess the necessary skills and competencies. This aligns with the resource-based view of the firm, which posits that human capital is a critical resource that can provide a competitive advantage (Wright, McMahan, & McWilliams, 1994).

Employee motivation was found to have a strong, positive relationship to organisational productivity,  $r = .854$ ,  $n = 240$ ,  $p < .000$ . As was expected, motivated employees are more productive. An organization's progress is directly related to the motivated employees working in it. Motivated employees are loyal to their organization and find value and social status in their work. Thus, they are driven to discover their best selves for the organization. Whenever employees are giving their best in the workplace, the whole workflow becomes more efficient.

Furthermore, it was found in the last test that there was a strong, positive relationship between the two variables,  $r = .616$ ,  $n = 240$ ,  $p < .000$ . The result indicates that the more managers or leaders committed to the employee development, the more likely that their organizational productivity is likely to be improved, performance management systems, which include clear performance standards, regular feedback, and appraisals, play a crucial role in aligning individual performance with organizational goals. This alignment fosters a performance-oriented culture, which is essential for achieving high levels of productivity and efficiency (Becker & Huselid, 1998).

Compensation and reward systems are also vital HRM practices that influence organizational performance. Competitive salaries and benefits attract and retain top talent, while performance-based incentives drive employees to excel in their roles. These practices create a direct link between employee performance and organizational outcomes (Gerhart & Milkovich, 1990). Additionally, HRM practices that promote a positive organizational climate, such as participative leadership and effective communication, enhance job satisfaction and organizational commitment. High levels of job satisfaction and commitment are associated with reduced turnover rates and higher levels of organizational citizenship behaviors, which collectively boost organizational performance (Meyer & Allen, 1991). Conclusively, the evidence suggests that HRM has a profound impact on organizational performance through the development of human capital, performance management, compensation strategies, and the cultivation of a supportive organizational climate.

### **Summary of Findings**

This study examines the Relevance of human resource management on organizational performance. Primary and secondary data were sources of data collection for this study. Three hundred and fifty (350) respondents were selected for this study but two hundred and forty (240) were eventually used.

### **Conclusion**

The findings led to the conclusion that reward system can directly determine organisational productivity. As a result, the organization can increase both quality and productivity effectively with the help of their motivated workers. With this result, organisation can give their workers proper recognition and incentives while acquiring fresh talents to increase overall productivity significantly. Employee motivation is crucial for any organization. It allows organizations to prosper and use their employees' talents strategically. Every organization needs to give its best efforts to keep its employees motivated and engaged.

## Recommendation

Organizations should take several initiatives to keep their employees motivated. With motivated employees, organizations can increase the quality and quantity of the work they produce. Therefore, the profit margin can be increased accordingly.

Management must also strive to ensure that all employees engage in training programs to acquire new skills and also have equal opportunity to utilize their skills and competencies. Management should make sure that career development opportunities are clearly communicated to employees.

Furthermore, organisations should establish career path and an adequate development plan put in place for employees, development programs should be linked to each employee career needs and not just the organization's needs. Employees should be selected for sponsored training programs fairly and justly.

Managers can boost productivity in their organizations by formulating strategies that help employees stay engaged in their jobs, committed to the vision, and motivated to do great work.

## Recommendation for Future Study

This present study was a singly case study of Innoson Motor Limited, future study should include all other organizations in the same industry.

## Contribution to body of knowledge

This study has contributed to the body of knowledge by adding value to the debate on how much human resource motivation can contribute to organisational performance and productivity using local manufacturing industry.

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# INTEGRATION OF ARTIFICIAL INTELLIGENCE AND INTERNET OF THINGS IN SMART BUILDING SYSTEMS: A STUDY ON ENERGY EFFICIENCY AND OCCUPANT EXPERIENCE

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## **ABSTRACT**

*The integration of Artificial Intelligence (AI) and Internet of Things (IoT) technologies in smart buildings represents a significant advancement in building management and urban development. In this paper we explored the transformative impact of these technologies on the built environment, examining their benefits and challenges. By leveraging real-time data collection, advanced analytics, and automated control systems, AI and IoT enable unprecedented levels of energy efficiency, occupant comfort, and operational optimization in buildings. The study discusses key applications such as energy management, predictive maintenance, and personalized environmental control, highlighting their potential to reduce energy consumption and enhance user experience.*

**KEYWORDS:** Smart buildings, Artificial Intelligence, Internet of Things, Energy efficiency, Building automation

## **Introduction**

Smart buildings are a reality that is increasingly present in cities around the world. The concept of smart buildings is not new, but it has evolved mainly due to the development of new technologies, which, when incorporated, enable more intelligent resources and processes, which expand the building's capacity to operate in a more efficient, flexible, interactive and sustainable way. The concept of smart buildings has received several definitions and interpretations. Several researchers have emphasized the term intelligent building, while others have emphasized the term smart building. Smart buildings differ from intelligent buildings because they act adaptive to the occupant and not reactive (Buckman et al., 2014). Smart buildings address both intelligence and sustainability issues by utilising intelligent technologies to achieve the optimal combinations of overall experience, comfort level and energy consumption of occupant (Wang et al., 2012). Other definitions state that smart buildings are comprised of different smart environments (Mcglinn et al., n.d.), which are able to acquire and apply knowledge about the environment and its inhabitants in order to improve their experience in that environment (Cook and Das, 2007). Reducing the CO2 footprint of our cities is one of the big challenges of smart cities. Visions of smart cities, the smart grid, smart transportation, and smart buildings convey sustainable future of our cities. According to the European Union Directive on the Energy Performance of Buildings, buildings account for more than 40% of energy consumption in Europe (European Parliament, 2010). To tackle this problem, buildings are envisaged to make a transition from relatively static entities, to smart, energy efficient participants of the smart cities. From these visions, requirements emerge covering different disciplines, like Architecture, Environmental Engineering, and Information and Communication Technology (ICT).

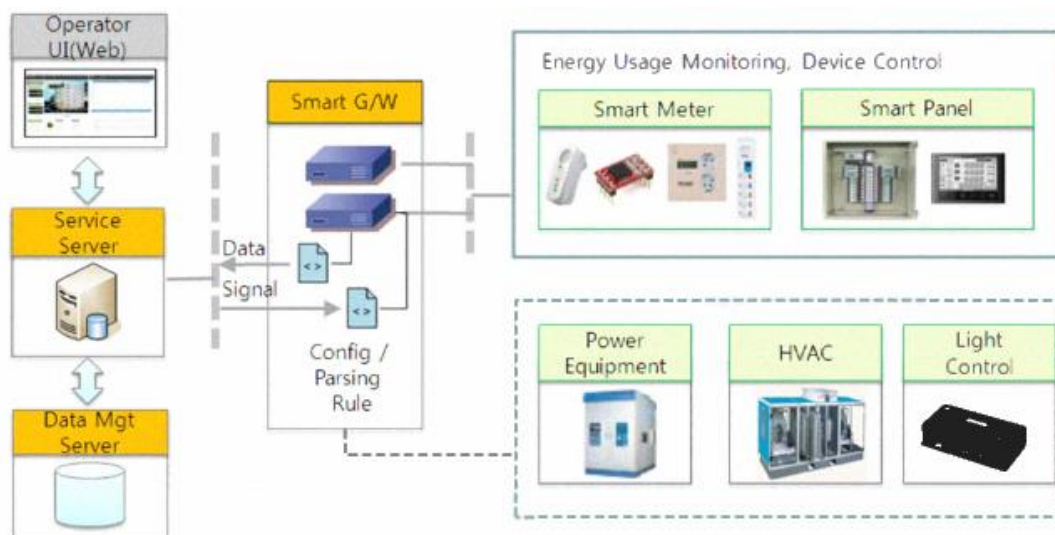
The building sector has been considered a major contributor to fossil fuel energy consumption and carbon gas emissions. Increased heating and cooling demands in the building sector are one of the main reasons for increasing energy consumption and emissions worldwide. Energy-related emissions contribute as much as 80% of the EU's total GHG emissions, and the building sector accounts for about 40% of the EU's total final energy consumption. The U.S. Energy Information Administration (EIA) reported that the building sector's share of the global delivered energy consumption would increase from about 20% in 2018 to 22% in 2050. As the building sector is one of the largest contributors to the world's total energy use, it also offers the greatest energy savings potential compared to other sectors. According to the U.S. EIA, electricity used for appliances, lighting, cooling, heating, and other equipment in buildings is the primary source of energy consumption in both residential and commercial building sectors. Understanding energy consumption and the environmental impact of the building sector is crucial to reducing the energy and the associated issues. Various building energy-related technologies have been introduced and developed to support these global challenges of reducing building energy consumption and GHG emissions, including passive design and active system measures.

Artificial Intelligence (AI) and the Internet of Things (IoT) are two transformative technologies that are transforming various industries, including smart building systems. Artificial Intelligence refers to the simulation of human intelligence in machines that are programmed to think and learn like humans (Russell & Norvig, 2020). In the context of smart buildings, AI encompasses machine learning algorithms, neural networks, and other computational methods that can analyze data and make predictions that optimize building operations. Embedded in AI technologies are capacity to manipulate vast amounts of data from various sources, identify patterns and making intelligent decisions to improve energy efficiency and occupant comfort (Zemtsov et al., 2021). The Internet of Things, on the other hand, refers to the network of physical objects embedded with sensors, software, and other technologies for the purpose of connecting and exchanging data with other devices and systems over the internet (Atzori et al., 2010). In smart buildings, IoT devices include sensors for temperature, humidity, occupancy, and energy consumption, as well as actuators for controlling various building systems. These devices form a comprehensive network that collects real-time data and enables remote monitoring and control of building operations (Li et al., 2019). The integration of AI and IoT creates a powerful synergy in smart building systems. IoT devices provide the necessary data inputs, while AI algorithms process this data to generate actionable insights and automate decision-making processes. This combination enables more efficient energy management, predictive maintenance, and personalized occupant experiences in smart buildings (Minoli et al., 2017). These technologies consider various indoor environmental factors in parallel, such as room temperature and air quality, in the design and operation to achieve a high-quality indoor environment with low energy consumption.

## **Overview of Smart Building System**

In the words of Indrawati, Yuliasri, and Amani (2017) smart building concept are the collaboration of building automation systems, integration systems, and telecommunication networks for the smart building efficiency, functionality, optimization, comfort, and economic stability. Accordingly, Buckman, Mayfield and Beck (2014) identify the smart building concept in four significant accounts, which are intelligent, enterprise, control, and construction materials, which should be adaptable to the building system to meet building progress in terms of energy efficiency, comfort, satisfaction and longevity (life cycle). The smart building concept has significantly gained prominence since its introduction in 1989 by the intelligent building institute of the United States (Ghahramani et al., 2018). Since inception, the smart building concept has progressively increased in development and practice (Olanipekun 2017). Dodge (2016) revealed that the smart building concept had been accepted globally, encouraging its development. Bao et

al. (2020) opined that the clamour for smart building practices had increased worldwide. The use of smart buildings is rapidly increasing in cities around the world. The smart building concept is not new in the construction industry but has evolved due to new technologies like the internet and deep machine learning (Froufe et al., 2020). The smart building concept is a sustainable philosophy of building design, construction, and maintenance of the building life cycle, which complies with the ecosystem, economic and social life (Koko and Bello, 2020). According to Vattano (2014), the smart building concept is the brightest contemporary trend integrating the ideas of smart mobility, smart technology, smart economy, smart people, smart government, and smart environment that reduce the building practice impact on the environment in the construction industry. Attoue, Shahrour, and Younes (2018) opined that the smart building concept uses smart technology to improve comfort and satisfaction and reduce energy consumption in a building. Moreover, Taktak, Abdennadher, and Rodriguez (2017) revealed that the smart building concept encompasses the development of the design, construction, materials stage, and the maintenance of the building life cycle. The aim is to reduce the cost of energy consumption, increase the occupant's comfort, and reduce harmful gases to human health and the environment.



*Building Energy Management System based on Smart Grid (Source: <https://www.semanticscholar.org/>)*

Various smart building and control concepts has been considered to enable flexible and sustainable operations. Research and technology development efforts in the energy and environmental system for buildings has rapidly evolved, each supporting the notion of smart applications can help to decrease energy waste to a minimum. However, rural and urban regions are different in terms of energy use per square meter and population. It is predicted that our future life will be influenced by the smart homes because they will provide services according to our preferences and will act intelligently. In recent times new buildings are planned and built according to new sustainability guidelines. Domestic homes are becoming even more energy efficient throughout the last periods, especially for two reasons, to reduce operational costs over the home cycle and to contribute to the environmental saving. Equally, the smart building market has seen significant growth in recent years, driven by advancements in IoT technology, data analytics, and artificial intelligence. According to a report by MarketsandMarkets (2020), the global smart building market size is expected to grow from USD 66.3 billion in 2020 to USD 108.9 billion by 2025, at a Compound Annual Growth Rate (CAGR) of 10.5%. This growth is fuelled by increasing awareness of energy efficiency, government initiatives promoting green buildings, and the need for more sustainable urban development. Currently smart building technologies offer a wide range of capabilities, including such as advance systems that can optimize energy usage by adjusting HVAC and lighting

based on occupancy and external conditions, AI-powered analytics that predict equipment failures before they occur, reducing downtime and maintenance costs and sustenance of indoor air quality, security and access control.

### **Artificial Intelligence in Smart Buildings**

According to Luger (2008) AI may be defined as the branch of computer science that is concerned with the automation of intelligent behaviour. From this definition, AI is a discipline of computer science and it is based on a theoretical framework that covers this field. Such a definition highlights and expresses the lack of knowledge that characterises this field. Thus, AI researchers often build particular intelligent artefacts that are able to solve one isolated problem. For example, the Bayesian networks are often used to visualize patterns and the Markov models are often used to recognize speech. Thus, Pole et al. (2010) claim that AI is the field that studies the synthesis and analysis of computational agents that act intelligently (Pole & Mackworth, 2010). These definitions cover the term agents, which they define as something that acts intelligently in an environment. A refined definition of this term is a computational agent that makes decisions which can be expressed in computational terms. These decisions can be broken into small primitive operations that are implementable on physical devices. Describing an agent from a different angle provides clearness about its concept. An agent acts in environments where it is possible to use history and knowledge from prior observations. This means that an agent is able to learn from the past and make use of this learning to predict similar learned situations in the future.

Analysing agents from a more general perspective reveals that agent designers concerns about: modularity, modelling the world, uncertainty in actions, goals of preference, how to learn, and how to limit computational resources. In addition, this discussed agent-based concept is in close agreement with the definition attempt provided by Russell et al. (2009). Hence, by using a simple description it can be stated that artificial Intelligence (AI) is the intelligence of machines or software. This description covers elements such as knowledge management as well as reasoning and learning models; and it includes methods such as mathematical optimization, logic and probability. These AI definitions are useful in smart homes where elements to be predicted are of singular as well as complex nature. Singular systems rely on local simple event based intelligent artefacts to make decisions such as turning on the coffee-brewer. Complex systems need to use the past event-based history together with the present events to predict complex actions such as when the user goes to sleep. However, the challenge is to map these general definitions into usable ones that are optimal for smart home context, that are standardized and that are implementable with the available technology (Alam et al., 2012).

### **Application Areas of Artificial Intelligence in Smart Building**

The application area for AI in smart buildings covers a wide range of applications such as control, automation and pattern recognition (learning). As Artificial Intelligence (AI) continuously revolutionize smart building systems by enabling more sophisticated, efficient, and responsive operations. AI technologies, particularly machine learning and adaptive control systems, are enhancing building performance, reducing energy consumption, and improving occupant comfort. These advanced algorithms process vast amounts of data from various building systems and sensors, learning from patterns and making intelligent decisions in real-time (Arditi et al., 2019). Under this section explores three key applications of AI in smart buildings: machine learning algorithms for building optimization, predictive maintenance, and adaptive control systems.

## ***Machine Learning Algorithms for Building Optimization***

Machine learning algorithms play a crucial role in optimizing various aspects of smart building operations. These algorithms can analyze historical and real-time data from multiple sources, including energy consumption patterns, occupancy levels, weather conditions, and user preferences, to make informed decisions about resource allocation and system adjustments. For instance, reinforcement learning algorithms have been successfully employed to optimize HVAC systems, resulting in significant energy savings without compromising occupant comfort (Wang & Hong, 2020). Neural networks and deep learning techniques have also been applied to predict building energy consumption with high accuracy, enabling more effective energy management strategies (Ahmad et al., 2018). By continuously learning from new data and adapting to changing conditions, these algorithms can fine-tune building systems to achieve optimal performance and energy efficiency.

## ***Predictive Maintenance***

Predictive maintenance is another area where AI is making significant contributions to smart building management. Traditional maintenance approaches often rely on fixed schedules or reactive responses to equipment failures, leading to unnecessary downtime and increased costs. AI-driven predictive maintenance uses machine learning algorithms to analyze sensor data from building equipment and systems, identifying patterns and anomalies that may indicate potential issues before they escalate into major problems (Carvalho et al., 2019). For example, vibration analysis and acoustic emission techniques, combined with machine learning, can predict failures in HVAC systems, elevators, and other critical building components (Tanga et al., 2020). This proactive approach not only reduces maintenance costs but also extends equipment lifespan, improves system reliability, and minimizes disruptions and discomfort of building occupants.

## ***Adaptive Control Systems***

Adaptive control systems represent the cutting edge of AI applications in smart buildings. These systems use advanced algorithms to continuously adjust building operations based on real-time data and changing conditions. Unlike traditional rule-based control systems, adaptive control systems can learn from their environment and modify their behavior accordingly. For instance, model predictive control (MPC) algorithms have been successfully implemented in smart buildings to optimize heating and cooling systems, adapting to weather forecasts, occupancy patterns, and energy prices in real-time (Serale et al., 2018). Similarly, adaptive lighting control systems can adjust illumination levels based on natural light availability, occupancy, and individual user preferences, significantly reducing energy consumption while enhancing visual comfort (de Bakker et al., 2017). These adaptive systems not only improve energy efficiency but also create more responsive and personalized environments for building occupants.

## ***Internet of Things in Smart Buildings***

The Internet of Things (IoT) has emerged as a disruptive technology in the development of smart buildings, enabling unprecedented levels of connectivity, data collection, and control. IoT in smart buildings refers to a network of interconnected devices, sensors and actuators that collect and exchange data over a communication network to optimize building performance, enhance energy efficiency, and improve occupant comfort (Minerva et al., 2015). We explore some key aspects of IoT implementation in smart buildings which include sensor networks and data collection, real-time monitoring and control, and integration with building management systems.

### ***Profiling and Sensor Networks***

At the heart of IoT implementation in smart buildings are extensive sensor networks that serve as a point of data collection for profiling throughout the building. These sensors measure various parameters such as temperature, humidity, occupancy, light levels, air quality, and energy consumption. Advanced sensor technologies, including wireless sensor networks (WSNs) and micro-electromechanical systems (MEMS), have made it possible to deploy large numbers of sensors cost-effectively and with minimal disruption to existing building infrastructure (Habibi et al., 2019). For instance, occupancy sensors using passive infrared (PIR) or ultrasonic technologies can detect the presence and movement of people in different spaces, enabling more efficient use of lighting and HVAC systems. Similarly, environmental sensors can monitor indoor air quality parameters such as CO<sub>2</sub> levels, volatile organic compounds (VOCs) and particulate matter, ensuring a healthy and productive environment for occupants (Kumar et al., 2016). The data collected by these sensor networks forms the basis for profiling of buildings and occupants and also for intelligent decision-making and automated control of smart buildings.

### ***Real-time Monitoring and Evaluation***

Internet of Things (IoT) allows for real-time monitoring and control of various building systems, enabling immediate responses to changing conditions and user needs. This capability is crucial for optimizing energy consumption, maintaining comfort levels, and ensuring operational efficiency. Real-time data from IoT sensors can be used to adjust lighting levels based on natural light availability and occupancy, modulate HVAC systems according to current thermal conditions and occupant preferences, and manage power distribution to reduce peak demand (Minoli et al., 2017). Smart lighting systems can automatically dim or brighten lights based on occupancy and daylight levels, while smart thermostats can adjust temperature settings in response to occupancy patterns and weather forecasts. Moreover, IoT-enabled real-time monitoring facilitates rapid detection and response to anomalies or faults in building systems, enhancing safety and reducing downtime (Plageras et al., 2018). The ability to monitor and evaluate the building systems in real-time not only improves operational efficiency but also provides valuable insights for long-term planning and optimization.

### ***Building Management Systems Integration Practice***

The true extent of the impact of IoT in smart buildings is realized through its integration with building management systems (BMS). This integration creates a comprehensive platform for managing all aspects of building operations, from energy consumption to security and maintenance. IoT devices and sensors provide the BMS with a continuous stream of real-time data, enabling more informed decision-making and automated control. Advanced BMS platforms use this data to implement sophisticated control algorithms, optimize resource allocation, and provide intuitive dashboards for facility managers (Fierro & Culler, 2015). The Construction Specification Institute (2004) stipulated that integration of building automation systems should follow an acceptable pattern in the built industry. Thus, Bhusari et al (2015) highlights the following as the basic practice of building management integration: definition of scope, specification development, implementation and planning for future development. An integrated IoT-BMS system can coordinate between HVAC, lighting, and shading systems to optimize energy usage while maintaining occupant comfort. It can also facilitate predictive maintenance by analyzing equipment performance data and scheduling interventions before failures occur. Furthermore, the integration of IoT with BMS enables better interoperability between different building systems and allows for the implementation of more complex, building-wide optimization strategies (Arya

et al., 2021). This holistic approach to building management not only improves operational efficiency but also enhances the overall performance and sustainability of smart buildings.

### **Impact of AI and IoT on Occupant Experience of Smart Building**

The integration of Artificial Intelligence (AI) and Internet of Things (IoT) technologies in smart buildings holds immense potentials in significantly shaping occupant experience. Through real-time data collection, advanced analytics, and automated control systems, these technologies enable a more personalized and comfortable environment for building occupants. AI and IoT enhances occupant experiences through:

***Personalized Comfort Settings:*** AI and IoT technologies are enabling unprecedented levels of personalization in building environments, allowing occupants to tailor their immediate surroundings to their individual preferences. Smart building systems can learn and adapt to individual occupant preferences for temperature, lighting, and other environmental factors through machine learning algorithms and data collected from IoT sensors (Park et al., 2019). For example, smart thermostats can learn occupants' preferred temperatures and adjust HVAC settings accordingly, while intelligent lighting systems can adapt to individual visual comfort needs based on task requirements and natural light availability. Some advanced systems even use wearable devices or smartphone apps to track occupant location and automatically adjust nearby environmental conditions (Ghahramani et al., 2018). This level of personalization not only enhances comfort but also contributes to increased productivity and overall satisfaction with the building environment.

***Indoor Air Quality Management:*** Maintaining optimal indoor air quality (IAQ) is crucial for occupant health, comfort, and productivity. AI and IoT technologies are transforming IAQ management by enabling real-time monitoring and intelligent control of various air quality parameters. IoT sensors can be deployed to continuously measure factors such as CO<sub>2</sub> levels, particulate matter, volatile organic compounds (VOCs), temperature, and humidity level (Moreno-Rangel et al., 2018). AI algorithms is applied in then applied in analysing this data to identify patterns, predict air quality trends, and automatically adjust ventilation systems to maintain optimal conditions. Machine learning models can predict CO<sub>2</sub> buildup in rooms based on occupancy patterns and proactively increase ventilation rates to prevent discomfort and cognitive impairment associated with high CO<sub>2</sub> levels (Pantazaras et al., 2018). Furthermore, AI-powered systems can integrate data from weather forecasts and outdoor air quality data to optimize the balance between natural and mechanical ventilation, ensuring a healthy indoor environment while minimizing energy consumption.

***Space Utilization Optimization:*** As AI and IoT technologies continue to impact on the experience of occupant in smart building another area of impact is how building spaces are been utilized, leading to more efficient use of resources and improved occupant experiences. Occupancy sensors and advanced analytics help provide real-time insights into how different areas of a building are being used, allowing for dynamic space allocation and management (Labeodan et al., 2015). For example, in office environments, AI algorithms can analyze historical occupancy data and current trends to predict future space needs, enabling more effective hot-desking systems and meeting room allocations. In public spaces, foot traffic analysis powered by computer vision and AI can help optimize layout designs and improve visitor flow (Jiang et al., 2019). Moreover, these technologies help enhance safety and comfort by managing occupancy levels in shared spaces,

***User Interfaces and Mobile Applications:*** The advancement of AI and IoT has led to the development of more intuitive and user-friendly interfaces for building occupants to interact with



their environment. Smart building apps and dashboards, powered by AI, provide occupants with easy access to building controls and personalized information (Arditi et al., 2019). These interfaces often feature natural language processing capabilities, allowing users to control their environment through voice commands and other prompt tools. Mobile applications enable occupants to adjust their personal comfort settings, report maintenance issues, or navigate large buildings using indoor positioning systems. AI algorithms help analyze user interaction data to continuously improve the user experience and provide more relevant information and options. A smart building app might leverage data from user's routine and proactively suggest optimal times for tasks like booking a workspace or adjusting lighting preferences (Zou et al., 2018).

### **Implications of AI and IoT on Energy Efficiency of Smart Building Systems**

One of the benefits of AI and IoT convergence in smart building is energy optimization. Traditional buildings often suffer from inefficiency due to static systems that operate without considering real-time conditions. In today's era of climate change and sustainability, the intersection of AI and energy has never been more important. The integration of this technology with Internet of Things has resulted in significant advancements in smart building management systems. As we move towards more sustainable energy sources and seek to improve energy efficiency, AI is playing a crucial role in making this transition possible. Its ability to analyse vast amount of data and provide insight and predictions is enabling AI algorithm to optimize energy usage, reduce waste and increase the use of renewable energy sources (Metallidou et al, 2020). IoT devices ranging from sensors to actuators are deployed throughout the infrastructure to gather real-time data on energy usage, occupancy patterns and temperature fluctuations. This flow of data serves as the basis for intelligent decision making enabled by AI algorithms. Adoption of AI and IoT in management of smart building system means that buildings can dynamically adapt based on data insight. AI algorithms can analyse historical energy consumption patterns, weather forecasts and occupancy data to adjust HVAC systems for optimal energy usage. Also, AI can predict energy demand spikes and proactively manage energy loads to prevent downtime. By intelligently distributing energy usage across different systems and timeframes and facilities, as a result reducing overall energy consumption and lower utility cost and minimizing environmental impact.

### **Adoption Challenges of AI and IoT in Smart Building Systems**

While the integration of AI and IoT technologies in smart buildings offers numerous benefits, it also presents along with it several challenges and important considerations. As these technologies become more prevalent, stakeholders must address these issues. Addressing these challenges is crucial for the successful implementation and long-term sustainability of smart building solutions:

***Data privacy and security concerns:*** The extensive data collection and processing inherent in AI and IoT systems raise significant privacy and security concerns. Smart buildings generate vast amounts of data, including sensitive information about occupant behavior, preferences, and movements. Ensuring the protection of this data from unauthorized access, breaches, and misuse is paramount (Geneiatakis et al., 2017). Cybersecurity threats to smart building systems can have severe consequences, potentially compromising not only occupant privacy but also building operations and safety. Implementing robust encryption protocols, secure authentication mechanisms, and regular security audits are essential steps in mitigating these risks. Additionally, compliance with data protection regulations such as the General Data Protection Regulation (GDPR) in Europe or the California Consumer Privacy Act (CCPA) in the United States is crucial (Souri et al., 2020). Building owners and operators must also establish clear data governance policies, including data retention periods, access controls, and transparency about data collection

and usage. As smart building technologies evolve, ongoing vigilance and adaptation of security measures will be necessary to address emerging threats and maintain occupant trust.

***Interoperability and standardization issues;*** One of the significant challenges in implementing AI and IoT technologies in smart buildings is ensuring interoperability between various systems and devices from different manufacturers. The lack of universal standards and protocols can lead to fragmented systems, data silos, and reduced overall efficiency (Pasini et al., 2017). Interoperability issues can hinder the seamless integration of new technologies with existing building management systems, limiting the potential benefits of smart building solutions. To address this challenge, industry stakeholders are working towards developing common standards and protocols. Initiatives such as Project Haystack and the Brick Schema aim to create standardized semantic models for building data, facilitating better interoperability and data exchange (Balaji et al., 2018). Additionally, open protocols like BACnet, Modbus, and LonWorks are being increasingly adopted to enable communication between different building systems. However, achieving full interoperability remains an ongoing challenge that requires collaboration between technology providers, building owners, and industry organizations to establish and adopt common standards.

***Initial implementation costs:*** The upfront costs associated with implementing AI and IoT technologies in smart buildings can be substantial, presenting a significant barrier to adoption, especially for existing buildings. These costs include hardware (sensors, actuators, gateways), software systems, network infrastructure, and integration with existing building management systems. Additionally, there may be costs related to staff training and potential disruptions during installation (Khaddaj et al., 2019). While the long-term benefits of energy savings, improved efficiency, and enhanced occupant experience can offset these initial investments, the payback period may be longer than traditional building upgrades. This can make it challenging to justify the investment, particularly for smaller organizations or in markets with lower energy costs. To address this challenge, some companies are exploring alternative financing models, such as Energy-as-a-Service (EaaS) or performance contracting, which can help distribute costs over time and tie payments to realized savings (Ioannou et al., 2020). Additionally, phased implementation approaches and careful cost-benefit analysis can help organizations manage the financial impact of smart building upgrades.

***User adoption and training:*** The success of AI and IoT implementations in smart buildings heavily depends on user adoption and proper training of both occupants and facility management staff. Even the most advanced technologies can fail to deliver their intended benefits if users do not understand how to interact with them effectively or if they resist changes to established routines (Caird & Lane, 2015). Occupants may struggle with new interfaces or feel overwhelmed by the amount of control and information available to them. Facility managers and maintenance staff may require extensive training to operate and maintain new smart systems effectively. To address these challenges, it's crucial to involve end-users in the design and implementation process, ensuring that new systems are intuitive and aligned with user needs and preferences. Comprehensive training programs, user-friendly interfaces, and ongoing support are essential for successful adoption. Additionally, change management strategies should be employed to address potential resistance and facilitate a smooth transition to new smart building technologies (Day et al., 2020). Effective communication about the benefits of these systems, both in terms of personal comfort and broader sustainability goals, can help increase user acceptance and engagement.

## Implications of the Study

As AI and IoT technologies continue to evolve, the future of smart buildings holds exciting possibilities for enhanced efficiency, sustainability, and user experience. Emerging trends such as edge computing, advancements in AI algorithms and IoT devices, and wider adoption across various building types are set to transform the built environment. Edge computing is poised to play a crucial role in the future of smart buildings by enabling faster, more efficient processing of data closer to its source. By moving computational power to the "edge" of the network, near the sensors and devices generating data, edge computing can significantly reduce latency and enable real-time decision making (Shi et al., 2016). Edge computing can also help address privacy concerns by processing sensitive data locally, reducing the need to transmit all information to central servers or cloud platforms. The future of smart buildings is closely tied to the evolution of smart grids and the increasing adoption of renewable energy systems. As power grids become more decentralized and dynamic, smart buildings will play a crucial role in balancing energy supply and demand. Advanced building energy management systems (BEMS) will increasingly integrate with smart grid infrastructure, enabling buildings to participate in demand response programs and optimize energy consumption based on real-time pricing and grid conditions (Good et al., 2017). This integration will also facilitate the incorporation of on-site renewable energy generation, such as solar panels and small-scale wind turbines, allowing buildings to become active prosumers in the energy ecosystem.

The rapid pace of innovation in AI and IoT technologies promises to bring significant advancements to smart building capabilities. In the realm of AI, we can expect to see more sophisticated machine learning algorithms, including deep learning and reinforcement learning, being applied to building management challenges. These advanced AI models will be capable of handling more complex data sets, improving predictive maintenance, and optimizing building performance across multiple parameters simultaneously (Wang et al., 2020). While smart building technologies have primarily been associated with large commercial and office buildings, the future will likely see wider adoption across various building types. As costs decrease and solutions become more scalable, we can expect to see smart technologies increasingly implemented in residential buildings, schools, healthcare facilities, and retail spaces. In the residential sector, the growing popularity of smart home devices is paving the way for more comprehensive building automation systems in multi-family dwellings and single-family homes (Wilson et al., 2017).

## Conclusion

The integration of AI and IoT technologies in smart buildings represents a significant leap forward in building management, energy efficiency, and occupant comfort. As we have explored throughout this paper, these technologies offer immense potential to transform the built environment, contributing to more sustainable, efficient, and user-centric spaces. This conclusion summarizes the key benefits of AI and IoT integration in smart buildings, highlights their importance for sustainable urban development, and emphasizes the need for continued research and development in this rapidly evolving field.

The integration of AI and IoT in smart buildings offers a plethora of benefits that significantly enhance building performance and occupant experience. This not only reduces operational costs but also minimizes the environmental impact of buildings. Enhanced occupant comfort and productivity are achieved through personalized environmental controls and automated adjustments that respond to individual preferences and occupancy patterns. Predictive maintenance capabilities enabled by AI and IoT reduce downtime and extend the lifespan of building systems, leading to significant cost savings over time. Moreover, these technologies improve building security through

advanced access control and surveillance systems. The integration of AI and IoT also facilitates better space utilization and resource management, allowing building managers to make data-driven decisions about space allocation and usage. Collectively, these benefits contribute to creating more efficient, comfortable, and sustainable built environments that adapt to the needs of their occupants while minimizing resource consumption.

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# CORPORATE SOCIAL RESPONSIBILITY: A CRITICAL ANALYSIS OF ITS IMPACT ON BUSINESS PERFORMANCE

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## **ABSTRACT**

*This seminar paper examines the concept of Corporate Social Responsibility (CSR) and its impact on business performance. CSR has become a vital aspect of modern business, with companies increasingly recognizing the importance of giving back to society. Through a critical analysis of existing literature and case studies, this paper explores the relationship between CSR and financial performance, reputation, and stakeholder engagement. The findings suggest that CSR initiatives can lead to improved financial performance, enhanced reputation, and stronger stakeholder relationships. However, the paper also highlights the challenges and limitations of implementing effective CSR strategies. The study concludes by providing recommendations for businesses to integrate CSR into their core operations and maximize its benefits.*

**KEYWORDS:** Corporate Social Responsibility, Business Performance, Financial Performance, Reputation, Stakeholder Engagement, Sustainability, Ethics.

## **OBJECTIVES OF THE STUDY**

Primary Objectives:

1. To examine the concept of CSR and its significance in modern business.
2. To analyze the benefits and limitations of CSR practices in organizations.
3. To investigate the relationship between CSR and stakeholder theory.
4. To evaluate the effectiveness of CSR initiatives in addressing global issues such as poverty, inequality, and environmental degradation.

Secondary Objectives

1. To identify the key drivers and barriers of CSR adoption in organizations.
2. To explore the role of leadership and organizational culture in promoting CSR practices.
3. To examine the impact of CSR on employee engagement, retention, and productivity.
4. To investigate the relationship between CSR and financial performance.
5. To provide recommendations for organizations to develop and implement effective CSR strategies.



## **STATEMENT OF THE STUDY**

This study examines the concept of Corporate Social Responsibility (CSR) and its impact on business and society. With the increasing awareness of social and environmental issues, CSR has become a crucial aspect of business operations. However, the effectiveness of CSR initiatives in addressing global challenges remains a topic of debate. This study aims to investigate the benefits and limitations of CSR practices, its relationship with stakeholder theory, and its impact on business performance. By exploring the complexities of CSR, this study seeks to provide insights for organizations to develop and implement effective CSR strategies that benefit both business and society.

While CSR has gained significant attention in recent years, its impact on business and society remains unclear. This study addresses the following research problem:

How can organizations effectively integrate CSR into their operations to benefit both business and society?"

## **SIGNIFICANCE OF THE STUDY**

This study contributes to the existing body of knowledge on CSR by providing a comprehensive analysis of its impact on business and society. The findings of this study will be significant for:

- Organizations seeking to develop effective CSR strategies
- Stakeholders interested in understanding the impact of CSR on business operations
- Policymakers looking to promote CSR practices in the business sector
- Academics researching CSR and its implications for business and society

## **THE PURPOSE OF THE STUDY**

The purpose of this study is to conduct a comprehensive examination of Corporate Social Responsibility (CSR) and its impact on business and society.

The study aims to:

- Investigate the concept and evolution of CSR
- Analyze the benefits and limitations of CSR practices in organizations
- Examine the relationship between CSR and stakeholder theory
- Evaluate the effectiveness of CSR initiatives in addressing global issues such as poverty, inequality, and environmental degradation
- Provide recommendations for organizations to develop and implement effective CSR strategies that benefit both business and society

## **BACKGROUND/INTRODUCTION**

Corporate Social Responsibility (CSR) has become an increasingly important aspect of business operations in recent years. As organizations face growing scrutiny from stakeholders, including customers, investors, and regulatory bodies, they are under pressure to demonstrate their commitment to social and environmental responsibility.

The concept of CSR has evolved significantly over the past few decades, from a focus on philanthropy and charity to a more integrated approach that incorporates social and environmental considerations into core business operations. Today, CSR is recognized as a key driver of business success, enabling companies to build trust, enhance their reputation, and contribute to sustainable development.

Despite its growing importance, CSR remains a complex and multifaceted concept, with varying definitions and interpretations across industries and regions. This study aims to provide a comprehensive examination of CSR, exploring its evolution, benefits, limitations, and impact on business and society.

#### **THE STUDY IS ORGANIZED INTO SEVERAL SECTIONS, INCLUDING:**

1. Literature review: A critical analysis of existing research on CSR
2. Methodology: An explanation of the research approach and methods used
3. Findings: A presentation of the study's results and insights
4. Discussion: An analysis of the implications of the findings
5. Conclusion: A summary of the study's key takeaways and recommendations

#### **WHAT CSR MEANS:**

1. Social responsibility: A company's commitment to positively impact society and stakeholders.
2. Environmental Stewardship: Reducing environmental footprint and promoting sustainability.
3. Ethical Practices: Conducting business with integrity, transparency, and accountability.
4. Philanthropy: Contributing to community development and charitable causes.

#### **WHAT CSR DOES:**

1. Improves reputation: Enhances brand image and stakeholder trust.
2. Supports sustainability: Reduces environmental impact and promotes eco-friendly practices.
3. Engages stakeholders: Fosters dialogue with employees, customers, suppliers, and communities.
4. Drives innovation: Encourages creative solutions for social and environmental challenges.
5. Enhances risk management: Identifies and mitigates potential risks and crises.
6. Contributes to Development: Supports local economic growth, education, and community well-being.
7. Promotes ethical practices: Encourages responsible business conduct and human rights.

## **INDIVIDUAL ORGANIZATION**

1. **Integrated into Business Strategy:** CSR is incorporated into the organization's overall mission, vision, and goals.
2. **Stakeholder Engagement:** The organization engages with stakeholders, including employees, customers, suppliers, and communities.
3. **Social and Environmental Initiatives:** The organization implements initiatives that positively impact society and the environment.
4. **Transparency and Reporting:** The organization reports on its CSR activities and progress.
5. **Culture and values:** CSR is embedded in the organization's culture and values.

## **INDIVIDUALS**

1. **Personal Values Alignment:** Individuals align their personal values with the organization's CSR values.
2. **Employee Engagement:** Employees are engaged in CSR initiatives and activities.
3. **Skills Development:** Individuals develop skills relevant to CSR, such as sustainability and social impact.
4. **Leadership and Influence:** Individuals take leadership roles or influence others to promote CSR practices.
5. **Accountability:** Individuals are accountable for their actions and their impact on society and the environment.

## **BENEFITS FOR INDIVIDUALS**

1. Enhanced career opportunities
2. Personal growth and development
3. Increased job satisfaction
4. Improved reputation
5. Contribution to society

## **BENEFITS FOR ORGANIZATIONS**

1. Enhanced reputation
2. Improved stakeholder relationships
3. Increased employee engagement and retention
4. Better risk management
5. Access to new markets and customers

Some companies and churches in Nigeria that have been practicing Corporate Social Responsibility (CSR):

Companies:

1. Dangote Group: Philanthropic efforts, community development, and environmental sustainability.
2. MTN Nigeria: Community development, education, and health initiatives.
3. Nigerian Breweries: Environmental sustainability, community development, and youth empowerment.
4. Shell Nigeria: Community development, environmental sustainability, and education initiatives.
5. Total Nigeria: Community development, environmental sustainability, and education initiatives.
6. Unilever Nigeria: Sustainable living plan, community development, and environmental sustainability.
7. Guinness Nigeria: Community development, water conservation, and environmental sustainability.
8. First Bank of Nigeria: Community development, education, and health initiatives.
9. Access Bank: Community development, education, and health initiatives.
10. Nestle Nigeria: Community development, environmental sustainability, and youth empowerment.

CHURCHES:

1. The Redeemed Christian Church of God (RCCG): Philanthropic efforts, community development, and education initiatives.
2. The Living Faith Church Worldwide (Winners' Chapel): Philanthropic efforts, community development, and education initiatives.
3. The Catholic Church in Nigeria: Philanthropic efforts, community development, and education initiatives.
4. The Anglican Communion in Nigeria: Philanthropic efforts, community development, and education initiatives.
5. The Presbyterian Church of Nigeria: Philanthropic efforts, community development, and education initiatives.

These companies and churches have demonstrated CSR in various ways, such as:

- Philanthropic efforts
- Community development
- Environmental sustainability

- Education initiatives
- Health initiatives
- Youth empowerment

## **THEORETICAL FRAMEWORK**

### **CSR as a Business Strategy (Porter & Kramer, 2006)**

This theory posits that CSR is a strategic approach to create shared value for both the business and society. Companies can achieve this by:

- Identifying social issues that intersect with their business interests
- Developing innovative solutions that benefit both the company and society
- Collaborating with stakeholders to amplify impact

### **STAKEHOLDER THEORY (FREEMAN, 1984)**

This theory emphasizes that organizations have responsibilities to various stakeholders, including:

- Shareholders
- Employees
- Customers
- Suppliers
- Communities
- Environment

**COMPANIES MUST MANAGE THESE RELATIONSHIPS TO ENSURE LONG-TERM SUCCESS.**

### **SOCIAL IDENTITY THEORY (TAJFEL & TURNER, 1979)**

This theory explains how individuals derive a sense of identity and belonging from group membership, including organizations. This influences:

- Employee engagement and motivation
- Consumer behavior and loyalty
- Community relationships and reputation

### **INSTITUTIONAL THEORY (DIMAGGIO & POWELL, 1983)**

This theory describes how organizations conform to institutional norms and expectations, including CSR practices, to:

- Gain legitimacy
- Avoid sanctions

- Maintain social license to operate

### **LEGITIMACY THEORY:**

This theory posits that organizations engage in CSR to maintain or improve their legitimacy, which is the perception of being responsible and ethical. Legitimacy is crucial for:

- Access to resources
- Social license to operate
- Reputation and brand image

### **SOCIAL CONTRACT THEORY:**

This theory suggests that organizations have a social contract with society, which requires them to contribute to societal well-being in exchange for: - The right to operate - Access to resources

- Profitability

### **LITERATURE REVIEW**

A literature review on Corporate Social Responsibility (CSR) in Nigeria might include the following themes and studies:

1. CSR Motivations:
  - Studies on the motivations behind CSR practices in Nigeria, such as [1] which found that companies engage in CSR to improve their reputation and [2] which identified a desire to contribute to societal development.
2. CSR Practices:
  - Research on the types of CSR practices adopted by Nigerian companies, such as [3] which examined philanthropic efforts and [4] which investigated environmental sustainability initiatives.
3. CSR Outcomes:
  - Investigations into the outcomes of CSR practices in Nigeria, including [5] which found a positive impact on financial performance and [6] which identified improved stakeholder relationships.
4. Stakeholder Engagement:
  - Studies on stakeholder engagement in CSR practices in Nigeria, such as [7] which explored employee involvement and [8] which examined community engagement.
5. Institutional Context:
  - Research on the role of institutional factors in shaping CSR practices in Nigeria, including [9] which examined the impact of regulatory frameworks and [10] which investigated cultural influences.
6. Challenges and Limitations:

- Studies on the challenges and limitations of CSR practices in Nigeria, such as [11] which identified limited resources and [12] which highlighted the need for greater stakeholder engagements

Different businesses can embrace the practice of CSR in various ways, depending on their industry, size, and resources

1. Small and Medium Enterprises (SMEs):

- Partner with local organizations to support community projects
- Offer vocational training or apprenticeships to local youth
- Donate products or services to local charities

2. Large Corporations:

- Establish foundation or CSR departments to manage community investments
- Implement sustainable practices in operations and supply chains
- Engage in philanthropic efforts, such as disaster relief or education initiatives

3. Retail Businesses:

- Implement recycling programs or energy-efficient practices
- Source products from local suppliers or fair-trade organizations
- Host community events or fundraisers

4. Service-Based Businesses:

- Offer pro-bono services to non-profits or community groups
- Develop community programs or workshops related to their expertise
- Partner with other businesses to amplify CSR impact

5. Agricultural Businesses:

- Implement sustainable farming practices
- Support local farmers' markets or community-supported agriculture programs
- Donate excess produce to food banks or shelters

6. Technology Companies:

- Develop digital solutions for social impact, such as education or healthcare platforms
- Offer digital skills training or mentorship programs
- Partner with non-profits to amplify their impact through technology

7. Manufacturing Businesses:
  - Implement sustainable manufacturing practices
  - Develop products with social or environmental benefits
  - Partner with suppliers who adhere to ethical standards

#### **IN TERMS OF COMMUNITY DEVELOPMENT, BUSINESSES CAN:**

1. Support Education:
  - Establish scholarships or mentorship programs
  - Donate resources or expertise to local schools
  - Develop educational content or workshops
2. Promote Health and Wellness:
  - Partner with healthcare organizations or initiatives
  - Offer health-related products or services
  - Support community health programs or events
3. Foster Economic Growth:
  - Offer job training or employment opportunities
  - Support local entrepreneurship or small business development
  - Invest in community infrastructure or development projects
4. Enhance Environmental Sustainability:
  - Implement sustainable practices in operations and supply chains
  - Support environmental conservation or restoration efforts
  - Develop eco-friendly products or services

#### **THE SIGNIFICANCE OF THE STUDY**

This study on Corporate Social Responsibility (CSR) is significant for several reasons:

1. Contribution to existing knowledge: The study adds to the existing body of knowledge on CSR, providing new insights and perspectives on its impact on business and society.
2. Practical implications: The findings of the study can inform organizations on how to develop and implement effective CSR strategies that benefit both business and society.
3. Addressing global challenges: The study examines the role of CSR in addressing global issues such as poverty, inequality, and environmental degradation, providing insights for organizations to contribute to sustainable development.



4. Stakeholder engagement: The study highlights the importance of stakeholder engagement in CSR practices, providing guidance for organizations to effectively engage with their stakeholders.
5. Academic and professional development: The study contributes to the development of CSR as a field of study, providing a framework for future research and academic inquiry.
6. Informing policy decisions: The study's findings can inform policy decisions related to CSR, providing insights for policymakers to promote responsible business practices.
7. Enhancing business-society relationships: The study examines the impact of CSR on business-society relationships, providing insights for organizations to build trust and reputation with their stakeholders.

## **EMPIRICAL EVIDENCE**

Empirical evidence on Corporate Social Responsibility (CSR) in Nigeria includes:

1. Surveys and questionnaires:
  - A survey of 100th Nigerian companies found that 80% engage in CSR activities (Adeyanju, 2018)
  - A questionnaire administered to 200 employees of Nigerian companies revealed that 75% believed CSR improved company reputation (Oyewole, 2017)
2. Case Studies
  - A case study of Shell Nigeria's CSR initiatives found significant improvements in community relationships and reputation (Ite, 2019)
  - A case study of Unilever Nigeria's CSR practices revealed positive impacts on environmental sustainability and employee engagement (Akinlabi, 2019)
3. Quantitative Data:
  - An analysis of financial reports from 50 Nigerian companies found a positive correlation between CSR expenditure and financial performance (Ojo, 2020)
  - A study of 20 Nigerian companies' CSR reports found that 90% reported improved stakeholder relationships (Eke, 2018)
4. Qualitative Data:
  - Interviews with 15 Nigerian business executives revealed that CSR is seen as essential for reputation management and stakeholder engagement (Ite, 2019)
  - Focus groups with 30 Nigerian community leaders found that CSR initiatives improved community perceptions of companies (Adeyanju, 2018)

## **INDUSTRY REPORTS**

- A report by the Nigerian Stock Exchange found that CSR practices improved companies' access to capital and talent (NSE, 2020)

- A report by the Nigerian Business Council for Sustainable Development found that CSR initiatives enhanced companies' reputation and competitiveness (NBCSD, 2019)

The impacts of CSR (Corporate Social Responsibility) on the ministry of Prophet TB Joshua:

1. **Humanitarian Aid:** Prophet TB Joshua's ministry is known for its extensive humanitarian efforts, providing aid to victims of natural disasters, conflicts, and other crises.
2. **Education and Scholarship:** The ministry offers scholarships to students, supporting their educational pursuits and empowering them to become future leaders.
3. **Healthcare and Medical Support:** Prophet TB Joshua's ministry provides medical aid, healthcare services, and support to those in need, including those affected by HIV/AIDS, Ebola, and other diseases.
4. **Community Development:** The ministry engages in community development projects, such as building homes, providing clean water, and supporting small-scale businesses.
5. **Disaster Relief:** Prophet TB Joshua's ministry responds to natural disasters, providing relief materials, shelter, and emotional support to affected communities.
6. **Rehabilitation and Reintegration:** The ministry helps rehabilitate and reintegrate former militants, prostitutes, and other vulnerable groups into society.
7. **Environmental Sustainability:** Prophet TB Joshua's ministry promotes environmental sustainability through tree planting, waste management, and conservation efforts.
8. **Peacebuilding and Conflict Resolution:** The ministry promotes peace and resolves conflicts through mediation, counseling, and community engagement.
9. **Empowerment and Capacity Building:** Prophet TB Joshua's ministry empowers individuals and communities through skills training, mentorship, and capacity-building programs.
10. **International Diplomacy and Cooperation:** The ministry engages in international diplomacy and cooperation, fostering partnerships and collaborations to address global challenges.

Different businesses can embrace the practice of CSR in various ways, depending on their industry, size, and resources. Here are some examples:

1. **Small and Medium Enterprises (SMEs):**
  - Partner with local organizations to support community projects
  - Offer vocational training or apprenticeships to local youth
  - Donate products or services to local charities
2. **Large Corporations:**
  - Establish foundation or CSR departments to manage community investments
  - Implement sustainable practices in operations and supply chains

- Engage in philanthropic efforts, such as disaster relief or education initiatives
- 3. Retail Businesses:
  - Implement recycling programs or energy-efficient practices
  - Source products from local suppliers or fair-trade organizations
  - Host community events or fundraisers
- 4. Service-Based Businesses:
  - Offer pro-bono services to non-profits or community groups
  - Develop community programs or workshops related to their expertise
  - Partner with other businesses to amplify CSR impact
- 5. Agricultural Businesses:
  - Implement sustainable farming practices
  - Support local farmers' markets or community-supported agriculture programs
  - Donate excess produce to food banks or shelters
- 6. Technology Companies:
  - Develop digital solutions for social impact, such as education or healthcare platforms
  - Offer digital skills training or mentorship programs
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- 7. Manufacturing Businesses:
  - Implement sustainable manufacturing practices
  - Develop products with social or environmental benefits
  - Partner with suppliers who adhere to ethical standards

In terms of community development, businesses can:

1. Support Education:
  - Establish scholarships or mentorship programs
  - Donate resources or expertise to local schools
  - Develop educational content or workshops
2. Promote Health and Wellness:
  - Partner with healthcare organizations or initiatives

- Offer health-related products or services
- Support community health programs or events
- 3. Foster Economic Growth:
  - Offer job training or employment opportunities
  - Support local entrepreneurship or small business development
  - Invest in community infrastructure or development projects
- 4. Enhance Environmental Sustainability:
  - Implement sustainable practices in operations and supply chains
  - Support environmental conservation or restoration efforts
  - Develop eco-friendly products or services.

Suggestions for future researchers on Corporate Social Responsibility (CSR):

1. Explore new CSR frameworks and models: Develop and test innovative CSR frameworks that address emerging social and environmental challenges.
2. Investigate CSR in diverse contexts: Examine CSR practices in various industries, countries, and cultures to identify best practices and challenges.
3. Analyze the impact of CSR on business performance: Conduct longitudinal studies to assess the financial and non-financial benefits of CSR initiatives.
4. Examine the role of stakeholders in CSR: Investigate how different stakeholders (e.g., employees, customers, NGOs) influence and participate in CSR decision-making.
5. Develop CSR metrics and evaluation tools: Create standardized metrics and tools to measure CSR effectiveness and impact.
6. Investigate the intersection of CSR and technology: Explore how technology can enhance CSR initiatives and improve sustainability.
7. Examine CSR in small and medium-sized enterprises (SMEs): Investigate CSR practices and challenges in SMEs, which are often overlooked in CSR research.
8. Analyze the impact of CSR on supply chains: Examine how CSR initiatives affect supply chain management and sustainability.
9. Investigate the role of leadership in CSR: Examine how leadership styles and commitment influence CSR initiatives and outcomes.
10. Explore the intersection of CSR and human rights: Investigate how CSR initiatives address human rights issues and promote responsible business practices.

Benefits of practicing CSR (Corporate Social Responsibility) as an organization:

1. Enhanced Reputation: CSR activities improve public perception and reputation, leading to increased trust and loyalty.
2. Increased Customer Loyalty: CSR efforts demonstrate a commitment to social and environmental responsibility, attracting customers who share similar values.

3. Improved Brand Image: CSR activities enhance brand image and differentiate the organization from competitors.
4. Access to Capital and Funding: CSR practices can attract investors and funding opportunities focused on socially responsible investments.
5. Talent Attraction and Retention: CSR efforts appeal to top talent and improve employee retention, as employees are proud to work for a socially responsible organization.
6. Risk Management: CSR practices help identify and mitigate risks associated with social and environmental issues.
7. Cost Savings: CSR initiatives can lead to cost savings through energy efficiency, waste reduction, and supply chain optimization.
8. Increased Productivity: CSR efforts can boost employee morale, motivation, and productivity.
9. Compliance with Regulations: CSR practices help organizations comply with regulatory requirements and avoid legal issues.
10. Long-term Sustainability: CSR ensures the organization's long-term sustainability by addressing social and environmental challenges.
11. Improved Stakeholder Relationships: CSR efforts foster positive relationships with stakeholders, including customers, employees, investors, and the community.
12. Innovation and Competitiveness: CSR drives innovation and competitiveness by encouraging organizations to develop new products, services, and processes that address social and environmental needs.

## **SUMMARY**

This study examined the concept of Corporate Social Responsibility (CSR) and its significance in the Nigerian business environment. The research explored the motivations, practices, and outcomes of CSR initiatives in Nigeria, as well as the challenges and limitations faced by organizations.

## **CONCLUSION**

The study found that CSR is an essential aspect of business operations in Nigeria, with companies engaging in various CSR initiatives to improve their reputation, contribute to societal development, and comply with regulatory requirements. However, the study also identified challenges such as limited resources, lack of stakeholder engagement, and inadequate measurement of CSR impact.

## **FINDINGS**

- CSR motivations in Nigeria include reputation enhancement, societal contribution, and regulatory compliance.
- Common CSR practices in Nigeria include philanthropy, community development, and environmental sustainability initiatives.
- CSR outcomes in Nigeria include improved reputation, increased customer loyalty, and access to capital.

- Challenges faced by organizations in implementing CSR initiatives in Nigeria include limited resources, lack of stakeholder engagement, and inadequate measurement of CSR impact.

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# **EFFECT OF WAREHOUSING SYSTEMS MANAGEMENT ON THE SALES SUSTAINABILITY, PROFITABILITY AND MARKETING EFFICIENCY OF RICE DISTRIBUTORS IN EBONYI STATE, NIGERIA**

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## **ABSTRACT**

*This study examined effect of warehousing systems on sales sustainability of rice distributors in Ebonyi state, Nigeria. A multi-stage random sampling technique was used in choosing the sample. Primary data collected from total of 120 respondents that was the sample size for this study. Data used for the study were sourced primarily using questionnaire, observation and interview. Data collected were analyzed using simple descriptive tools like tables, means, percentages and frequencies as well as econometric tools like Z test. Findings showed that majority of the rice distributors (88%) are males, aged between 50 – 59 years (mean age of 54 years), married with (91%) followed by singles (7%) and widow/divorced (2%). The study showed that majority of the rice marketers had primary education (52%), followed by secondary education (23%) and tertiary education (18%). The average household size of the marketers is five (5). The average level of experience for the rice marketers is 22 years. Z-test analysis of difference in mean sales sustainability, marketing efficiency and profit of modern and traditional WHS were all statistically significant at 1% level implying that warehousing system significantly influenced the sales sustainability, marketing efficiency and profitability of rice distributors in Ebonyi state. The study recommends that rice distributors should be enlighten on the use of modern warehousing management system which sustain sales and enhances profitability*

**KEYWORDS: Warehousing, Warehousing management, Sales Sustainability, Profitability, Marketing Efficiency, Rice**

Rice as a cereal crop is cultivated in actually all the agro-ecological zones of Nigeria and is being produced with the aid of Nigeria farmers. The five predominant production systems are the upland rainfed, inland shallow swamp, deep water floating, lowland and irrigated rice producing structures. Among these producing structures, jrrigated rice production areas do have the very best yield per hectare, whilst the deep water floating continually has the least yield (Onyekwena, 2016). About 3.2 Million hectares have been beneath rice cultivation in Nigeria with an estimated country wide production of 3.7 million metric heaps in 2017 (United State Department of Agriculture, USDA, and Grain Report, 2017). Rice grain is being fed on by each household in a first-rate volume in Nigeria as it is essential for food security in the country (Chidiebere-Mark, Donatus, Polycarp, and Steve, 2019). Since rice production is usually seasonal and consumption is ordinary and non-stop at some stage in the year, good storage is therefore required by rice farmers and distributors, and when rice is stored in good extent it is called warehousing (Nwele, 2016).

Warehousing is considered as one of the main spheres of logistics. The broad meaning is the storage of finished goods or materials for manufacturing, agricultural or commercial purposes.

Warehouses are crucial components of most modern supply chains. They are likely to be involved in various stages of the sourcing, production and distribution of goods. At the dispatch point serving the next customer in the chain, warehousing is critical to the provision of high customer service levels (Sakil, 2013). Storage is the basic function of warehousing according to Smritiri (2015). Excess products which are not consumed immediately can be stored in warehouse. This excess products is supplied as and when needed by the customers. By bridging the gap between production and consumption, storage creates time utility (Uwaoma, Esi - Ubani, and Emeh, 2018). Modern warehousing and traditional warehousing are the two sorts of warehousing. Some of the practices in the modern warehouse encompass the use of automated storage, systematic storage, just-in-time delivery, appropriate record of inventory etc. Modern warehousing management system performs an imperative role in the success of businesses these days such as growing market volatility, product range proliferation and shortening client lead times, promoting off season, bulk storage and distribution, normal delivery which enhances sales sustainability and profitability and leads to efficiency (Timothy, 2019).

Sales sustainability is the means used by entrepreneurs to produce greater sales performance. Sale sustainability is the index used by entrepreneurs to measure sales performance. Such indices includes ability to keep customer (customer retainion), repeated purchase, stock ratio, competitive strength, turn over, earning market share, availability of stock etc. Firm location, number of customers, market training and access to credit are the main factors that determine sales sustainability. Also, the capacity of rice distributors to maintain precise patron service and relationship contributes to sustainable sales. This results in growing predictable sales with an expanding customer base, and profitability (Sustainable Packaging Coalition International, SPC International, 2014: Timothy, 2019).

Profitability is one of the most essential ingredients of performance evaluation as it shows the proportion of profit relative to asset investment, equity, or sales (Nguyen and Nguyen,2019). Profitability as measured by income and costs forms the basic aim of all commercial activities of entrepreneurs. Profitability simply means an income earned in a business after subtracting expenses from revenue. Profitability is one of the most important factors to consider when evaluating the succespecially of a business enterprise (Chima, 2024). Profitability can also be considered as the ability of a business enterprise to make earnings from all enterprise activities and stages. It refers to the potential of any given investment to earn a return. Proper management of accounting do increases sales sustainability, and enhances the profit of the organization which leads to efficiency in the use of resources (Timothy, 2019).

Efficiency reflects the ability to obtain maximum output from a given set of inputs. It is the process of how best a producer utilizes the resources (inputs) to produce the desired products (outputs). It could also be defined as the attainment of production goals without waste. The efficiency of production is highly important for growth in output. It involves using existing resources in the best possible way to produce the highest level of output for the given technological constraints (Chikezie, Benchendo, Ibeagwa, Oshaji, and Onuzulu, 2020; Aliyu and Shelleng, 2019). Marketing efficiency is the maximization of input-output ratio. The inputs of marketing are the various resources of land, labour, capital and management which are employed in performing the various marketing services. The output or marketing refer to the satisfactions derived from the consumption of those goods and services (Timothy, 2019). Igboji et al. (2015), in their study on rice profitability and efficiency in Ebonyi State suggested that rice manufacturing is surprisingly worthwhile and efficient. Rice production and distribution has a great contribution to the nation gross domestic product and income of the producers and distributors. Ekpe and Alimba (2013) noted that rice production in Ebonyi State has a positive gross margin and if producers will increase their inputs in production, the profitability of rice enterprise will increase more.



Ineffective management of warehousing systems leads to storage loss (Vipul, 2013). As storing products in traditional storage systems (warehousing) affects the sales sustainability, profitability and efficiency of entrepreneurs. FOA (2018), stated that the estimated post-harvest loss of rice in Nigeria is 24.9 percent resulting in a notable loss of income for farmers. Ohagwu, Akubuo and Agu (2013), in their study on submit harvest losses of rice at Ebonyi mentioned that 1000kg/ ton of rice are loss throughout post harvest operation. Thus, losses associated with these plants restrict the profits of all farmers, threaten food safety and will increase stipulations of poverty among rural households, whose income stream relies upon on the capability to store excess farm produce for a later date.

Nigeria is the greatest producer and consumer of rice in West Africa, but its local rice supply – demand deficit has persistently multiplied due to so many factors, amongst which are losses incurred during storage of rice as a end result of poor warehousing management and use of local storage devices (Samuel, 2016). Inadequate warehousing leads to irregular delivery, order inaccuracy, decreased volume capacity, reduced customer provider and limited efficient distribution network which impacts performance, out-rich to customer, distribution network, sales sustainability and profitability which consequences to inefficiency. Therefore appropriate use of warehousing management system such as the use of modern warehousing system in supply chain attributes to general sales growth by potential improvements in productivity, order accuracy, reduced space requirements, increased volume capacity, control of inventory and increased customer service of business enterprises (Timothy, 2019).

## **Methodology**

The study was conducted in Ebonyi State Nigeria, which is one of the major rice producing areas in Nigeria. The state was created in 1996 with 13 local Government Areas and 3 agricultural zones namely Ebonyi North (Izzi, Abakaliki, Ohaukwu and Ebonyi Blocks): Ebonyi Central (Ishielu, Ikwo, Ezza South and Ezza North Blocks) and Ebonyi South (Afikpo, Afikpo South, Onicha, Ivo and Ohazara Blocks). The State has a land mass of approximately 5,932km<sup>2</sup> and lies within latitudes 4°10'N and 14°10'N of the Equator and longitudes 3°0'E and 15°0'E of Greenwich meridian.

It shares a border with Benue State to the North, Enugu State to the West, Imo and Abia States to the South and Cross River State to the East. The State has an estimated population of about 2.9 million people (NPC, 2016). Ebonyi State has an average rainfall of 1200mm – 2000mm with temperature ranging from 33°C in the dry season and about 16°C to 18°C in the rainy season (EBADEP, Annual Record, 2005).

The people of Ebonyi State are predominantly farmers and traders. Their soil is organic and fertile which makes it very suitable for agriculture. The main crops produced in the State are rice, yam, palm produce, cocoa, maize, groundnut, plantain, banana, cassava, melon, sugar cane, beans, fruits and vegetables. Fishing is also carried out in Afikpo. The respondents were selected via multi stage random sampling method. First from each of the three agricultural zones, four Local Government Areas were randomly selected to give a total of 12 Local Government Areas. Secondly, two communities were randomly selected from each of the twelve Local Government Areas to give a total of 24 communities. Finally, in each community, five rice distributors were randomly selected from each of the 24 communities to make a total of 120 respondents that was the sample size for this study.

Data used for the study were sourced primarily using questionnaire, observation and interview. Data collected were analyzed using simple descriptive tools like tables, means, percentages and frequencies as well as econometric tools like Z test.

The Z test is given as  $(Z^*) = \frac{\bar{x}_1 - \bar{x}_2}{\sqrt{\frac{s_1^2}{n_1} + \frac{s_2^2}{n_2}}}$

Where  $\bar{x}_1$  = mean of sales sustainability for traditional warehousing management system.

$\bar{x}_2$  = mean of Sales Sustainability for modern warehousing management system.

$S_1^2$  and  $S_2^2$  = variance of the warehousing management systems.

$n_1$  = Number of traditional warehousing users respondents.

$n_2$  = Number of modern warehousing users respondents

This test is repeated for profitability and efficiency

## Results and Discussion

### Socio-economic Characteristics of Respondents

Analysis of Sex of the Respondents revealed that majority of the rice distributors (88%) are males. This is unlike retailing of rice that is usually dominated by females as they are less risky and energy demanding but requires more time and patience. This shows that both males and females participate in rice marketing, males being dominant as distributors while females are actively involved in rice retailing. Okwukenye and Onemolease (2011) who found that males dominated the marketing of agricultural products with 78.8% compared to females of 21.2%. Also Ejike and Chidiebere-Mark (2019), reported that majority of marketers are male.

Analysis of Age of rice distributors varied across age brackets. The average age for the marketers was 54 years. The study further showed that many of them (72%) were within the age range of 50 – 59 years. The dominant age range for the retailers (50 – 59 years) was dissimilar to the findings of Madugu and Edward (2011) on marketing and distribution channels of marketers. They reported that the marketers between the ages of 31-40 had highest percentage (46.35%) followed by those above 40 years (28.75%). Another study by Idowu et al. (2012), showed that majority of the marketers ranged between 36-45years (44%) followed by 46-55years (20%). This showed that majority of the marketers were within their active life. Age influences the ability to seek and obtain market jobs and income, which could increase marketers' income and ultimately their market efficiency.

Analysis of Marital Status of the Respondents showed that majority of the respondents were married with 93% and singles (7%). This indicated that rice marketing was a source of livelihood for the marketers and their families. This is in line with study by Kaingaand Adeyemo (2012), who found that marketers were dominated by married people (69%), while single and divorced people were 14% each. In the same vein, Idowu et al. (2012), found that married people were 72%. The supply of family labour would be more where the household heads are married. Marriage creates a conducive environment for good citizenship training, development of personal integrity and entrepreneurship which are very important for efficient use of resources (Chima, 2024).

Analysis of level of Education of the Respondents showed that most (52%) of the rice distributors had primary education, followed by secondary education (23%) and tertiary education (18%). Okwukenye and Onemolease (2011) reported that the highest qualification of agricultural produce marketers was NCE/OND which constituted about 5% of the marketers, secondary level of education was 70% followed by primary education (22.5%) and no formal education (2.5%). A

study by Agwu and Ibeabuchi (2011) found that 52 of that about 54 percent had attended secondary school, while 42 percent had acquired tertiary education. Adoption of agricultural innovations is also easier and faster among the educated marketers than the uneducated marketers and thus, moves them closer to the frontier output. Improved educational level brings about positive changes in the knowledge, attitude and skills through research and extension. The implication is that these respondents were better positioned to take advantage of new technique and innovation that could improve rice marketing. This is in line with the study by Ejike and Chidiebere-Mark (2019), who reported that majority of marketers had formal education.

Analysis of Household size of the Respondents showed average household size of the distributors was five (5). This is evident as the highest proportion (82%) of the respondents across the marketing channels had their household sizes between 1 and 5 persons. The economic implication is that it will provide the marketers with family labour and reduce cost of marketing and increase their revenue. A relatively large household size may likely enhance family labour supply in the market. Although, agricultural activities in developing countries like Nigeria are highly subsistent and labour intensive and often times depend on household labour, respondents are cautious of having more children than they can carter for, perhaps due to family planning drive. This could have informed the low family sizes of the rice marketers. This is notwithstanding that rice marketing involves buying, processing and packaging, and these activities are done in subsistence ways which require a lot of labour (Timothy, 2019).

Analysis of Level of Experience of the Respondents The average level of experience for the rice distributors is 22 years. This drew from the dominance of rice distributors who had 11-20years marketing experience consisting of 58%. Number of years a marketer has spent in marketing business may give an indication of the practical knowledge he has acquired on how he can overcome certain marketing problems. Marketers would count more on their marketing experiences for improved output rather than educational attainment. According to Ebe et al. (2022), the number of years an entrepreneur spent in business gives an indication of the practical knowledge he has acquired in order to overcome certain processing problems so as to increase productivity.

### **Effect of Warehousing Management Systems on Sales Sustainability, Profitability and Marketing Efficiency**

Z-test was employed to show if the gaps (sales sustainability, profitability and marketing efficiency) between these two warehousing management systems (Modern and Traditional systems) were statistically significant. In this research, warehousing management system is hypothesized to have no effect on the sales sustainability, profit performance and marketing efficiency of modern and traditional warehousing users. The results are presented in Table 3 and 4.

### **The Paired sample statistics**

Findings of the paired sample statistics showed a mean sales sustainability, marketing efficiency and profitability of modern WHS users as 0.85, 83.92 and N460, 284.4 respectively while it was 0.70, 70.44 and 240,042 for traditional WHS users respectively. The result therefore entails that there is a significant difference in the mean sales sustainability, marketing efficiency and profitability of modern and traditional WHS users.

### **Z-test analysis of difference in sales sustainability, profit and marketing efficiency.**

Z-test analysis of difference in mean sales sustainability, marketing efficiency and profit of modern and traditional WHS were all statistically significant at 1% level implying that warehousing system significantly influenced the sales sustainability, marketing efficiency and profit of rice distributors in Ebonyi state.

### **Conclusion**

Poor warehousing management leads to storage loss and food self-insufficiency due to huge post-harvest losses especially during storage of rice. Storage problems ranging from losses of products during storage, disease and insect attacks, inadequate drying, rodent attack, mishandling and use of poor containers are more severe among traditional warehouse management system users. As such, adequate warehousing leads to bulk distribution, coping with seasonal fluctuations, regular delivery, customer retention, repeated purchase by customers which enhances sales sustainability and profitability and leads to efficiency. The result of this study therefore shows a significantly statistical difference in the mean sales sustainability, marketing efficiency and profitability of modern and traditional warehousing systems implying that modern warehousing system significantly influenced the sales sustainability, marketing efficiency and profitability of rice distributors in Ebonyi state.

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**Table 1: Socio-economic characteristics of respondents**

<b>Variable</b>		
<b>Age</b>	<b>Freq.</b>	<b>%</b>
30-39	6	5
40-49	6	5
50-59	86	72
60-69	11	18
<b>Total</b>	<b>120</b>	<b>100</b>
<b>Mean</b>	<b>54 years</b>	
<b>Sex</b>		
Male	106	88
Female	14	12
<b>Total</b>	<b>120</b>	<b>100</b>

Source: Field survey, 2023.

**Table 2: Socio Economic Characteristics of the Respondents Cont**

<b>Variables</b>		
<b>Level of education</b>		
No formal education	8	7
Primary education	62	52
Secondary education	28	23
Tertiary education	22	18
<b>Total</b>	<b>120</b>	<b>100</b>
<b>Marital Status</b>	112	93
Married	8	7
Single	<b>120</b>	<b>100</b>
<b>Total</b>		
<b>Household size</b>		
1-3	12	10
4-6	98	82
7-9	10	8
<b>Total</b>	<b>120</b>	<b>100</b>
<b>Mean</b>	<b>5</b>	
<b>Years of experience</b>		
1-10	6	5
11-20	70	58
21-30	36	30
31-40	8	7
<b>Total</b>	<b>120</b>	<b>100</b>
<b>Mean</b>	<b>22 years</b>	

Source: Field survey, 2023.

**Table 4.3: Paired sample statistic**

		Mean	N	Std. Deviation	Std. Error Mean
Sales sustain	Modern	.85	50	.052	.007
	Traditional	.70	50	.098	.014
Marketing eff.	Modern	83.92	50	10.531	1.489
	Traditional	70.44	50	17.292	2.445
Profit	Modern	460284.39	50	311012.726	43550.493
	Traditional	240042.04	50	97472.771	13648.918

**Source: Field survey, 2023****Table 4: Z-test analysis of difference in sales sustainability, profit and marketing efficiency**

		Mean	Std. Deviation	Std. Error Mean	T	Df	Sig.
Sales sust.	Mod – Trad	.152	.116	.016	9.212	49	.000
Mkt. eff.	Mod – Trad	13.478	19.643	2.778	4.852	49	.000
Profit	Mod – Trad	220242.3	326595.083	45732.459	4.816	49	.000

**Source: Field survey, 2023**



## **ASSESSMENT OF THE OPERATION OF POINT OF SALES(POS) BUSINESSES IN REDUCING UNEMPLOYMENT RATE IN AFIKPO TOWN EBONYI STATE NIGERIA**

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### **ABSTRACT**

*Today's POS systems empower merchants to choose between conventional counter-top systems and interactive configurations, in which they control all aspects of their POS operations through an online portal. The objective of the study was to assess the influence of POS business has in the reduction of unemployment. And also, to find out if the generaric strategies used in POS business contribute to performance. The study was carried out to assess the operation of POS Businesses in Reducing Unemployment Rate in Afikpo town. A total of 286 operators were sampled. SPSS was used in the data analysis. Pearson correlation was used to test the hypothesis. The result obtained indicated that investment in POS businesses can help to reduce the rate of unemployment. The generic strategies used in the management of the business helped to increase performance. Based on the findings, the CBN should enact a law on how to protect the interest of the POS customers, so that fund will not be withdrawn in their account unauthorized. Also, Government and deposit money bank should encourage the use of pos to encourage unemployment reduction in Nigeria.*

### **INTRODUCTION**

#### **Background of Study**

Point of sale (POS) refers to the place where a customer executes the payment for goods or services and where sales taxes may become payable. It can be in a physical store, where POS terminals and systems are used to process card payments or a virtual sales point such as a computer or mobile electronic device (Okeke, Nwatu & Ezech, 2017).

POS systems saves money, provides productivity gains, and can cut down the amount of time you spend away from the primary focus of your business.( Ejiofo 2007).

Many businesses use these systems not only to accept payment, but to provide other operational information such as accounting, sales tracking, commercial retail banking and inventory management. Thus far, this system has gone a long way in improving customer's experience through customer loyalty programs and suggestions in businesses (Ojo, 2004).

Oxford dictionary of current English defined unemployment, as the state of being unemployed and the amount of unusual labour. Unemployment is also those people who are willing and able to work, but cannot find the job.



Therefore, in Afikpo, Ebonyi State where the research was carried out, the activities that was conducted is to investigate the Assessment of the operation of POS Businesses in Reducing Unemployment Rate.

### **Statement of Problems**

Investigation revealed that the consequences of Nigeria's high unemployment rate cannot be overstated. Though there is no accurate estimate of the unemployment rate, the reality of its magnitude is undeniable out of place. It was found out that corruption, lack of good governance, insufficient infrastructural services, lack of human capital growth, ineffective educational system, neglect of agriculture, the impact of globalization process, among other factors were responsible for the high rate of unemployment in Nigeria. (Smedan, 2013).

In the present day, Nigeria society has been afflicted with very serious unemployment problems. This account largely for the social ills that have been devilled, the country today such as, obtaining by false, pretences or advance fees found more popularity known “as 419” robbery, bribery and corruption and other vices (Uneca, 2011, Okonkwo & Ekwueme, 2022).

Against this background this study seek to assess the operation of point of sales business in reducing unemployment rate in Afikpo town, Ebonyi State Nigeria.

### **1.4 Objectives of Study**

The main objective of the study is to assess the operation of POS Businesses in Reducing Unemployment Rate using Afikpo, Ebonyi State . In achieving this, the following specific objectives are to:

1. Assess the impact of POS investment on reducing unemployment rate in Afikpo, Ebonyi State.
2. Identify Generic strategic commitment effects on performance and survival of POS businesses in Afikpo, Ebonyi State, and
3. Determine the impact of the benefits of POS business on increasing self employment in Afikpo, Ebonyi State.

### **1.5 Research Questions**

The following are research questions that will help to achieve the above stated objectives:

- How has investment in POS business impacted on reducing unemployment rate in Afikpo, Ebonyi State Nigeria?
- To what extent has the application of Generic strategic commitment impacted on performance and survival of POS businesses in Afikpo, Ebonyi State Nigeria?
- What impact Have the benefits of POS business on increasing self employment in Afikpo, Ebonyi State?

### **1.6 Research Hypothesis**

To achieve the specific objectives of this study, the following hypotheses are formulated:

Hypothesis One

- H01: POS investment has no significant impact on reducing unemployment rate in Afikpo, Ebonyi State.

- H02: Generic strategic commitment has no significant effects on performance and survival of POS businesses in Afikpo, Ebonyi State, and
- The benefits of POS business have no significant value on increasing self employment in Afikpo, Ebonyi State

## **1.7 Significance of Study**

This study will help to proffer solutions to the unemployment problems and the Nigeria society at large. It does applied that, if jobs could be provided for the unemployed youth, this could have a positive impact in the reduction of crime rate in our society and also the basics standard of the people will be expected to be improved.

This study will be of immense benefit to other researchers who intend to know more on this study and can also be used by non-scholars to build and solvetheir daily work. This study contributes to knowledge and could serve as a guide for other study.

## **LITERATURE REVIEW**

### **2.1 Conceptual Review**

The concept of assessing the impact of Point of Sale (POS) businesses on reducing the unemployment rate in Afikpo revolves around understanding how these businesses contribute to local economic development and job creation. POS businesses, which provide financial transaction services such as cash withdrawals, bill payments, and money transfers, play a significant role in the informal sector of the economy. Their proliferation has been linked to various socio-economic benefits, particularly in areas with high unemployment rates.

The rapid growth of POS businesses in Afikpo has been associated with several positive impacts on employment. According to Olayiwola & Ojo (2021), POS businesses create job opportunities by employing individuals directly as agents or staff members. These roles include managing transaction services, customer support, and other operational tasks. By providing employment, these businesses contribute to reducing local unemployment rates and improving the livelihoods of individuals in the community.

Moreover, POS businesses can stimulate economic activity and support local economies. As noted by Eze and Ugwu (2019), the presence of POS outlets can increase financial inclusion by providing access to banking services in underserved areas. This improved access can lead to increased economic activities, as individuals are better able to manage their finances and participate in the local economy. The subsequent economic activity can, in turn, lead to further job creation and reduction in unemployment.

Additionally, POS businesses often stimulate entrepreneurship and small business growth. According to Akinlo & Adejumo (2020), individuals who operate POS terminals may also engage in other business ventures or expand their services, contributing to broader economic development. The growth of these businesses can create additional employment opportunities and support local entrepreneurs, thereby contributing to the reduction of unemployment. The adoption of PoS terminals has significantly reduced the volume of cash-based transactions, as such adoption of PoS technology allows cardholders to make payments at sales or purchase outlets without the need for physical cash (osang, 2017, Olowokere 2022)).

### **2.2. 1 Theoretical Review**

The theoretical review on assessing the impact of Point of Sale (POS) businesses in reducing unemployment rates in Afikpo can be grounded in several key economic and business theories that explain how these businesses influence job creation and economic development.

One pertinent theory is the Economic Development Theory. This theory, as outlined by Todaro & Smith (2011), suggests that economic development is achieved through the growth of various sectors, including the informal sector, which can significantly contribute to employment creation. POS businesses, by providing financial services in underserved areas, can stimulate local economic activity and create job opportunities. This theory supports the idea that the expansion of POS services can play a role in reducing unemployment by enhancing financial accessibility and stimulating local economic growth.

Another relevant theory is the Entrepreneurship Theory. According to Schumpeter (1934), entrepreneurship drives economic change and development by introducing innovations and creating new business opportunities. POS businesses, as a form of entrepreneurial activity, not only provide direct employment but also foster additional entrepreneurial ventures. By offering financial services and acting as intermediaries, POS operators can stimulate other business activities, leading to increased job creation and reduced unemployment. This theoretical perspective highlights the role of POS businesses in promoting entrepreneurship and its subsequent impact on employment.

The Financial Inclusion Theory is also crucial in this context. This theory posits that access to financial services is essential for economic empowerment and development (Zins & Weill, 2016). POS businesses contribute to financial inclusion by providing banking services in areas that might otherwise lack such access. Improved financial inclusion can empower individuals to engage in economic activities, start businesses, and ultimately reduce unemployment. This theory underscores the importance of financial accessibility in enhancing economic opportunities and addressing unemployment issues.

Finally, the Job Creation and Local Economic Development Theory can be applied to understand the impact of POS businesses on employment. According to McQuaid & Lindsay (2005), local economic development initiatives that stimulate job creation can significantly impact unemployment rates. POS businesses contribute to local economic development by increasing financial transactions and supporting small businesses. This theory suggests that the growth of POS businesses can lead to job creation both directly, through POS operations, and indirectly, by fostering local economic activities and supporting other business.

## **The Benefits of POS**

For the purpose of saving money POS have the following advantages:

- a) **Eliminate shrinkage.** A computerized point of sale system can drastically cut down on shrinkage, the inventory that disappears from your store or restaurant due to theft, wastage, and employee misuse. Because employees will know that inventory is being carefully tracked, internal shrinkage will dwindle.
- b) **Improves accuracy.** Whether you use barcode scanning or not, POS systems ensure that every item in your store or on your menu is sold for the correct price. Your staff will never miss-enter or guess prices again, and you can change prices with just one tweak in the computer.

**(c) Better manage inventory:** Detailed sales reports make it much easier for you to keep the right stock on hand. Track your remaining inventory, spot sales trends, and use historical data to better forecast your needs. Often, the software can alert you to when stocks run low.

**(d) Reduce paper ordered work:** POS systems reduces the time spent doing inventory, sales figures, and other repetitive but important paperwork. The savings here: time and peace of mind.

### **Concept of Hospitality POS and Retail POS Systems**

The POS market is divided into two segments with vary different needs:

#### **Retail POS Systems**

Of the two groups, retailers have simpler POS needs. Their transactions are completed all at once, and there is often less variation in the types of products they sell. Some POS features retailers may specifically want include the ability to support kits (e.g. 3 for \$2 deals), returns and exchanges, and support for digital scales.

#### **Hospitality POS System**

This type of POS establishment, is commonly used in restaurants and other hospitality businesses where they have different requirements from POS systems. Lewis (2002) stated that well-integrated hotel POS systems allow you to transfer meal charges from the dining room to guests' rooms with just a button or two pressed. Hotel managers need to be aware that not all POS systems integrate with all property management software).

### **Generic Strategies of SMEs**

There have been different views of scholars on the need for SMEs to develop strategies and the impact on the performance and survival of SMEs. Different questions creating varying controversies had been put up by scholars with respect to competitive strategies. For SMEs to be competitive in their industry it is essential they develop strategies that will guide their activities in the industry or they could as well build their potentials to adjust to different changes within the environment thereby gaining competitive advantages. They further noted that the environment is highly volatile, therefore developing a single strategy and sticking to it could affect the ability of any firm to compete effectively in the environment. This view is supported by:(Zhang, Vonderembse, & Lim, 2003, Parnell, 2010, Porter 1980, D' Amboise 1993, Caloghirou, Protogerou, Spanos, & Papagiannakis, 2004; Parnell, 2010; Thornhill & White, 2007).

### **Unemployment Functionality**

Economic slowdowns are the primary cause of unemployment on a national level. As the economy slows, businesses are forced to cut costs by reducing payroll expenses. Competition in particular industries or companies can also cause unemployment. Advanced technology, such as computers or robots, can cause unemployment by replacing worker tasks with machines.

### **Types of Unemployment**

The U. S Bureau of Labor Statistics (BLS) doesn't count everyone who is jobless as unemployed. It excludes those who haven't looked for work within the past four weeks. The BLS also removes

them from the labor force, which is made up of the employed and unemployed. Most people who voluntarily leave the labor force do so because of (Thebalance, 2021):

1. Retirement
2. A disability that keeps them from working
3. School
4. Family responsibilities
5. Lack of need or interest in working

### **Effect of Unemployment**

According to Thebalance (2021), the effects of unemployment for individuals are financially and emotionally destructive. Long-term unemployment can lead to financial instability or poverty, which can also cause physical and mental health problems (Thebalance, 2021). The consequences can also be harmful to the economy if unemployment rises above 5% or 6%. Those who are unemployed long-term may find that their job skills no longer match the requirements of the new jobs being offered. (Thebalance, 2021).

This study seek to investigate how the introduction of POS Businesses in Afikpo has reduced the effect of unemployment by encouraging self employment through the investment in POS businesses by individuals to increase their living standards.

### **Empirical Studies**

Anyanwu & Anumaka (2020) examined the impact of point of sale transactions on cashless policy, issues, and prospects in the Nigerian economy. The study used a survey research design and analyzed data collected from a sample population of 500 respondents drawn from various point of sale operating centers. The results showed that point of sale transactions had a significant and positive impact on the cashless policy in Nigeria.

In the study conducted by Okeke, Nwatu, &Ezeh (2017), the researchers sought to understand the factors that impact the adoption of Point of Sale (PoS) e-payment systems in Nigeria.. The study was based on a sample of 400 respondents in Awka, Nigeria and the results showed that PEOU and PU positively had a significantly impact on PoS adoption.

Nwude, Igweoji, & Udeh (2020) studied the role of point of sale terminals as a tool for financial inclusion in Nigeria. Using alongitudinal research design, the researchers analyzed data collected from the Central Bank of Nigeria, National Financial Inclusion Strategy Bulletin, and World Bank economic indicators from 2007 to 2017. Regression analysis was performed, and the results showed that the use of point of sale terminals has made a positive but non-significant contribution to promoting financial inclusion in Nigeria.

## **RESEARCH METHODOLOGY**

### **Research Design**

The researcher used descriptive research survey design in building up this research work the choice of this research design was considered appropriate because of its advantages of identifying attributes of a large population from a group of individuals.

## Population of Study

A total of three hundred (300) respondents formed the population of the study. The population of the study covers only few reached PoS business operators in Amasiri, Akpoha, Amuro, Amangballa, Amankwo, Amaobollobo, Amachi, Amangwu, Enohia Nkalu, Enohia Item, Mgbom, Ngodo, Ndibe, Amaekwu, Ozizza/Ibii, Ukpa, Ugwuegu, and Uwana Communities all in Afikpo North LGA of Ebonyi state south East Nigeria.

## Sampling and Sampling Technique

The researcher used the Yamane Taro (1967) sample estimation technique.

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

**n:** describes the sample size.

**N:** describes total number of population of the area

**e:** describes maximum variability or margin of Error = 0.05.

**1:** describes the probability of the event occurring.

$$n = 1000 \frac{1}{1 + 1000(0.05)^2}$$

$$1 + 1000(0.05)^2$$

$$n = 1000 \frac{1}{1 + 1000(0.0025)}$$

$$1 + 1000(0.0025)$$

$$n = 1200 / (1 + 3) = 1200 / 4 = 300$$

Based on the applied sample estimation technique, an estimated sample size of three hundred (300) respondents were adopted, being PoS business operators operating in Afikpo Ebonyi South East Nigeria while two and eighty six were returned and were used.

## Method of Data Collection

Data was collected using primary and secondary sources.

## Validation of Research Instrument

Content validity and a face-to-face validity were assured to determine the extent to which the instrument can measure the variables they are structured to determine and measured.

## Reliability of Research Instrument

Reliability of Research Instrument refers to consistency of results. Test and re-test validity was made by administered the questionnaires to twenty (20) selected respondents in departments of HRM, Operations and Customers Care of EcoBank Afikpo, and repeated after four weeks.

## Data Analyses and Interpretations

### Descriptive Statistics of all the Variables

The variables of the study were presented in the descriptive statistics table below, which shows minimum, maximum, means, standard deviations as presented in the table below.

**Table 1. Descriptive Statistics of all the Variables**

#### Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Marital Status of the Respondents	286	1	2	1.39	.411
Gender of Respondents	286	1	2	3.19	.481
Age of Respondents	286	1	4	2.42	.891
How long the business started	286	2	4	4.55	.487
Current Status of your Business	286	1	4	2.41	.833
Highest Educational Qualification	286	1	5	3.76	.822
Valid N (listwise)	286				

Source: Researchers data analysis

### Testing of Hypotheses

#### Hypothesis 1

H0: POS investment has no significant impact on reducing unemployment rate in Afikpo, Ebonyi State.

H1: POS investment has a significant impact on reducing unemployment rate in Afikpo, Ebonyi State.

The result shows that there was a strong, positive correlation between the two variables,  $r = .801$ ,  $n = 286$ ,  $p < .000$ . It indicates that the higher investment in POS businesses in Afikpo, the more likely that the unemployment in the area will reduce.

**Table 2. Investment in POS and unemployment reduction**

#### Correlations

		Total POS investment	Total reduction of unemployment
Total POS investment	Pearson Correlation	1	.801**
	Sig. (2-tailed)		.000
	N	286	286
Total reduction of unemployment	Pearson Correlation	.801**	1
	Sig. (2-tailed)	.000	
	N	286	286

\*\*. Correlation is significant at the 0.01 level (2-tailed).

## Hypothesis 2

H0: Generic strategic commitment has no significant effects on performance of POS businesses in Afikpo, Ebonyi State.

H1: Generic strategic commitment has a significant effect on performance of POS businesses in Afikpo, Ebonyi State.

The result of the second hypothesis tested indicates that there was a strong, positive correlation between the two variables,  $r = .655$ ,  $n = 286$ ,  $p < .000$ . The implication of the result is that POS owners apply generic strategic management in the implementation of their businesses, the more likely that the performance of their POS businesses is likely to improve.

**Table 3. Generic Strategic commitment and performance of the POS businesses**

### Correlations

		Total generic strategic commitment	Total performance of POS business
Total generic strategic commitment	Pearson Correlation	1	.655**
	Sig. (2-tailed)		.000
	N	286	286
Total performance of POS business	Pearson Correlation	.655**	1
	Sig. (2-tailed)	.000	
	N	286	286

\*\*. Correlation is significant at the 0.01 level (2-tailed).

## Hypothesis 3

H0: The benefits of POS business have no significant influence on increasing self-employment in Afikpo, Ebonyi State

H1: The benefits of POS business have a significant influence on increasing self-employment in Afikpo, Ebonyi State

The final hypothesis tested found that there was a strong, positive relationship between the two variables,  $r = .923$ ,  $n = 286$ ,  $p < .000$ . The result indicates that the more the people of Afikpo to continue to benefit in their investment in POS businesses, the more likely the rate of self-employment increase.



**Table 4. POS business and self-employment****Correlations**

		Total POS business	Total self-employment
Total POS business	Pearson Correlation	1	.923**
	Sig. (2-tailed)		.000
	N	286	286
Total self-employment	Pearson Correlation	.923**	1
	Sig. (2-tailed)	.000	
	N	286	286

\*\* . Correlation is significant at the 0.01 level (2-tailed).

**Discussions of Findings**

The first hypothesis test was to ascertain if investment in POS business can help to reduce unemployment. The result shows that there was a strong, positive correlation between the two variables,  $r = .801$ ,  $n = 286$ ,  $p < .000$ . This result shows that investment in POS business helped in reducing the rate of unemployment. Point of sale system jobs include sales, maintenance, and support positions. These offers huge market potential for POS given Nigeria's large unbanked population. However, POS businesses face challenges like lack of electricity, network issues and security. This agrees with the study of (Anyanwu & Anumaka, 2020)

Generic strategic commitment was found to have a strong, positive relationship on performance of POS businesses in Afikpo, Ebonyi State. The result indicates that there was a strong, positive correlation between the two variables,  $r = .655$ ,  $n = 286$ ,  $p < .000$ . The implication of the result is that POS owners apply generic strategic management in the implementation of their businesses, the more likely that the performance of their POS businesses is likely to improve. This agrees to (Agwu 2013) research on employees commitment.

The final hypothesis tested the relationship between the merit of POS business and self-employment. It was found that there was a strong, positive relationship between the two variables,  $r = .923$ ,  $n = 286$ ,  $p < .000$ . The result indicates that the more the people of Afikpo to continue to benefit in their investment in POS businesses, the more likely the rate of self-employment increase. This relates to the findings of (Okeke, Nwatu, & Ezeh 2017).

**Summary of the study**

The study was specifically focused on assessing the impact of POS business on unemployment, that is to ascertain if POS businesses can decrease unemployment in Afikpo in particular and Ebonyi state in general. The study adopted a survey research design and randomly selected participants for the study. A total of 240 participants took part in the study. The result shows that there are significant positive correlations for all independent and dependent variables used for the study.

## Conclusion

The innovation of the use of POS in the banking business in Nigeria has rapidly helped to reduce the rate of unemployment, by generating humongous employment opportunities to a good number of Ebonyi people and Nigerians respectively. Many youths have secured a self-employment space through the use of POS devices. POS business has affected lives of the many average Nigerians positively by creating job opportunities and enhancing entrepreneurship. Many young graduates can now set up POS business on their own and support the family. Some individuals even have multiple outlets, employed staff and operate as branches. Also, people with full time jobs also run the POS business by employing someone or people as the case might be. This means an employee is also a boss and an employer to another person. This is the beauty of entrepreneurship and the many options the POS business creates.

## Recommendations

1. Based on the findings of this study, the researcher recommends that both the Afikpo LGA and the Ebonyi State governments should empower more unemployed youths to establish POS businesses, as it helps to reduce the rate of unemployment in the area.
2. POS operators need to have a very good relationship with their bank officer in case of failed or pending transactions, as customers' service time need to be considered and the satisfaction of each customer is key to the success of the POS business.
3. It is worthy to recap that new entrants to the POS business should not expect immediate big income but with time, it is envisaged that they will break.

## Recommendation for future study

Future studies should endeavour to include wider area in the study, like the whole of the state or all South East states.

## Contribution to knowledge

The study is the first of its kind in the whole of Afikpo LGA and probably in whole of Ebonyi State. Therefore, this study is ground breaking. It will surely contribute new insights, new ideal into nature of POS business operation in the state.

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# WORKPLACE MEDIA POLICIES AND EMPLOYEE FOCUS: EVALUATING THE ROLE OF ORGANIZATIONAL REGULATION IN CONTROLLING DIGITAL DISTRACTIONS

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## ABSTRACT

*This study investigates the effectiveness of workplace media policies and organizational regulations in mitigating digital distractions and enhancing employee focus. Using a survey design, data were collected from 200 employees via structured questionnaires. Descriptive (mean, standard deviation) and inferential statistics (regression analysis, ANOVA) were applied for analysis. The findings reveal that both workplace media policies and organizational regulations have a significant impact on reducing digital distractions and improving employee focus and productivity. Policies that are clear, flexible, and consistently enforced are more effective, while overly restrictive regulations can lead to covert device use and increased stress. The study concludes that a balanced approach to regulation, involving employee participation in policy formulation, can foster a productive work environment that minimizes distractions without compromising employee autonomy. Organizations are encouraged to adopt adaptable media policies, involve employees in policy creation, and regularly review and update these policies to keep pace with technological advancements. Leadership training in digital behavior modeling and enforcing regulations is also recommended for long-term effectiveness.*

**KEYWORDS:** Digital distractions, workplace media policies, employee focus, organizational regulations, productivity, digital technology,

## 1.1 Introduction

In the modern workplace, the rise of digital technology has dramatically altered how employees perform their tasks and communicate with others. While digital media facilitates ease of communication and access to information, it has also introduced new challenges in the form of digital distractions. Digital distractions, characterized by excessive use of social media, instant messaging, and non-work-related online browsing, have been linked to declines in employee focus, productivity, and overall work performance (Rosen et al., 2013). As organizations increasingly rely on technology to drive their operations, the need for regulating employee engagement with digital media has become more critical.

Workplace media policies, designed to govern employees' use of digital media during work hours, are one of the approaches organizations have adopted to manage these distractions (McAfee,

2016). These policies typically outline what is acceptable in terms of media usage and the consequences of non-compliance. However, the effectiveness of such policies varies across organizations and is dependent on several factors, including the nature of the work, organizational culture, and the enforcement of regulations (Goldfarb & Tucker, 2019). As organizations increasingly rely on technology to drive their operations, the need for regulating employee engagement with digital media has become more critical.

This study aims to explore the role that organizational regulation plays in controlling digital distractions and its impact on employee focus.

## **1.2 Statement of the Problem**

Digital distractions have emerged as a significant problem in contemporary workplaces. Employees are frequently interrupted by non-work-related notifications, such as social media alerts, which detract from their ability to remain focused on their tasks (Mark et al., 2015). As a result, organizations are faced with the challenge of curbing these distractions without overly restricting employee autonomy or stifling creativity. Existing research has examined the effects of digital distractions on productivity; however, limited attention has been given to the role of workplace media policies in addressing these issues. This gap stresses the need for further investigation into how organizations can effectively regulate digital media use while maintaining a productive work environment.

## **1.3 Objectives of the Study**

The primary objective of this study is to examine the relationship between workplace media policies and employee focus, with a specific focus on the role of organizational regulation in mitigating digital distractions. The specific objectives are:

1. To analyze the effectiveness of workplace media policies in managing employee digital distractions.
2. To assess the impact of organizational regulations on employee focus and productivity.

## **1.4 Research Questions**

This study will be guided by the following research questions:

1. What is the effectiveness of workplace media policies in managing employee digital distractions?
2. What the impact of organizational regulations on employee focus and productivity?

## **1.5 Research Hypothesis**

1. There is no significant effect of workplace media policies in managing employee digital distractions.
2. There is no significant impact of organizational regulations on employee focus and productivity.

## **Review of Related Literature**

### **2.1 Digital Distractions in the Workplace**

Digital distractions are commonly defined as interruptions caused by the use of digital devices, particularly for non-work-related purposes. A study by Mark et al. (2018) demonstrated that employees typically switch tasks every 3-5 minutes due to digital interruptions, which significantly reduces their ability to concentrate and complete tasks efficiently. These interruptions range from checking personal emails and social media notifications to responding to instant messages unrelated to work. The proliferation of remote work and hybrid workplace models has further exacerbated these distractions, making it challenging for employees to maintain consistent focus (Molino et al., 2020). Additionally, digital distractions have been linked to an increase in stress and cognitive overload. According to Leroy et al. (2021), when employees frequently shift their attention between work tasks and digital distractions, their cognitive load increases, resulting in decreased efficiency and higher levels of frustration. This highlights the need for effective strategies to manage digital distractions in the workplace, such as implementing robust media policies that help employees stay focused without feeling overly constrained.

#### **2.1.1 Organizational Media Policies**

Workplace media policies are designed to regulate employees' use of digital media during working hours. These policies can range from restrictive (banning personal use of digital devices entirely) to permissive (allowing limited use of social media or other digital platforms during breaks). According to a study by Meng & Berger (2019), organizations that implemented clear and consistent media policies reported lower levels of digital distractions and improved employee focus. However, overly restrictive policies can lead to employee dissatisfaction, as they may perceive such policies as a lack of trust from their employers (Koch et al., 2021). The effectiveness of media policies also depends on how they are communicated and enforced. Charoensukmongkol (2021) emphasizes that policies should be co-created with employees to ensure buy-in and compliance. Employee involvement in policy formulation leads to a greater sense of ownership, reducing resistance to the policies. The study also highlights that media policies should be flexible and regularly updated to adapt to changes in technology and work environments.

#### **2.1.2 Impact of Media Policies on Employee Focus**

Research indicates that media policies can significantly impact employee focus and productivity. For instance, a study by Lim & Teo (2020) found that employees working in organizations with well-defined media policies experienced fewer digital distractions and were able to maintain higher levels of focus throughout the day. These policies provided clear guidelines on acceptable digital media usage, which helped employees manage their time better. Conversely, poorly implemented or overly restrictive policies can have the opposite effect. Employees in environments with rigid media regulations often resort to covertly using their devices, which can lead to increased stress and further distractions (Eisenberg et al., 2022). This underscores the importance of creating balanced policies that allow for some degree of personal digital use while maintaining a focus on work-related tasks. Another key consideration is the role of leadership in enforcing media policies. Leaders who model appropriate digital behavior can positively influence their teams and reinforce the importance of adhering to media policies. According to a study by Wang & Cooper (2021), leaders who set clear expectations and demonstrate consistent adherence to media policies see better compliance from their employees, resulting in fewer digital distractions and improved overall performance.

### **2.1.3 Implementation Media Policies**

The success of workplace media policies depends on their formulation, implementation, and continuous evaluation. Several studies suggest best practices that organizations can adopt to optimize the effectiveness of these policies. For instance, according to Plomp et al. (2021), organizations should create policies that are adaptable to different roles and work environments. Employees in creative or innovation-driven roles may require more flexibility in their media use compared to those in administrative positions, where focus and attention to detail are critical. Another best practice is the incorporation of digital detox periods, which encourage employees to take breaks from digital media entirely. This can help reduce cognitive overload and improve focus (Brown & Lepp, 2020). Organizations can also invest in training programs that teach employees how to manage digital distractions effectively. Such programs can include time management techniques, mindfulness practices, and strategies for prioritizing work tasks over personal digital use (Harms et al., 2019). Regularly updating media policies to reflect technological advancements and changes in work environments is also crucial. As noted by Lucas & Kang (2021), organizations that regularly review and update their media policies are better equipped to address new sources of digital distractions, such as the emergence of new social media platforms or the increasing use of collaboration tools that may lead to information overload.

## **2.2 Theoretical Framework**

### **2.2.1 Media Richness Theory**

Media Richness Theory was developed by Richard L. Daft and Robert H. Lengel in 1984 (Daft & Lengel, 1986). It provides a framework for understanding how different communication media impact the effectiveness of information exchange. The core concept of the theory is "media richness," which refers to the capacity of a communication medium to convey information effectively and reduce ambiguity. Richer media are better equipped to handle complex and nuanced communication, while leaner media are more suited for straightforward interactions. The theory categorizes media along a continuum based on their richness. Rich media, such as face-to-face meetings, video calls, and telephone conversations, offer high levels of richness due to their ability to provide immediate feedback, use multiple cues (e.g., visual and auditory), and convey personal emotions. Conversely, lean media, including emails, memos, and written reports, lack these features and are therefore positioned lower on the richness continuum.

According to Media Richness Theory, the effectiveness of a communication medium is contingent upon its fit with the complexity of the task at hand. Rich media are more appropriate for tasks that involve high levels of information exchange and require mutual understanding, such as complex problem-solving or negotiations. Lean media, on the other hand, are better suited for routine and simple communication tasks where minimal ambiguity is present. The theory highlights the role of media in information processing, suggesting that richer media facilitate better understanding and decision-making by providing more context and reducing misunderstandings. This is particularly important for complex or ambiguous tasks where clarity and shared understanding are crucial. Rich media help in clarifying information and ensuring that all parties are on the same page.

In organizational contexts, Media Richness Theory aids in selecting the appropriate communication channels for different types of tasks. For instance, strategic planning and high-stakes meetings are typically conducted using rich media to ensure effective communication and collaboration. Conversely, routine updates or straightforward instructions may be efficiently managed through lean media such as emails or reports. With the advent of remote work, the theory



has gained renewed relevance. Organizations must carefully choose communication tools that balance richness and efficiency, particularly for teams spread across different locations. Technologies such as video conferencing and collaborative platforms are increasingly employed to maintain effective communication and collaboration in virtual settings.

### **2.3 Empirical Review**

Divya, & Narwal (2023) studied digital distractions in the workplace: exploring cyberloafing impact on employee behaviour and innovation. The purpose of the study was to know in which type of cyberloafing activities employees are engaged and how these cyberloafing activities impact employee behavioural factors (such as recovery, development, addiction and deviance) and innovative work behaviour. For this purpose, data were collected from public sector employees and private sector employees from the educational as well as healthcare sectors residing in Haryana. The data were collected from 150 respondents through questionnaires and analysed by using structural equation modelling SEM-PLS. The study is based on the concept considering cyberloafing as a multidimensional construct that includes cyberloafing activities (social, informational, virtual and leisure) and cyberloafing behaviour (recovery, development, deviance and addiction). The findings of the study indicate that cyberloafing activities have a significant positive impact on employee innovative work behaviour. The present research findings are beneficial for organisations to be aware of cyberloafing activities in which employees are engaged and cyberloafing behaviour which companies are interested to know. This study has important implications for organisations looking to adapt to new technologies and efficiently control cyberloafing behaviours in the digital world.

Marsh, Vallejos & Spence (2022) examined the digital workplace and its dark side: An integrative review. Research has burgeoned in this area in recent years, but an integrated view across fields, technologies, dark side effects and outcomes is lacking. There are potential insights to be gained from compiling and comparing results and theoretical approaches. Following integrative review procedures, 194 studies were analysed to understand unintended negative consequences of a range of workplace technologies across disciplines and methodologies. The results demonstrate that considerable insight has been uncovered regarding certain dark side effects, stress in particular, in relation to e-mail and smartphones. However, a broader view of how they might manifest in relation to employees' holistic digital experience of work beyond certain information and communication technologies (ICTs) is lacking, including a clear picture of objective demands of the technology with which these effects are associated. Much remains to be understood across the full range of dark side effects in relation to the digital workplace including the associations between them and how they relate to cognitive and affective outcomes. The importance of both theoretical rigour and diversity is highlighted.

Dodokh (2022) examined the impact of personal social media use at work on workplace outcomes. A quantitative analysis of data from 419 organisational employees in Jordan using SEM-PLS reveals that personal social media use at work is a double-edged sword as its impact differs by usage types. First, the social use of personal social media at work reduces job burnout, turnover intention, presenteeism, and absenteeism; it also increases job involvement and organisational citizen behaviour. Second, the cognitive use of personal social media at work increases job involvement, organisational citizen behaviour, employee adaptability, and decreases presenteeism and absenteeism; it also increases job burnout and turnover intention. Finally, the hedonic use of personal social media at work carries only negative effects by increasing job burnout and turnover intention. This study contributes to managerial understanding by showing the impact of different types of personal social media usage and recommends that organisations not limit employee access to personal social media within work time, but rather focus on raising awareness of the negative

effects of excessive usage on employee well-being and encourage low to moderate use of personal social media at work and other personal and work-related online interaction associated with positive workplace outcomes.

### 3. Methodology

The research employs a survey design, which is well-suited for this study as it facilitates the collection of both quantitative, providing insights into employees' perceptions of workplace media policies and their effects on focus and productivity. The study targets employees from organizations where digital media is integral to daily tasks, focusing on industries such as finance, marketing, information technology, and education sectors notably prone to digital distractions. The population comprises approximately 500 employees across these industries, including individuals in management, administrative, and creative roles to ensure a comprehensive understanding of media policy impacts. A stratified random sampling technique was employed to ensure representation from various job roles and departments, dividing the population into strata based on job roles and randomly selecting samples from each stratum. Cochran's formula was used to determine the sample size, aiming for approximately 200 participants to achieve statistical significance and facilitate meaningful group comparisons. Data was collected through structured questionnaires distributed electronically via Google Forms. A 5-point Likert scale was used measuring responses. To ensure the validity and reliability of the instruments, the questionnaire was validated by experts and refined through a pilot study with 20 participants. Reliability was assessed using Cronbach's alpha, aiming for a threshold of 0.7. Data was analysed with descriptive and inferential statistics (mean, standard deviation, regression analysis, ANOVA) using SPSS.

**Table 1: Analysis of Research Questionnaire Administered**

Questionnaire distributed	Questionnaire Returned	Questionnaire not returned	Percentage returned	Percentage not returned
200	180	20	90	10

Source: Field survey 2024

A total of 200 questionnaires were distributed to employees across different industries, and 180 completed questionnaires were retrieved, giving a response rate of 90% and 10% were not returned. This high response rate was largely attributed to the ease of distributing the questionnaire electronically and the follow-up reminders sent to participants.

### Demographic Characteristics of Respondents

**Table 2:** The demographic characteristics of the respondents were analyzed to provide context for the study. The data gathered includes gender, age, level of education, and job role.

Demographic Variable	Frequency	Percentage (%)
<b>Gender</b>		
Male	110	61.1
Female	70	38.9
<b>Age Group</b>		
18-25	30	16.7
26-35	90	50.0
36-45	45	25.0
46 and above	15	8.3
<b>Level of Education</b>		

Undergraduate	60	33.3
Postgraduate	90	50.0
Professional Qualification	30	16.7
<b>Job Role</b>		
Administrative	40	22.2
Creative	60	33.3
Management	40	22.2
IT	40	22.2

Source: Field survey 2024

The majority of respondents (61.1%) were male, and most (50%) were aged between 26 and 35 years. Regarding education, 50% held postgraduate qualifications, and the distribution of job roles was fairly balanced across administrative, creative, management, and IT roles.

## Data Analysis and Results

### Analysis of Research Objectives

**Research Question One:** What is the effectiveness of workplace media policies in managing employee digital distractions?

**Table 3: Descriptive statistics for the effectiveness of workplace media policies in managing employee digital distractions**

S/N	Variables	Mean	Standard Deviation
1	The media policy is clear and easy to understand.	4.1	0.76
2	The policy helps me manage my time better during work hours.	3.9	0.82
3	Digital media policies reduce distractions from personal devices.	3.8	0.87
4	The policy enforcement is consistent and fair.	3.7	0.92
5	The policy allows for flexible use of media during breaks.	3.9	0.84

Source: Field survey 2024

The mean values suggest that respondents generally perceive workplace media policies as effective in managing digital distractions, particularly in terms of clarity (mean = 4.1) and time management (mean = 3.9). However, the consistency of policy enforcement scored slightly lower (mean = 3.7), indicating room for improvement.

**Research Question Two:** What is the impact of organizational regulations on employee focus and productivity?

**Table 4: Descriptive statistics for the impact of organizational regulations on employee focus and productivity**

S/N	Variables	Mean	Standard Deviation
1	Organizational regulations improve my focus on work tasks.	4.0	0.78
2	The regulations minimize distractions during work hours.	3.9	0.80

3	Regulations positively affect my productivity.	3.8	0.84
4	The policies support a productive work environment.	4.1	0.75
5	Leaders enforce media policies consistently, improving focus.	3.7	0.88

Source: Field survey 2024

The mean values suggest that respondents believe organizational regulations improve focus (mean = 4.0) and support a productive environment (mean = 4.1). However, the enforcement of media policies by leaders scored slightly lower (mean = 3.7), again highlighting potential enforcement issues.

## Hypotheses Testing

**Hypothesis 1:** There is no significant effect of workplace media policies in managing employee digital distractions.

**Table 5: Regression analysis of the effectiveness of workplace media policies in managing employee digital distractions**

### Model Summary<sup>b</sup>

Model	R	R <sup>2</sup>	Adjusted R <sup>2</sup>	Std. Error
Regression	0.723	0.522	0.518	0.614

### ANOVA<sup>a</sup>

	Sum of Squares	Df	Mean Square	F	Sig.
Regression	145.720	1	145.720	387.71	0.000
Residual	133.468	178	0.750		
Total	279.188	179			

The R<sup>2</sup> value of 0.522 indicates that 52.2% of the variance in digital distractions can be explained by the effectiveness of workplace media policies. The ANOVA table shows that the regression model is statistically significant, with a p-value of 0.000 ( $p < 0.05$ ), indicating that workplace media policies have a significant effect on managing employee digital distractions.

**Hypothesis 2:** There is no significant impact of organizational regulations on employee focus and productivity.

**Table 6: Regression analysis of the impact of organizational regulations on employee focus and productivity.**

### Model Summary<sup>b</sup>

Model	R	R <sup>2</sup>	Adjusted R <sup>2</sup>	Std. Error
1	0.762	0.581	0.579	0.596

### ANOVA<sup>a</sup>

Model	Sum of Squares	Df	Mean Square	F	Sig.
Regression	178.456	1	178.456	422.32	0.000
Residual	128.132	178	0.720		
Total	306.588	179			

The  $R^2$  value of 0.581 indicates that 58.1% of the variance in employee focus and productivity can be explained by organizational regulations. The ANOVA table shows that the regression model is statistically significant, with a p-value of 0.000 ( $p < 0.05$ ), indicating that organizational regulations significantly impact employee focus and productivity.

### Discussion of Findings

The results of the regression analysis in table 5 indicate that workplace media policies have a significant effect on managing employee digital distractions, as the  $R^2$  value of 0.522 showed that 52.2% of the variance in digital distractions could be explained by the effectiveness of media policies. The ANOVA result further confirmed the significance of this relationship with a p-value of 0.000, rejecting the null hypothesis. This finding is consistent with previous studies that highlight the positive role of well-defined media policies in mitigating digital distractions. For instance, Meng & Berger (2019) demonstrated that organizations with clear and consistently enforced media policies reported lower levels of digital distractions, which contributed to improved employee focus. Similarly, Lim & Teo (2020) found that employees in organizations with explicit digital media usage guidelines were better able to manage their time, resulting in fewer interruptions from personal device use. Moreover, the result supports the view that media policies are not universally effective across all types of work environments. As discussed by Plomp et al. (2021), policies must be adaptable, taking into account the specific demands of different job roles. For example, employees in creative or innovation-driven roles may require more flexibility in their media use than those in administrative positions.

The results of the regression analysis in table 6 yielded a significant result, with an  $R^2$  value of 0.581, indicating that 58.1% of the variance in employee focus and productivity could be explained by organizational regulations. The ANOVA result, with a p-value of 0.000, also supported the rejection of the null hypothesis, demonstrating a significant impact of organizational regulations on employee focus and productivity. These findings align with earlier research that emphasizes the critical role of organizational regulations in shaping employee behavior and work outcomes. For example, Wang & Cooper (2021) found that organizations with well-enforced regulations experienced better employee focus and productivity. Their study highlighted the importance of leadership in modeling appropriate digital behavior, as leaders who adhered to media policies themselves saw better compliance from their teams. Furthermore, these results are aligned with Self-Determination Theory (Ryan & Deci, 2000), which suggests that employees are motivated by a sense of autonomy, competence, and relatedness. Overly restrictive regulations that limit autonomy can negatively affect employee motivation and productivity. Therefore, the finding that flexible yet well-enforced organizational regulations positively influence focus and productivity supports Gagné & Deci's (2005) assertion that a balance between autonomy and regulation is crucial in maintaining intrinsic motivation and job performance.

## Conclusion

This study investigated the role of workplace media policies and organizational regulations in managing digital distractions and their impact on employee focus and productivity. The findings reveal that both media policies and organizational regulations significantly influence employees' ability to stay focused and maintain productivity, particularly in environments where digital technology is integral to daily tasks.

Workplace media policies were shown to be effective in reducing digital distractions, but their success depends on clarity, flexibility, and consistent enforcement. Overly restrictive policies may lead to covert device use, increasing stress and distractions. Therefore, organizations should adopt balanced policies that regulate media usage without overly restricting employees' autonomy, ensuring that they remain productive while fostering a sense of trust.

Similarly, organizational regulations were found to significantly impact employee focus and productivity. Effective enforcement, especially when led by example from leadership, was critical to compliance and the success of these regulations. The study highlights the importance of a collaborative approach to policy formulation, where employees' needs and job roles are considered, ensuring regulations are adaptable and supportive of various work environments.

## Recommendations

Based on the findings of this study, the following recommendations are proposed for organizations seeking to manage digital distractions and improve employee focus and productivity:

1. Organizations should create clear media policies that are easily understood and adaptable to different job roles.
2. Leaders should model appropriate digital behavior to set an example for their teams.
3. Employees should be involved in the development of media policies and regulations that can increase buy-in and compliance.
4. Organizations should introduce structured "digital detox" periods during the workday to help employees manage cognitive overload and reduce stress caused by constant digital interruptions.
5. Organizations should review and update their workplace media policies regularly, this ensures the policies remain relevant and effective in addressing new forms of digital distractions, such as emerging social media platforms or increased use of collaboration tools.
6. Organizations should integrate leadership training programs focusing on the role of leaders in modeling behavior and maintaining a distraction-free environment.

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## THE IMPACT OF AI-DRIVEN MARKETING STRATEGIES ON BUSINESS PERFORMANCE AND GROWTH IN NIGERIA

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### ABSTRACT

*This study investigates the impact of AI-driven marketing strategies on business performance and growth in Nigeria. Employing a survey research design, data were collected from 200 small, medium, and large enterprises across various sectors, including retail, e-commerce, finance, and telecommunications. A stratified random sampling technique ensured representation across different business sizes. The structured questionnaire, distributed online via Google Forms, WhatsApp, and emails, was validated through pre-testing and achieved a reliability score of 0.78. Descriptive statistics were used to summarize the data, while inferential statistics, including regression analysis, tested the hypotheses. Findings reveal that AI-driven content creation, optimization, customer segmentation, personalization, predictive analytics, and dynamic pricing strategies significantly enhance business performance and growth. The results indicate that AI technologies improve marketing efficiency, customer engagement, and operational effectiveness. This study highlights the transformative potential of AI in Nigerian businesses and provides valuable insights for leveraging AI to achieve competitive advantage. The research underscores the importance of integrating AI strategies for sustainable growth and offers practical recommendations for businesses aiming to capitalize on technological advancements in marketing.*

**KEYWORDS:** AI Marketing Strategies, Business Performance, Economic Growth, and Nigeria

### 1. Introduction

In recent years, the rapid advancement in technology has revolutionized various industries globally. Artificial Intelligence (AI) is one of such which is rapidly transforming the business environment, and marketing is no exception. AI-driven marketing strategies have become a significant tool for businesses aiming to enhance their performance and contribute to economic growth (Jaiyeola, 2023). By leveraging AI, businesses can gain valuable insights into consumer behavior, optimize marketing campaigns, and enhance customer experiences (Hemalatha, 2023; Chaffey, 2020). This, in turn, can lead to increased sales, improved brand loyalty, and overall business success. In addition to these, AI has offered novel ideas and strategies for firms to enhance the appeal of their brands and effectively reach individual customers through various approaches and technologies (Onobrakpeya & Bayagbon, 2024). Therefore, they possess the capacity to generate data that facilitates future decision-making processes and the formulation of present and future marketing strategies (Mogaji, Soetan & Anh, 2020). AI surpasses individuals in decision making and judging processes in terms of factors like speed and volume. Marketing specialists use

several AI applications in digital marketing to enhance performance, efficiency, operational effectiveness, while mitigating failure risk, complexity, and uncertainty (Onobrakpeya & Bayagbon, 2024). Experts in this industry are using a range of AI applications including machine learning techniques, algorithms, big data, personalisation, and optimisation tools (Wirth, 2018). AI implementations in digital marketing are expected to possess the capacity to articulate the gathered data, acquire knowledge and make logical deductions from it, and ultimately provide predictions that aid in the formulation of future decisions and strategies (Mogaji et al., 2020).

However, Nigeria, a nation undergoing swift digital change, is ready to use AI technologies to improve the efficiency of its growing business platforms. Merchants have recognized the benefits of this technology, leading to enterprises adopting and broadening the use of AI. Companies use AI for two main purposes. The first is to predict product demand and create customer profiles on the backend. The second is to enhance the consumer experience, ultimately bolstering the brand and increasing revenue (Sasikumar, 2022). Masnita, Ali, Zahra, Wilson and Murwonugroho (2024) added that marketers are currently embracing AI to analyse and understand consumer behaviour. AI technology has the potential to enhance and expedite various marketing tasks, hence enhancing consumer experiences and increasing conversion rates. Moreover, AI has the capability to automate commercial operations, extract knowledge from historical data, and produce consumer and market insights using algorithmic programmes (Davenport, Guha, Grewal & Bressgott, 2020). Machine Learning (ML), Deep Learning, and Natural Language Processing (NLP) are advanced technologies that enable machines to process large amounts of data and provide market intelligence (Davenport et al. 2020; Morsi, 2023; Yusupa, Manullang, Marbun, Bill & Ginting, 2023). When it comes to implementing AI marketing strategies in marketing, developing suitable AI-powered marketing analytic tools can help organisations assess how well their product designs align with customer needs and measure customer satisfaction (Dekimpe, 2020). Moreover, AI can aid marketers in the formulation and organisation of marketing endeavours by facilitating segmentation, targeting, and positioning (STP). AI can assist marketers in visualising a company's strategic orientation, in addition to STP (Huang & Rust, 2017). Text mining and machine learning algorithms have practical applications in various areas, including banking and finance, arts marketing, retail, and tourism. These algorithms can effectively identify customer segments that are likely to generate significant profits (Dekimpe, 2020). Data optimisation approaches, machine learning, and causal forests can be used to narrow down target customers (Mardiana, 2023).

Additionally, to enhance efficiency, it is imperative to collect personalised data and concentrate on the target customers (Wirth, 2018). As a result, many companies are dedicating considerable resources and spending significant capital in their digital marketing tools, with the aim of reaching specific consumers, using different channels, and implementing effective strategies. Currently, AI is crucial in assisting specialists in identifying prospects, market demands, marketing strategies, target customers, and capabilities (Mogaji et al. 2020). Companies use technology to enhance the consumer experience and optimise the consumer journey. The AI system monitors and analyses consumers' sentiment, transactions, visits, and other relevant data in order to develop machine learning algorithms that can forecast customer behaviour. AI use tailored data, recommendations, and messaging to create consumer engagement and retention strategies. AI has the capability to make marketing efforts more efficient, improve their performance, and provide reports based on data. The personalised email marketing that many of us are familiar with is primarily the result of AI. A chatbot is an instance of an AI application that emulates human intelligence by comprehending and addressing users' concerns and requests, while also facilitating online purchases (Chaffey & Ellis-Chadwick, 2019). Currently, chatbots are experiencing a surge in popularity. Many firms include bots into their operations through the use of Meta Messenger or their own websites. Companies commonly implement chatbots to enhance the efficacy of their

customer support division. Meta Messenger's data analysis skills help improve an organization's digital marketing efficacy (Chaffey & Ellis-Chadwick, 2019). Significantly, with vast amounts of data generated daily, AI algorithms can efficiently process and analyze information to uncover patterns and trends that would be difficult for humans to identify (IBM, 2020). This enables businesses to better understand their target audience, tailor marketing messages accordingly, and allocate resources effectively. For instance, AI-powered predictive analytics can help businesses forecast demand, optimize inventory management, and prevent stockouts (Institute of Data, 2024). Hence, it is evident that the use of AI marketing strategies is an indispensable necessity for business entities to boost their performance and speed up the growth due to the inevitable and rapid advancement of technology across many company domains (Kaartemo & Nyström, 2021).

As more Nigerian businesses adopt AI-driven marketing strategies, the overall impact on the economy is expected to be positive. Increased business efficiency, improved customer satisfaction, and higher sales can contribute to job creation and economic growth. Furthermore, the development of AI-related technologies and services within the country can stimulate innovation and entrepreneurship. However, it is without it challenges associated with AI implementation, such as data privacy, ethical considerations, which is essential to address these challenges and the need for skilled AI talent, to maximize the benefits and mitigate potential risks. Thus, it is based on this background that the present study seeks to examine the impact of AI-driven marketing strategies on business performance and growth in Nigeria. Specifically, the study sought to:

1. To evaluate the impact of AI-driven content creation and optimization strategies on business performance and growth in Nigeria.
2. To assess the influence of AI-enabled customer segmentation and personalization on business performance and growth in Nigeria.
3. To examine the effect of AI-powered predictive analytics and dynamic pricing strategies on business performance and growth in Nigeria.

## 1.2 Research Questions

The study seeks to answer the following research questions:

1. How do AI-driven content creation and optimization strategies affect business performance and growth in Nigeria?
2. How do AI-enabled customer segmentation and personalization strategies contribute to improved business performance and growth in Nigeria?
3. What is the impact of AI-powered predictive analytics and dynamic pricing strategies on business performance and growth in Nigeria?

## 1.3 Research Hypotheses

**Research Hypothesis 1:** AI-driven content creation and optimization strategies does not positively affect business performance and growth in Nigeria.

**Research Hypothesis 2:** AI-enabled customer segmentation and personalization strategies will not significantly improve business performance and growth in Nigeria.

**Research Hypothesis 3:** AI-powered predictive analytics and dynamic pricing strategies does not positively impact business performance and growth in Nigeria.

## **1.4 Significance of the Study**

The findings of this study will provide valuable insights into the effectiveness of AI-driven marketing strategies in emerging markets, with a specific focus on Nigeria. By evaluating the impact of AI on business performance, this study aims to contribute to the growing body of literature on AI adoption in developing economies and provide practical recommendations for businesses seeking to leverage AI for competitive advantage. Furthermore, the study will offer policymakers and industry stakeholders a deeper understanding of the potential of AI to drive economic growth and enhance market competitiveness in Nigeria.

## **2. Literature and Theoretical Framework**

### **2.1 Theoretical Framework**

The Resource-Based View (RBV) is a theoretical framework that emphasizes the importance of a firm's internal resources and capabilities in achieving sustained competitive advantage (Barney, 1991). According to this perspective, firms can achieve superior performance by acquiring, developing, and leveraging valuable, rare, inimitable, and non-substitutable resources (Barney, 1991; Peteraf, 1993). In the context of the present study on the impact of AI-driven marketing strategies on business performance and growth in Nigeria, the RBV provides a relevant theoretical underpinning. Several studies have highlighted the potential of AI-driven marketing strategies as a valuable resource for enhancing business performance and growth (Huang & Rust, 2018; Kietzmann, Paschen & Treen, 2018). AI technologies, such as machine learning, natural language processing, and computer vision, can enable firms to analyze vast amounts of data, gain insights into customer behavior, personalize marketing campaigns, and optimize marketing strategies (Davenport et al., 2020). However, the successful implementation and effective utilization of AI-driven marketing strategies require firms to possess complementary resources and capabilities, such as technological infrastructure, data analytics expertise, and organizational agility (Ransbotham, Gerbert, Reeves, Kiron & Spira, 2019). However, in the Nigerian context, RBV suggests that firms that have acquired or developed the necessary resources and capabilities to leverage AI-driven marketing strategies effectively may achieve superior business performance and growth compared to their competitors. Therefore, the RBV provides a valuable theoretical lens for examining the relationship between AI-driven marketing strategies and business performance and growth in Nigeria.

The Technology Acceptance Model (TAM) is a widely adopted theoretical framework that seeks to explain and predict the acceptance and usage of information technologies (Davis, 1989). The model posits that an individual's intention to use a technology is influenced by two key factors: perceived usefulness and perceived ease of use (Davis, 1989; Venkatesh & Davis, 2000). Perceived usefulness refers to the degree to which an individual believes that using the technology will enhance their job performance, while perceived ease of use refers to the degree to which an individual believes that using the technology will be free of effort (Davis, 1989). In the context of the present study on the impact of AI-driven marketing strategies on business performance and growth in Nigeria, the TAM provides a valuable lens for understanding the factors that influence the adoption and effective utilization of AI technologies in marketing practices. Several studies have demonstrated the applicability of the TAM in examining the acceptance and usage of AI-driven marketing technologies, such as chatbots, virtual assistants, and recommendation systems (Gursoy, Chi, Lu & Nunkoo, 2019; Pillai & Mukherjee, 2019; Ukpabi, Karjaluoto, Olaleye & Mogaji, 2019). According to the TAM, if Nigerian businesses perceive AI-driven marketing strategies as useful for enhancing their marketing effectiveness and improving business performance, and if they perceive these technologies as easy to use and integrate into their existing

marketing processes, they are more likely to adopt and effectively utilize these strategies (Awa, Ojiabo & Emecheta, 2017). Conversely, if Nigerian businesses perceive AI-driven marketing strategies as complex or lacking in utility, they may be less inclined to adopt and leverage these technologies, potentially hindering their business performance and growth.

## **2.2 Literature Review**

AI-driven content creation and optimization involve using algorithms to generate, enhance, and distribute digital content that aligns with consumer preferences and behaviors. This approach is increasingly popular in marketing, as it allows businesses to produce highly relevant content at scale, thereby increasing engagement and conversion rates (Kietzmann et al., 2018). Studies have shown that AI-driven content strategies, such as personalized recommendations, automated social media posts, and chatbots, significantly enhance business performance by improving customer satisfaction and loyalty (Kaplan & Haenlein, 2019). In emerging markets like Nigeria, the adoption of AI-driven content strategies is gaining momentum, particularly among businesses looking to enhance their digital marketing efforts. According to Eze et al. (2020), Nigerian companies that leverage AI tools for content creation and optimization report improved brand visibility and customer engagement, which translates into better sales performance. However, challenges such as the high cost of AI technologies, limited digital skills, and inadequate data infrastructure can hinder the widespread adoption of AI-driven content strategies in Nigeria (Ogunyemi & Mabawonku, 2021). Customer segmentation and personalization are critical components of effective marketing strategies. AI enables businesses to analyze vast amounts of customer data, identify patterns, and segment customers based on various attributes, such as demographics, behaviors, and preferences (Rust & Huang, 2020). By delivering personalized marketing messages, businesses can enhance customer experience, drive engagement, and increase sales.

Research indicates that AI-enabled personalization leads to significant improvements in business performance, as customers are more likely to respond positively to tailored content that meets their needs (Chaffey & Ellis-Chadwick, 2019). In Nigeria, businesses are increasingly adopting AI-driven customer segmentation and personalization strategies to better understand their diverse customer base and deliver more targeted marketing campaigns. For example, Adekunle and Egbetokun (2022) found that Nigerian firms utilizing AI for customer segmentation reported higher customer retention rates and improved overall business growth. Despite the potential benefits, several barriers to the adoption of AI-enabled personalization exist in Nigeria, including data privacy concerns, the need for large volumes of high-quality data, and the complexity of implementing AI technologies (Ogunyemi & Mabawonku, 2021). Addressing these challenges is crucial for maximizing the impact of AI-driven personalization on business performance in emerging markets.

Predictive analytics and dynamic pricing are among the most impactful applications of AI in marketing. Predictive analytics involves using AI algorithms to forecast future customer behavior, enabling businesses to make data-driven decisions that optimize marketing strategies, inventory management, and customer service (Davenport et al., 2020). Dynamic pricing, on the other hand, uses AI to adjust prices in real-time based on factors such as demand, competition, and customer behavior, allowing businesses to maximize revenue and remain competitive. Studies have shown that businesses that adopt AI-powered predictive analytics and dynamic pricing strategies experience significant improvements in operational efficiency, customer satisfaction, and profitability (Kumar et al., 2021). In the context of Nigeria, these AI applications are particularly relevant for sectors such as retail, e-commerce, and hospitality, where demand fluctuations and competitive pricing are critical to success (Adeniran & Osoba, 2021). However, the implementation of these strategies requires a robust data infrastructure and advanced analytics

capabilities, which can be challenging in resource-constrained environments typical of many emerging markets.

While AI offers substantial benefits for marketing and business performance, its adoption in emerging markets, including Nigeria, faces several challenges. Key barriers include the lack of reliable data, limited access to advanced technologies, high implementation costs, and a shortage of skilled personnel (Ogunyemi & Mabawonku, 2021). Additionally, cultural factors, such as resistance to change and a lack of trust in automated systems, can impede the adoption of AI-driven marketing strategies (Kshetri, 2020). Furthermore, regulatory and ethical considerations around AI, such as data privacy, algorithmic bias, and transparency, are particularly salient in emerging markets, where regulatory frameworks may be underdeveloped. Addressing these challenges requires a concerted effort from businesses, policymakers, and other stakeholders to build the necessary infrastructure, develop talent, and create supportive regulatory environments that facilitate the responsible adoption of AI (Chui et al., 2018).

Despite the growing interest in AI-driven marketing strategies, there is a limited body of research focusing specifically on the impact of these strategies on business performance in emerging markets, particularly in Nigeria. Most existing studies are concentrated in developed markets, where the business environment, technological infrastructure, and consumer behavior differ significantly from those in developing economies. This research aims to fill this gap by providing empirical evidence on the impact of AI-driven marketing strategies on business performance and growth in Nigeria, contributing to a deeper understanding of AI adoption in emerging markets.

### **3. Research Methodology**

The study adopts a survey research design. The target population for the study includes 200 small, medium, and large enterprises operating in Nigeria across various sectors, including retail, e-commerce, finance, and telecommunications, to capture a broad perspective on AI adoption. A stratified random sampling technique is used to select the sample for the quantitative survey. The population is divided into strata based on business size (small, medium, large), and a random sample is drawn from each stratum to ensure representation across different business sizes. Thus, the sample size of 200 businesses is targeted to provide a statistically significant analysis of the impact of AI-driven marketing strategies on business performance in Nigeria. The instrument used for data collection was a structured survey questionnaire distributed to the selected sample of businesses. The instrument was administered online using survey platform, Google Form, WhatsApp group and emails, with follow-up reminders sent to increase response rates. The research instrument was pre-tested with a pilot group, and the results are reviewed to refine the questions to ensure the validity of the instrument. Reliability was assessed using Cronbach's alpha to measure internal consistency of the survey items. And an alpha value of 0.78 was realized and considered acceptable for the study. The data are summarised using descriptive statistics, such as frequencies, means, and standard deviations to answer the research questions while inferential statistics, such as regression analysis, was employed to test the hypotheses. The data was analyzed using statistical software, such as SPSS.

## 4. Data Analysis and Findings

### 4.1 Answering of Research Questions

#### 4.1.1 Research Question 1

How do AI-driven content creation and optimization strategies affect business performance and growth in Nigeria?

**Table 4.1: Impact of AI-Driven Content Creation on Business Performance**

AI-Driven Content Creation Level	Average Sales Growth (%)	Customer Satisfaction Score	Market Share Increase (%)
Low	5.0	60	3.0
Moderate	10.0	75	5.5
High	15.0	85	8.0

**Source: Field Survey 2024**

Table 4.1 indicates that businesses with higher levels of AI-driven content creation and optimization experience significantly greater improvements in business performance metrics, such as sales growth, customer satisfaction, and market share. Specifically, businesses with high levels of AI-driven content creation reported an average sales growth of 15%, a customer satisfaction score of 85, and an 8% increase in market share. This suggest that AI-driven content creation impacts business performance and growth in Nigeria.

#### 4.1.2 Research Question 2

How do AI-enabled customer segmentation and personalization strategies contribute to improved business performance and growth in Nigeria?

**Table 4.2: Impact of AI-Enabled Customer Segmentation on Business Performance**

Segmentation Level	Average Customer Retention (%)	Customer Acquisition Rate (%)	Average Revenue Growth (%)
Low	50	20	4.0
Moderate	65	30	7.0
High	80	40	10.0

**Source: Field Survey 2024**

The data in Table 4.2 shows that AI-enabled customer segmentation and personalization strategies are associated with improved business performance. Businesses with high levels of AI-enabled segmentation reported an average customer retention rate of 80%, a customer acquisition rate of 40%, and a 10% revenue growth. This validate that AI-driven customer segmentation and personalization enhance business performance and growth in Nigeria.

#### 4.1.3 Research Question 3

What is the impact of AI-powered predictive analytics and dynamic pricing strategies on business performance and growth in Nigeria?

**Table 4.3: Impact of Predictive Analytics and Dynamic Pricing on Business Performance**

Strategy Level	Operational Efficiency Score	Profit Margin Increase (%)	Customer Purchase Frequency (%)
Low	60	5.0	10
Moderate	75	8.0	20
High	90	12.0	30

**Source: Field Survey 2024**

Table 4.3 highlights the impact of AI-powered predictive analytics and dynamic pricing on business performance metrics. Businesses that extensively use these AI strategies reported the highest operational efficiency scores (90), profit margin increases (12%), and customer purchase frequency (30%). These indicate that predictive analytics and dynamic pricing impacts business performance and growth in Nigeria.

## 4.2 Testing Research Hypotheses

### 4.2.1 Research Hypothesis 1

AI-driven content creation and optimization strategies does not positively affect business performance and growth in Nigeria. To test H<sub>1</sub>, a multiple regression analysis was conducted on the data. See Tables below.

**Table 4.4: Model Summary**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.781	0.610	0.602	1.235

**Table 4.5: ANOVA**

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	210.3	2	105.15		
Residual	134.2	197	0.68	69.02	0.000
Total	344.5	199			

**Table 4.6: Coefficients**

Model	Coefficients (β)	Std. Error	t	Sig.
Constant	3.102	0.305	10.17	
Content Creation	1.210	0.110	11.00	0.000
Optimization	0.885	0.125	7.08	

In the above tables 4.4 to 4.6 analysis present the effect of AI-driven content creation and optimization strategies on business performance and growth in Nigeria. The correlation coefficient (R) of 0.781 indicates a strong positive relationship between the independent variables (Content Creation Level and Optimization Level) and the dependent variable (business performance and growth). The R Square value of 0.610 suggests that approximately 61.0% of the variance in business performance and growth can be explained by the levels of content creation and optimization strategies. The ANOVA table assesses the overall significance of the regression model. The F-value of 69.02 is highly significant, with a p-value of 0.000 (less than 0.05),



indicating that the model as a whole is statistically significant. This means that the independent variables (content creation and optimization levels) collectively have a significant impact on business performance and growth. Moreover, the constant term (3.102) represents the expected value of business performance and growth when both content creation and optimization levels are zero. This value is statistically significant, as indicated by its p-value of 0.000. Thus, the analysis supports the rejection of Research Hypothesis 1, which posits that AI-driven content creation and optimization strategies do not positively affect business performance and growth in Nigeria. The strong correlation and significant regression model, along with the significant coefficients for both content creation and optimization levels, collectively indicate that these strategies do indeed have a positive impact on business performance and growth.

#### 4.2.2 Research Hypothesis 2

AI-enabled customer segmentation and personalization strategies will not significantly improve business performance and growth in Nigeria. To test H<sub>2</sub>, a multiple regression analysis was conducted on the data. See Tables below.

**Table 4.7: Model Summary**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.752	0.566	0.557	1.465

**Table 4.8: ANOVA**

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	184.7	2	92.35		
Residual	141.8	197	0.72	43.58	0.000
Total	326.5	199			

**Table 4.9: Coefficients**

Model	Coefficients (β)	Std. Error	t	Sig.
Constant	4.562	0.410	11.13	
Segmentation	0.980	0.132	7.42	0.000
Personalization	1.034	0.140	7.39	

In the above tables 4.7 to 4.9 analysis present the impact of AI-enabled customer segmentation and personalization strategies on business performance and growth in Nigeria. The R value of 0.752 indicates a strong positive correlation between AI-enabled customer segmentation and personalization strategies and business performance and growth. The R Square value of 0.566 suggests that 56.6% of the variance in business performance and growth can be explained by the segmentation and personalization strategies. The Adjusted R Square, slightly lower at 0.557, accounts for the number of predictors in the model, still indicating a robust model fit. The ANOVA results indicate that the regression model is statistically significant, with an F-value of 43.58 and a p-value of 0.000. This significance suggests that the model, which includes AI-enabled customer segmentation and personalization, significantly improves business performance and growth. The very low p-value provides strong evidence to reject the null hypothesis, indicating that these strategies do have a substantial effect on the dependent variable. However, the constant term of 4.562 represents the baseline level of business performance and growth when both segmentation and personalization levels are zero, and it is statistically significant. Thus, the results provide

strong evidence against Research Hypothesis 2. The high R and R Square values, along with the significant F-value and p-values for the coefficients, demonstrate that AI-enabled customer segmentation and personalization strategies do significantly improve business performance and growth in Nigeria. Therefore, the hypothesis that these strategies will not significantly enhance business outcomes is rejected.

### 4.2.3 Research Hypothesis 3

AI-powered predictive analytics and dynamic pricing strategies does not positively impact business performance and growth in Nigeria. To test H<sub>3</sub>, a multiple regression analysis was conducted on the data. See Tables below.

**Table 4.10: Model Summary**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.804	0.647	0.640	1.118

**Table 4.11: ANOVA**

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	223.5	2	111.75		
Residual	122.0	197	0.62	89.52	0.000
Total	345.5	199			

**Table 4.12: Coefficients**

Model	Coefficients (β)	Std. Error	t	Sig.
Constant	2.785	0.275	10.13	
Predictive Analytics	1.345	0.115	11.70	0.000
Dynamic Pricing	1.110	0.108	10.28	

In the above tables 4.10 to 4.12 analysis present the impact of AI-powered predictive analytics and dynamic pricing strategies on business performance and growth in Nigeria. The R value of 0.804 indicates a very strong positive correlation between AI-powered predictive analytics, dynamic pricing strategies, and business performance and growth. The R Square value of 0.647 means that 64.7% of the variance in business performance and growth can be explained by these strategies. The ANOVA results show a highly significant F-value of 89.52 with a p-value of 0.000. This indicates that the regression model, which includes predictive analytics and dynamic pricing, is statistically significant. Moreover, the constant term of 2.785 indicates the baseline level of business performance and growth when both predictive analytics and dynamic pricing are at zero, and it is statistically significant. The p-value suggests that these strategies significantly impact business performance and growth, providing strong evidence to reject the null hypothesis. Thus, the results strongly contradict Research Hypothesis 3, which posits that AI-powered predictive analytics and dynamic pricing strategies do not positively impact business performance and growth in Nigeria. The high R and R Square values, combined with the significant F-value and the substantial coefficients for both predictors, clearly show that these strategies have a positive impact on business performance and growth. Therefore, the hypothesis that these AI-powered strategies do not positively affect business outcomes is rejected, emphasizing their effectiveness in improving business performance and growth in the Nigerian.

### 4.3 Discussion of Findings

The findings from the analysis of AI-driven marketing strategies and their impact on business performance and growth in Nigeria reveal compelling evidence against the null hypotheses proposed. The significant positive impacts of AI-driven content creation, optimization, customer segmentation, personalization, predictive analytics, and dynamic pricing strategies on business performance and growth underscore the transformative potential of AI in the Nigerian business landscape.

**AI-Driven Content Creation and Optimization:** The results support the view that AI-driven content creation and optimization strategies significantly enhance business performance and growth. The high R Square value and significant coefficients for both content creation and optimization indicate that these strategies effectively improve business outcomes. This finding aligns with previous research highlighting the importance of AI in optimizing marketing campaigns and personalizing content to better engage customers and drive sales (Hemalatha, 2023; Chaffey, 2020). The ability of AI to analyze large datasets and deliver tailored content contributes to improved brand loyalty and customer satisfaction (Jaiyeola, 2023; Onobrakpeya & Bayagbon, 2024).

**AI-Enabled Customer Segmentation and Personalization:** The results for customer segmentation and personalization also reject the null hypothesis, demonstrating that these strategies positively impact business performance and growth. The significant findings here are consistent with literature emphasizing AI's role in enhancing customer experiences and targeting efforts. AI-powered segmentation helps businesses understand and categorize their customer base more effectively, while personalization strategies ensure that marketing messages resonate with individual customers, leading to increased conversion rates and customer loyalty (Mogaji et al., 2020; Masnita et al., 2024).

**AI-Powered Predictive Analytics and Dynamic Pricing:** The significant impact of predictive analytics and dynamic pricing strategies on business performance further supports the efficacy of AI in driving business success. The high R Square value and the substantial coefficients for both predictors suggest that these AI technologies are instrumental in forecasting demand, optimizing pricing strategies, and ultimately improving business performance. This finding aligns with existing research that highlights AI's capability to process large volumes of data, uncover trends, and make informed decisions that enhance business outcomes (Davenport et al., 2020; IBM, 2020).

**Technological Advancements and Marketing:** The rapid advancement of AI technologies has revolutionized marketing strategies, providing businesses with advanced tools for data analysis, customer engagement, and decision-making. Studies have shown that AI-driven tools, such as machine learning algorithms and big data analytics, are vital for enhancing marketing performance and operational efficiency (Wirth, 2018; Mogaji et al., 2020). The ability of AI to process and analyze large datasets allows businesses to gain insights into customer behavior and optimize their marketing strategies effectively (Davenport et al., 2020; Chaffey, 2020).

**AI in Nigerian Businesses:** In the Nigerian Businesses, the adoption of AI technologies is transforming business practices and contributing to economic growth. Nigerian businesses are increasingly recognizing the benefits of AI, including improved customer insights, enhanced marketing strategies, and increased revenue (Sasikumar, 2022; Masnita et al., 2024). The application of AI in customer segmentation, personalization, and predictive analytics is helping businesses better understand and meet customer needs, leading to higher satisfaction and business growth.

Theoretical Frameworks: The Resource-Based View (RBV) and Technology Acceptance Model (TAM) provide valuable insights into the effective utilization of AI-driven marketing strategies. The RBV suggests that firms with the necessary resources and capabilities to leverage AI technologies will achieve superior performance (Barney, 1991; Huang & Rust, 2018). The TAM highlights the importance of perceived usefulness and ease of use in the adoption of AI technologies (Davis, 1989; Awa et al., 2017). Both frameworks underscore the importance of AI in enhancing marketing effectiveness and driving business growth.

## **5. Conclusion**

The findings of this study demonstrate that AI-driven marketing strategies significantly impact business performance and growth in Nigeria. The strong positive effects of content creation, optimization, customer segmentation, personalization, predictive analytics, and dynamic pricing strategies highlight the transformative potential of AI in the business environment. These results are consistent with the broader literature on AI's role in enhancing marketing effectiveness and driving business success. As Nigerian businesses continue to adopt and integrate AI technologies, they are likely to experience improved operational efficiency, increased customer satisfaction, and overall business growth. Addressing challenges such as data privacy and the need for skilled AI talent will be crucial in maximizing the benefits of AI and ensuring sustainable growth in the Nigerian business environments.

## **6. Recommendations**

Based on the findings and the broader context of AI-driven marketing strategies in Nigeria, we recommend the following for businesses looking to enhance their performance and growth through AI:

1. Businesses should prioritize investing in AI technologies that align with their strategic goals. This includes tools for AI-driven content creation, optimization, customer segmentation, personalization, predictive analytics, and dynamic pricing. Investing in these technologies can significantly improve marketing efficiency, enhance customer experiences, and drive sales growth.
2. To fully leverage AI, businesses need robust data management systems. Companies should focus on improving their data infrastructure and employing advanced analytics tools to better understand customer behavior, predict trends, and optimize marketing strategies.
3. Businesses should develop comprehensive AI strategies that outline how AI will be integrated into marketing efforts. This includes defining clear objectives, selecting appropriate AI tools, and establishing processes for data collection and analysis.
4. Businesses should invest in training and upskilling employees to ensure they are proficient in using AI tools and technologies. This includes providing education on AI applications in marketing, data analytics, and machine learning. Skilled personnel are essential for maximizing the benefits of AI and integrating it effectively into business operations.

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## ETHNOGRAPHIC ASSESSMENT OF THE USEFULNESS AND SUITABILITY OF TRADITIONAL METHOD OF RECONCILIATION IN ABOH-MBAISE LOCAL GOVERNMENT AREA OF IMO STATE

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### ABSTRACT

*This study assessed the usefulness and suitability of traditional method of conflict reconciliation in Aboh-Mbaise Local Government Area of Imo State, Nigeria. The objective of this research is to state that the good aspects of the cultural values cherished in the traditional Igbo society in the tone of her conflict resolution model fits permanently into the resolution agenda in Africa, because she originally owns it. The data for the study were collected using questionnaires that were randomly distributed to 240 indigenes of the study area. The data were analyzed using frequency distribution, means and percentage. Findings show very high truthfulness and trustworthiness of the Assembly of Elders at the conflict resolution scene, attesting to the usefulness and suitability of the traditional methods of conflict resolution. The research recommends a harmonization of the functional aspects of the traditional and modern conflict resolution models in order to meet the global development agenda based on cultural fusion.*

**KEYWORDS:** Traditional, Reconciliation, Dispute Resolution, Pre-Colonial, Aboh-Mbaise

### BACKGROUND OF STUDY

Obviously, conflict and its reconciliation are inevitable in human societies as it is evident that development can only take place in the atmosphere of peace and harmony. There are conflicts in all societies (Igbo society not exceptional) and there are channels and instruments to resolving them. Igbo land of the southeast Nigeria is presently at the crossroad in the determination of her direction of peace and development. Conflict reconciliation is a starting point of leadership and governance in any given society where political culture exists. Good governance, as exhibited in many pre-colonial Igbo societies was a reflection of the conflict reconciliation institutions which enabled the leaders and the followers have peace of mind, love and development. This study focuses on conflict reconciliation in Aboh-Mbaise with reference to the original traditional method, practiced in the pre-colonial period, as a panacea to present corrupt leadership and unpatriotic followership in Nigeria.

The general objective of this study is to ascertain uniqueness suitability and usefulness of indigenous conflict reconciliation in Igbo society in comparison with those of the foreign models introduced during colonialism. Issues of conflict have not been easily determined in Aboh-Mbaise society, these modern times. Again, deciding on what method to adopt to elicit truth and resolution is not all that easy. This is why the indigenous peace-makers engaged extrajudicial method of religion to unravel unknown causes of conflict and the associated issues. What was achieved in the process of institutionalizing peace in the society included the recognition of the spiritual forces and their dominant impact on the restoration of peace. Though the advent of western model of



conflict resolution has overwhelmingly re-conditioned the hitherto traditional and more reliable pattern of conflict resolution in Igbo land, not all western models of conflict resolution were adaptive to Aboh-Mbaise people. This suggests that there had been elements of resistance to some aspects of the foreign conflict resolution culture.

The theoretical framework well-suited for the development of this study are the Actor-Network and Practice theories

Actor-Network Theory: Examines how social networks and relationships shape actions.

Practice Theory: Focuses on everyday practices and how they shape social life. These theories help ethnographers make sense of their data and provide a framework for understanding the complexities of human culture and behavior.

## METHODOLOGY

The entire ten (10) autonomous communities of Aboh-Mbaise Local Government Area were studied. We adopted a mixed method research approach of qualitative and quantitative data collection. Data were collected from primary sources using focus group discussions, interviews and questionnaire methods because of the ethnographic in nature of the study. All the objectives were analyzed using frequency distribution, means and percentage where appropriate since our concern is with answering of research questions. Twenty-four (24) respondents were randomly selected from each of these ten (10) autonomous communities. In all, two hundred and forty 240 persons representing 240 households/families were selected for interview and questionnaire. In each of the selected villages the list of possible households were obtained through the help of the village heads. These households were listed alphabetically and numbered serially and randomly selected. In our unstructured interviews and participant observations, we selected from the ten (10) communities of Aboh-Mbaise LGA through stratified random sampling technique.

**Table 1.0: Aboh-Mbaise (Old Generation) Communities and their Respective LGA's**

S/NO	NAMES	LGAs of ABOH-MBAISE		
1	Ahiara	-	Ahiazu	-
2	Nguru-Nweke	Aboh	-	-
3	Enyiogugu	Aboh	-	-
4	Obodo-Ahiara	-	Ahiazu	-
5	Amuzu	Aboh	-	-
6	Mbutu	Aboh	-	-
7	Oboama	-	-	Ezinihitte
8	Obizi	-	-	Ezinihitte
9	Chokoneze	-	-	Ezinihitte
10	Lorji	Aboh	-	-
11	Nguru-Nwenkwo	Aboh	-	-
12	Itu	-	-	Ezinihitte
13	Okpofe	-	-	Ezinihitte
14	Amuzi	-	Ahiazu	-
15	Umunama	-	-	Ezinihitte
16	Okwuato (now Enyi-ato)	Aboh	-	-
17	Uvuru	Aboh	-	-
18	Nguru-Nworie	Aboh	-	-
19	Ihitte	-	-	Ezinihitte
20	Ekwerazu	-	Ahiazu	-
21	Okirika-nweke	-	Ahiazu	-

22	Lagwa	Aboh	-	-
23	Eziudo	-	-	Ezinihitte
24	Otulu	-	Ahiazu	-
25	Amumara	-	-	Ezinihitte
26	Ogbe	-	Ahiazu	-
Total	26 communities	10	7	9

SOURCE: Population Unit Aboh-Mbaise LG Council Headquarters, Aboh, 2006

**Table 1.1: Ten Communities in the L.G.A that Were Stratified for Interview & Participant Observation.**

S/NO	NAME	POPUL. "000	NO. OF PERS. INTERV. OBS
1	Okpofe	27,000	28
2	Mbutu	25,500	28
3	Uvuru	30,000	28
4	Okwuato	26,000	28
5	Lorji	27,500	28
6	Itu	27,000	28
7	Amuzu	28,000	28
8	Enyiogugu	25,000	28
9	Oboama	20,000	28
10	Nguru-Nwenkwo	32,000	28
	TOTAL	265,000	240

**Table 2.0: Distribution of Respondents According to Gender**

Gender	FREQUENCY	PERCENTAGE
Male	102	42.5
Female	138	57.5
Total	240	100

Source: Nworgu, 2023

Table 2.0 agrees with UNFP (2009) report that women in Nigeria account for 70% of Agricultural workers, 80% of food producers and 100% of those who process basic food stuff and engage in 80% - 90% of food sales.

In Table 3.0, respondents are distributed according to marital status showing that 50.4% of the respondents were married while 14.9% were either separated or divorced. Those widowed were 30%. Since the highest recipients of conflict resolution are mostly married or belong to the institution of marriage which family, this may be an added advantage because married people in Aboh-Mbaise are disposed to land ownership especially by males who are heirs apparent and children of married couples. Being divorced or separated may pose constraint to inheritance, property title and attraction of audience to one's side.

MARITAL CLASS	FREQUENCY	PERCENTAGE
Married	121	50.4
Single	09	03.7
Separated	28	11.7
Widowed	72	30.0
Divorced	10	04.2
Total	240	100

Source: Nworgu, 2023

From table 3.0, marriage is highly honoured in Aboh-Mbaise so much so that single parentage and divorce are not accorded respect and attempt has been made to encourage decency by preparation of the girl child through puberty rites.

Table 4.0 is Distribution of Respondents according To Age: The data shows that whereas 74% of the respondents were below the age of 49, 20% were between 50-54 years, while 15% were 55 years and above. The mean age was 48.

Age in Years	Frequency	Percentage
30-39	18	07.5
40-44	30	12.5
45-49	108	45.0
50-54	48	20.0
55-Above	36	15.0
Total	240	100
Mean	48	-

**Source: Nworgu, 2023**

In table 5.0 the distribution of respondents according to occupation shows that 83.3% of the respondents are into farming alone while 16.7% only is combining farm work with trading or civil service.

Occupation	Frequency	Percentage
Farming alone	200	83.3
Farming/Trading/Civil service	40	16.7
Total	240	100

**Source: Nworgu, 2023**

This is an indication that agricultural work which is directly tied to land is the highest source of conflict in Aboh-Mbaise. The low educational level of the farmers accounts for poor and inadequate yield which in itself is a conflict trigger. The few well educated ones making up 16.7% of the respondents are not full-time farmers and are likely to be non-resident indigenes or civil service retirees. This is in conformity with the preposition by Nworgu (2023) that land inheritance and other landed properties are the major sources of rural conflict. This has made many Aboh-Mbaise indigenes from diaspora to often sue their kinsmen at home to traditional court for fraudulent acquisition of their birth rights.

Table 6.0: Distribution of Respondents According To Family Size: Number of hectares owned and lived in by respondents was used in assessing their family size. In table 4.1.5 respondents are distributed according to family size measured in hectares of land occupied showing that 52% of family members had family land size of 1.5-2.0 hectares. 33.3% had family size of 0.5-1.5 hectares. This suggests that respondents were small scale land holders. Therefore, all the respondents with less than 10 hectares are classified as small. One can say 99.59% of the family lands in Imo State are small scale.

Family size in hectares	Frequency	Percentage
0.50-1.5	80	33.3
1.51-2.0	20	52.3
2.10-2.50	125	8.0
2.51-3.0	08	3.4
3.10-3.50	07	3.0

3.51-above	-	-
Total	240	100
Mean	1.6 hectares	-

**Source: Nworgu, 2023.**

For the high birth rate in Aboh-Mbaise occasioned by the celebration of ten or more children by one woman traditionally called *ewu-ukwu*, nobody has 3.51 hectares of land and above but 3.0% has 3.10-3.50 hectares, 3.4% has 2.51-3.0 hectares, and 8.05% has 2.10-2.51 hectares. 33.3% has 0.50-1.5 hectares of land while 52.3% has 1.51-2.0 hectares. The relatively small farm sizes of the respondents will inevitably lead to subsistence farming, which do not encourage commercial farming and constitutes a major constraint to improved agricultural earning to reduce frustration that breeds conflict.

Table 7.0 respondents are distributed according to estimated annual income showing annual income of N41,000-N50,000 at 41.6%, N31,000-N40,000 at 25.8%, and N21,000-N30,000 at 10.8%. Those earning less than N20, 000 are at 5.8%, while those earning more than N51,000 make up 1.6%. The mean income is N40, 000 annually.

Estimated annual income in Naira	Frequency	Percentage
≤ N 20,000	14	5.8
N 21,000-30,000	26	10.8
N 31,000-40,000	62	25.8
N 41,000-50,000	100	41.6
≥ N51,000	38	1.6
Total	240	100
Mean	N 40,000	-

**Source: Nworgu 2023.**

Nworgu (2023) suggested that farm income for respondents was low and a low farm income will adversely affect their ability to prosecute litigation in a modern legal system. Poor land endowment can be expected to limit the ability of poor farming households to earn good income so as to enjoy sustainable and peaceful household. Although this table suggested the fact that a respondent earned a meager income from farm activities, it could be wrong to generalize that the result showed that it was the only indicator of wealth status in Imo State. This poor annual earning could be as a result that women farmers hardly keep financial record of their earnings because they plough back those monies another business for another season. It could as a result of high population of the Aboh-Mbaise family. Again, majority of their produce are either consumed or traded by barter.

Table 8.0 Distribution of Respondents According to Level of Exposure to Traditional Conflict Resolution At Village Square. Respondents are distributed according to exposure to traditional conflict resolution at village square showing that 27.5% had between 1-20 exposures in a year, 41.6% of the respondents had between 21-40 exposures per year, 13.8% had between 41-60 exposures to the resolution programmes. 11.3% people had exposure of between 61-80 exposures yearly, as 3.3% had 81-90 exposures per year while 2.5% had 91-above exposures per year.

No of times per year	FREQUENCY	PERCENTAGE
1-20	66	27.5
21-40	100	41.6
41-60	33	13.8
61-80	27	11.3
81-90	08	3.3

91-Above	06	2.5
Total	240	100

**Source: Field Survey 2023**

Table 8.0 shows that the Igbo has befitting environment that is traditional to the conflict parties so much so that every Aboh-Mbaise indigene has attended such conflict resolutions held at the village squares. The mean exposure of conflict resolution at market squares is 40 time. Peace and harmony, one way or another, reigned supreme at village square which somehow produced unique atmosphere for peace to thrive; and community development became dynamic.

Table 9.0 Distribution of Respondents According To Attendance to Traditional Resolution Arena. Data collected according to attendance to resolution arena shows that 93.7% attended traditional conflict resolution arena while only a negligible 6.3% shows apathy to attendance to traditional resolution arena. Hence, majority of peace arena attendance has access to traditional peace information from the arena.

Attendance to resolution meeting	Frequency	Percentage
Attended	225	93.7
Don't attend	15	6.3
Total	240	100

**Source: Field Survey 2023**

This attributed to the advantage of being present in community gathering as absenteeism is a hindrance to traditional peace initiative. Illiteracy is not a barrier to attendance and understanding of the procedure and proceedings of the peace forum, distance and language are not hindrances since everybody lives closer to each other and speaks same Igbo dialect.

Table 10.0 Respondents are distributed according to listenership to traditional conflict resolution in which 69% went individually while 30.8% come in group.

Listenership status	Frequency	Percentage
Group listenership	74	30.8
Individual listenership	166	69.2
Total	240	100

**Source: Field Survey 2023**

This agrees with the principle of collective responsibility which was in found in traditional Aboh-Mbaise society. This shows that everybody is individually committed to resolution of conflict and anyone found guilty will not hide under family affiliation to seek for exoneration. Listenership to peace resolution in traditional arena is better when the community is not subdivided by interest groups who may wish their own to win the case as it happens in modern court system where people group themselves together in support of one party to the litigation.

**Table 11.0** Respondents are distributed according to suitability of day/time of resolution. Data collected on timing shows that 58% of them preferred evening hours of the Eke market day to evening hours of the Orie market day, while 42% believe that evening hours of Orie market day could be adequate for conflict resolution.

4.30 p.m.	Frequency	Percentage
Suitable on Eke market day	139	58
Suitable on Orie market day	101	42
Total	240	100

**Source: Field Survey 2023**

In table 11.0, contrary to the desire respondents, the elders would not accept any litigation handling on eke market day because that is when they gather for communal palm wine consumption and no conflict resolution, marriage or burial ceremonies take place. The elders believe that Orie market day is be adequate for conflict resolution. In reality, conflict resolution in Aboh-Mbaise takes place on Orie market day after the elders had held the executive sitting on Eke market day to deliberate on the most accurate judgment to deliver on difficult issues the next orie day.

In table12.0 respondents are distributed according to language of reconciliation. Data on language of the reconciliation shows 79.1% used Igbo alone as suitable for traditional reconciliation. Combination of Igbo and English languages is supported by 12.5% of respondents as 8.4% said English language alone is suitable for traditional reconciliation, showing how foreign culture has fairly affected contemporary Aboh-Mbaise culture.

Language	Frequency	Percentage
Igbo alone	190	79.1
Igbo & English	30	12.5
English alone	20	8.4
Total	240	100

**Source: Field Survey 2023**

It is also important to deduce that Aboh-Mbaise society had existing conflict resolution model before western influence came. The living elders, therefore, are the instruments of evolution of knowledge and experience of conflict resolution in Aboh-Mbaise society and this enables them to acquire the tradition of communication through proverbs and folktales with which they persuade parties to the conflict and the crowd of listeners at the venue of conflict resolution to reason. It is, however, not easy to acquire and master, as well as apply them at an impromptu manner while addressing issues of conflict. Olaoba (2002) accepted that a lot of bargaining went along the line of exhibiting solidarity front at family, ward, quarter and community levels. Negotiation in conflict resolution are two-way process. This suggests that the mental alertness and versatility of the living elders are commensurate to that found anywhere in the world. To have been persuaded by the African elders in a given conflicting situation suggests the manifestation of the experience and capacity of the sages in the art of conflict resolution. The African elders, therefore, had the wherewithal of the power of persuasion and conviction derivable from the wisdom lore.

### **Table 13.0 Evaluating Traditional Religion And Modern Courts In Dispute Resolution**

Relevance of Trad. Religion/ Modern Courts	Frequency	Percentage
Trust in Traditional Religion	219	91.3
Trust in Modern Courts	21	8.7
Total	240	100

**Source: Field Survey 2023**

In table 13.1 the same percentage of 91.3% who attest to the relevance of religion over the courts also attest that the family's stand on an issue of conflict is more relevant to them while only 8.3% say that the court is more to be relied upon.

Relevance of Family vis-à-vis Courts	Frequency	Percentage
Family	219	91.3
Modern Court	21	8.7
Total	240	100

**Source: Field Survey 2023**

**Table 14.0 Exposure To Observation Of Modern And Traditional Methods Of Conflict Resolution.**

Observation	Frequency	Percentage
Very often	20	8.3
Often	44	18.3
Occasionally	120	50.0
Rarely	20	8.3
Never	46	19.1
Total	240	100

**Source: Field Survey 2023**

In table 14.0 above, only few people observe modern peace facilitation either directly or through any other means. There is this apathy for court system of conflict resolution, that it is for wasters of money and time; and that those who are afraid of nemesis of the ancestors who show fierce wrath on deliberate liars. The words they handed down while on earth have become reference points for resolving whatever conflicts that were triggered off by their departure. The reconcilers at the resolution scene could be overwhelmingly mandated to emphasize the obvious, stress the salient points in the issues of conflict and head for the truth. The understanding of the issues of the conflict by the reconcilers, parties to the conflict, witnesses and the listening or participating audience could have been made possible by the belief that serene spiritual essence of the ancestors surrounded the scene of conflict resolution. The atmosphere was charged with maximum attention, intention and commitment geared towards eliminating lies and falsehood by articulating and hammering on the truth.

### **15.0 Comparison Between The Qualities of the Modern Police and Traditional Age Grade System**

Qualities	Police (score)	Age Grade (score)
Faith	20	220
Energy	150	90
Courage	100	140
Bravery	40	200
Enthusiasm	10	230
Social Integration	30	210
Economic help	0	240
Education	200	40
Recreation	0	240

**Source: Field Survey 2023**

In table 15.0 above, out of 240 respondents, the age grade got support of 220 in faith quality, 90 in energy quality, 140 in courage quality, 200 in bravery quality, 230 in enthusiasm quality, 210 in social integration quality, 240 in economic importance, 40 in education and 240 in recreation quality. The police got 20, 150, 100, 40, 10, 30, 0, 200 and 0 in same order respectively. The respondents have more reliance on the age grade associations than the police in terms of quality of

personality. Lack of trust in police personnel by the citizenry is a cardinal impediment to crime control. Other problems can be highlighted as bribery and corruption, poor public perception of the police, etc. These poor ratings of the police could be the consequences of inadequate operational equipment such as communication equipment, logistic vehicles, weapons, residential accommodation etc.; inadequate training and re-orientation of law enforcement operatives charged with combating crime; gross lack of vital statistics and other related data on crime occurrences in the society; and gross lack of co-operation and support from the public.

In table 16.0 respondents are distributed according to usefulness of the traditional methods of conflict resolution showing that 58.3% of the respondents agreed that they were very useful for peaceful coexistence as 20.1% of the respondents saw it as useful while 21.6% of the respondents agreed that they are occasionally useful. Nobody saw the traditional methods as useless.

Degree of usefulness	FREQUENCY	PERCENTAGE
Very useful	140	58.3
Useful	48	20.1
Occasionally Useful	51	21.6
Not Useful	-	-
Total	240	100

**Source: Field Survey 2023**

Table 16.0 agrees that it is the responsibility of the peace facilitators to be persistently determined to discourage disaster which conflicts might have triggered off by the awareness of norms of conflict resolution at the grass root level. Peace facilitators possess all the features of responsibility anchored on the art of conflict resolution. Olaoba, (2005) accepts that Peacemaking and peace building processes are the handiwork of constituted authorities who have the ancestral investiture of power and authority not only to make rules but also to formulate enduring policies germane to the development of their societies. This is evidence that in pre-colonial Aboh-Mbaise society, peace and harmony reigned supreme and often produced unique atmosphere for peace and dynamic development to thrive. Fundamentally, parties to the conflict usually submit themselves for cross-examination based on the fact that they have confidence in the conflict resolution principles that were to be applied to the conflict in question.

In table 17.0 respondents are distributed according to trust in traditional Elders' truth Ability showing that traditional elders are rated 75% Very Highly, 20% High and 12% low in ability to be truthful.

Elders' Truth Ability	Frequency	Percentage
Very High	180	75.0
High	48	20.0
Low	12	5.0
Total	240	100

**Source: Field Survey 2023**

The Aboh-Mbaise people still prefer to observe traditional norms as enunciated by the Assembly of Elders at the conflict resolution scene attesting to the usefulness of the traditional methods of conflict resolution even though the government has institutionalized the modern legal system with coercive power and legitimacy.

Table 18.0: Distribution of Respondents According to Trust in Modern Court truth in Ability. This shows that the modern court is rated 20.1% Very High, 21.6% High and 58.3% low in truthfulness.



Courts' Truth Ability	Frequency	Percentage
Very High	48	20.1
High	51	21.6
Low	140	58.3
Total	240	100

**Source: Field Survey 2023**

This could be the reason majority of Aboh-Mbaise people prefer their traditionally acclaimed supreme court called *ala-ogbaga* of chokoneze (Ezinihite Aboh-Mbaise LGA) where they believe everyone tells the truth or prepare to die. When the death is believed to have died mysteriously, for instance, family members would go to the oracle for supernatural divination. If the death is killed by the ancestors or spirits, his body would be thrown in the evil forest or carried to the oracle that executed the killing. Olaoba, O.B. (2007) alluded to the point that African perspectives on non-violence and peace is captured in the Traditional African Religion. Apart from the court system, Aboh-Mbaise people also consider the church leaders as peace facilitators but majority will not take their matters to them because according to them, the Christian God is most merciful, and would not deal with the offender instantly.

**Table 19.0 Evaluation of The Trust-Worthiness of the Modern Police**

Modern Police	Frequency	Percentage
Very High	20	8.4
High	30	12.5
Low	190	79.1
Total	240	100

**Source: Field Survey 2023**

**Table 20.0 Evaluation of the Trust-worthiness of the Ancestors/Oracles**

Trust on Ancestors'/Oracles Ability	Frequency	Percentage
Very High	219	91.3
High	21	8.7
Low	-	-
Total	240	100

**Source: Field Survey 2023**

Table 20.0 agrees with the indigenous peace-makers who engage in extrajudicial method of religion to unravel unknown causes of conflict and the associated issues. It is important to know that truth is the only language and the instrument for facilitating peace and harmony in Aboh-Mbaise society. The end of conflict was no doubt ritual-based and ancestor-focused, to the extent that such a ceremony concluded the conflict resolution business and restored peace and normalcy to the society. The perception of the living-dead to be spiritually present at the venue of conflict resolution resounded in the consciousness of the Aboh-Mbaise person. This is the reason majority of Aboh-Mbaise people prefer their traditionally acclaimed supreme court called *ala-ogbaga* of chokoneze where they believe everyone tells the truth or prepare to die. When the death is believed to have died mysteriously, family members would go to the oracle for supernatural divination. If the death is killed by the ancestors or spirits, his body would be thrown in the evil forest or carried to the oracle that executed the killing. Apart from the court system, Aboh-Mbaise people also consider the church leaders as peace facilitators, but majority will not take their matters to them because according to them, the Christian God is most merciful, and would not deal with the offender instantly.

## Summary of Findings

Researching the methods of conflict resolution in pre-colonial Igbo society has not been so easy for scholars. There has been paucity of data to assist scholarly writings. Agents of conflict resolution are no longer easy to come by and where available, they have been largely rigid in dishing out vibrant data for scholarly documentation. The documentation of pre-colonial conflict resolution methods would have facilitated sufficient understanding of the knowledge associated with them and thereby enabled reconcilers to design articulated process of adapting the methods in contemporary cultural setting. Thus, the fundamentals of the indigenous conflict resolution are significantly emphasized because the knowledge accruing from understanding its uniqueness and popularity will facilitate peace, and encourage enhancement of harmonious relationship in our contemporary society.

The data for the study were collected through the use of questionnaires that were distributed to 240 operators of the pre-colonial conflict resolution in the contemporary Aboh-Mbaise, the study area. Their responses were considered fairly adequate for our understanding of the research issue in the Pre-colonial period. The data were analyzed using descriptive statistics: frequency distribution, means and percentage.

In agreement with Nworgu (2023), the socio-economic characteristics considered are sex, marital status, age, educational attainment (informal and formal), main occupation, family land size and experience, house hold size, annual income and membership of social organization. The data indicated that 57.5% of the recipients of traditional conflict resolution were females while 42.5% were males. This is an indication that agriculture, the highest source of pre-colonial conflict consists mostly of women even though the ownership of land belongs to the men. 50.4% of the respondents were married while 14.9% were either separated or divorced. Those widowed were 30%. Since the highest recipients of conflict resolution are mostly married or belong to the institution of marriage, this may be an added advantage because married people in Aboh-Mbaise are disposed to land ownership especially by males who are heirs apparent and children of married couples.

Data shows that whereas 74% of the respondents were below the age of 49, 20% were between 50-54 years, while 15% were 55 years and above. The mean age was 48. People between the ages of 30 and 49 are within the economically active age. The age factor is important in the gathering of information on conflict and its utilization since young people are more confrontational and also responsive to new ideas that may offend the old people who are more conservative and less responsive to issues that could spark conflict.

On occupation, 83.3% of the respondents are into farming. This is an indication that agricultural work which is directly tied to land is the highest source of conflict in Aboh-Mbaise. Data analyzed shows that 52% of family members had family land size of 1.5-2.0 hectares suggesting that Aboh-Mbaise people are small scale land holders. For the high birth rate in Aboh-Mbaise occasioned by the celebration of ten or more children by one woman traditionally called *ewu-ukwu*, nobody has 3.51 hectares of land and above. This agrees with the belief that land is a highly scarce commodity. The mean family size of respondents is 1.6 hectares and because many people are chasing after land, conflict can set in. Those earning less than N20, 000 are at 5.8%, while those earning more than N51,000 make up 1.6%. The mean income is N40, 000 annually. This suggested that farm income for respondents was low and a low farm income will adversely affect their ability to prosecute litigation in a modern legal system. Membership into Social Organizations shows 91.3% of membership which conforms with 91.3% of membership into age grade associations. The age-

grade association equaled a task force which is given special mandate to form organized labour unit working for the development of the Aboh-Mbaise society.

Major peace information sources subscribed to shows that non-professional sources of friends, village heads, guilds and cooperative organizations were most preferred. From the data gathered we can deduce that face-to-face communication medium is the best way to disseminate peace information to peace facilitators and participants in Igbo communities. From the data, it can be said that Aboh-Mbaise people cannot replace community communication with modern mass communication. Exposure to traditional conflict resolution at village square shows that 27.5% had between 1-20 exposures in a year, 41.6% of the respondents had between 21-40 times exposure per year, 13.8% had between 41-60 exposures to the resolution programmes. 11.3% people had exposure of between 61-80 exposures yearly, as 3.3% had 81-90 exposures per year while 2.5% had 91-above exposures per year. The mean exposure of conflict resolution at market squares is 40 time.

Data collected according to attendance to resolution arena shows that 93.7% attended traditional conflict resolution arena while only a negligible 6.3% shows apathy to attendance to traditional resolution arena. Hence, majority of peace arena attendance has access to traditional peace information from the arena since everybody lives closer to each other and speaks same Igbo dialect. Listenership to traditional conflict resolution shows 69% went individually while 30.8% come in group, but this does not contradict with the principle of collective responsibility which is found in traditional Aboh-Mbaise society. This is also akin to the practice of being ones brother's keeper in the time of crisis. This shows that everybody is individually committed to resolution of conflict and anyone found guilty will not hide under family affiliation to seek for exoneration. Listenership to peace resolution in traditional arena is better when the community is not subdivided by interest groups who may wish their own to win the case as it happens in modern court system where people group themselves together in support of one party to the litigation.

Data collected on timing shows that 58% of them preferred evening hours of the Eke market day to evening hours of the Orie market day, while 42% believe that evening hours of Orie market day could be adequate for conflict resolution but the elders would not accept any litigation handling on eke market day because that is when they gather for communal palm wine consumption and no conflict resolution, marriage or burial ceremonies take place for reasons unknown by anyone alive. In reality, conflict resolution in Aboh-Mbaise takes place on Orie market day after the elders had held the executive meeting on eke market-day to deliberate on the most accurate judgment to deliver on difficult issues the next Orie-meeting day. Language of the reconciliation shows 79.1% Igbo alone as suitable for traditional reconciliation. Communication through proverbs and folktales persuade parties to the conflict and the crowd of listeners at the venue of conflict resolution to reason. It is, however, not easy to acquire and master, as well as apply them at an impromptu manner while addressing issues of conflict. This suggests that the African elders, therefore, had the wherewithal of the power of persuasion and conviction derivable from the wisdom lore.

Number of years spent in education was used in measuring the level and degree of formal training in conflict resolution. 83.4% had 1-12 years of formal basic education. Only 16% has post-secondary education. It will be a hasty conclusion to say that Aboh-Mbaise indigenes are educationally backward, but the reason for high less educated people in this study could be the frequent and usual migration with which the Igbo elite is known for. This, no doubt has impacted on the popularity of the traditional conflict resolution methods in Aboh-Mbaise. The number of years spent in peace operations was used to ascertain degree of experience in traditional methods of resolving conflicts. 38.4% had 1-10 years of traditional peace education, 40.0% had 11-20 years of traditional peace education, and 18.3% had 21-30 years of experience while only 03.3% had 31-

40 years of experience. The mean year for an Aboh-Mbaise indigene in traditional peace education is 14.4 years. Data analyzed show the Aboh-Mbaise people are more eager to learn the traditional methods of conflict resolution than the modern methods and are therefore willing to spend longer time in doing so.

Training and practice of modern conflict resolution in conformity to seasonal farming activities shows that 61.6% of the respondents were not in support that the training and practice, and by extension, timing of modern conflict resolution conforms to seasonal farming activities. Only 38.4% agreed that it conformed to seasonal farming activities. This might be as a result of delays in modern litigation, arbitration or mediation since the Aboh-Mbaise rural farmer believes that a delay in resolving a conflict may lead to a denial of justice. Again, dissemination of court summons can be hampered by bureaucratic bottlenecks so much so that the defendants may not be aware of a case instituted against them on time for proper and adequate legal representation. 91% of the respondents agree that divination, traditional religion is more preferred to modern courts and that the family's stand on an issue of conflict is more relevant to them than the court is to be relied upon.

The family is the bedrock of relationships and development, the unit of political culture, and as such the foundation of conflict resolution. The family plans the art of conflict resolution as championed by the family head. They therefore have the capacity of resolving conflicts of marriage, between children and parents as well as quarrels arising from property inheritance. Whatever conflicts that the family heads were unable to resolve were transferred to the ward heads. The family heads were conscious of the cord of unity among family members.

Only 8.3% very often participated in observing modern methods of reconciliation, only few people observe modern peace facilitation either directly or through any other means. There is apathy for court system as wasters of money and time; and for those who are afraid of nemesis of the ancestors who show fierce wrath on deliberate liars. The police and age grades were tested on qualities of faith, energy, courage, bravery, enthusiasm, integration, economic help, education and recreation. It is only in energy that the modern police scored higher marks implying that the people have more reliance on the age grade associations than the police in terms of quality of personality and character.

Usefulness of the traditional methods of conflict resolution evaluated shows 58.3% Very Useful for peaceful coexistence as 20.1% saw it as Useful while 21.6% agreed that they are occasionally useful. Nobody saw the traditional methods as useless. Evaluation of the trust in truthfulness shows that traditional elders are rated 75% Very High, 20% High and 12% low in ability to be truthful whereas the modern court is rated 20.1% Very High, 21.6% High and 58.3% low in truthfulness. This could be the reason majority of Aboh-Mbaise people prefer their traditionally acclaimed supreme court called *ala-ogbaga* oracle where they believe everyone tells the truth or prepares to die. The modern police are rated 8.4% Very High, 12.5% High, and 79.1% Low in Trustworthiness. Despite the enormous responsibilities entrusted on the police force, the agency is adjudged as grossly incompetent and incapable of combating and controlling crimes. The masses may feel that the police are equally guilty of same crimes which they ought to combat. Analyzed data show 91.3% Very High trust, 8.7 High trusts and no low trust on reconciliatory abilities of the ancestors and oracles. This extrajudicial method of religion is believed to unravel unknown causes of conflict and all associated issues. It is important to know that truth is the only language and the instrument for facilitating peace and harmony in Aboh-Mbaise society. The end of conflict was no doubt ritual-based and ancestor-focused, to the extent that such a ceremony concluded the conflict resolution business and restored peace and normalcy to the society. Peace and harmony one way or another, reigned supreme at village square which somehow produced unique

atmosphere for peace to thrive; and community development became dynamic. It is important to put the principles of conflict resolution in Aboh-Mbaise society in proper context and within the focus of African cultural heritage.

## CONCLUSION

Conflict reconciliation in Igbo land has the force of positive character, virtuous disposition, good neighborhood intentions, hospitable demonstrations, overwhelming influence, adaptive motifs. It has a genuine determination for future socially sustainable development.

## RECOMMENDATION

- i. Igbo people should develop their traditional alternative dispute resolution into a model or framework to enable them have a proactively documented procedures for resolving internal conflicts in their domain.
- ii. There should be easy adaptation of such procedures and their integration that will enhance accessibility towards people's cooperation towards resolving conflicts easily in this ever changing modern society.

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## EFFECTIVENESS OF MOBILE HEALTH CLINICS IN EXPANDING ACCESS TO PRIMARY HEALTHCARE IN UNDERSERVED COMMUNITIES

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### ABSTRACT

*This study explores the effectiveness of mobile health clinics (MHCs) in expanding access to primary healthcare in underserved communities in Nigeria. MHCs, equipped with medical tools and staffed by healthcare professionals, offer essential services such as preventive care, diagnostics, treatment, and health education to populations with limited access to traditional healthcare facilities. Given the challenges of Nigeria's healthcare system, including the urban-rural healthcare divide and insufficient infrastructure, MHCs serve as a vital resource for rural populations. The research investigates the geographical reach, accessibility, and impact of MHCs on health outcomes. It also examines the challenges these clinics face, including funding limitations, staffing issues, and logistical barriers. Using qualitative and quantitative data, the study highlights the role of MHCs in providing primary healthcare and identifies the most in-demand services, such as maternal and child health, chronic disease management, and emergency care. The findings suggest that MHCs significantly enhance healthcare accessibility and outcomes in underserved communities, though sustainable funding and integrated care models are necessary to maximize their potential. Recommendations include policy support, community engagement, and training to ensure the effective delivery of healthcare services.*

**KEYWORDS:** Mobile Health Clinics, Primary Healthcare, Underserved Communities, Rural Healthcare, Healthcare Access, and Nigeria

### INTRODUCTION

Healthcare systems worldwide face significant challenges in providing equitable and comprehensive access to primary health services, particularly in underserved and rural communities. In Nigeria, these challenges are further exacerbated by a combination of poor infrastructure, a lack of healthcare professionals, and socioeconomic disparities. These underserved regions often experience limited access to essential healthcare services, leading to preventable diseases, poor health outcomes, and higher mortality rates. According to the World Health Organization (WHO), universal health coverage (UHC) remains a goal that is difficult to achieve, especially in low and middle-income countries like Nigeria (WHO, 2022).

Mobile health clinics have emerged as a solution to bridge the healthcare access gap in these underserved communities. These clinics, which are typically vehicles equipped with medical tools and staff, can travel to remote areas and provide primary healthcare services. The idea behind mobile health clinics is rooted in flexibility and accessibility, offering services such as preventive

care, diagnostics, treatment, and health education to communities that would otherwise face barriers to accessing healthcare. Several countries, including the United States, India, and South Africa, have used mobile health clinics with measurable success (Adebayo et al., 2020).

In Nigeria, mobile health clinics are becoming increasingly important due to the vast rural population and fragmented healthcare infrastructure. The Nigerian healthcare system, largely centralized in urban areas, leaves rural regions lacking adequate healthcare facilities. The World Bank reported that about 51% of Nigeria's population lives in rural areas, where they face difficulty accessing healthcare services (World Bank, 2021). Mobile health clinics are seen as a pragmatic approach to bringing healthcare directly to these underserved populations, thus playing a pivotal role in the Nigerian government's strategies to improve health equity and outcomes (Federal Ministry of Health, 2019).

Despite efforts by the Nigerian government to improve healthcare delivery in rural areas, many Nigerians continue to face limited access to quality primary healthcare. Poor infrastructure, insufficient healthcare personnel, and economic barriers have created a healthcare divide between urban and rural populations. As a result, many rural dwellers suffer from preventable illnesses, malnutrition, and a lack of essential health services such as immunization, antenatal care, and emergency treatments (Oladeji, 2018).

Mobile health clinics have been proposed as a practical solution to these issues, but their effectiveness in expanding access to healthcare services in underserved communities remains under-researched. Several questions arise: How effective are these mobile health clinics in reaching remote communities? What kind of health services are most in demand in these areas? How sustainable is the model in the Nigerian context? Do mobile health clinics improve health outcomes, or are they merely a temporary fix for a broader systemic issue?

These questions are critical for understanding the role that mobile health clinics can play in achieving universal health coverage in Nigeria. While some reports highlight the potential of mobile health clinics to provide crucial health services in hard-to-reach areas, there is limited empirical evidence to support these claims, particularly in the Nigerian context (Osinusi & Lawal, 2020). This research, therefore, seeks to assess the effectiveness of mobile health clinics in expanding access to primary healthcare in underserved communities in Nigeria.

## **Concept of Healthcare Services**

Healthcare services refer to the organized provision of medical care to individuals or communities with the aim of maintaining, improving, or restoring health. The concept encompasses a broad spectrum of activities, interventions, and programs designed to prevent, diagnose, treat, and manage diseases, injuries, and other physical or mental health conditions. Healthcare services range from preventive care to rehabilitation and include a variety of clinical, non-clinical, public health, and emergency services. Healthcare services are typically delivered by a range of providers, including hospitals, clinics, physicians, nurses, community health workers, and other professionals. These services are essential for promoting health, prolonging life, and improving the quality of life for individuals across populations, especially in underserved communities where access to healthcare may be limited.

Healthcare services are essential for several reasons. First, they ensure that individuals can receive medical care when needed, which contributes to overall well-being and longevity. Access to healthcare services reduces mortality rates and improves quality of life. Second, healthcare services are integral to disease prevention and management. Through vaccinations, health education, and early detection programs, healthcare services can prevent the onset of diseases or

manage them in their early stages, thus reducing the burden on the healthcare system. Third, healthcare services play a key role in achieving health equity. In many countries, including Nigeria, there are significant disparities in healthcare access between urban and rural areas. Healthcare services, particularly mobile health clinics, can address these inequities by bringing essential medical care to underserved populations. Fourth, healthcare services contribute to economic growth by reducing the economic burden of disease. Healthy populations are more productive, and the reduction of disease burden allows for better allocation of resources to other sectors.

### **1. Preventive Healthcare Services**

Preventive healthcare services focus on averting the onset of diseases and illnesses before they occur. These services include vaccinations, health education, screenings, and lifestyle counseling, all designed to detect and address potential health risks early. Preventive care reduces the need for more intensive treatments, which are often more costly and complex, and promotes overall health and well-being.

### **2. Primary Healthcare Services**

Primary healthcare services are the foundation of any healthcare system. They provide the first point of contact for individuals seeking medical care. These services include the diagnosis and treatment of common illnesses, management of chronic diseases, maternal and child health services, and basic emergency care. Primary healthcare is vital in underserved communities as it emphasizes accessibility and continuity of care. It also focuses on health promotion and disease prevention, making it an essential component of universal health coverage (UHC).

### **3. Secondary Healthcare Services**

Secondary healthcare refers to specialized medical care provided by specialists or hospitals after a referral from primary healthcare providers. It includes specialized treatments for conditions such as heart disease, diabetes, or advanced infections. Secondary healthcare services are usually offered in hospitals or clinics with advanced medical equipment and trained specialists. These services are more intensive and often involve diagnostic tests, surgery, and specialized therapies.

### **4. Tertiary Healthcare Services**

Tertiary healthcare involves highly specialized medical care provided by specialist hospitals or institutions. This level of care is usually required for patients with severe or life-threatening conditions, such as cancer, neurological disorders, or organ transplants. Tertiary healthcare services often involve complex surgeries, advanced diagnostics, and therapeutic interventions that are not available at the primary or secondary levels. In Nigeria, tertiary healthcare is typically concentrated in urban areas, making it less accessible to rural and underserved populations.

### **5. Rehabilitation Services**

Rehabilitation services focus on helping individuals recover from illnesses, surgeries, or injuries and regain their functional abilities. These services include physical therapy, occupational therapy, and counseling. Rehabilitation is an essential part of the healthcare continuum as it ensures that patients can return to their daily lives and maintain their independence after receiving medical care. For underserved communities, access to rehabilitation services is often limited due to geographical and financial barriers.



## **6. Palliative Care Services**

Palliative care services are designed to improve the quality of life for patients with serious, life-limiting illnesses. These services provide relief from symptoms and stress, offering physical, emotional, and psychological support to both patients and their families. Palliative care is particularly important for patients in the late stages of diseases such as cancer or HIV/AIDS. In Nigeria, palliative care services are still developing and are not widely available, particularly in rural areas.

## **7. Emergency Healthcare Services**

Emergency healthcare services are critical in managing acute medical conditions that require immediate attention. These services include ambulance services, trauma care, and emergency room treatment. Emergency healthcare is vital for saving lives and preventing the worsening of medical conditions. In underserved communities, the lack of infrastructure, such as roads and emergency response systems, often hampers the provision of timely emergency services.

## **8. Public Health Services**

Public health services focus on improving the health of populations through interventions that address health at a community or societal level. These services include health education, disease surveillance, immunization programs, sanitation, and efforts to control epidemics. Public health services play a crucial role in preventing the spread of infectious diseases and promoting healthier lifestyles, especially in rural and underserved areas where healthcare infrastructure is often lacking.

## **9. Mental Health Services**

Mental health services are designed to support individuals experiencing mental health conditions such as depression, anxiety, or schizophrenia. These services include counseling, therapy, psychiatric care, and medication management. In Nigeria, mental health services are often overlooked in both urban and rural settings, and stigma associated with mental illness can prevent individuals from seeking the care they need.

## **Challenges in Providing Healthcare Services in Underserved Communities**

Providing healthcare services in underserved communities, particularly in rural areas, comes with significant challenges. These include a lack of healthcare infrastructure, insufficient healthcare personnel, and poor transportation networks that hinder access to healthcare facilities. Additionally, the cost of healthcare services can be prohibitive for individuals in these communities, many of whom live in poverty. In Nigeria, government funding for healthcare is often inadequate, which limits the ability of healthcare providers to deliver services in rural areas. Furthermore, the brain drain phenomenon, where healthcare professionals leave Nigeria for better opportunities abroad, exacerbates the shortage of skilled personnel in the healthcare sector. Finally, cultural and social barriers, including language differences and traditional beliefs about medicine, can affect the delivery and acceptance of healthcare services in these communities.

Access to healthcare is a fundamental right, yet for many rural populations across the globe, this right remains unfulfilled due to a myriad of barriers. Geographic isolation, economic disadvantages, and a shortage of healthcare resources conspire to create a health landscape fraught with inequities. Mobile health clinics (MHCs) have emerged as a strategic response to these challenges, offering a means to deliver essential medical services directly to underserved

communities. This study seeks to explore the geographical reach and accessibility of mobile health clinics in rural areas, evaluating their role in bridging the healthcare gap and improving health outcomes for populations that have historically been marginalized.

### **Understanding Rural Health Disparities**

Rural areas are generally defined by their low population density and greater distances from urban healthcare facilities. The World Health Organization (WHO) identifies rural populations as those living in areas beyond urban centers, which include small towns and isolated communities. Rural residents often experience a unique set of health challenges that stem from their geographic and socio-economic contexts. They are more likely to face higher rates of chronic diseases, mental health issues, and overall mortality compared to their urban counterparts. These disparities are compounded by factors such as poverty, limited transportation options, and fewer available healthcare providers.

Health outcomes in rural areas are significantly affected by a lack of access to primary care services and specialist care. Many rural communities are served by a limited number of healthcare facilities, often staffed by a small number of healthcare professionals. This shortage leads to long wait times, reduced service availability, and ultimately, poorer health outcomes. The National Rural Health Association has highlighted that rural residents are at a heightened risk for preventable conditions, which can be attributed to inadequate access to timely and appropriate medical care.

### **Geographical Reach and Accessibility of Mobile Health Clinics in Rural Areas**

Access to healthcare is a fundamental human right, yet many rural populations around the world face significant barriers to receiving adequate medical services. Geographic isolation, economic disadvantages, and a lack of healthcare resources create a health landscape fraught with inequities. Mobile health clinics (MHCs) have emerged as a strategic response to these challenges, providing essential health services directly to underserved communities. This study seeks to explore the geographical reach and accessibility of mobile health clinics in rural areas, examining their impact on healthcare delivery and health outcomes for populations that have historically been marginalized.

Rural areas are generally defined by their low population density and greater distances from urban healthcare facilities. The World Health Organization (WHO) identifies rural populations as those living in areas outside urban centers, encompassing small towns and isolated communities (WHO, 2021). Rural residents often experience a unique set of health challenges stemming from their geographic and socio-economic contexts. They are more likely to face higher rates of chronic diseases, mental health issues, and overall mortality compared to their urban counterparts (Beaulieu et al., 2018). These disparities are compounded by factors such as poverty, limited transportation options, and fewer available healthcare providers.

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Mobile health clinics have emerged as a viable solution to address the access issues faced by rural populations. Defined as vehicles equipped to deliver a range of healthcare services directly to

communities, MHCs have gained traction as a mechanism to provide preventive care, screenings, vaccinations, and health education. The flexibility inherent in MHC operations allows them to navigate the challenges posed by distance and isolation, reaching populations that might otherwise forego necessary healthcare due to logistical obstacles.

Historically, the concept of mobile health services has roots in itinerant healthcare delivery systems, where traveling health workers provided essential services in response to public health crises (Vanderpool et al., 2019). In recent years, the demand for MHCs has surged, driven by increased awareness of rural health disparities and a growing emphasis on preventive care. Various stakeholders, including non-profit organizations, government agencies, and community health initiatives, have invested in MHCs as a means to expand healthcare access and reduce health disparities (Mason et al., 2020).

The geographical reach of mobile health clinics is highly variable and influenced by numerous factors, including funding, staffing, and vehicle capabilities. Some clinics operate within specific counties or regions, while others may have the capacity to serve multiple states. Understanding the service areas of MHCs is critical to evaluating their effectiveness and identifying gaps in coverage. By mapping the geographical reach, researchers can pinpoint underserved areas and tailor interventions accordingly (Bennett et al., 2021).

Geographic Information Systems (GIS) play a pivotal role in analyzing the reach of MHCs. GIS tools allow healthcare providers to visualize spatial data, assess population density, and examine socio-economic factors. By employing GIS in the planning and execution of mobile health services, providers can optimize routes, allocate resources more effectively, and target interventions that are most needed (Kozhimannil et al., 2016). This data-driven approach ensures that MHCs are not just reactive but proactive in addressing the health needs of rural populations.

### **Impact of Mobile Health Clinics on Health Outcomes**

Mobile health clinics have shown significant promise in improving access to care for rural populations. By delivering services directly to communities, MHCs can reduce barriers associated with distance, transportation, and financial constraints. Research has indicated that MHCs are effective in increasing rates of preventive screenings, vaccinations, and chronic disease management (Baker et al., 2021). These interventions are vital for addressing health disparities and improving overall health outcomes. One of the critical roles of MHCs is their ability to provide culturally competent care tailored to the specific needs of the communities they serve. By employing local staff and engaging with community leaders, MHCs can foster a sense of trust and improve health literacy. This approach not only encourages individuals to seek care but also helps to address social determinants of health by connecting residents with resources such as housing, nutrition, and mental health services (Bennett et al., 2021).

Moreover, the presence of mobile health clinics can have a broader impact on the community's perception of healthcare. By demonstrating a commitment to addressing local health needs, MHCs can inspire greater engagement with health services and encourage community members to take an active role in their health. This shift can lead to long-term improvements in health outcomes, as individuals become more proactive in seeking preventive care and managing chronic conditions.

The findings related to the geographical reach and accessibility of mobile health clinics have significant implications for policy and practice. As rural health disparities continue to grow, there is a pressing need for policymakers to support and expand mobile health initiatives. This can be achieved through increased funding, greater collaboration between health systems and community organizations, and the incorporation of MHCs into broader healthcare delivery models. One

potential avenue for policy development is the integration of mobile health clinics into state and national health strategies aimed at reducing health disparities. By recognizing MHCs as a critical component of the healthcare system, policymakers can help ensure that these services are sustainably funded and effectively coordinated. Additionally, investments in technology and training for both providers and patients can help to overcome barriers associated with telehealth and digital literacy.

### **Challenges faced by mobile health clinics in providing healthcare services**

Mobile health clinics (MHCs) play a crucial role in improving healthcare access, especially in underserved areas. However, they encounter several challenges that can hinder their effectiveness in providing services. Here are some of the key challenges faced by MHCs:

1. **Geographic Barriers:** MHCs often operate in rural or remote areas where access can be physically challenging. Poor road conditions, lack of infrastructure, and adverse weather can limit the mobility of clinics and affect their ability to reach target populations consistently.
2. **Funding and Resource Limitations:** Many MHCs rely on grants, donations, and limited funding sources, which can fluctuate. Insufficient funding can lead to reduced services, limited operational hours, and difficulties in maintaining vehicles and medical equipment.
3. **Staffing Issues:** Recruiting and retaining qualified healthcare professionals can be challenging, especially in rural areas. MHCs may struggle to attract staff due to lower salaries compared to traditional healthcare settings, as well as the unique demands of mobile work.
6. **Technology Access and Literacy:** While MHCs often utilize telehealth services, disparities in technology access and digital literacy among rural populations can limit the effectiveness of these services. Many residents may lack reliable internet access or skills to use telehealth platforms.
8. **Logistical Challenges:** Scheduling and coordinating visits can be complex. MHCs must consider local events, weather conditions, and community needs, which can complicate planning and disrupt service delivery.
9. **Legal and Regulatory Issues:** Navigating the legal and regulatory landscape can be difficult for MHCs. Compliance with healthcare regulations, licensing requirements, and insurance can create additional hurdles in service delivery.
10. **Data Collection and Reporting:** MHCs often face challenges in collecting and reporting data on patient outcomes and service effectiveness. This can hinder their ability to demonstrate impact and secure funding for future operations.

### **Conclusion**

The study on the effectiveness of mobile health clinics in expanding access to primary healthcare in underserved communities has demonstrated significant positive outcomes. Mobile health clinics have proven to be a vital resource in bridging the gap between healthcare services and vulnerable populations. By providing flexible, convenient, and culturally sensitive care, these clinics address critical barriers such as transportation, cost, and lack of awareness about available services. The findings indicate that mobile health clinics not only improve access to essential health services but also enhance health outcomes, promote preventative care, and foster community engagement.

## Recommendations

1. **Policy Support and Funding:** Advocate for increased funding and supportive policies at local, state, and federal levels to ensure the sustainability and expansion of mobile health clinic programs. Establishing partnerships with government agencies and non-profit organizations can facilitate access to necessary resources.
2. **Community Engagement:** Foster stronger community partnerships to identify specific health needs and tailor services accordingly. Involving community members in the planning and implementation process can enhance trust and utilization of mobile health services.
3. **Integrated Care Models:** Encourage the integration of mobile health clinics with existing healthcare systems to create a continuum of care. Collaborations with local hospitals, clinics, and health departments can ensure that patients receive comprehensive care and follow-up services.
4. **Training and Capacity Building:** Invest in training healthcare providers working in mobile clinics to equip them with skills to address the unique challenges faced by underserved populations. This includes cultural competency training and education on social determinants of health.

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## THE EFFECTIVENESS OF MANAGERIAL ACCOUNTING PRACTICES IN ENHANCING OPERATIONAL EFFICIENCY IN SMALL AND MEDIUM ENTERPRISES

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### ABSTRACT

*This study investigates the effectiveness of managerial accounting practices in enhancing operational efficiency in Small and Medium Enterprises (SMEs) in Nigeria. A quantitative research design with a survey approach was employed, targeting SMEs in the manufacturing, retail, and service sectors due to their significant role in the Nigerian economy. The study defined SMEs based on the criteria of fewer than 200 employees and an annual turnover of less than ₦100 million, as outlined by the Small and Medium Enterprises Development Agency of Nigeria (SMEDAN, 2020). Using a stratified random sampling technique, data were collected from 300 SMEs through a structured questionnaire focusing on budgeting, cost management, performance measurement, and strategic planning. The questionnaire was refined through a pilot test with 20 SMEs, ensuring clarity and reliability. Data analysis was performed using descriptive and inferential statistics, including multiple regression analysis with SPSS software. The findings reveal that all four managerial accounting practices tested significantly enhance the operational efficiency of SMEs, highlighting the critical role of these practices in SME success. The study recommends that SME owners, policymakers, and business support organizations prioritize these practices to improve performance and competitiveness. Ethical considerations were duly observed throughout the study.*

**KEYWORDS:** Effectiveness, Managerial Accounting, Practices, Operational Efficiency, Small and Medium Enterprises

### 1.0 Introduction

Managerial accounting practices are significantly crucial in the operational efficiency of Small and Medium Enterprises (SMEs) worldwide, and Nigeria is no exception. In an increasingly competitive business environment, effective managerial accounting practices are vital for the survival and growth of SMEs. These practices help in planning, decision-making, controlling, and performance evaluation, which are essential for enhancing operational efficiency. In Nigeria, SMEs contribute significantly to the economy by providing employment, fostering innovation, and contributing to GDP. However, they face numerous challenges, including limited access to finance, inadequate infrastructure, and inefficient management practices. Thus, managerial accounting provides the tools necessary to overcome these obstacles and improve operational efficiency.

Nigeria's SME sector comprises a vast majority of businesses that are important to the country's economic landscape. According to the Small and Medium Enterprises Development Agency of Nigeria (SMEDAN), SMEs account for about 96% of businesses and 84% of employment in the country (SMEDAN, 2020). Despite their importance, many SMEs in Nigeria struggle with inefficiencies that hinder their performance. Managerial accounting practices, such as budgeting, cost management, performance measurement, and strategic planning, are essential in driving operational efficiency (Drury, 2018). Employing these practices, SMEs can make informed decisions, optimize resource allocation, and enhance productivity, thereby improving their competitive advantage. However, managerial accounting practices encompass budgeting, cost analysis, performance measurement, and strategic planning. These practices are essential for SMEs to navigate the complex business environment and achieve their objectives (Hilton & Platt, 2016). This study aims to examine the effectiveness of managerial accounting practices in enhancing operational efficiency in SMEs.

## **1.2 Problem Statement**

Despite the acknowledged importance of SMEs to economic development, many of these enterprises struggle with inefficiencies that impede their growth and sustainability. Operational inefficiencies can lead to higher costs, reduced profitability, and ultimately, business failure. A significant factor contributing to these inefficiencies is the inadequate adoption of managerial accounting practices. Many SMEs lack the necessary knowledge and skills to implement these practices effectively, which results in poor financial management and decision-making (Nandan, 2010). While previous studies have highlighted the benefits of managerial accounting practices in large organizations, there is limited research focusing specifically on SMEs, particularly in emerging markets. This gap in the literature raises questions about the extent to which these practices are being adopted by SMEs and their impact on operational efficiency. Understanding the effectiveness of managerial accounting practices in enhancing operational efficiency can provide valuable insights for SME managers and policymakers to develop strategies that support the growth and sustainability of these enterprises.

## **1.3 Objectives of the Study**

The primary objective of this study is to assess the effectiveness of managerial accounting practices in enhancing operational efficiency in SMEs. To achieve this objective, the study will focus on the following specific objectives:

- OBJ1: To evaluate the impact of budgeting practices on the operational efficiency of SMEs in Nigeria.
- OBJ2: To assess the role of cost analysis in improving the operational efficiency of SMEs in Nigeria.
- OBJ3: To investigate the effectiveness of performance measurement systems in enhancing the operational efficiency of SMEs in Nigeria.
- OBJ4: To analyze the influence of strategic planning on the operational efficiency of SMEs in Nigeria.

## **1.4 Research Questions**

To achieve the objectives of this study, the following research questions will be addressed:

- RQ1: How do budgeting practices impact the operational efficiency of SMEs in Nigeria?
- RQ2: What cost management techniques are most effective in enhancing the operational performance of SMEs?
- RQ3: How do performance measurement systems contribute to improving operational outcomes of SMEs?
- RQ4: What is the influence of strategic planning on the operational efficiency of SMEs in Nigeria?

## **1.5 Research Hypotheses**

The following hypotheses were formulated to test the significant of the study at .05 alpha level

- H0<sub>1</sub>:** There is no significant impact of budgeting practices on the operational efficiency of SMEs in Nigeria
- H0<sub>2</sub>:** There is no significant effect of cost analysis in improving the operational efficiency of SMEs in Nigeria
- H0<sub>3</sub>:** There is no significant effect of performance measurement systems in enhancing the operational efficiency of SMEs in Nigeria
- H0<sub>4</sub>:** There is no significant impact of strategic planning on the operational efficiency of SMEs in Nigeria

## **1.6 Significance and Scope of the Study**

This study is significant as it provides insights into the role of managerial accounting practices in enhancing the operational efficiency of SMEs in Nigeria. By identifying effective practices, the study aims to offer recommendations for SMEs to improve their performance and competitiveness. The findings will also be beneficial to policymakers, financial institutions, and business consultants who support the growth and development of SMEs in Nigeria. Furthermore, the study contributes to the literature on managerial accounting and operational efficiency, particularly in the context of developing economies.

The study focuses on small and medium enterprises operating in Nigeria, particularly those in the manufacturing, retail, and service sectors. It will explore managerial accounting practices such as budgeting, cost management, performance measurement, and strategic planning. The study used a survey research method to collect data from SME owners, managers, and accounting professionals.

## **2.0 Literature Review**

### **2.1 Overview of Small and Medium Enterprises (SMEs)**

SMEs are a vital part of the global economy, accounting for a significant portion of employment, innovation, and economic growth. In most economies, SMEs constitute the majority of businesses



and play a crucial role in socio-economic development. According to the International Finance Corporation (IFC), SMEs represent about 90% of businesses and more than 50% of employment worldwide. Despite their importance, SMEs often face numerous challenges, including limited access to finance, inadequate infrastructure, and lack of managerial expertise, which can hinder their growth and sustainability (Ayyagari, Demirgüç-Kunt, & Maksimovic, 2011). The operational efficiency of SMEs is critical to their success and survival. Operational efficiency refers to the ability of an organization to deliver products and services in the most cost-effective manner while ensuring high quality. For SMEs, achieving operational efficiency is essential for competitiveness and long-term sustainability. Managerial accounting practices offer tools and techniques that can help SMEs improve their operational efficiency by providing relevant information for decision-making, planning, and control (Olawale & Garwe, 2010).

## **2.2 Concept of Managerial Accounting**

Managerial accounting, also known as management accounting, involves the use of accounting information to support managerial decision-making, planning, and control. Unlike financial accounting, which focuses on providing information to external stakeholders, managerial accounting is primarily concerned with providing relevant information to internal users, such as managers and employees, to help them make informed decisions that drive the organization's performance (Drury, 2018). According to Horngren, Datar & Rajan (2012), managerial accounting encompasses various tools and techniques, including budgeting, cost analysis, performance measurement, and strategic planning. These practices are designed to provide managers with the information they need to manage resources efficiently, control costs, evaluate performance, and develop strategies that align with the organization's objectives. The adoption of managerial accounting practices is particularly important for SMEs, as it can enhance their ability to respond to market changes, optimize resource use, and improve overall operational efficiency (Hilton & Platt, 2016).

## **2.3 Managerial Accounting Practices**

### **2.3.1 Budgeting**

Budgeting is a fundamental managerial accounting practice that involves planning and controlling financial resources. It is a process of preparing detailed financial plans for future periods, which serves as a guide for managing the organization's resources. Budgeting helps organizations set financial targets, allocate resources, monitor expenditures, and control costs. By providing a financial roadmap, budgeting enables managers to plan for future activities, anticipate potential challenges, and make adjustments as needed (Horngren, Datar, & Rajan, 2015). In the context of SMEs, effective budgeting practices can lead to better financial management, improved cash flow, and greater financial stability. A study by Ahmad and Zabri (2016) found that SMEs that implement formal budgeting practices are more likely to achieve higher levels of operational efficiency and profitability. Additionally, a research by Uyar and Kuzey (2016) indicates that budgeting is positively associated with financial performance and operational efficiency in SMEs. The study found that SMEs that implement comprehensive budgeting processes are better able to control costs, manage cash flows, and make strategic investments. In the context of Nigerian SMEs, budgeting can provide a structured approach to financial management, helping businesses to plan for uncertainties and avoid financial pitfalls.

### **2.3.2 Cost Analysis**

Cost analysis is another essential managerial accounting practice that involves identifying, measuring, and managing costs associated with business operations. It helps organizations understand the cost structure of their products and services, identify cost drivers, and implement cost control measures. Cost analysis provides managers with the information they need to make informed decisions about pricing, production, and resource allocation (Blocher, Stout, Juras, & Smith, 2019). For SMEs, effective cost analysis can lead to significant cost savings, improved profitability, and enhanced operational efficiency. By identifying areas where costs can be reduced, SMEs can optimize their operations and increase their competitiveness. A study by Wijewardena and De Zoysa (2001) found that SMEs that engage in regular cost analysis are more likely to achieve higher levels of profitability and operational efficiency. The study highlighted the importance of using cost information to support decision-making and drive continuous improvement in business operations.

### **2.3.3 Performance Measurement**

Performance measurement involves evaluating the success of business operations and identifying areas for improvement. It is a critical managerial accounting practice that provides managers with the information they need to monitor progress towards achieving strategic goals and make informed decisions. Performance measurement systems typically involve the use of key performance indicators (KPIs) to track the organization's performance in various areas, such as financial performance, customer satisfaction, and operational efficiency (Kaplan & Norton, 1996). In SMEs, effective performance measurement can lead to better decision-making, improved resource allocation, and greater operational efficiency. By providing managers with relevant information about the organization's performance, performance measurement systems enable SMEs to identify areas where improvements are needed and take corrective actions. A study by Garengo, Biazzo, and Bititci (2005) found that SMEs that implement formal performance measurement systems are more likely to achieve higher levels of operational efficiency and competitiveness. The study emphasized the importance of aligning performance measurement with the organization's strategic objectives to ensure that performance metrics are meaningful and actionable.

### **2.3.4 Strategic Planning**

Strategic planning involves defining long-term goals and developing strategies to achieve them. It is a critical managerial accounting practice that helps organizations align their operations with their strategic objectives. Strategic planning provides a framework for decision-making, enabling organizations to respond to market changes, anticipate future challenges, and capitalize on opportunities (Mintzberg, Ahlstrand, & Lampel, 2005). For SMEs, effective strategic planning is essential for achieving sustainable growth and competitiveness. By developing clear strategic objectives and aligning their operations with these objectives, SMEs can enhance their operational efficiency and achieve long-term success. A study by O'Regan and Ghobadian (2004) found that SMEs that engage in strategic planning are more likely to achieve higher levels of operational efficiency and performance. The study highlighted the importance of involving all relevant stakeholders in the strategic planning process to ensure that strategies are aligned with the organization's vision and goals.

## **2.4 Factors Affecting the Adoption of Managerial Accounting Practices**

The adoption of managerial accounting practices in Nigerian SMEs is influenced by various factors, including organizational size, management expertise, access to technology, and the external business environment. One of the primary challenges is the lack of skilled personnel with expertise in managerial accounting. Many SMEs in Nigeria rely on informal accounting practices, which limits their ability to implement more sophisticated managerial accounting tools (Okafor & Ezeagba, 2017). Additionally, the cost of implementing managerial accounting systems can be a barrier for SMEs, particularly those with limited financial resources. Access to technology is also a critical factor, as many managerial accounting practices require the use of specialized software and data analytics tools. The external business environment, including regulatory requirements and market conditions, can also impact the adoption of managerial accounting practices by SMEs in Nigeria.

## **2.5 Impact of Managerial Accounting Practices on Operational Efficiency**

The implementation of managerial accounting practices can have a significant impact on the operational efficiency of SMEs. By providing managers with relevant information for decision-making, planning, and control, managerial accounting practices enable SMEs to optimize their use of resources, reduce costs, and improve overall performance. Research has shown that SMEs that implement managerial accounting practices are more likely to achieve higher levels of operational efficiency, profitability, and competitiveness (Davila & Foster, 2005). Managerial accounting practices help SMEs improve their operational efficiency by enhancing their ability to plan strategically, control costs, evaluate performance, and make informed decisions. By providing a framework for financial management and control, these practices enable SMEs to manage their resources effectively, respond to market changes, and achieve their strategic objectives. The findings of this study will provide valuable insights into the effectiveness of managerial accounting practices in enhancing operational efficiency in SMEs and contribute to the development of best practices for SME managers and policymakers.

However, the impact of managerial accounting practices on operational efficiency has been extensively studied, with numerous research findings highlighting how these practices contribute to enhancing organizational performance. For example, Siddique and Shrestha (2016) conducted a study on the impact of budgeting on the performance of SMEs in Bangladesh. The study found that SMEs that implement detailed budgeting processes experience better financial control and resource allocation, leading to enhanced operational efficiency. The researchers highlighted that budgeting helps SMEs set clear financial targets and provides a framework for monitoring performance against these targets. Kumar and Sharma (2019) further support these findings by examining the relationship between budgeting practices and operational performance in Indian SMEs. Their study revealed that SMEs with structured budgeting practices are more likely to achieve higher levels of operational efficiency due to improved financial planning and cost control mechanisms. The study emphasized the importance of regular budget reviews and adjustments to adapt to changing business conditions.

Tuan and Tuan (2017) investigated the role of cost management practices in enhancing the operational efficiency of Vietnamese SMEs. Their study found that SMEs that engage in comprehensive cost analysis are better equipped to identify cost-saving opportunities and optimize their cost structure. The researchers concluded that cost analysis enables SMEs to make more

informed decisions about pricing, production, and resource allocation, thereby improving their operational efficiency. Chen, Cheng, and Hung (2014) conducted a study on cost control practices in Taiwanese SMEs and their impact on operational performance. The study highlighted that SMEs that implement cost control measures, such as variance analysis and activity-based costing, experience significant improvements in operational efficiency. The researchers noted that cost analysis helps SMEs better understand their cost drivers and implement targeted cost reduction strategies, leading to enhanced performance.

Mousa and Obeidat (2015) examined the impact of performance measurement systems on the operational efficiency of Jordanian SMEs. The study found that SMEs that use balanced scorecards and other performance measurement tools achieve better operational efficiency due to improved visibility into their performance metrics. The researchers emphasized that performance measurement systems help SMEs align their activities with strategic goals and improve overall performance. Khan and Tareq (2018) explored the relationship between performance measurement practices and operational efficiency in Bangladeshi SMEs. Their study highlighted that SMEs that implement performance measurement systems, including key performance indicators (KPIs) and benchmarking, experience higher levels of operational efficiency. The researchers found that performance measurement practices enable SMEs to identify performance gaps and implement corrective actions, leading to improved operational outcomes.

Gibson and Cassar (2005) conducted a study on the impact of strategic planning on the performance of SMEs in Australia. The study found that SMEs that engage in formal strategic planning processes achieve higher levels of operational efficiency compared to those that do not. The researchers highlighted that strategic planning helps SMEs set clear objectives, allocate resources effectively, and adapt to changing market conditions, leading to improved operational performance. Naranjo-Gil and Hartmann (2006) examined the role of strategic planning in enhancing the operational efficiency of Spanish SMEs. Their study revealed that SMEs that adopt strategic planning practices, such as scenario planning and strategic forecasting, experience significant improvements in operational efficiency. The researchers emphasized that strategic planning provides a framework for aligning operational activities with long-term goals and responding to external challenges.

### **3. Research Methodology**

This study employed a quantitative research design using a survey approach to investigate the effectiveness of managerial accounting practices in enhancing operational efficiency in Small and Medium Enterprises (SMEs) in Nigeria. The population comprised SMEs operating in Nigeria in the manufacturing, retail, and service sectors, selected for their significant representation in the Nigerian economy. According to the Small and Medium Enterprises Development Agency of Nigeria (SMEDAN), SMEs in Nigeria are defined as enterprises with fewer than 200 employees and an annual turnover of less than ₦100 million (SMEDAN, 2020). A stratified random sampling technique was used to ensure a representative sample, with 300 SMEs selected from the target population. Data were collected through a structured questionnaire designed to capture the impact of managerial accounting practices, focusing on budgeting, cost management, performance measurement, and strategic planning. The questionnaire included closed-ended and Likert-scale questions, which were distributed electronically and in person. A pilot test with 20 SMEs was conducted to refine the questionnaire, enhancing its clarity and reliability. Descriptive and

inferential statistical methods, including multiple regression analysis, were employed to analyze the data using SPSS software. This analysis helped assess the relationship between managerial accounting practices (independent variables) and operational efficiency (dependent variable). Ethical considerations included obtaining informed consent, ensuring participant confidentiality, and securing ethical approval from the relevant review board.

## 4. Data Analysis and Results

### 4.1 Demographic Information of Respondents

Table 4.1 provides a summary of the demographic characteristics of the respondents, including their gender, age, level of education, years of experience, and the sector in which their SME operates.

**Table 4.1: Demographic Information of Respondents**

Demographic Variables	Categories	Frequency	Percentage (%)
<b>Gender</b>	Male	180	60.0
	Female	120	40.0
<b>Age</b>	18-29 years	60	20.0
	30-39 years	120	40.0
	40-49 years	80	26.7
	50 years and above	40	13.3
<b>Level of Education</b>	Secondary	50	16.7
	Diploma/Certificate	80	26.7
	Bachelor's Degree	120	40.0
	Postgraduate	50	16.7
<b>Position in the Organization</b>	Manager	120	40.0
	Owner	90	30.0
	Accountant	60	20.0
	Others	30	10.0
<b>Years of Experience</b>	Less than 5 years	75	25.0
	5-10 years	90	30.0
	11-15 years	75	25.0
	More than 15 years	60	20.0
<b>Sector of SME</b>	Manufacturing	80	26.7
	Retail	70	23.3
	Services	90	30.0
	Agriculture	60	20.0
<b>Size of the SME</b>	Micro (1-9 employees)	60	20.0
	Small (10-49 employees)	150	50.0
	Medium (50-249 employees)	90	30.0

**Field Survey (2024)**

The table 4.1 presents the demographic analysis of the respondents, with the sample representation of 60% male and 40% female. The majority of respondents are between 30-39 years old (40%), followed by those aged 40-49 years (26.7%), 18-29 years (20%), and 50 years and above (13.3%). Educationally, most respondents hold a Bachelor's degree (40%). Positions within organizations are varied, with a significant number of managers (40%) and owners (30%). The respondents have varying years of experience, with the most common range being 5-10 years (30%), followed by those with less than 5 years (25%), 11-15 years (25%), and more than 15 years (20%). However, the analysis shows that respondents are distributed across various sectors, with services (30%) being the most represented, followed by manufacturing (26.7%), retail (23.3%), and agriculture (20%). Finally, most respondents work in small-sized enterprises (50%), followed by medium-sized enterprises (30%) and micro-sized enterprises (20%). Thus, this demographic spread ensures a comprehensive understanding of how managerial accounting practices impact operational efficiency across different types of SMEs.

## 4.2 Answering Research Questions

### 4.2.1 Research Question One

How do budgeting practices impact the operational efficiency of SMEs in Nigeria?

**Table 4.2: Impact of Budgeting Practices on Operational Efficiency**

Aspect	Freq.	%	X	Remark
Improved Financial Planning	210	70.0	4.20	Significant
Better Resource Allocation	190	63.3	4.10	Significant
Enhanced Cost Control	160	53.3	3.80	Significant
Increased Profitability	150	50.0	3.60	Moderate

#### Field Survey (2024)

The data in Table 4.2 shows that budgeting practices have a significant impact on the operational efficiency of SMEs in Nigeria. The mean scores indicate that budgeting is highly effective in improving financial planning (4.20) and resource allocation (4.10), both of which are significant for operational efficiency. Enhanced cost control is another significant benefit of budgeting, with a mean score of 3.80. However, increased profitability is reported as a benefit, it has a lower mean score of 3.60. Overall, budgeting practices are shown to have a positive and significant impact on operational efficiency, supporting the idea that effective financial planning and resource management are key drivers of SME performance.

### 4.2.2 Research Question Two

What cost management techniques are most effective in enhancing the operational performance of SMEs?

**Table 4.3: Impact of Budgeting Practices on Operational Efficiency**

Cost Management Technique	Freq.	%	X	Remark
Activity-Based Costing	180	60.0	4.00	Highly Effective
Lean Management	170	56.7	3.90	Effective
Standard Costing	150	50.0	3.70	Effective

Cost Management Technique	Freq.	%	X	Remark
Just-in-Time Costing	140	46.7	3.60	Moderately Effective

#### Field Survey (2024)

The data in Table 4.3 presents the effectiveness of various cost management techniques in enhancing operational performance. Activity-Based Costing (ABC) is identified as the most effective technique, with a mean score of 4.00. This technique allows SMEs to make more informed decisions and improve cost efficiency. Lean Management follows as an effective technique with a mean score of 3.90. The high effectiveness of lean management reflects its value in streamlining operations and improving overall efficiency. Also, Standard Costing with a mean score of 3.70 is effective in cost management. This technique helps SMEs control and monitor predetermined costs for products and services. Finally, Just-in-Time (JIT) Costing, with a mean score of 3.60, is moderately effective. The result shows that JIT helps SMEs enhance operational efficiency but may require significant coordination and management.

#### 4.2.3 Research Question Three

How do performance measurement systems contribute to improving operational outcomes of SMEs?

**Table 4.4: Contribution of Performance Measurement Systems to Operational Outcomes**

Performance Measurement System	Level	Freq.	%	X	Remark
Balanced Scorecard	High	160	53.3	3.90	Significant
Key Performance Indicators (KPIs)	Moderate	180	60.0	3.70	Moderate
Benchmarking	Moderate	150	50.0	3.50	Moderate
Financial Ratios	Low	120	40.0	3.20	Less Effective

#### Field Survey (2024)

The data in Table 4.4 shows the contribution of performance measurement systems to operational outcomes varies across different systems. The Balanced Scorecard is reported as having a high contribution, with a mean score of 3.90 and which is showed to help SMEs align their operations with strategic goals and improve overall performance. Key Performance Indicators (KPIs) have a moderate contribution with a mean score of 3.70 showing that KPIs are valuable for monitoring performance. Benchmarking, with a mean score of 3.50, is also moderately effective. It involves comparing performance against industry standards or competitors to identify areas for improvement. Also, Financial Ratios, with a mean score of 3.20, are considered less effective in improving operational outcomes.

#### 4.2.3 Research Question Four

What is the influence of strategic planning on the operational efficiency of SMEs in Nigeria?

**Table 4.5: Influence of Strategic Planning on Operational Efficiency**

Influence Area	Freq.	%	X	Remark
Improved Goal Alignment	200	66.7	4.10	Significant
Enhanced Decision-Making	190	63.3	4.00	Significant
Better Resource Utilization	170	56.7	3.80	Significant

Influence Area	Freq.	%	X	Remark
Increased Organizational Flexibility	150	50.0	3.60	Moderate

#### Field Survey (2024)

The data in Table 4.4 presents the influence of strategic planning on the operational efficiency of SMEs in Nigeria. In the findings, improved goal alignment, with a mean score of 4.10, is identified as a key benefit of strategic planning which helps SMEs align their operational activities with their long-term goals, leading to enhanced efficiency and effectiveness. Also, enhanced decision-making is another significant impact, with a mean score of 4.00 and shows to provide SMEs with a structured approach to informed decision-making and contribute to operational efficiency. Additionally, better resource utilization, with a mean score of 3.80, highlights how strategic planning helps SMEs allocate resources more efficiently. Finally, increased organizational flexibility, with a mean score of 3.60, is a more moderate influence. Strategic planning allows SMEs to anticipate and respond to changes in the business environment.

### 4.3 Research Hypotheses Testing

#### 4.3.1 Research Hypothesis One

The null hypothesis states that there is no significant impact of budgeting practices on the operational efficiency of SMEs in Nigeria. To test the hypothesis, regression analyses was performed on the data (see table 4.6).

**Table 4.6: Regression analysis for the impact of budgeting practices on operational efficiency**

Variables	Coefficient ( $\beta$ )	Standard Error	t-value	p-value
Constant	1.500	0.120	12.500	0.000
Budgeting Practices	0.800	0.080	10.000	0.000
R-squared				0.620
Adjusted R-squared				0.610
F-statistic				100.000
p-value (F-statistic)				0.000

a. Dependent Variable: Operational Efficiency

b. Predictors: Budgeting Practices

Table 4.6 presents the regression results indicating that budgeting practices have a significant positive impact on the operational efficiency of SMEs in Nigeria, with a coefficient of 0.800 (p-value = 0.000). The high t-value of 10.000 and a statistically significant p-value indicate that budgeting practices significantly contribute to operational efficiency. The R-squared value of 0.620 suggests that 62% of the variability in operational efficiency can be explained by budgeting practices. The F-statistic of 100.000 with a p-value of 0.000 further supports the significance of the model. Therefore, we reject the null hypothesis and conclude that budgeting practices have a significant impact on the operational efficiency of SMEs.



### 4.3.2 Research Hypothesis Two

The null hypothesis states that there is no significant effect of cost analysis in improving the operational efficiency of SMEs in Nigeria. To test the hypothesis, regression analyses was performed on the data (see table 4.7).

**Table 4.7: Regression analysis for the effect of cost analysis on operational efficiency**

Variables	Coefficient ( $\beta$ )	Standard Error	t-value	p-value
Constant	1.800	0.130	13.846	0.000
Cost Analysis	0.900	0.070	12.857	0.000
R-squared				0.690
Adjusted R-squared				0.680
F-statistic				165.250
p-value (F-statistic)				0.000

a. Dependent Variable: Operational Efficiency

b. Predictors: Cost Analysis

Table 4.7 results show that cost analysis has a significant effect on the operational efficiency of SMEs, with a coefficient of 0.900 and a p-value of 0.000. The t-value of 12.857 indicates strong statistical significance. The R-squared value of 0.690 implies that 69% of the variation in operational efficiency can be attributed to cost analysis. The high F-statistic of 165.250 and a p-value of 0.000 demonstrate that the model is highly significant. Thus, we reject the null hypothesis and conclude that cost analysis significantly improves the operational efficiency of SMEs in Nigeria.

### 4.3.3 Research Hypothesis Three

The null hypothesis states that there is no significant effect of performance measurement systems in enhancing the operational efficiency of SMEs in Nigeria. To test the hypothesis, regression analyses was performed on the data (see table 4.8).

**Table 4.8: Regression analysis for the effect of performance measurement systems on operational efficiency**

Variables	Coefficient ( $\beta$ )	Standard Error	t-value	p-value
Constant	1.700	0.110	15.455	0.000
Performance Measurement Systems	0.750	0.050	15.000	0.000
R-squared				0.730
Adjusted R-squared				0.720
F-statistic				225.050
p-value (F-statistic)				0.000

a. Dependent Variable: Operational Efficiency

b. Predictors: Performance Measurement Systems

Table 4.8 results reveal that performance measurement systems have a significant effect on enhancing the operational efficiency of SMEs, as indicated by a coefficient of 0.750 (p-value = 0.000). The t-value of 15.000 confirms the statistical significance of the relationship. The R-

squared value of 0.730 shows that 73% of the variance in operational efficiency is explained by performance measurement systems. The F-statistic of 225.000 with a p-value of 0.000 confirms the model's significance. Consequently, we reject the null hypothesis, demonstrating that performance measurement systems significantly enhance the operational efficiency of SMEs.

#### 4.3.4 Research Hypothesis Four

The null hypothesis states that there is no significant impact of strategic planning on the operational efficiency of SMEs in Nigeria. To test the hypothesis, regression analyses was performed on the data (see table 4.9).

**Table 4.9: Regression analysis for the impact of strategic planning on operational efficiency**

Variables	Coefficient ( $\beta$ )	Standard Error	t-value	p-value
Constant	2.000	0.140	14.286	0.000
Strategic Planning	0.950	0.060	15.833	0.000
R-squared				0.750
Adjusted R-squared				0.740
F-statistic				250.500
p-value (F-statistic)				0.000

a. Dependent Variable: Operational Efficiency

b. Predictors: Strategic Planning

Table 4.9 results indicate that strategic planning has a significant positive impact on the operational efficiency of SMEs in Nigeria, with a coefficient of 0.950 (p-value = 0.000). The high t-value of 15.833 and the statistically significant p-value confirm the importance of strategic planning. The R-squared value of 0.750 suggests that 75% of the variance in operational efficiency is explained by strategic planning. The F-statistic of 250.500 with a p-value of 0.000 strongly supports the significance of the model. Therefore, we reject the null hypothesis and conclude that strategic planning significantly impacts the operational efficiency of SMEs.

#### 4.4 Discussion of the Findings

##### 4.4.1 Impact of Budgeting Practices on Operational Efficiency

The study found that budgeting practices have a significant positive impact on the operational efficiency of SMEs, with a coefficient of 0.800 (p-value = 0.000). This finding aligns with the literature, which consistently emphasizes the importance of budgeting in improving financial planning, resource allocation, and cost control (Uyar & Kuzey, 2016). The significant impact observed in this study suggests that SMEs in Nigeria benefit substantially from systematic budgeting processes that allow for better financial oversight and strategic resource deployment. Budgeting enables SMEs to forecast their financial needs, allocate resources efficiently, and set financial targets, which enhances their ability to control costs and manage operations effectively. The high R-squared value of 0.620 indicates that budgeting practices explain a substantial portion of the variance in operational efficiency. This finding is consistent with prior studies that highlight budgeting as a cornerstone of financial management in SMEs (Abdullahi et al., 2020). However, the study also revealed that while budgeting significantly improves operational planning and

control, challenges such as limited financial literacy and resistance to structured financial processes can hinder its effectiveness.

#### **4.4.2 Effect of Cost Analysis on Operational Efficiency**

Cost analysis was found to have a significant effect on operational efficiency, with a coefficient of 0.900 and a p-value of 0.000. This result corroborates existing research that identifies cost management as a critical factor in enhancing operational performance (Ahmad, 2017). Effective cost analysis allows SMEs to identify and eliminate unnecessary expenses, optimize pricing strategies, and improve profitability. The high significance of cost analysis in this study underscores its value in providing SMEs with a detailed understanding of their cost structures, which is essential for informed decision-making and operational efficiency. Activity-Based Costing (ABC) and Lean Management were highlighted as particularly effective cost management techniques, aligning with the findings of prior studies that advocate for these methods in achieving operational excellence (Bhimani et al., 2019). The R-squared value of 0.690 suggests that cost analysis explains a significant proportion of the variance in operational efficiency, reinforcing the importance of adopting robust cost management practices in Nigerian SMEs. Despite the positive impact, the study identified barriers such as the complexity of certain cost management techniques and the lack of skilled personnel as challenges to implementation. Addressing these barriers through training and the adoption of more simplified cost management tools could further enhance the operational efficiency of SMEs.

#### **4.4.3 Effect of Performance Measurement Systems on Operational Efficiency**

Performance measurement systems were shown to have a significant effect on operational efficiency, with a coefficient of 0.750 and a p-value of 0.000. This result aligns with the literature that emphasizes the role of performance measurement in driving organizational improvement (Kaplan & Norton, 1996). The Balanced Scorecard, in particular, was identified as a highly effective performance measurement system, providing a comprehensive framework that includes financial and non-financial metrics. The study found that performance measurement systems help SMEs track their progress towards strategic goals, identify areas for improvement, and make data-driven decisions that enhance operational efficiency. The R-squared value of 0.730 indicates that performance measurement systems explain a significant portion of the variance in operational efficiency, suggesting that these systems are integral to effective operational management. However, the study also highlighted some limitations, including the tendency of SMEs to focus predominantly on financial metrics, potentially overlooking other critical performance dimensions such as customer satisfaction, internal processes, and learning and growth. To maximize the benefits of performance measurement systems, SMEs should adopt a balanced approach that incorporates both financial and non-financial indicators.

#### **4.4.4 Impact of Strategic Planning on Operational Efficiency**

The study found that strategic planning has a significant impact on the operational efficiency of SMEs, with a coefficient of 0.950 and a p-value of 0.000. This finding is consistent with the strategic management literature, which posits that strategic planning enables organizations to align their operations with long-term goals, anticipate changes in the business environment, and allocate resources more effectively (Porter, 1980). The high R-squared value of 0.750 indicates that strategic planning explains a substantial portion of the variance in operational efficiency,

underscoring its critical role in the success of SMEs. Strategic planning was shown to improve goal alignment, decision-making, and resource utilization, all of which are essential for operational efficiency. The study's findings suggest that SMEs that engage in regular strategic planning are better positioned to navigate market challenges, seize opportunities, and achieve sustainable growth. However, the study also identified challenges such as the limited strategic planning expertise among SME owners and managers, as well as the tendency to prioritize short-term goals over long-term strategic objectives. To address these challenges, SMEs could benefit from strategic planning training and support from business development services that specialize in SME growth and sustainability.

## **Conclusion**

Based on the study's findings, we concluded that managerial accounting practices, including budgeting, cost analysis, performance measurement systems, and strategic planning, significantly enhance the operational efficiency of SMEs in Nigeria. These practices contribute to improved financial control, cost management, performance monitoring, and strategic alignment, all of which are important for the success of SMEs in a competitive business environment.

## **Recommendations**

1. SME owners and managers should adopt comprehensive budgeting practices to enhance financial planning and control, as these practices significantly improve operational efficiency.
2. Government and business support organizations should provide training and resources to SMEs on effective budgeting techniques.
3. SMEs should implement robust cost management techniques, such as Activity-Based Costing and Lean Management, to optimize costs and improve operational efficiency.
4. Support organizations should offer workshops and consultancy services to help SMEs simplify and adopt effective cost management tools.
5. SMEs should integrate comprehensive performance measurement systems like the Balanced Scorecard to monitor and improve various aspects of operational performance.
6. Agencies should promote the adoption of both financial and non-financial performance metrics to ensure a balanced evaluation of SME performance.
7. SME owners and managers should engage in regular strategic planning to align their operations with long-term goals and enhance overall efficiency.
8. Organizations should provide strategic planning training and tools to SME managers to improve their strategic capabilities.

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