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Digital Transformation and Profitability of Deposit Money Banks in South-South Region of Nigeria

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Abstract

This study empirically looks at the relationship between digital transformation and profitability of Deposit Money Banks (DMBs) in South-South region of Nigeria. The study adopted a cross-sectional research design, with the participants of the study being 609 respondents of (DMBs) in South-South region of Nigeria. A sample size of 242 respondents was determined using Taro Yamanes formula. Data were analysed using the multivariate regression and the analysis of variance (ANOVA) techniques. The findings show that digital transformation has a significant positive impact on profitability. In this regard, the research concluded that digital transformation has an effect on profitability. The results of the hypotheses tested showed that artificial intelligence driven and digital currency do not have significant relationships with the profitability of Deposit Money Banks, as both variables recorded very high p-values. This indicates that among the three digital financial technologies examined; only open banking contributes significantly to the profitability of Deposit Money Banks, while artificial intelligence driven and digital currency do not demonstrate notable direct influence in this context. Based on this conclusion, the study recommended that Deposit Money Banks are to strengthen and develop their open banking initiatives because this digital innovation has proven the presence of a positive and powerful effect on profitability. Deposit money banks should streamline their AI plans by focusing on the use cases that prove to be efficient regarding operational efficiency, fraud detection, customized services, and credit-risk evaluation. Finally, they must review their digital currency plans by raising their customer awareness, informing the customer about the advantages and threats and enhancing digital currency infrastructure to facilitate adoption.

***Keywords**:*

Digital transformation, Artificial intelligence driven, Open banking, Digital currency, profitability.

Introduction

Profitability is a measure of how a bank can make income and this is what makes it financially stable and able to withstand economic recessions. Flexibility also helps banks to react to the changes in the market and changes in regulations and technological

interruptions, which is crucial in a time when the financial sector is rapidly changing (Alhassan et al., 2023; Adebisi et al., 2024). There are a number of factors that are likely to influence profitability of deposit money banks in recent times. The regulatory policies, competition, stability of the overall economy, quality of risk management system, adoption of technology and many others in particular in relation to crises such as regulatory changes, economic volatility and banking crises are factors that determine the profitability of DMBs in Nigeria (Ajayi & Salami, 2019). The considerations like inflation and the necessity to switch to the digital banking channel to increase the speed of banking processes are in high demand.

Nevertheless, the utilization of digital transformation in the banking business is one of the most urgent aspects (Lottu et al., 2023; McNchols, 2002). The digital transformation of banking activities implies the implementation of artificial intelligence (AI), open banking, and digital currencies (Lottu et al., 2023). The digital transformation of the banking business encompasses digital currencies and open banking, as well as the application of artificial intelligence (AI), which all introduce fundamental shifts to the manner in which banks operate, interact with their customers and offer them financial services (Lottu et al., 2023; McNchols, 2002). The banking industry is quickly applying AI to automate their customer service, detect fraud, assess credit risk, and offer personalized financial advice among other tasks that make consumer experiences more enjoyable and efficient (Olayemi and Tiamiyu, 2024). To enhance customer choice and stimulate competition in the financial sector, open banking and its ability to facilitate the sharing of customer financial information through secure APIs allow innovation and the possibility of offering new financial services and products (Akinboade et al., 2023). In particular, central bank digital currencies (CBDCs) are transforming how money is exchanged by providing banks with better control over the monetary policy and making transactions faster, cheaper, and safer (Eze et al., 2024). As these technologies are being used to promote efficiency, transparency, and accessibility, they are also bringing about new challenges like cybersecurity threats and the necessity to adapt regulations to them (Adebisi et al., 2024).

Although the digital banking process is rapidly changing on a global scale, the studies of the ways that Nigerian banks use artificial intelligence (AI), open banking, and digital currencies are few. One of the causes of this discrepancy is the infrastructural issues, regulatory ambiguity, and cultural opposition to technological change (Akinboade et al., 2023). However, digital transformation can bring about great opportunities to DMBs, particularly AI-based services, enhanced operational efficiency and customer experience, open banking that enhances innovation, and digital currencies that can facilitate quicker and safer transactions (Olayemi & Tiamiyu, 2024; Ojo et al., 2024). However, very little is known about digital transformation role within the Nigerian banks. This study addressed this gap by exploring the connection between digital transformation, and profitability of deposit money South-South of Nigeria. To enable policymakers and bank managers to formulate strategies that would ensure that digital transformation can be aligned to sustainable growth and profitability within the Nigerian banking sector, this study will find out the influence of culture on the technology adoption and integration.

Statement of the Problem

The issue of poor profitability of deposit money banks (DMBs) in Nigeria is a burning issue to respond to the fast-evolving business environment, and poor growth. Although the banks are pivotal in economic development, most of the DMBs in Nigeria are still grappling with profitability, which is often due to high costs of operation, inefficiencies, and heavy use of the traditional model of banking that do not address the changing needs of customers (Alhassan et al., 2023). This reduction in profitability does not only impact the financial performance of the banks but also their capacity in attracting investors and maintaining their competitive edge in a market that is getting more and more saturated. Eze et al. (2024) have documented the poor management of non-performing loans, limited access to capital, and the Economic instability in the Nigerian market as some of the factors that have failed the banks to attain sustained and consistent profitability.

Besides the low profitability, the inability to adjust to the changing business environments is another factor that contributes to the survival challenges of DMBs. With the world banking environment experiencing major changes, most of them brought about by the development of digital technologies, the south-south of nigeria have found it hard to cope with the changes. The process of the implementation of new technologies, including artificial intelligence, blockchain, and digital currencies, has been slow, in part because of the deficient infrastructure, the lack of clarity in regulations, and the unwillingness to change in the organization (Olayemi & Tiamiyu, 2024). Therefore, most DMBs still work in the frameworks of the past that do not contribute to their ability to be innovative and adapt to changes in customer preferences, market demands, and regulatory changes. According to Adebisi et al. (2024), such inability to be versatile makes them less competitive, and thus it is more challenging to match customer demands and stay aligned with the global banking expectations.

Yet, the poor growth of the Nigerian DMBs is another characteristic feature of the poor corporate survival, which is mainly caused by a failure to diversify the operations and to widen the market coverage. Most of the banks are still too dependent on a small number of products, and not many financial products are being innovated, including digital banking and mobile payments. Moreover, the expansion prospects of these banks are limited due to such circumstances as the lack of customer confidence, low financial inclusion, as well as the lack of effective risk management (Akinboade et al., 2023). It is of particular concern that this growth has not been increasing, especially in a time where other markets have quickly adopted the digital transformation allowing banks to grow and expand operations across the world. Ojo et al. (2024) argue that, unless the Nigerian banks choose to adopt more digital-focused and diverse business models, the latter will go out of business and will not be able to seize the opportunities of emerging markets and, eventually, lose their own existence. Therefore, the areas of concern on profitability, adaptability and growth are relevant to the current work because it aims at exploring the linkage between digital transformation and the possibility of corporate survival of deposit money banks in South-South region of Nigeria.

Conceptual Framework

The conceptual framework below was developed to examine the link between digital transformation and profitability of Deposit Money Banks.

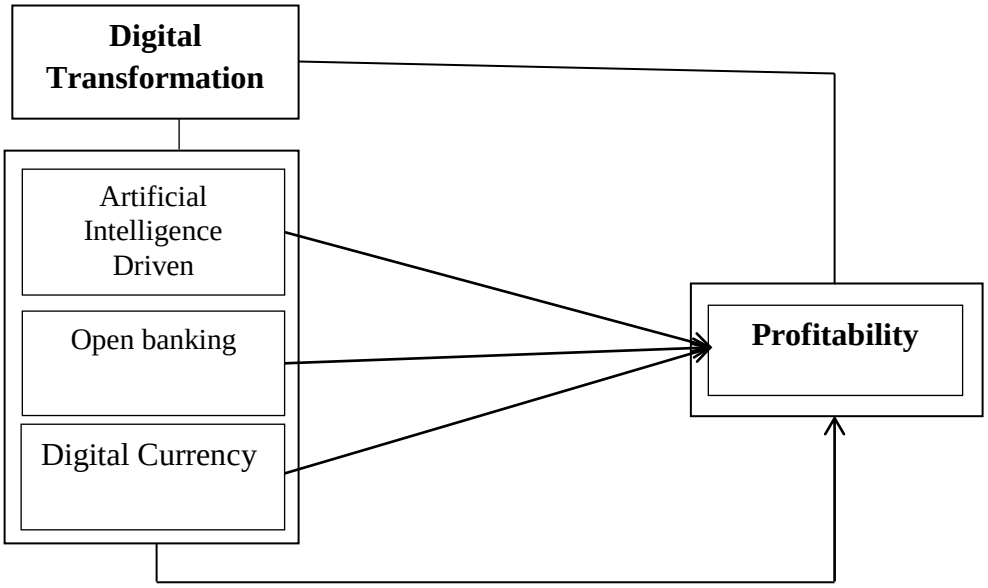

Figure 1.1: Conceptual framework below seeks to address the link between digital transformation and adaptability of deposit money south-south of Nigeria
Source: Lottu et al.(2023), McNchols (2002), Jonas and Blanchet (2000), Francis et al. (2002).

Aim and Objectives of the Study

The aim of the study was to examine the relationship between digital transformation and profitability of Deposit Money Banks.

The objectives of the study are to:

1. Determine the relationship between artificial intelligence driven and profitability of Deposit Money Banks.
2. Examine the relationship between open banking and profitability of Deposit Money Banks.
3. Investigate the relationship between digital currency and profitability of Deposit Money Banks.

Research Questions

The following research questions guided the study

1. What is the relationship between artificial intelligence driven and profitability of Deposit Money Banks?
2. How does artificial intelligence driven relate with profitability of Deposit Money Banks?

3. What is the relationship between digital currency and profitability of Deposit Money Banks?

Hypotheses

The following statements of hypotheses guided the study

Ho_1: There is no significant relationship between artificial intelligence driven and profitability of Deposit Money Banks.

Ho_2: There is no significant relationship between open banking and profitability of Deposit Money Banks.

Ho_3: There is no significant relationship between digital currency and profitability of Deposit Money Banks.

Significance of the Study

The significance of studying digital transformation and profitability of Deposit Money Banks (DMBs) in Nigeria is multifaceted, impacting the banks, scholars, and society at large. In the case of the banking institutions, the study provides priceless information on how advancing technological change enables efficiency in its operations, a superior aspect of operations, and reduction of its operations versus its cost, ultimately providing the basis of competitiveness and sustainability in a rapidly changing world of finance. With the Nigerian banks facing the insurmountable pressure to embrace digital banking solutions necessitated by the increased customer need to be conveniently served, it becomes necessary to understand that wholesome understanding of digital transformation is the best entree pass into long-term sustainability and growth.

To the scholars, the article offers a unique research sitting to explore the intersection of technology, business strategy and financial services in a developing economy and therefore adds to the academic body of literature on digital banking and the response of corporate resiliency amidst disruption. Besides, it provides a basis of further investigation of challenges and opportunities that go hand in hand with digitalization in newer markets. In societal perspective, the findings of the study are important in that they could be used as a guideline in formulating policy and regulatory measures aimed at ensuring financial inclusion, access to banking services, and stability of the banking sector in general. Also, the study highlights the importance of the digital transformation in driving economic growth, creating innovation, and improving service delivery to clients, thus, benefiting the general population at large due to better financial access and financial safety.

Conceptual Review

This study focused on how digital transformation and profitability interact in the situation of the Deposit Money Banks that have operations in Nigeria. The implementation of artificial intelligence technologies in automation of operations processes, data analysis, and increase of organizational decisions are the artificial intelligence-driven initiatives that contribute to the profitability. Digital currency is a financial product that is present solely in the digital format without the physical representation, as well as for which the

issue and the regulation are usually centralized or decentralized to an authority or a decentralized operating network, respectively. As a systemic framework, Open banking provides banks with a sanctioned access to customer data, which can be used to create new products and services and impetus innovation in competition.

Digital Transformation

The financial sector has been widely equipped with digital transformation over the past few decades to adjust the mode of operation and reassess company procedures in an attempt to shift better opportunities in the market. The digital transformation also represents the fundamental change in the functioning of organizations, value creation and stakeholder interaction by means of combining digital technologies. It is beyond the technological uptake and requires redefining the organizational structures, strategies, and processes in reaction to dynamically changing digital ecosystems (Kraus et al., 2021). Digital Transformation (DT) represents the radical and increased revolution in organizations through the embrace and the use of digital tools to enhance significantly processes and customer experiences as well as business models. This transformation follows three stages, as explained by Verhoeff et.al. (2021) which are digitization (conversion of analog data), digitalization (increasing the efficiency of processes using digital technology), and digital transformation (reinventions of the enterprise strategy). Vial (2021) states that DT is also not about implementing technology but also reconsidering the value creation mechanisms. Kraus et al. (2021) map out dealt with in modern literature, see Figure 1, puts Kraus et al. (2021) at the forefront of three key groups in digital business transformation, digital innovation, and enabling technologies underpinning the multidimensional nature of Kraus et al. (2021). In addition, Gong and Ribiere (2021) also define six attributes of DT, recommending the conceptual accuracy to differentiate digital change and real transformation. According to Schwertner (2017), leadership dedication and cultural organizational preparedness are what determines successful DT initiatives. According to Kane et al. (2015), transformation is fueled by strategy formulation as opposed to technology. Without a strategic fit, the use of digital tools might not have many long-term returns. Moreover, Zaoui and Souissi (2020) affirm that DT requires a well-defined roadmap, as otherwise there will be no consistency and effectiveness. Therefore, DT is the strategic process and not a change in technology at hand.

Artificial Intelligence Driven

Financial organisations are striving to change the way they relate with their consumers. The application of insights and advice to deliver a personal experience specific to personal goals and needs is one of the main benefits of artificial intelligence. Tink *2021) guide to improving digital banking with bespoke insights 2021). The improved customer or user experience elevates retention and leads to referral by the clients of fellow clients with over 50 per cent of bank clients claiming that personalised experience fosters confidence in the bank. These technological tools can hasten the process of decision making when deciding on whether to grant a loan or not. His risk assessment and underwriting processes are speeded up, providing the machine-learning algorithms with

the ability to process a large number of data streams in parallel, allowing the production of the loans faster and increasing customer satisfaction (Deloitte US, 2021). Regulatory reporting is also made easier through artificial intelligence making it more readable and correct. Elimination of redundancy in the manual mapping and reviewing processes, ease in administrative changes as a result of faster responsiveness of automated systems, and an increase in the quality of reports are eliminated (PwC, 2020). Besides, fraud detection and anti-money-laundering efforts are supported by machine-learning algorithms and do not allow facilitating illegal transactions and detecting possible criminal behavior through risk awareness of fraud patterns in real-time (McKinsey, 2020).

Due to the lack of a universally accepted definition of artificial intelligence, there has been a lot of debate to the point that the field has no single and widely accepted terminology. The past decades have seen many different definitions of AI; one of the statements was made by John McCarthy in 2004 when he referred to AI as science and engineering of creating intelligent machines, in particular intelligent computer programs (McCarthy, 2004). The given definition is deeply interested in the attempt to understand the intellect of humans in a way that was computational. However, the concept AI is not limited to observable techniques that are only predisposed to physiological evidence (McCarthy, 2007). Recreation of the intelligence of humans in their right to reason and learn (calculate) as calculated by a machine sometimes is referred to as the Artificial Intelligence (henceforth, AI) (Mikalef & Gupta, 2021). This includes the usage of computer programmes and algorithms designed to perform functions previously performed by human cognitive abilities, such as speech recognition, visual perception, decision-making, problem-solving and language translation. It is possible because AI systems are independently able to perform intricate activities that are normally the prerogative of natural human intellect due to their ability to learn by themselves (Mikalef & Gupta, 2021).

Open Banking

Open banking is a prominent financial technology which allows third-party developers, such as FinTech companies, to access consumer banking, transactional and other financial data through regularized Application Programming Interfaces (APIs), under express customer permission. This paradigm shift takes the traditional banking paradigm of restrictive, vertically integrated paradigm architectures and shifts it to the paradigm of a decentralized and modular scaffold (Omarini, 2018). The mandate as a form of the wider trend of digital transformation and regulatory requirements including the Revised Payment Services Directive (PSD2) by the European Union requires institutions to open their data repositories to encourage competition and innovation. Open banking improves the quality of services by delegating the power of the consumers to flex their financial data and share it on various channels. APIs would be used as interstitial data pipes between banks and external developers and enable smooth exchange of data. As Laplante and Kshetri (2021) point out, open banking has heterogeneous adoption globally, where the adoption has been pursued faster than in parts of Europe and Asia. This development goes beyond technological augmentation, and it is a strategic restructuring of banking framework on the basis of transparency, interoperability and

consumer empowerment. This is resulting in the breaking of new business models, ecosystem partnerships, and customer-focused offerings in the financial services industry. Finally, the open banking changes the relationships between institutions, their customers, and third parties because it agenda-previews the data portability and financial innovation.

Digital Currency

Digital currencies have become some of the most radically innovative innovations in the financial industry that have led to controversies about their design, regulation, and consequences. In particular, CBDCs have drawn the interest on the belief that they will improve the effectiveness of monetary policy transmission, financial inclusion, and alleviate the falling usage of cash (Engert & Fung, 2017). Being issued by the state in response to the conventional money, CBDCs differ with the previous digital currencies like Bitcoin that do not require governmental support (Grinberg, 2011). Economic effects of the use of private digital currencies have also been discussed; researchers including Dwyer (2015) say that the currencies are similar to conventional money in functionality, even though centralised control is absent. At the same time, the digital currency regulation environment across the globe is still changing. Wu et al., (2019) note that effective legal frameworks should be put in place to regulate transactions of digital currency and hold people accountable for the same due to the anonymity that is related to some digital currencies. Narayanan (2020) emphasizes the fact that digital currencies were even more relevant during the COVID-19 pandemic that stimulated their use and changed the way the world understands the financial technology. Besides that, Balvers and McDonald (2021) consider the theoretical framework of the development of a universally recognized digital currency, especially when it is tied to fiat currencies, which guarantee price stability. These changes indicate that the future of digital finance is heavily dependent on the role played by the state and non-state actors.

Profitability

Profitability is widely recognized as a critical measure of a firm's economic health and long-term viability. Ball et al. (2015) emphasize the importance of using refined measures such as operating profitability, which isolates the firm's true economic profit by excluding non-recurring accounting effects. This cleaner measurement provides clearer insights into the sustainable earning power of firms and enables more accurate comparisons across industries and time periods. Profitability serves not only as an indicator of past performance but also as a predictor of future growth and investment opportunities (Geroski et al., 1993). Alarussi and Alhaderi (2018) highlighted that profitability underpins survival in competitive markets, especially in developing countries where firms face structural and financial constraints. Firms must continually assess internal and external factors influencing profitability, including cost management, pricing strategies, and market demand dynamics. Burja (2011) stresses the managerial importance of profitability data for resource allocation and strategic planning, ensuring that companies can adapt to changing economic environments. Importantly, profitability is not static; it fluctuates with innovation cycles, market competition, and operational

efficiency improvements. Therefore, sustained profitability depends on dynamic managerial capabilities and ongoing evaluation of economic conditions.

Profitability in DMBs is closely tied to how effectively they manage financial and operational risks (Becker, 1964). Risk exposure, including credit risk, market risk, and liquidity risk, can significantly impact a bank's profitability if not properly managed. For example, a high level of non-performing loans can reduce interest income and increase provisioning costs, while market fluctuations in the value of securities can affect the bank's capital base. On the other hand, DMBs that actively monitor and mitigate risks, using tools such as hedging strategies and credit assessments, are better positioned to maintain consistent profitability. Maintaining a balanced risk profile is essential for protecting the bank's assets and ensuring stable returns for shareholders. Therefore, an effective risk management framework is indispensable for DMBs aiming to sustain long-term profitability.

Theoretical Framework

The interdependence between the digital transformation and the survival of a corporate within Deposit Money Banks (DMBs) can be successfully explained with the help of the Resource Based View (RBV) and the Technology Acceptance Model (TAM). According to the RBV developed by Barney (1991), the firm can achieve better and sustainable performance by creating and exploiting internal resources that are valuable, rare, imitable and well-organised (VRIO). In DMBs, the digital-transformation assets, such as AI-based analytics, mobile-banking platform, and digital-currency platform are the strategic technological assets that enhance operational effectiveness, customer satisfaction, and competitiveness. The empirical research results are consistent with the proposal that the banking institutions that successfully execute distinctive digital capabilities outperform other companies, and increase the chances of survival in the long term (Clulow et al., 2003; DavidWest et al., 2018; Usman et al., 2021). In line with the RBV, the Davis (1989) Technology Acceptance Model (TAM) explains the role of user perceptions in determining the success of digital -transformation programmes. TAM assumes that the adoption of technology depends on the perceptions of usefulness and perceived ease of use which influences the attitudes and intentions to behavioural change among users (Venkatesh and Davis, 2000). The adoption of technologies in DMBs, including mobile banking, online platforms, and digital payments, is crucial to achieving the benefits of digital change among the customers and the employees. An empirical study conducted in Nigeria and other jurisdictions has proven that the stronger perceptions of usefulness, security, and ease of navigation of the banking technologies, the higher the adoption, which subsequently leads to higher customer retention, operational efficiency, and profitability (Lule et al., 2011; Gbongli et al., 2019). Combined, RBV explains internal strategic benefits of digital capabilities, and TAM explains their successful introduction and use, thus showing that digital transformation only adds to the corporate survival in case valuable technological resources are created and adopted by the users.

There are a number of gaps in the research on digital transformation and how it affects deposit money banks' (DMBs') performance and ability to survive in Nigeria. Although a large body of literature highlights the significance of digital technologies in the banking industry, there is a dearth of comprehensive research on the precise applications of digital transformation technologies like artificial intelligence (AI), digital currency, and open banking in the context of Nigerian DMBs. Furthermore, there is no empirical data on how well-known theories like the Resource-Based View (RBV) and the Technology Acceptance Model (TAM) interact in the context of digital transformation, despite the fact that these theories are often cited. By filling up these gaps, a more thorough knowledge of the elements affecting the digital transformation success of Nigerian DMBs would be possible, along with more specialized suggestions for enhancing performance and long-term viability across various bank types.

Methodology

The research design used in the study was a cross sectional research design that allowed data to be collected at one point in time to explain the relationship between digital transformation and corporate survival (Baridam, 2001). The population of interest constituted included all staff and managers of all 43 Deposit Money Banks (DMBs) across the country Nigeria (CBN, 2024), but because of the resource limitations, only banks within the South-South region were investigated, resulting in a convenient population of 609 respondents across six states. A sample of 242 was calculated by the formula of Taro Yamane and Bowley by his proportional method of allocation apportioned the sample among the states in proportion to their respective population. Data were collected both in primary and secondary sources where the primary data were collected using a structured questionnaire, both in-person and using Google Forms. The items of the questionnaire included demographic questions and the questions of digital transformation and corporate survival organized along the 5-point Likert scale. Digital transformation was measured in the dimensions of AI-driven processes, open banking, and use of digital currency and corporate survival measured in such indicators as profitability. The instrument was evaluated by experts and with a serious literature analysis to guarantee construct validity, and established reliability through internal consistency measures of Cronbach alpha acceptable values of 0.70 and higher (Taber, 2018; Pallant, 2016). Generally, the methodology was a systematic and quantitative way that was appropriate to the study of the nexus between the digital transformation and the survival of the corporations in Deposit Money Banks. Two data analysis techniques were the descriptive and inferential analyses. Univariate analyses was part of the descriptive data analysis, whilst bivariate and multivariate analyses was part of the inferential data analysis. The mean, standard deviation (SD), and percentage rates. Multiple regression statistics was used for analysis of data.

Model Specification

1. Mathematical Model:

The mathematical model presents the relationship between the variables in terms of equations that can be tested empirically. The equations are based on the econometric models outlined above.

$P = f(AID, OB, DC)$

Where;

P = Profitability

AID = Artificial Intelligence Driven

OB = Open Banking

DC = Digital Currency

2. Functional Model

This specifies the expected direction of relationships and expresses the model in an explicit functional form

$P=\beta_0+\beta_1(AID)+\beta_2(OB)+\beta_3(DC)$

Where:

$\beta 0$ = Intercept

β_1,β_2,β_3 = Slopes showing the effect of each independent variable on profitability

Expected signs (if positive influence is expected):

$\beta_1>0$ (AI-driven processes increase profitability)

$\beta_2>0$ (Open banking improves revenue streams)

$\beta_3>$ (Digital currency enhances transactional efficiency and profitability)

$P_i = \beta_0 + \beta_1 AID_i + \beta_2 OB_i + \beta_3 DC_i + \epsilon_i$ ---------- (1)

This equation expresses how changes in AID, OB, and DC affect the profitability of the bank.

A Priori Expectations:

A priori expectations represent the anticipated direction of the relationship between the independent and dependent variable, based on theory, literature, and prior research. These expectations assume that digital transformation through AID, OB, and DC has a positive impact on profitabiity.

Summary of A Priori Expectations:

$\beta_1 > 0$ (for AID on P)
$\beta_2 > 0$ (for OB on P)
$\beta_3 > 0$ (for DC on P)

It is necessary to identify the variables in order to create a functional model for the connections between the independent and dependent variables, assuming that the independent factors have an impact on the dependent variable.

Independent Variables (IVs): Artificial Intelligence Driven (AID), Open Banking (OB), Digital Currency (DC)

Dependent Variable (DV): Profitability (P)

Functional Model:

The functional model expresses the theoretical relationship between the independent variables and the dependent variables. It shows how digital transformation impacts the profitability in banks. The functional model is represented as:

$P = f(AID, OB, DC)$ ---------- (2)

Where:

P = Profitability of the bank
AID = Artificial Intelligence-driven technology
OB = Open Banking
DC = Digital Currency

This model suggests that profitability depends on the level of adoption and implementation of AID, OB, and DC by deposit money banks.

3. Econometric Model:

The econometric model formalizes the functional relationships in a way that can be estimated using statistical methods. This study used multiple linear regression for each dependent variable, where the independent variables (AID, OB, DC) are assumed to have a linear relationship with the dependent variable (P). The econometric models for dependent variable is:

Profitability Model (P):

$P_i = \beta_0 + \beta_1 AID_i + \beta_2 OB_i + \beta_3 DC_i + \epsilon_i$ ---------- (3)

Where:

P_i, represents the profitability for bank i,
AID_i, OB_i, DC_i represent the levels of artificial intelligence, open banking, and digital currency adoption in bank i,

β_0 is the intercept,
β_1 are the coefficients representing the impact of AID, OB, and DC on dependent variable,

ϵ_i is the error term capturing all unobserved factors affecting profitability.

Data Analysis and Results

Analysis of Questionnaire Distribution and Retrieval

Table 1: Frequency and percentage of questionnaire distribution and return:

Description	Frequency	Percentage (%)
Questionnaires Distributed	242	100.00
Questionnaires Filled and Returned	228	94.21
Questionnaires Not Returned	14	5.79

Out of the 242 copies of the questionnaire distributed, 228 were duly filled and returned, representing a high response rate of **94.21%**. This indicates a strong level of engagement and participation from the respondents, which enhances the reliability and generalizability of the study findings. A response rate above 90% is generally considered excellent in survey-based research, as it minimizes non-response bias and reflects the respondents' interest or relevance of the research topic to the target population. Therefore, the data collected from this study can be regarded as both representative and robust for meaningful analysis and interpretation.

Descriptive Data Analysis

In this section the results were discussed in detailed for better understanding.

Table 2: Descriptive Analysis Variables using of Mean and Standard Deviation

Descriptive Statistics				
	N	Sum	Mean	Std. Deviation
Artificial Intelligence Driven	228	657.00	2.8816	1.03635
Open Banking	228	640.00	2.8070	1.09365
Digital Currency	228	655.00	2.8728	1.05637
Profitability	228	644.00	2.8246	1.09662
Valid N (listwise)	228			

Source: Desk Research (2025)

The descriptive statistics point to some real insights into how respondents view things and what they prioritize. This covers areas like technology, business growth, and organizational culture.

When it comes to items on artificial intelligence driven aspects, the mean comes in at 2.8816. Respondents show a view that slightly above neutral on AI. It seems like they acknowledge it, but the sample has not fully embraced it yet. The standard deviation sits at 1.03635, which is fairly high. That points to a spread of opinions on AI. Some folks likely see it as more impactful or relevant in their world. Others might feel skeptical or just indifferent. This kind of variance could stem from different levels of knowledge, trust, or hands-on experience with AI tech. The takeaway here is that organizations should put more effort into educating and involving stakeholders on AIs potential. Perceptions might shift as understanding grows and integration happens in daily business practices.

For open banking items, the mean is 2.8070. Respondents see it in a somewhat favorable light, but they have some reservations. The standard deviation of 1.09365 shows a wide range of responses. That implies diversity in how people react. While some spot the clear benefits of open banking, others hesitate over issues like security or data privacy. There could also be a lack of full understanding at play. These mixed views stress the need for better communication on the upsides. Efforts to tackle concerns are crucial too. This holds especially true in finance sectors, where trust and security matter most.

Digital currency items score a mean of 2.8728. That reflects a moderate level of engagement or perception in business and finance roles. The standard deviation at 1.05637 is quite high. It highlights significant differences in responses. This variance might come from varying familiarity or comfort with digital currencies. Some respondents treat it as a game-changing innovation. Others stay uncertain or cautious about its stability and long-term potential. For businesses and policymakers, the key implication involves creating clearer frameworks. These should cover adoption, regulation, and worries like volatility, security, and oversight.

On profitability items, the mean is 2.8246. It positions profitability as a relevant factor for respondents. But it does not stand out as the main focus or a strong point of difference. The standard deviation of 1.09662 is high. That means opinions on profitability differ a lot across the group. Some see it as the top sign of success. Others put more weight on things like sustainability or customer satisfaction. In terms of business strategy, profitability stays important. Still, companies should look at wider metrics too. Think innovation, customer loyalty, and adaptability for lasting success.

Test of Hypotheses (Multiple Regression Analyses)

The null statements of hypotheses formulated in this study were tested in this section to generate findings after detailed analyses of research questions using SPSS. Table 4.7 to 4.9 contained the results of the test of hypotheses that addressed how artificial intelligence driven, open banking, and digital currency associate with profitability.

Table 3: Model Summary with respect to how Digital Currency, Open Banking, Artificial Intelligence Driven associate with Profitability

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.989[a]	.978	.978	.16231

a. Predictors: (Constant), Digital Currency , Open Banking , Artificial Intelligence Driven

b. Dependent Variable: Profitability

The model summary reveals a very strong relationship between the independent variables—Digital Currency, Open Banking, and Artificial Intelligence Driven—and the dependent variable, Profitability. The R value of 0.989 indicates a very high correlation, while the R Square of 0.978 suggests that approximately 97.8% of the variance in profitability can be explained by the combined influence of the three predictors. The Adjusted R Square, which accounts for the number of predictors and sample size, remains high at 0.978, reinforcing the model's robustness. The standard error of the estimate (0.16231) is relatively low, indicating that the model's predictions are precise. Overall, this result implies that the integration of digital financial technologies has a significant and highly predictive influence on profitability within the context studied.

Table 4: Analysis of ANOVA with respect to the Association between Digital Currency, Open Banking, Artificial Intelligence Driven and Profitability

ANOVA[a]

Model		Sum of Squares	Df	Mean Square	F	Sig
1	Regression	267.081	3	89.027	3379.317	.000[b]
	Residual	5.901	224	.026		
	Total	272.982	227			

a. Dependent Variable: Profitability

b. Predictors: (Constant), Digital Currency , Open Banking , Artificial Intelligence Driven

Source: Desk Research (2025)

The ANOVA table provides strong statistical evidence of a significant association between the independent variables digital currency, open banking, and artificial intelligence driven and the dependent variable, profitability. The regression sum of squares (267.081) is substantially higher than the residual sum of squares (5.901), indicating that the model explains most of the variability in profitability. With 3 degrees of freedom for regression and 224 for residual, the mean square value for regression is 89.027, resulting in a very high F-statistic of 3379.317. The significance value (Sig.) is .000, which is less than 0.05, confirming that the model is statistically significant. This means the likelihood that the relationship between these digital financial technologies and profitability occurred by chance is virtually zero. Hence, the ANOVA results validate that digital currency, open banking, and artificial intelligence significantly contribute to explaining profitability in the study context.

Table 5: Analysis of Coefficients with respect to the Association between Digital Currency, Open Banking, Artificial Intelligence Driven and Profitability

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	.048	.032		1.500	.135
	Artificial Intelligence Driven	-.020	.052	-.019	-.384	.702
	Open Banking	1.009	.029	1.006	34.953	.000
	Digital Currency	.001	.041	.001	.018	.985

a. Dependent Variable: Profitability

Source: Desk Research (2025)

The coefficient analysis reveals insights into the individual contributions of Artificial Intelligence Driven, Open Banking, and Digital Currency to Profitability. The constant value (B = 0.048, p = .135) is not statistically significant, indicating that profitability is not significantly different from zero when all predictors are held constant. Among the independent variables, Open Banking has the strongest and statistically significant positive effect on profitability (B = 1.009, Beta = 1.006, t = 34.953, p = .000), suggesting it is a major driver of profitability in the model. In contrast, Artificial Intelligence Driven has a negative but statistically insignificant relationship with profitability (B = -0.020, p = .702), implying it does not meaningfully predict changes in profitability in this context. Similarly, Digital Currency shows an almost negligible and statistically insignificant effect (B = 0.001, p = .985). These results imply that, although the overall model is significant, Open Banking is the primary factor contributing to profitability, while Artificial Intelligence and Digital Currency do not have significant direct effects within this model. Table 4.10 to 4.12 contained the results of the test of hypotheses addressed how the digital currency, open banking, artificial intelligence driven associate with Adaptability.

Findings of the Study

The model summary results indicate a very strong relationship between the independent variables digital currency, open banking, and artificial intelligence driven and the dependent variable, Profitability. The correlation coefficient (R) of 0.989 shows an extremely high correlation, while the R Square value of 0.978 reveals that about 97.8% of the variation in profitability is explained by the combined influence of these three predictors. The adjusted R Square of 0.978, which accounts for sample size and number of predictors, confirms the robustness of the model. Additionally, the low standard error of estimate (0.16231) suggests that the model predicts profitability with a high level of precision. Overall, these results imply that the integration of digital financial technologies plays a significant and highly predictive role in driving profitability within the study context.

The ANOVA analysis further validates the significance of the regression model examining the relationship between Digital Currency, Open Banking, Artificial Intelligence Driven, and Profitability. The regression sum of squares (267.081) far exceeds the residual sum of squares (5.901), indicating that the model explains most of the variability in profitability. The F-statistic of 3379.317 is extremely high, and the p-value of .000 (less than 0.05) confirms that the association between the independent variables and profitability is statistically significant. This means the likelihood of this relationship occurring by chance is virtually zero, confirming that Digital Currency, Open Banking, and Artificial Intelligence collectively and significantly contribute to explaining profitability in the context studied.

Examining the individual contributions of the predictors to profitability, the coefficient analysis reveals that Open Banking has the strongest and statistically significant positive effect on profitability (B = 1.009, Beta = 1.006, p = .000), making it the primary driver in the model. In contrast, both Artificial Intelligence Driven (B = -0.020, p = .702) and Digital Currency (B = 0.001, p = .985) show statistically insignificant relationships with profitability. Artificial Intelligence Driven even shows a slight negative coefficient, though it is not significant. The constant term is also not statistically significant (p = .135), indicating that profitability does not significantly differ from zero when all predictors are held constant. These results suggest that while the overall model is strong, Open Banking is the key factor influencing profitability, whereas Artificial Intelligence and Digital Currency do not have significant direct impacts in this analysis.

Discussion of Findings

Artificial Intelligence has a slight positive and no significant effect on profitability

The findings that artificial intelligence (AI) has a slight positive but no statistically significant effect on profitability contrast with the results reported by Altheebeh et al. (2025) in their study "The Impact of Artificial Intelligence on Achieving Profitability: The Modified Role of the Efficiency of Accounting Systems in Jordanian Commercial Banks." They found that there was a strong and statistically significant positive correlation between artificial intelligence (AI) and profitability especially in case of consideration of the efficiency of accounting systems. The study has proved that AI can substantially improve profitability in the banking industry on a significant level, in case it is properly combined with an efficient accounting system. This high effect is contrary to other results, which show that AI effects on profitability are usually small or minimal, particularly, in the situations where there is a lack of digital infrastructure, talent preparedness, or integration abilities.

Open banking has a positive significant effect on Profitability of Deposit Money South-South of Nigeria.

Recent empirical research indicates that open banking has a positive and significant effect on the profitability of Deposit Money Banks (DMBs) in Nigeria. The study by Ologunwa, et al. (2024) presents an empirical investigation into the impact of financial technology (FinTech) on the financial performance of deposit money banks (DMBs) in Southwest Nigeria. Using an ex-post facto research design, the study analyzes data

collected from both customers and employees of DMBs in the region. The findings reveal that the adoption of FinTech tools—such as automated teller machines (ATMs), mobile banking, internet banking, and point-of-sale (POS) systems—has significantly and positively influenced key performance indicators, including return on assets (ROA), return on equity (ROE), and net income margin. Descriptive statistics show improvements in ROA, with a weighted average of 35.94%, while over 97% of respondents reported moderate improvements in banks' equity levels. Furthermore, a 1% increase in ATM usage is associated with a 0.18% rise in ROA, while a similar increase in mobile banking leads to a 0.29% improvement. The study concludes that mobile and internet banking play a critical role in driving bank profitability and recommends that banks intensify the deployment of these technologies to further enhance their financial performance.

Digital currency was slightly positive and significantly not significant on the profitability of Deposit Money Banks.

The empirical finding that digital currency gives a low positive but non-statistically significant impact on the profitability of the Deposit Money South-south of nigeria goes hand in hand with the current body of scholarship, which generally emphasised the emergent and developing role of digital currencies into the traditional financial institutions. Indicatively, according to Baur, Hong, and Lee (2018), although digital currencies have the ability to make significant transformations to the financial sector, the immediate financial gains of such currencies to banks are limited by regulatory uncertainty and market volatility a fact that is also consistent with the perceived absence of any significant profitability effect in this research. Besides, Mougayar (2016) highlights that, whereas blockchain and digital currency can contribute to efficiencies in operations in the long term, the initial costs of implementation and the infrastructural drawbacks prevent timely achievement of gains on profit.

Conclusion

The results of the hypotheses testing show that Artificial Intelligence Driven and Digital Currency do not have significant relationships with the profitability of Deposit Money Banks, as both variables recorded very high p-values (0.702 and 0.985 respectively), leading to the retention of Ho1 and Ho3. Their coefficients and t-values further confirm that they do not meaningfully predict changes in profitability within the model. In contrast, Open Banking displayed a strong and statistically significant positive effect on profitability ($p = 0.000$), resulting in the rejection of Ho2. This indicates that among the three digital financial technologies examined, only Open Banking contributes significantly to the profitability of Deposit Money Banks, while Artificial Intelligence Driven and Digital Currency do not demonstrate notable direct influence in this context.

Recommendations

The study based on results and conclusion makes the following recommendations:

1. First, banks are to strengthen and develop their open banking initiatives because this digital innovation has proven the presence of a positive and powerful effect on profitability.

2. Second, despite the fact that the artificial-intelligence-based solutions did not show any substantial direct influence, banks should streamline their AI plans by focusing on the use cases that prove to be efficient regarding operational efficiency, fraud detection, customised services, and credit-risk evaluation.

3. Third, banks must review their digital currency plans by raising their customer awareness, informing the customer about the advantages and threats and enhancing digital currency infrastructure to facilitate adoption. It might also be strengthened by making regulatory compliance and by providing digital-currency products as a part of the regular banking services.

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