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Effect of Digital Transformations on Sustainability of Deposit Money Bank in Port-Harcourt, River State, Nigeria.

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ABSTRACT

The study determined the effect of digital transformations on sustainability for deposit money banks in Port-Harcourt, River State. Specifically the study examined the effect of innovation and product on economic sustainability, the effect of digital leadership and culture on social sustainability, the extent to which employees and skills affect environmental sustainability, the effect of organization and process on operational efficiency, the effect of digital strategy on effectiveness and the effect of digital technologies on growth of deposit money bank in Port-Harcourt, River State. A total of 165 questionnaires distributed to the staff of UBA Plc., FBN Plc., GTbank Plc. and Access Bank Plc. The cross-sectional survey research design was adopted for this study. Statistical Package for Social Sciences (SPSS) window version 25.0 was employed in all the analysis. Based on empirical investigation and analysis, the findings indicated that: Innovation and product have significant effect on economic sustainability of deposit money bank in Port-Harcourt, River State; Digital leadership and culture have significant effect on social sustainability of deposit money bank in Port-Harcourt, River State; Employees and skills have significant effect on environmental sustainability of deposit money bank in Port-Harcourt, River State; Organization and process have significant effect on operational efficiency of deposit money bank in Port-Harcourt, River State; Digital strategy have significant effect on effectiveness of deposit money bank in Port-Harcourt, River State; Digital technologies have significant effect on growth of deposit money bank in Port-Harcourt, River State. From statistical evidence it could be concluded that, Effective digital leadership is essential for navigating digital transformation, promoting innovation, and ensuring that digital initiatives contribute to social sustainability goals.

Based on the findings, the study recommends that; Deposit money bank management should actively embrace and integrate innovation to improve service delivery, enhance customer experience, and ultimately achieve a competitive advantage and sustainable growth. Deposit Money Banks should focus on fostering a culture of innovation and continuous improvement,

leveraging digital technologies to enhance customer experience and operational efficiency, and promoting ethical behavior and transparency in all operations.

Keywords:Organization, Sustainability, Productivity, Profitability and Efficiency

INTRODUCTION

1.1BACKGROUND OF THE STUDY

The computerization of the processes has been introduced since the early 1990s. After almost 30 years mobility, cloud computing, the Internet of Things (IoT), augmented reality, social media and decentralized public ledgers of transactions like blockchain are driving enterprises to new digital customer engagement and IT enabled processes. From the mid-2000s until today, smart devices and social platforms have been strongly influencing B2C communication methods and opening new communication channels with customers. Digital communication encouraged high expectations regarding multi-channel availability and revolutionized the Customer Service Experience within the "Customer in the Center" and real time communication approach. Within the rise of new technologies, all industries are conducting various initiatives to discover and exploit technological benefits (Mugge, Gudergan 2017). This engages transformations of business operating models, and also affects product portfolio. Processes and organizational structures are also to be reengineered in a way to govern the complex evolvement. The implementation of a new digital-based business model requires wide a range of capabilities to be developed, starting with the influence on people's mindset and organizational culture and the ability to change (Zinder, Yunatova 2016).

However, the evolving landscape of the 21st century, the banking industry has witnessed a profound revolution driven by digital transformation. This transformative journey, marked by the integration of cutting-edge technologies, has not only reshaped the way financial institutions operate but has also had significant implications for the broader economy (Guechi, 2020; Murinde, Rizopoulos, & Zachariadis, 2022). Digital transformation in the banking sector encompasses various technological innovations and strategic shifts to improve operational efficiency, enhance customer engagement, and remain competitive in a rapidly evolving financial landscape (Bharadwaj, El Sawy, Pavlou, & Venkatraman, 2013; Rha & Lee, 2022). It involves the integration of digital technologies into all aspects of banking operations, from customer service to back-office functions. The key components are mobile banking and apps, online banking, digital payments, blockchain, and cryptocurrencies.

Digitalization can be defined as the use of technology to transform business models and create new opportunities to increase revenue and generate value. The following processes are part of the 5.0 industrial revolution where technology evolves in every aspect of life and becomes a current business trend. Along with technological advancements, competition in the banking industry has intensified with the emergence of Financial Technology (Fintech) companies, making digital transformation unavoidable. Most banks have realized that establishing a digital ecosystem within a company is a key business development strategy (Tan, Huynh, Nguyen & Le, 2021).

Digital transformation represents a change in the activities of individuals and businesses through the application of digital technology to create major improvements in business, personal experience, and new business models (Abdulquadri, Mogaji, Kieu, & Nguyen, 2021). A more specific definition of digital transformation is mentioned in Vial (2019). Specifically, digital transformation is a process that aims to improve an entity by making significant changes to its properties through a combination of information, computing, communication, and connectivity technologies (Vial 2019). This definition shows that digital transformation can significantly change the business activities of enterprises by applying modern technologies. Therefore, changing and diversifying the operating methods of businesses is understandable since the concept of digital transformation was proposed.

However, growth of deposit money banks in Nigeria has been slow due to the lack of innovation in their products and inadequate technological developments, especially in today's digital era where most financial transactions are carried out digitally. However, deposit money banks do have a distinct share market compared to the general banking market. In addition, deposit money banks have until now paid little attention to the driving force or driver of sustainability for deposit money banks. Asustainable business can be interpreted as one that produces both short-term and long-term benefits. If a company can achieve its business goals, increase long-term value, and consistently maintain it all, then a new business can be considered sustainable (Pham & Vu, 2022).

Additionally, a sustainable business must also be able to implement social, economic, and environmental values in its business strategy. Therefore, the present solution for the deposit money banks in Nigeria is digital transformation. Digital transformation is crucial for business growth, especially in banking. The banking industry relies heavily on digitalization because most financial institutions are competing to enhance and upgrade it. Mobile banking, e-banking, SMS-banking, and other technologies allow access to practically all bank goods and services. Deposit money banks compete with traditional rural banks, fintech, and internet credit; thus, technological advances are crucial. Thus, clients will abandon Islamic rural banks if they do not develop technology. However, digital transformation would enable a firm to create value for both customers and other stakeholders (Oktavenus, 2019).

1.2STATEMENT OF THE PROBLEM

The digital transformation of Deposit Money Banks (DMBs) presents both opportunities and challenges to their long-term sustainability. While digital technologies offer increased efficiency, improved customer experience, and new revenue streams, they also introduce complexities such as cybersecurity risks, infrastructure costs, and the need to adapt to rapidly evolving customer expectations. The core problem is how to effectively leverage digital transformation to enhance sustainability while mitigating potential negative impacts such as;

Firstly, the need to understand the impact of technology adoption on performance, the increasing demand for differentiated financial products, and the need for banks to develop effective marketing strategies to maintain customer loyalty in a competitive market. Additionally, research is needed to assess how innovation can lead to competitive advantage and improved financial performance, especially in light of the challenges faced by Nigerian banks in adapting to new technologies and meeting customer expectations.

Secondly, the need to address challenges related to digital transformation, evolving customer expectations, and the need for sustainable business practices. Specifically, research is motivated by issues like the gap between technological advancements and strategic management adaptation, the impact of digital transformation on operational efficiency and customer experience, and the need for leadership to foster a culture that supports both digital initiatives and social responsibility.

Thirdly, the need to understand how a bank's workforce, specifically their skills and engagement, influence its environmental sustainability. Deposit money banks in Port Harcourt, like elsewhere, are under increasing pressure to operate responsibly and sustainably. This study aims to investigate the specific link between employee-related factors and the bank's ability to achieve environmental sustainability goals.

Fourthly, issues like slow service delivery, high operational costs, and difficulty adapting to changing market conditions. Researchers might also be interested in examining the impact of leadership styles, employee training, and technology adoption on overall bank performance.

Fifth, challenges with adapting to technological advancements, evolving customer expectations, and the need for improved operational efficiency and competitive positioning in an increasingly digital marketplace. Additionally, issues like security

concerns with online banking, customer complaints about service, and the need for more effective digital marketing strategies further emphasize the importance of this research.

Lastly, the increasing need for banks to adopt digital technologies to remain competitive, the challenges in implementing these technologies, and the potential impact on customer experience and financial performance.

These evolving digital landscape, changing customer expectations, the need for operational efficiency, and the potential for increased competition, have necessitated the need to investigate whether if digital transformations have impacted significantly on sustainability for deposit money bank in Port-Harcourt, River State.

1.3OBJECTIVES OF THE STUDY

The major objective of the study determined the effect of digital transformations on sustainability for deposit money banks in Port-Harcourt, River State. Other specific objectives are to;

i. examine the effect of innovation and product on economic sustainability of deposit money bank in Port-Harcourt, River State.
ii. ascertain the effect of digital leadership and culture on social sustainability of deposit money bank in Port-Harcourt, River State.
iii. access the effect of organization and process on environmental sustainability of deposit money bank in Port-Harcourt, River State.

1.3RESEARCH QUESTIONS

This study answered the following questions;

i. What is the effect of innovation and product on economic sustainability of deposit money bank in Port-Harcourt, River State?
ii. What is the effect of digital leadership and culture on social sustainability of deposit money bank in Port-Harcourt, River State?
iii. What are the effect of organization and process on environmental sustainability of deposit money bank in Port-Harcourt, River State?

1.4RESEARCH HYPOTHESES

The hypotheses of this study were formulated in their null forms as follows;

$H0_1$: Innovation and product have no significant effect on economic sustainability of deposit money bank in Port-Harcourt, River State.

$H0_2$: Digital leadership and culture have no significant effect on social sustainability of deposit money bank in Port-Harcourt, River State.

$H0_3$: Organization and process have no significant effect on environmental sustainability of deposit money bank in Port-Harcourt, River State.

REVIEW OF RELATED LITERATURE

2.1 CONCEPTUAL REVIEW

2.1.1 Digitalization

Digitalization refers to the implication of digital technology in an organization within the business context. The impact of digitalization has a positive effect on the firms, bring international business competencies and digital implementation of policies. It represents a change in perspective that unavoidably influences the most traditional organizations and even effects

the general society (Gimpel & Röglinger, 2015; Sambamurthy *et al.,* 2003). It is important to state that digitalization has overturned large industries, retail businesses, media, transport etc. and this is currently sweeping across commercial banks in Nigeria.

The digitalization change has been around for a considerable length of time; but in recent times, its effect and the speed of change appear to be exceptional. Digitalization has changed the financial sector and its working condition. Albeit, it is important to say that financial services have been automated for quite a long time, but a more extreme change could be said to be delayed as a result of most financial organization trying to maintain their traditional financial mode of services (IFC, 2017).

2.1.2 Concept of Digital Transformation

Digital transformation is a comprehensive process that involves the integration of digital technologies into all aspects of an organization's operations, culture, and business models to fundamentally change how it operates and delivers value to customers (Westerman et al., 2014). It goes beyond simply adopting new technologies; instead, it requires a strategic and holistic approach to leverage digital tools to improve efficiency, innovation, and customer experiences.

At its core, digital transformation entails reimagining traditional processes and embracing digital solutions to drive organizational growth and competitiveness. This may include digitizing manual processes, implementing data-driven decision-making, adopting cloud computing and artificial intelligence (AI), and enhancing digital channels for customer engagement (Westerman et al., 2014).

Digital transformation is driven by the recognition that digital technologies have the potential to revolutionize industries, disrupt traditional business models, and create new opportunities for innovation and growth. Organizations across various sectors, including banking, retail, healthcare, and manufacturing, are undergoing digital transformation to stay relevant in an increasingly digital and interconnected world.

2.1.3 Technological Innovation

Technological innovation provides the life-blood of economic activities. According to Adeyeye (2014), technological innovation is a tool for organisational growth, the application of those inventions to meet emerging business opportunities, meeting social needs, and environmental challenges. For any organization to be able to compete, it must be technologically innovative. Technological innovation and core competitiveness enjoy symbiotic relationship (Prhanlad & Hamel, 1990). Azubuike (2013) broadly described technological innovation as an essential component of competitiveness, rooted in the organizational structures, processes, products and services within a firm. Innovativeness is one of the essential strategies to enter new markets, increasing the existing market share and providing the company with a competitive edge. Guan, Yam, Mok and Ma (2006) sees technological innovation as the combination of knowledge techniques and management skills from different areas, that by strengthening these areas, the company can build its organizational competitiveness. Burgelman, Christensen and Wheelwright (2004) posited that technological innovation allocate the capability of an organization to choose, diffuse and then improve it technology. As such, it is a continuous process of experience gathering including the use of technology, the improvement and application of existing technology. Yam, Guan, Pun & Tang (2004) asserted that technological innovation is the skill involved in realizing and supporting a company's technological innovation strategy.

2.1.4 Innovation and product on economic sustainability of DMBs

Innovation and product development are fundamental drivers of economic sustainability for Deposit Money Banks (DMBs). They enable DMBs to remain competitive, adapt to evolving market demands, enhance operational efficiency, and diversify revenue streams, all of which are critical for long-term viability and contribution to broader economic growth. Innovation for DMBs involves implementing new technologies, processes, and business models to improve service delivery and create

new value. Innovation for DMBs involves implementing new technologies, processes, and business models to improve service delivery and create new value. Products like agent banking, basic savings accounts, and mobile money services extend financial access to underserved populations, fostering economic activity and growth.

The synergy between innovation and product development directly underpins the economic sustainability of DMBs:

- **Increased Profitability**: Innovations that lead to cost efficiencies (e.g., automation) and product developments that generate new revenue streams (e.g., digital services) directly boost the bank's bottom line. Studies consistently show a positive correlation between financial innovation and bank profitability.
- **Enhanced Competitiveness**: DMBs that continuously innovate and develop new products are better positioned to outmaneuver competitors, capture market share, and respond effectively to market disruptions.
- **Risk Mitigation**: Innovative risk management tools and diversified product portfolios reduce the bank's exposure to concentrated risks, making it more resilient to economic downturns or sector-specific challenges.
- **Customer Loyalty**: Offering superior, convenient, and relevant products and services cultivates strong customer relationships, leading to higher retention rates and a stable deposit base.
- **Contribution to Economic Growth**: By facilitating easier access to finance, efficient payment systems, and diverse investment options, DMBs support entrepreneurship, consumption, and overall economic development, creating a virtuous cycle where a healthy economy further supports the banking sector. "Green innovation" in banking, for instance, supports sustainable projects, contributing to environmental well-being alongside economic returns (Inokon, 2023).

Deposit Money Banks to thrive and contribute meaningfully to the economy, they must embed innovation and strategic product development into their core business strategy. Failure to do so risks obsolescence in an increasingly dynamic and technologically driven financial landscape.

2.1.5 Digital leadership and culture on social sustainability of DMBs

Digital leadership and organizational culture are increasingly recognized as crucial drivers of social sustainability within Deposit Money Banks (DMBs). As the banking sector undergoes rapid digital transformation, its ability to positively impact society, beyond mere financial performance, hinges significantly on how leaders navigate the digital landscape and how the organizational culture adapts to these changes. Digital leadership in DMBs involves leveraging digital technologies and a digital-first mindset to guide the organization towards its strategic objectives, including those related to social responsibility. For social sustainability, digital leadership plays several key roles:

Driving Digital Inclusion and Financial Literacy: Digital leaders can spearhead initiatives to expand access to financial services for underserved populations through digital channels (mobile banking, online platforms). This includes developing user-friendly digital tools and promoting financial literacy programs to ensure that a wider segment of society can participate in and benefit from the digital economy.

Ethical AI and Data Practices: As DMBs increasingly use AI and big data, digital leaders are responsible for establishing ethical guidelines for data collection, usage, and algorithmic decision-making. This ensures fairness, transparency, and prevents discrimination, which are critical aspects of social sustainability. They must prioritize data privacy and security to build and maintain public trust.

Promoting Sustainable and Responsible Lending/Investment: Digital leaders can integrate Environmental, Social, and Governance (ESG) criteria into lending and investment decisions by utilizing data analytics and digital platforms to assess the social impact of projects. This can lead to increased financing for socially beneficial initiatives (e.g., affordable housing, education, healthcare) and a reduction in support for activities with negative social consequences.

Enhancing Transparency and Accountability: Digital tools can facilitate greater transparency in reporting on social performance. Digital leaders can champion the use of robust data analytics and reporting platforms to communicate the DMB's social impact to stakeholders, fostering accountability and trust.

Fostering a Culture of Innovation for Social Good: Digital leaders inspire and empower employees to innovate with a focus on social impact. This could involve developing new digital products or services that address societal challenges, or streamlining internal processes to better serve community needs.

Effective Change Management: Digital transformation often involves significant shifts in operations and employee roles. Digital leaders must effectively manage this change, ensuring employees are reskilled and supported, and that the transition does not lead to job displacement without adequate mitigation strategies. This contributes to employee well-being, a core component of social sustainability.

The interplay between digital leadership and culture is vital. Digital leaders act as catalysts for cultural change, articulating a vision for social sustainability in the digital age, modeling desired behaviors, and investing in the technologies and training needed to embed these values. Conversely, a resilient and adaptive culture provides the fertile ground for digital leadership initiatives to flourish and become deeply integrated into the DMB's operations. Digital leadership and a robust organizational culture are not mere add-ons but fundamental pillars for DMBs aiming to achieve genuine social sustainability in the increasingly digitalized world. They provide the strategic direction and the foundational values necessary to leverage technology for the greater good, fostering a banking sector that is not only profitable but also deeply beneficial to society (Tan, *et. al.*, 2021).

2.1.6 Employees and skills affect environmental sustainability of DMBs

Employees and their skills are not just cogs in the corporate machine of Deposit Money Banks (DMBs); they are central to the institution's environmental sustainability efforts. The workforce's knowledge, abilities, and engagement directly influence a DMB's capacity to reduce its environmental footprint, finance green initiatives, and navigate the complex landscape of climate risk (Tan, *et. al.*, 2021).

The Role of Employees in Environmental Sustainability

Employees at all levels of a DMB, from front-line staff to senior management, play a critical role in environmental sustainability. This role can be broken down into three key areas:

1. **Operational Sustainability:** This involves the day-to-day actions of employees that directly impact the bank's environmental footprint.

- **Reducing resource consumption:** Simple acts like turning off lights, reducing paper usage, and being mindful of energy and water consumption in branches and offices contribute to a smaller environmental footprint.
- **Waste management:** Proper segregation and recycling of waste materials are essential for reducing the bank's overall waste.
- **"Green" behavior:** Encouraging employees to use sustainable transportation, opt for digital communications, and reduce travel for meetings are all part of fostering a green culture.

2. **Strategic Sustainability:** This involves employees with specialized skills who can drive environmental strategy and innovation.

- **Climate Risk Assessment:** Employees with skills in data analytics and risk management are crucial for assessing the physical and transition risks of climate change on the bank's lending and investment portfolios.
- **Green Product Development:** Teams need to be able to design and market new financial products, such as green loans, sustainable bonds, or renewable energy financing, that align with the bank's environmental goals and meet client demand.

- **Sustainable Finance Expertise:** Employees must understand ESG (Environmental, Social, and Governance) criteria to integrate them into financial decision-making, ensuring that the bank's investments and loans support environmentally sound projects.

3. **Cultural Change Agents:** Employees are the ambassadors of the bank's environmental commitment.

- **Raising Awareness:** Engaged employees can champion environmental initiatives, encouraging their colleagues and clients to adopt sustainable practices.
- **Providing Feedback:** They can offer valuable insights from the ground level, identifying opportunities for operational improvements or new green initiatives that may not be apparent to senior management.
- **Driving Innovation:** A culture that empowers employees to think creatively about environmental solutions can lead to new ideas for green technologies, processes, and business models (Nasamu, 2020).

The Impact of Employee Skills

The skills of a DMB's workforce are a direct determinant of its environmental performance. The transition to a sustainable economy requires new and specialized competencies, often referred to as "green skills." These skills can be categorized as follows:

- **Technical and Analytical Skills:**
  - **Carbon accounting and reporting:** Expertise in measuring, reporting, and verifying greenhouse gas (GHG) emissions is essential for meeting regulatory requirements and setting credible net-zero targets.
  - **Climate risk modeling:** Advanced analytical skills are needed to model the financial impacts of climate change on loan portfolios and assets.
  - **ESG data analysis:** Employees must be able to interpret and integrate a vast amount of ESG data into credit and investment analysis.
- **Financial and Business Skills:**
  - **Green finance knowledge:** This includes understanding the principles of green bonds, sustainability-linked loans, and other sustainable finance products.
  - **Sector-specific knowledge:** Expertise in green technologies, renewable energy, and sustainable agriculture is necessary to effectively lend to and advise clients in these sectors.
  - **Regulatory literacy:** Employees need to be up-to-date on evolving environmental regulations and reporting standards (e.g., TCFD, CSRD) to ensure compliance.
- **Soft Skills and Mindset:**
  - **Ethical decision-making:** A strong ethical compass is crucial for navigating the complexities of greenwashing and ensuring the bank's environmental claims are genuine.
  - **Collaboration:** Environmental sustainability is a cross-functional effort. Employees must be able to collaborate across departments (e.g., risk, lending, marketing) to integrate sustainability into all aspects of the business.
  - **Change management:** The transition to a green economy is a significant change. Employees with skills in change management can help their colleagues adapt and embrace new, sustainable ways of working (Satyendra, 2016).

The Link to Human Resources Management (HRM)

For DMBs to successfully leverage their workforce for environmental sustainability, their human resources management (HRM) practices must align with these goals. This involves:

- **Recruitment:** Hiring individuals who are not only skilled but also have a genuine passion for environmental issues.
- **Training and Development:** Providing targeted "green skills" training for existing employees. This can range from basic environmental awareness courses for all staff to specialized training in climate risk modeling for analysts.

- **Performance Management:** Incorporating environmental goals and metrics into performance appraisals and employee rewards systems. This incentivizes employees to actively contribute to the bank's sustainability objectives.
- **Employee Engagement:** Creating a culture where employees feel empowered to contribute to environmental initiatives. This can be achieved through green teams, suggestion programs, and transparent communication about the bank's environmental performance (Vial, 2019).

Employees and their skills are fundamental to the environmental sustainability of DMBs. A bank's ability to reduce its own environmental footprint, innovate new green products, and effectively manage climate-related risks is directly tied to the knowledge, commitment, and capabilities of its workforce. By investing in green skills and fostering a culture of environmental engagement, DMBs can transform their employees from passive participants into active agents of change, driving both environmental progress and long-term business success.

2.2 THEORETICAL REVIEW

2.2.1 Innovation diffusion theory (Rogers E. M., 1962).

Rogers' Innovation Diffusion Theory provides a valuable lens for understanding the adoption and diffusion of technological innovations. In the realm of Nigeria DMBs, this theory helps illuminate the process through which novel fraud prevention technologies are introduced, accepted, and integrated into the operational landscape. Rogers' Innovation Diffusion Theory (1962) stands as a seminal framework shaping our understanding of the intricate process of adopting and disseminating technological innovations. In the context of Nigeria Deposit Money Banks (DMBs), this theory serves as an invaluable lens, offering profound insights into the dynamic journey of integrating novel fraud prevention technologies into the operational landscape.

The foundational work of Rogers Rogers, (1962). guides us through the stages of innovation adoption, presenting a systematic approach to comprehend how these advancements are introduced, accepted, and assimilated within the unique context of Nigeria DMBs. This theoretical lens provides a structured framework, elucidating the complexities inherent in the adoption and diffusion of technological innovations (Rogers, 1962). As the financial sector in Nigeria constantly evolves, Rogers' theory becomes particularly crucial in navigating the challenges surrounding the introduction of fraud prevention technologies. It delineates the process from the initial exposure and awareness to the pivotal decision-making phase, where stakeholders evaluate the compatibility and benefits of integrating these technologies (Rogers, 1962). Moreover, in the ever-changing landscape of Nigeria DMBs, the theory emphasizes the collaborative efforts and strategic considerations essential in ensuring the seamless integration of fraud prevention technologies into daily operations (Rogers, 1962). It underscores the importance of a systematic approach to not only introduce these innovations but also to facilitate their acceptance and utilization among stakeholders within the banking sector.

In essence, Rogers' Innovation Diffusion Theory acts as a beacon, guiding the strategic integration of novel fraud prevention technologies within Nigeria DMBs. By acknowledging and embracing the principles embedded in this theoretical framework, stakeholders can navigate the complexities of technology adoption, fostering a resilient and technologically advanced operational landscape in the realm of Nigeria's banking sector.

2.3 EMPIRICAL REVIEW

Enoruwa *et al.*, (2023), research study examined the impact of technological innovations on bank performance in selected West African countries (1997-2020). A set of annual time series covering the period 1997 to 2020 and a multiple regression analysis including an autoregressive distributed lag (ARDL) model, a fully modified OLS (FMOLS) model and a dynamic OLS (DOLS) model were used. Bank performance was measured using bank return on assets (ROA) and bank return on equity (ROE), while technological innovation was measured using indicators such as Internet Banking (INB), Automated

Teller Machines (ATM), Mobile Banking (MBN) and Point of Sale (POS) whose control variables are inflation rate (INFR) and exchange rate (EXR). Findings from the ARDL panel results show that both positive and negative long-term relationships exist between technological innovation and bank performance in West Africa. We thoroughly verified the results from the ARDL model with FMOLS and DOLS and the findings show that technological innovation has a positive and negative long-run relationship with bank performance in West Africa and the results were the same for Nigeria, Ghana and Ivory Coast.

Bankole, Adeyemi, and Afolabi, (2022), conducted a research study on the impact of technological innovativeness on organisational effectiveness with reference to Akure Metropolis. A descriptive survey research design was adopted for the study. The population of the study comprised the unit managers of the entire deposit money bank in Akure metropolis. The study employed sample size of 48 through census sampling. Primary data used for the study were gathered through the administration of well-structured questionnaire. Data gathered were analyzed using Pearson product moment correlation and regression analysis. The study found that Automated Teller Machine, Mobile Banking and Internet Banking positively and significantly affect organizational effectiveness. Thus, it concluded that organizational effectiveness is positively impacted by technological innovativeness.

Enahoro, and Igbigbisie (2023), carried out a study on how technological innovation management techniques affect deposit money banks organizational performance in Nigeria. The specific goals are to ascertain the extent to which internet banking influences organizational performance, the extent to which automated teller machines influence organizational performance, the extent to which point-of-sale systems influence organizational performance, and the extent to which electronic mobile banking influences organizational performance. The study used descriptive survey research methods. Employees of First Bank, Delta State, Access Bank, and Zenith Bank make up the study's population. Using the Taro Yamani sample size calculation, a sample size of 277 people was determined. The study concluded that banks should mobilize more deposits from their clients through creation of ways that would make it easy and convenient for customers to transact. The study recommends that banks should undertake market research with an aim of improving their product innovation strategies. This will ensure that the banks only produce products that fulfill market needs.

Onwualu, (2019), examined the relationship between technological innovativeness and competitive advantage of Deposit Money Banks in Port Harcourt**.** The study adopted a cross-sectional survey in its investigation of the variables. Primary data was generated through self- administered questionnaire. The population of the study was 223 employees of twenty one (21) Deposit Money Banks in Port Harcourt. The sample size of 143 was determined using the Taro Yamane‟s formula for sample size determination. The reliability of the instrument was achieved by the use of the Cronbach Alpha coefficient with all the items scoring above 0.70. The hypotheses were tested using the Spearman Rank Order Correlation Coefficient. The tests were carried out at a 95% confidence interval and a 0.05 level of significance. The study findings revealed that there is a significant technological innovativeness and competitive advantage of Deposit Money Banks in Port Harcourt, Nigeria. The study recommends that Deposit money bank should encourage their Information Technology department by way of developing programs that will gear the IT personnel to innovate way on how to use technology such as apps and program (software) which will make banking much easier for customers.

Eneoli, Onwumere, Okwor and Nwosu, (2024), investigated how financial technology affected the growth of deposit money institutions in Nigeria. Financial technology value (POSV) serves as the explanatory variable, and the CPS to GDP ratio serves as a stand-in for development. Regarding digital activities in Nigerian financial institutions, the survey encompasses all individuals. The OLS regression model was used in the investigation. This study was chosen because other researchers have produced divergent and variant regression results by using various econometric approaches and variable selections. Methodology: Analytical and ex-post facto designs were employed. To make sure the parameters to be estimated were not

deceptive, the unit root test, correlation test, and parameter stability test were used. Results: The analysis indicated that the development of a few chosen deposit money banks in Nigeria was positively and marginally impacted by financial technology.

METHODOLOGY

3.1 RESEARCH DESIGN

The cross-sectional survey research design was adopted for this study. This was carried out using primary data through the use of questionnaire. Through this design, the use of questionnaire is considered appropriate as a method of retrieving information for data collection and classification. The study considered the views of respondents from the selected deposit money banks in River State, Nigeria. The justification for using survey research design was based on its capability for collecting enormous data; it is also useful in describing the characteristics of a large population extensively.

3.2 SOURCE OF DATA

The source of data were majorly primary data. *Primary source:* This is a form of data that is raw and uncollected. It is the type of data generated from the respondents who are mainly staff of selected First Bank of Nigeria Plc, Zenith Bank Plc, Access Bank Plc and Guarantee Trust Bank Plc., River state. The instruments that was used in generateing the data are questionnaire and direct observations.

3.3 POPULATION OF THE STUDY

The target population for this research comprised of 43 deposit money banks licensed by the Central Bank of Nigeria as 31st December 2024. The total population or staff strength of DMBs in Nigeria is estimated to be 95,888 as at 2024 banking sector report (NIBSS, 2024 and CBN Report 2024). But for the purpose of this study, the population of the study is two hundred and ninety nine (299) comprising the aggregation of the senior and junior staff and management of selected deposit money bank which includes, United Bank for Africa Plc., First Bank Nigeria Plc., Guaranty Trust Bank Plc. and Access Bank Plc. Porthacourth River state.

Table 3.3.1 The Study Population

United Bank for Africa Plc.	52
First Bank Nigeria Plc.	81
Guaranty Trust Bank Plc.	90
Access Bank Plc.	76
Grand Total	**299**

Source: Field Survey, 2025

3.3 SAMPLE SIZE DETERMINATION

In order to collect an unbiased sample for the study and because this study is targeted at employees of the selected deposit money banks in River State (United Bank for Africa Plc., First Bank Nigeria Plc., Guaranty Trust Bank Plc. and Access Bank Plc.), a random sampling technique was employed for the study so as to give all respondents an equal chance of being represented in the study. The objective of research work is to draw inference from the sample of the population in order to make generalizations on the whole population. However, because of the large population involved in most studies, researchers hardly study the entire population. Therefore, the sample for the study is 165 staff of the selected DMBs from the population of 299 in line with Krejice and Morgan (1970) (as cited Igwe, 2018) formula for determination of sample size. The sample size is therefore 165 respondents.

3.4 SAMPLING TECHNIQUE

The study adopted stratified sampling, whereby each stratum were drawn from a representing unit and to make sure all the entire population are duly represented for an optimal outcome. Each bank represent the strata of the population, using Bowley's proportion technique formula the results are shown below:

$$nh = \frac{nNh}{N}$$

Where:

nh = The number of unit allocated to each stratum.

Nh = The number of staff in each category

n = The total sample size

N = The actual or total population.

Proportional Allocation:

United Bank for Africa Plc.,

$$nh = \frac{52 \times 165}{299} = \frac{8,580}{299} = 28.70$$

First Bank Nigeria Plc.,

$$nh = \frac{81 \times 165}{299} = \frac{13,365}{299} = 44.70$$

Guaranty Trust Bank Plc.

$$nh = \frac{90 \times 165}{299} = \frac{14,850}{299} = 49.67$$

Access Bank Plc.

$$nh = \frac{76 \times 165}{299} = \frac{12,540}{299} = 41.94$$

Table 3.4.1: Selected banks for the Study and the Proportion size considered

	Population	Proportion
United Bank for Africa Plc.,	52	28.70
First Bank Nigeria Plc.,	81	44.70
Guaranty Trust Bank Plc.	90	49.67
Access Bank Plc.	76	41.94
Grand Total	**299**	**165**

Source: From Researcher Desk, 2025

3.5 DESCRIPTION OF THE RESEARCH INSTRUMENT

The research instrument is a device for collecting the data or measuring the variable which are used for answering research questions and/or testing hypothesis. The research instrument that was used for this study is an adopted semi structured questionnaire. A questionnaire is a document that consists of a set of leading questions which logically are arranged and are to be filled by the respondent himself. Semi-structured questionnaires will be adopted since they offer the researcher an opportunity to collect both structured and unstructured data. This is important in research since standardized data makes it easy to conduct analysis and to draw inferences, while at the same time, open ended questions offered respondents opportunity to clarify their answers in the structured section (Cooper & Schindler, 2014). The questionnaire was divided

into three parts. Part 1 covers demographic factors, while parts 2 and 3 covers independent and dependent variable consecutively.

The research instrument designed for this study is a 5-point Likert scale questionnaire aimed at eliciting the respondent's perception of the effect of technological innovations in banking operations among the DMBs.

3.6 VALIDITY OF THE RESEARCH INSTRUMENT

Validation of instrument is the extent to which an instrument measures what it is supposed to measure and performs as it is designed to perform. Validity is defined as the ability of a scale or measuring instrument to measure what is intended to be measured (Kothari, 2004) A content validity will be used for the study. Content validity is a process of justifying a questionnaire through its contents and variables. The questionnaire was submitted to the researcher's supervisor, a research statistician and a specialist in the field of research for verification and correction in order to establish an accurate criterion of the validity of the instrument and all necessary corrections were made before the questionnaire was administered.

3.7 RELIABILITY OF THE RESEARCH INSTRUMENT

A test-re-test method of reliability was adopted for this study. The pilot study was carried out, 38 copies of the questionnaire to be administered to the four selected deposit money banks in River state under study and 1 copies each of them. After two weeks, the instrument was collected and re-administered for the second time. Cronbach alpha coefficient of reliability was used to determine consistency of the instrument. The reliability result of 0.70% and above indicates high reliability.

$$\alpha = \frac{N*C}{V+(N-1)*C}$$

Reliability Analysis

Overall Cronbach's alpha of questionnaire items that is more than acceptable and recommended value 0.50 by Nunnally (1970) and 0.60 by Ibeta and Anyanwu (2017). The table below showed that all 51 items were reliable and valid to measure the effect of promotional tools towards organizational performance.

able-1 Reliability of Questionnaire and Scales

Scales	Items	Cronbach's Alpha
Innovation and product	10	0.821
Digital leadership and culture	9	0.633
Employees and skills	9	0.795
Organization and process	9	0.789
Digital strategy	7	0.721
Digital technologies	7	0.598

Source: Researcher's Survey, (2025).

3.8 Method of Data Analysis

The researcher committed data analysis to descriptive statistics of mean, percentages and standard deviation. The hypotheses testing were carried out with Regression analysis statistical tool for the test Hypotheses one to six. The computer aided Statistical Package for Social Sciences (SPSS) window version 25.0 was employed in all the analysis.

3.9 DATA PRESENTATION, ANALYSIS AND INTERPRETATION

This section contained the presentation of primary data obtained by the researcher through the administration of a questionnaire. The section was divided into two parts. In the first part of this section, demographic characteristics of respondent's data as contained in Section A of the questionnaire were presented. It included data on sex, educational

qualification, department in the bank, years of experience and position. The second part contained the presentation of responses on sections B of the questionnaire. It includes the proxies of digital transformation (innovation and product, digital leadership and culture, employees and skills, organization and process, digital strategy, digital technologies) as performance variables and sustainability of deposit money banks proxied by its indicators such as economic, social, environmental, operational efficiency, growth and effectiveness.

3.9.1 QUESTIONNAIRE DISTRIBUTION

TABLE 3.9.1 Distribution of Questionnaire to Staff of selected Firms and Response Rate.

Respondents	***Distributed questionnaires***	***% Valid & Returned questionnaires***	***% Invalid and not returned***
UBA Plc.	20	18 (11.39)	2 (28.57)
FBN Plc.	42	40 (25.32)	2 (28.57)
GTbank Plc.	35	34 (21.52)	1 (14.29)
Access Bank Plc.	68	66 (41.77)	2 (28.57)
Total	**165 (100)**	**158 (95.75)**	**7 (4.25)**

Source: *Field survey,* 2025

Table 3.9.1.1 above, shows the distribution of questionnaire to respondents. From the table it can be seen that out of the total 165 questionnaires distributed only 158 were actually completed and returned valid constituting 95.75%, while a total of 7 were invalid not returned at all constituting 4.25% respectively. Therefore, this analysis is based on 158 questionnaire correctly filled and returned which formed about 95.75% of respondents who co-operated with the researcher. The high percentage of those who co-operated with the researcher shows that they were familiar with the topic under consideration.

Table 3.9.1.2 Distribution of respondent by sex

SEX	**FREQUENCY**	**PERCENTAGE (%)**
MALE	96	60.76
FEMALE	62	39.24
Total	**158**	**100**

Source: Field survey, 2025

Table 3.9.1.2 shows the number of male staffs as 96 which makes up 60.76% of the total number of respondents and 62 females which makes up the remaining 39.24%. This indicates the population is more of male respondent than female

Table 3.9.1.3 Distribution of respondent by educational qualification

QUALIFICATION	**FREQUENCY**	**PERCENTAGE (%)**
FSLC	8	5.06
WAEC	15	9.49
ND/HND	26	16.46
B.Sc.	50	31.65
M.Sc.	28	17.72
Ph.D.	16	10.13
Others	15	9.49
Total	**158**	**100**

Source: Field survey, 2025

Table 3.9.1.3 reveals the qualification of the respondents. 31.65% has B.Sc., 16.46% has OND and HND, 17.72% has M.Sc., 9.49% has WAEC, 10.13% has Ph.D., 5.06% has FSLC and while 9.49% has other qualifications. This shows that the respondents have knowledge of the variables used for this study.

Table 3.9.1.4 Distribution of respondent by department in bank

DEPARTMENTS	FREQUENCY	PERCENTAGE (%)
Retail Banking	22	13.92
Cooperate banking	17	10.76
I.T/ Technology	20	12.66
Human resources	13	8.23
Risk Management	9	5.69
Marketing	31	19.62
Operations	25	15.82
Investment banking	7	4.43
Sustainability/CRS Department	11	6.96
Others	3	1.91
	0	0.0
Total	**158**	**100**

Source: Field survey, 2025

Table 3.9.1.4 reveals the departments of the respondents in the bank. 19.62% are in the marketing department, 15.82% are in the operations department, 13.92% are in the retail banking department, 12.66% are in the I.T/ Technology department, 10.76% are in the cooperate department, 8.23% are in the Human resource department, 6.96% are in the Sustainability/CRS Department, 5.69% are in the risk management department, 4.43% are in the investment banking department and while 1.91% are in other departments.

Table 3.9.1.5 Distribution of respondent by years of experience

YEARS OF EXPERIENCE	FREQUENCY	PERCENTAGE (%)
< 5yrs	23	14.56
6-10yrs	47	29.75
11-20yrs	88	55.69
Total	**158**	**100**

Source: Field survey, 2025

Table 3.9.1.5 reveals the years of experience of the respondents. 55.69% has 11-20years experience, 29.75% has 6-10years experience, and while 14.56% has below 5years experience.

Table 3.9.1.6 Distribution of respondent by position

POISTION	FREQUENCY	PERCENTAGE (%)
Senior management	8	5.06
Middle management	16	10.13
Operational staff	24	15.19
Team leader/supervisor	40	25.32
Frontline staff	63	39.87
Others	7	4.43
Total	**158**	**100**

Source: Field survey, 2025

Table 3.9.1.6 shows the current position of the respondents which include 8 senior managers i.e. 5.06% of the total respondents, 16 Middle managers which makes up 10.13%, 24 operational staff i.e. 15.19%, 40 team leaders/supervisor which make up 25.32%, 63 frontline mangers that is 39.87% and 7 other staff which makes up 4.43% of the total respondents.

3.2 DATA PRESENTATION

Table 3.2.1. What is the effect of innovation and product on economic sustainability of deposit money bank in Port-Harcourt, River State? N=158

S/N	Innovation and product towards economic sustainability of DMBs	SA 5	A 4	U 3	D 2	SD 1	TOTAL	MEAN	REMARK
1	The bank has a clearly defined innovation strategy that influences economic stability.	81	43	11	12	11	645	4.08	Accepted
2	Innovation is a key priority for the bank's senior management decision towards economic sustainability.	74	48	8	13	15	627	3.97	Accepted
3	The bank gain economic sustainability by allocating sufficient resources (financial, human and technological) to innovation initiatives.	67	53	9	11	18	614	3.89	Accepted
4	The bank improve on economic sustainability by actively monitoring industry trends and emerging technologies for innovation opportunities.	78	38	12	18	12	626	3.96	Accepted
5	The bank improvement on economic sustainability by collaborating with FinTech companies or other external partners for innovation.	74	47	9	15	13	628	3.97	Accepted
6	Innovation has positively impacted our bank's revenue growth economic stability.	72	51	8	14	13	629	3.98	Accepted
7	Innovative products have helped our bank attract new customers.	61	65	10	10	12	627	3.97	Accepted
8	Investing in sustainable products/practices has improved our bank's reputation and brand image.	69	58	11	10	10	640	4.05	Accepted

9	Economic sustainability is a core objective integrated into our bank's long-term strategy.	68	50	8	16	16	612	3.87	Accepted
10	The bank has a robust risk management framework for new innovative products and services.	41	40	18	26	33	504	3.19	Rejected
	Clustered mean for decision rule:-							**3.89**	**Accepted**

Source: Field survey, 2025

Respondent were asked to indicate their opinions by choosing questions from 1-10, scale is compound scale. The choice reflects the agreement or disagreement with the particular concept. In other word, it reveals the participant emotions, attitudes, beliefs, or points of view, because they show positive or negative emotions towards a concept of selecting a choice best representing their feelings (Likert, 2012). From the result, ten questions were designed in the questionnaire to ascertain the effect of innovation and product on economic sustainability of deposit money bank. From the result nine (9) of the variables in the table were accepted while one (1) of the variables was rejected by the mean range used for decision which is 3.5 and above. This result shows that the mean responses for items 1, 2, 5, 6, 7, 8 and 9 surpassed the criterion mean (4.08, 3.97, 3.89, 3.96, 3.97, 3.98, 3.97, 4.05 and 3.87 $\geq$ 3.5), and the mean response for item 10 was below the criterion mean (3.19 $\leq$ 3.5). From the result the clustered mean was 3.89 which was accepted. This, therefore means that innovation and product has a positive effect of on economic sustainability of deposit money banks.

Table 3.2.2. What is the effect of digital leadership and culture on social sustainability of deposit money bank in Port-Harcourt, River State? N=158

S/N	**Digital leadership and culture towards social sustainability of DMBs**	**SA 5**	**A 4**	**U 3**	**D 2**	**SD 1**	**TOTAL**	**MEAN**	**REMARK**
11	Digital leadership in our bank drives the integration of social sustainability goals into digital strategies.	62	48	14	13	21	591	3.74	Accepted
12	The bank's digital culture facilitates the implementation of social sustainability initiatives.	70	48	13	16	11	624	3.95	Accepted
13	Digital technologies are leveraged to enhance our bank's social impact (e.g., digital platforms for community engagement, data analytics for identifying social needs).	52	70	10	12	14	608	3.85	Accepted

14	Digital transformation helps our bank to reach and serve a wider range of customers, including those in remote or underserved areas.	92	28	9	17	12	645	4.08	Accepted
15	Digital tools improve our ability to measure and report on our social sustainability performance.	72	40	15	14	17	610	3.86	Accepted
16	The bank's commitment to social sustainability influences the development of new digital products and services.	80	35	11	24	8	629	3.98	Accepted
17	Digital innovation in our bank is often driven by a desire to address social challenges.	68	46	9	20	15	606	3.84	Accepted
18	The leaders actively promote the idea that digital progress should be coupled with social responsibility.	75	35	16	19	13	614	3.89	Accepted
19	Employees are aware of how their digital roles contribute to the bank's social sustainability efforts.	78	39	8	21	12	624	3.95	Accepted
	Clustered mean for decision rule:-							**3.90**	**Accepted**

Source: Field survey, 2025

Table 3.2.2 revealed that nine (9) questions were designed in the questionnaire to ascertain the effect of digital leadership and culture on social sustainability of deposit money bank in Port-Harcourt, River State. From the result of all the items in the table were accepted by the mean range used for decision which is 3.5 and above. From the result the mean responses for items 11-19, surpassed the criterion mean (3.5). From the result the clustered mean was 3.90 which was accepted. This, therefore means that digital leadership and culture has a positive effect on social sustainability of deposit money banks.

Table 3.2.3. What is the extent to which employees and skills affect environmental sustainability of deposit money bank in Port-Harcourt, River State? N=158.

S/N	**Employees and skills towards environmental sustainability of DMBs**	**SA 5**	**A 4**	**U 3**	**D 2**	**SD 1**	**TOTAL**	**MEAN**	**REMARK**
20	Understanding of environmental regulations and compliance in the banking sector.	60	60	17	11	10	623	3.94	Accepted

21	Ability to identify environmental risks associated with banking operations or client projects.	71	47	13	16	11	625	3.96	Accepted
22	Knowledge of green financial products and services (e.g., green bonds, eco-friendly loans).	80	55	6	9	8	664	4.20	Accepted
23	Skills in promoting sustainable practices to clients or colleagues.	73	48	14	11	12	633	4.00	Accepted
24	Ability to integrate environmental considerations into daily tasks and decision-making.	44	69	14	18	13	587	3.71	Accepted
25	Knowledge of energy efficiency measures in an office environment.	74	48	13	13	10	637	4.03	Accepted
26	Understanding of waste reduction and recycling practices.	60	40	16	20	22	570	3.61	Accepted
27	Familiarity with sustainability reporting standards (e.g., GRI, SASB).	92	47	6	4	9	683	4.32	Accepted
28	Proficiency in using digital tools to reduce paper consumption.	49	65	5	23	16	582	3.68	Accepted
	Clustered mean for decision rule:-							**3.94**	**Accepted**

Source: Field survey, 2025

From the result shown in Table 3.2.3 above all of the items in the table were accepted by the mean range used for decision which is 3.5 and above which has on the average the highest mean ($\bar{X}$= 4.32) and was accepted i.e. the respondents indicated strong agreement to the question statement; Furthermore, the clustered mean was 3.94 which was accepted, the implication is that all the above stated a positive effect of employees and skills towards environmental sustainability of banks.

3.3 TEST OF HYPOTHESES

Table 3.3.1 Regression results on the effects of digital transformations on sustainability of Deposit Money Bank in Port-Harcourt, River State

		Unstandardized Coefficients	**Standardized Coefficients**

Hypothesis	Model variables	R^2	R^2Adj.	SEE	D.W	β	Std.Error	Beta	t.cal	Sig.	F.value
Hypothesis 1	IP ⟶ ESD	.820	.818	.46768	.570	(Constant) .402 .918	.147 .034	- .905	2.740 .000 26.613	.007 .000	708.272
Hypothesis 2	DLC⟶ SSD	.522	.519	.72647	.410	(Constant) 1.642 .654	.211 .050	- .722	7.796 .000 13.048	.000 .000	170.257
Hypothesis 3	ES ⟶ EnSD	.590	.587	.66408	.351	(Constant) 1.545 .654	.184 .044	- .768	8.398 .000 14.974	.000 .000	224.219
Hypothesis 4	OP ⟶ OED	.615	.613	.64621	.438	(Constant) 1.290 .720	.194 .046	- .784	6.648 .000 15.799	.000 .000	249.604
Hypothesis 5	DS ⟶ EfD	.535	.532	.73654	.333	(Constant) 1.301 .711	.225 .053	- .732	5.792 .000 13.405	.000 .000	179.684
Hypothesis 6	DT ⟶ GrD	.830	.829	.43495	.887	(Constant) .265 .924	.146 .033	- .911	1.816 .071 27.606	.071 .000	762.065

a. Dependent Variable: Sustainability of DMBs (Growth, Relative Marketing Position, Customer Satisfaction, Profitability and Sales Volume)

b. Predictors: (Constant), Digital Transformations (Innovation and product, Digital leadership and culture, Employees and skills, Organization and process, Digital strategy and Digital technologies)

Source: *Researcher's Estimation 2025 SPSS version 25.0 Significance @ 95 confidence level (See SPSS Output – Appendix I - VI)*

Note:

Sub-Variables for X (Digital Transformations) regressing Sub-Variables for Y (Sustainability of DMBs) are;

x_1 = Innovation and product (IP)⟶ y_1 = Economic sustainability of DMBs (ESD)

x_2 = Digital leadership and culture (DLC)⟶ y_2 = Social sustainability of DMBs (SSD)

x_3 = Employees and skills (ES)⟶ y_3 = Environmental sustainability of DMBs (EnSD)

x_4 = Organization and process (OP)⟶ y_4 = Operational efficiency of DMBs (OED)

x_5 = Digital strategy (DS)⟶ y_5 = Effectiveness of DMBs (EfD)

x_6 = Digital technologies (DT) ⟶ y_6 = Growth of DMBs (GrD)

Interpretation

The result in tables 4.3.1 for hypothesis 1, 2, 3, 4, 5 and 6, the regression results showed that the estimated coefficient of the regression parameters has positive sign and thus conform to our a priori expectation, the R- square value of 0.820, 0.522, 0.590, 0.615, 0.535 and 0.830 which are the coefficients of determination covers 82.0%, 52.2%, 59.0%, 61.5%, 53.5% and 83.0% of the sample variation in the dependent variable are explained or caused by the explanatory variable while the remaining 18.0%, 47.8%, 38.5%, 31.0%, 46.5% and 17.0% are unexplained. This remaining could be caused by other factors or variables not built into the model.

The high value of R-square in hypothesis 1, 2, 3, 4, 5 and 6 are indications of a good relationship between the dependent and independent variables, meaning that there is a strong positive relationship between innovation and product and economic sustainability of DMBs, digital leadership and culture and social sustainability of DMBs, employees and skills and environmental sustainability of DMBs, organization and process and operational efficiency of DMBs, digital strategy and effectiveness of DMBs and digital technologies and growth of DMBs. This means that an increase in the independent variables will bring about credibility in the dependent variable. The regression equation (Y= 0.402+0.918IP+e, Y= 1.642+0.654DLC+e, Y= 1.454+0.654ES+e, Y= 1.290+0.720OP+e, Y= 1.301+0.711DS+e and Y= 0.265+0.924DT+e) shows that the economic sustainability, social sustainability, environmental sustainability, operational efficiency, effectiveness and growth of DMBs will always depend on a positive constant factor of 0.402, 1.642, 1.545, 1.290, 1.301 and 0.265 respectively regardless of the existence of other economic sustainability, social sustainability, environmental sustainability, operational efficiency, effectiveness and growth determinants. Every unit increase in innovation and product, digital leadership and culture, employees and skills, organization and process, digital strategy and digital technologies will increase economic sustainability, social sustainability, environmental sustainability, operational efficiency, effectiveness and growth of deposit money banks by a factor of 0.402, 1.642, 1.545, 1.290, 1.301 and 0.265 respectively.

The R^2 Adjusted value of 0.818, 0.519, 0.587, 0.613, 0.532 and 0.829 means that 81.8%, 51.9%, 58.7%, 61.3%, 53.2% and 82.9% of the variations in economic sustainability, social sustainability, environmental sustainability, operational efficiency, effectiveness and growth of deposit money banks are explained by effective innovation and product, digital leadership and culture, employees and skills, organization and process, digital strategy and digital technologies, while the 18.2%, 48.1%, 41.3%, 38.7%, 46.8% and 17.1% are explained by other variables not built into the model or covered by error terms. 0.46768, 0.72647, 0.66408, 0.64621, 0.73654 and 0.43495 indicates their Standard Error of the Estimate, while Durbin Watson Statistic of 0.570, 0.410, 0.351, 0.438, 0.333 and 0.887 show that there is no multicolinearity of variables in the partition curves. The F-Value of 708.272, 170.257, 224.219, 249.604, 179.684 and 762.065 measures the goodness of fit of the models which is greater than 2.5 rule of thumbs. The calculated t-statistic remains 26.613, 13.048, 14.974, 15.799, 13.405 and 27.606 at (df_1 = 1 & df_2 = 157 for all the models) and p.value of 0.000 in all respectively.

Hypothesis one

$H0_1$: Innovation and product have no significant effect on economic sustainability of deposit money bank in Port-Harcourt, River State.

The established regression equation was: **Y= 0.402+0.918IP+e (calculated p=0.00<0.05)**

The regression equation above has established that holding all factors of change management constant, factors affecting change management will be 0.918. The findings presented also shows that taking all other independent variables at zero, a unit increase in innovation and product will lead to an increase in the scores of economic sustainability of deposit money bank. This infers that innovation and product have significant effect on economic sustainability of deposit money bank in Port-Harcourt, River State.

Hypothesis two

$H0_2$: Digital leadership and culture have no significant effect on social sustainability of deposit money bank in Port-Harcourt, River State

The established regression equation was: **Y= 1.642+0.654DLC+e (calculated p=0.00<0.05)**

The regression equation above has established that holding all factors of change management constant, factors affecting change management will be 0.654. The findings presented also shows that taking all other independent variables at zero, a unit increase in digital leadership and culture will lead to an increase in the scores of social sustainability. This infers that digital leadership and culture have significant effect on social sustainability of deposit money bank in Port-Harcourt, River State.

Hypothesis three

$H0_3$: Employees and skills have no significant effect on environmental sustainability of deposit money bank in Port-Harcourt, River State.

Discussions of the Findings

The established regression equation was: **Y= 1.454+0.654ES+e (calculated p=0.00<0.05)**

The regression equation above has established that holding all factors of change management constant, factors affecting change management will be 0.654. The findings presented also shows that taking all other independent variables at zero, a unit increase in Employees and skills will lead to an increase in the scores of environmental sustainability. This infers that Employees and skills have significant effect on environmental sustainability of deposit money bank in Port-Harcourt, River State.

Based on hypothesis one, innovation and product have significant effect on economic sustainability of deposit money bank in Port-Harcourt, River State. This is in line with the examination of Onwualu, (2019) who examined the relationship between technological innovativeness and competitive advantage of Deposit Money Banks in Port Harcourt**.** The study adopted a cross-sectional survey in its investigation of the variables. Primary data was generated through self- administered questionnaire. The population of the study was 223 employees of twenty one (21) Deposit Money Banks in Port Harcourt. The sample size of 143 was determined using the Taro Yamane‟s formula for sample size determination. The reliability of the instrument was achieved by the use of the Cronbach Alpha coefficient with all the items scoring above 0.70. The hypotheses were tested using the Spearman Rank Order Correlation Coefficient. The tests were carried out at a 95% confidence interval and a 0.05 level of significance. The study findings revealed that there is a significant product innovation and competitive advantage of Deposit Money Banks in Port Harcourt, Nigeria.

More so, in the second hypothesis, digital leadership and culture have significant effect on social sustainability of deposit money bank in Port-Harcourt, River State. This was in accordance with the investigation of Mayowa, *et al.*, (2019) who study investigated how digitalization enhances the performance of commercial banks adopting the purposive method and simple random sampling selecting 370 nonmanagerial employees from a commercial bank. A self-structured questionnaire was used as the major instrument for data collection and was analysed using SPSS version 25. From the result, it was discovered that there was a mild significant and positive relationship between the digital leadership and commercial bank performance ($r = 0.114^*$; $p < .05$). Also, there is a positive significant relationship between culture and performance of commercial banks in Nigeria ($r = 0.186$; $p < 0.001$).

However, hypothesis three found that employees and skills have significant effect on environmental sustainability of deposit money bank in Port-Harcourt, River State. This agreed with the study of Bankole, Adeyemi, and Afolabi, (2022) who research study indicated the impact of technological innovativeness on organizational effectiveness with reference to Akure Metropolis. A descriptive survey research design was adopted for the study. The population of the study comprised the unit

managers of the entire deposit money bank in Akure metropolis. The study employed sample size of 48 through census sampling. Primary data used for the study were gathered through the administration of well-structured questionnaire. Data gathered were analyzed using Pearson product moment correlation and regression analysis. The study found that employees and skills positively and significantly affect organizational effectiveness.

SUMMARY OF FINDINGS, CONCLUSION AND RECCOMENDATIONS

3.4 SUMMARY OF FINDINGS

This study ascertained the effect of digital transformations on sustainability of Deposit Money Bank in Port-Harcourt, River State (UBA Plc., FBN Plc., GTbank Plc. and Access Bank Plc.). Descriptive research design was adopted. A total of 165 questionnaires was administered to the staff of UBA Plc., FBN Plc., GTbank Plc. and Access Bank Plc. Frequency distribution and percentages was determined, the hypotheses were tested using regression analysis with the help of SPSS version 25.0. Based on empirical investigation and analysis, the findings indicated that;

i. Innovation and product have significant effect on economic sustainability of deposit money bank in Port-Harcourt, River State.
ii. Digital leadership and culture have significant effect on social sustainability of deposit money bank in Port-Harcourt, River State.
iii. Employees and skills have significant effect on environmental sustainability of deposit money bank in Port-Harcourt, River State.

The conclusion from study on digital transformation impact on deposit money bank sustainability in Port Harcourt indicates that innovative service delivery and technological advancements, such as digital banking and mobile banking, have a positive and significant impact on competitive advantage, customer satisfaction, and overall performance.

Digital leadership and culture have significant effect on social sustainability of deposit money bank in Port-Harcourt, River State. This highlighted the crucial role of digital leadership in fostering a positive and sustainable organizational culture that supports social responsibility and employee well-being. Effective digital leadership is essential for navigating digital transformation, promoting innovation, and ensuring that digital initiatives contribute to social sustainability goals.

Employees and skills have significant effect on environmental sustainability of deposit money bank in Port-Harcourt, River State. This means that the employees are with the right skills, particularly in areas like information management and talent retention, are crucial for achieving organizational sustainability, which includes environmental sustainability.

Organizational structure and efficient processes significantly impact operational efficiency. Specifically, effective human resource planning, implementation of decision support systems, and adoption of differentiation strategies all contribute to improved performance.

Digital strategies significantly improve the effectiveness of deposit money banks (DMBs) in Port Harcourt, Rivers State. Specifically, the use of digital banking services like ATMs, online banking, and mobile banking has a positive and significant impact on the banks' performance and effectiveness.

Digital transformation significantly improves growth and customer satisfaction. Specifically, this study exposed the positive influence of technological advancements on organizational growth, network conditions, and customer patronage.

Based on the findings, the study recommends that;

1) Deposit money bank management should actively embrace and integrate innovation to improve service delivery, enhance customer experience, and ultimately achieve a competitive advantage and sustainable growth.

2) Deposit Money Banks should focus on fostering a culture of innovation and continuous improvement, leveraging digital technologies to enhance customer experience and operational efficiency, and promoting ethical behavior and transparency in all operations. Specifically, banks should invest in digital transformation strategies, including bolstering cybersecurity, updating technology infrastructure, and encouraging collaboration with fintech partners. They should also establish active digital marketing channels for two-way communication with customers and regularly gather feedback through surveys to improve processes and service delivery.

3) Deposit Money Banks should invest in employee training and development programs focused on environmental awareness and sustainable practices. This includes enhancing their knowledge of environmental regulations, promoting the adoption of eco-friendly technologies, and fostering a culture of environmental responsibility within the bank. Furthermore, banks should prioritize creating a positive work environment that encourages employee engagement and participation in sustainability initiatives.

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