DEPOSIT MONEY BANKS' PERFORMANCE: DOES VIRTUAL AND DIGITAL BANKING MATTER?

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ABSTRACT

This study focused on evaluating the impact of digital and virtual banking on the operations of Nigerian deposit money banks. It used a retrospective or ex post facto design analyzing some financial data from the banking industry to achieve the research goals. The analysis and testing were conducted using the Ordinary Least Squares (OLS) multiple regression technique. The results indicated that the performance of Nigerian deposit money banks was positively correlated with ATMs, although the correlation was not statistically significant. Similarly, while not statistically significant, internet banking appeared to enhance the performance of these banks. Additionally, there was a positive and significant relationship between the use of point of sale (POS) systems and manufacturing sector output in Nigeria. Based on these findings, the study recommended that the public banking sector should be extensively educated by monetary authorities about the benefits, practicality, and importance of electronic banking channels. Furthermore, banks should actively adopt electronic banking products to align with the objectives of Central Bank policies.
Keywords: virtual banking, digital banking, banking industry, bank performance, banking industry
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INTRODUCTION

Banks became more aggressive in deploying electronic banking products, including point-of-sale (POS) devices, telebanking platforms, online banking, NIBSS electronic fund transfer (NEFT), automated teller machines (ATMs), and NIBSS instant payment (NIP), to meet the objectives of the monetary authorities (Chaimaa, 2020). According to Azolibe (2021), banking— a subsector of the financial industry— has been the main driver of Nigeria's economic development and growth. The impressive profitability of banks on the Nigerian Stock Exchange supports this. Banks focus on accepting deposits and paying customers for goods and services. Caron (2018) explained that most technological developments are created primarily to support payment activities, as the payment aspect of financial transactions is the main focus of electronic banking. Recent advances in e-payments have led to the emergence of new payment channels and financial technology companies (Mustapha, 2018). Similarly, Gbanador et al. (2022) argued that technological progress enables banks to serve clients more effectively.

The functioning of Nigeria's deposit money banks has significantly improved with the advent of electronic banking. For many years, businesses and consumers have been receiving electronic services. Customers can use computers to access specific account information through electronic banking channels, and they can even use these channels to quickly and successfully complete

transactions from a distance. Simply put, electronic banking is a system of electronic payments that helps consumers of all financial institutions make transactions.

According to Simpson (2002), banks viewed the potential to reduce operating costs and increase revenue as a key motivation for investing in electronic banking. However, the banking industry has encountered significant risks as a result of implementing electronic banking. Since the introduction of electronic banking, there has been an increase in both the volume of deposits and fraudulent activity in Nigerian banks.

According to Freedman's (2000) proposal, electronic banking includes three components: network money, stored value cards, and access cards. Network money and stored value cards together comprise electronic money. The most interesting aspect of this view is that internet banking and electronic money are now seen as devices rather than processes. Shy and Tarkka (2002) have provided models that demonstrate under what conditions alternative electronic payment methods can replace cash.

Many electronic banking tools have been introduced to the global market with the goal of simplifying commerce and streamlining financial operations. Bankers, business owners, and others have long advocated for the adoption of more flexible, efficient, and affordable retail payment options instead of physical currency. The main challenges users face when making electronic payments are related to network issues (gaps in communication between network hosts and banks), financial literacy, risk aversion, and equipment malfunctions. Nevertheless, the profitability of deposit money institutions in Nigeria has not been extensively studied. Therefore, this study aims to examine how electronic banking affects the profitability of Nigerian deposit money institutions.

This study's main goal was to determine how electronic banking impacted the economic viability of Nigerian deposit-taking institutions; its specific objectives included:

- To determine the effect of automated teller machines (ATMs) on Nigerian deposit money banks' overall deposit amount.
- To assess how online banking has affected Nigerian deposit money banks' overall deposit levels.
- To assess how Point of Sale (POS) impacts the overall deposits of Nigerian deposit money banks.

LITERATURE REVIEW

Theoretical framework
Bank-focused theory
The core idea of this theory, which became popular thanks to Kapoor (2010), is that banks serve their clients through traditional low-cost delivery channels in addition to non-traditional ones. These channels include, among others, Point of Sale (POS), mobile banking, and automated teller machines (ATMs). According to Mary and Dharmaraj (2016), through these various channels, the bank provides its clients with a wide range of services, regardless of location or branch affiliation. All that is needed to complete the transaction is entering the required data into the system.

Bank-led theory

The bank-led theory of branchless banking was proposed by Lyman, Ivatury, and Stachen (2006), highlighting the role of an agent as a contact point between banks and their customers. According to this theory, the retail workforce acting as agents directly connects with the consumers of financial institutions and performs the expected services, such as collecting deposits or making cash payments. Finally, it is expected that this agent communicates all interactions with the bank's clients to the bank they represent through electronic channels like phones, the internet, and others.

Hogan (1991) popularized this theory. Customers in this case don't deal with banks and don't keep any bank accounts. Customers only need to interact with non-bank companies like prepaid card issuers or mobile network operators to exchange cash for e-money accounts. Next, the non-bank agent's server hosts the e-money account. Because there is currently no legal framework for these e-agents to operate under, this platform is considered the riskiest among electronic payment systems.

Technological acceptance model

Researchers have developed and used various models to analyze consumers' acceptance of information systems, aiming to predict, understand, and explain people's acceptance or rejection of these systems. The technology acceptance model (TAM), originally introduced by Davis, Bagozzi, and Warshaw (1989), has been widely used by researchers to explore the key factors that influence users to adopt and use new information systems. This model is the most frequently mentioned. TAM's primary goal is to clarify the factors that affect the acceptance of computer programs in general. Additionally, this approach helps practitioners and scholars identify the reasons why a particular system may be unsatisfactory (Davis, 1989).

Electronic banking and its adoption by the Nigerian banking system

The delivery of banking products through technological devices or digital signals, also known as e-banking, allows bank customers to perform specific financial transactions without visiting the bank in person. Using digital banking platforms reduces the need for paper bills, checks, and withdrawal slips. Although automated banking platforms no longer support cash transactions, they can still be used without real money through other payment methods like electronic checks (Gbanador, 2021). The increasing use of modern e-banking platforms has enabled various e-payment options, such as online banking, ATMs, mobile banking, point-of-sale systems, and NIBSS rapid payment. Consumers can complete financial transactions on bank websites using internet banking, an electronic payment method. This type of electronic banking is conducted with a personal computer connected to the internet.

Customers can perform secure financial transactions and banking online through an online banking system, commonly known as Internet banking. Customers and bank employees do not have to interact physically when using these services. Businesses adopt internet banking because it simplifies the process of completing transactions (Gbanador, 2021).

Mobile banking is an electronic banking system that allows users of mobile phones and other devices to perform transactions with banks. The bank's software is installed on a smartphone or similar device, which is used to carry out these transactions. To use it, the user may also need to complete some basic biometric tasks. Usually, the customer must first authenticate with their

username and password on the mobile device before accessing full transactions. Mobile banking channels generally require internet access before any transactions can be made. Telebanking is a form of mobile banking that lets users perform basic banking transactions over the phone without an internet connection. To access these services, call the number or code provided by the bank. The customer will receive instructions on how to access banking services via a voice prompt or message after entering the code or number. For security reasons, a new customer typically needs to generate a token or change the default personal identification number (PIN) (Gbanador, 2021).

Point-of-sale (POS) refers to a mobile device or equipment that accepts bank card payments for goods and services. In Nigeria, POS is widely accepted as a form of payment by urban residents and is used in stores, gas stations, boutiques, churches, and other establishments. Gbanador (2021) further explained that the customer or cardholder must initially insert their credit or debit card into the terminal, then enter the personal identification number (PIN) along with the total amount to be deducted. Afterward, they select "OK" to complete the transaction when using a POS machine for electronic payments. The machine will produce two copies of the receipt—one for the merchant and one for the cardholder—after the transaction is finished.

According to Essien (2019), the e-payment system known as NIBSS Instant Payment (NIP) is the only point-to-point money transfer network that guarantees recipients will receive their funds immediately. This service is primarily available for corporate and individual customers through the bank's branch network, mobile, and online banking platforms.

Empirical literature
In their 2019 study, Enoruwa, Ezuem, and Nwani examined the relationship between the performance of Nigerian banks and e-banking; the researchers used secondary data sources. They employed regression analysis to determine the type and strength of the connection between the dependent and independent variables. However, Total Bank Deposit served as a proxy for the performance of the Nigerian banking industry, while e-banking was represented by transaction values from Web Pay, ATMs, point-of-sale platforms, and mobile banking. The results showed a strong and positive relationship between the banks' performance and digital payment products (Mobile Pay, ATM, Web Pay, and POS). The regression analysis further confirmed the statistically significant relationship between each predicted factor.

Njeru and Omagwa (2018) used a structured questionnaire to collect primary data supporting their investigation into Kenyan financial institution profitability and mobile banking platforms from sixty participants. The data were analyzed using both descriptive analysis and OLS. The study found statistically significant transaction effects on Kenyan banks' earnings, even though customization and electronic money transfer services did not have a major impact on the operations of Kenyan tier 1 banks.

Orji, Ogbuador, Okon, and Anthony-Orji (2018) conducted a study on the relationship between advancements in electronic banking and the overall performance of Nigerian banks from 2012 to 2017. To determine how each independent variable related to the dependent variable, the researchers used multiple regression analysis and descriptive data analysis approaches. Among the variables included in the study, automated teller machines, bank size, point of sale, and mobile banking are the main factors influencing a bank's success. The impact of electronic banking

innovation on overall banking performance was judged to be significant by the researchers.

Taiwo and Agwu (2017) used Nigerian commercial banks as a case study to examine the impact of electronic banking on the operational effectiveness of Nigerian banks. The operational efficiency of Nigerian banks has been observed to improve during the implementation of electronic banking compared to the period of traditional banking. However, the survey included 90 respondents who were employees and clients of Nigerian commercial banks. They used the descriptive data analysis technique in their investigation. The banks' strength, capital, revenue stream, and customer loyalty all increased. It was found that the introduction of new channels into banking operations significantly boosted performance since banks profit more from engaged consumers who complete e-transactions.

Ugwueze and Nwezeaku (2016) examined the relationship between e-banking and the operational efficiency of commercial banks in Nigeria. The study was conducted due to the growing use of electronic banking, which has transformed financial services in Nigeria and worldwide. The performance of commercial banks was measured by customer deposits, and the value of point-of-sale transactions represented electronic banking. The data were analyzed using the Engle-Granger co-integration model for the period from 2009 to 2013. The findings indicated that deposits on demand and point-of-sale systems are not co-integrated, but savings and time deposits are. It is recommended that a comprehensive training campaign be launched by the apex bank and financial institutions to educate the banking public about the benefits, usability, and importance of transacting through digital payment channels.

Karimzadeh, Emadzadeh, and Shateri (2014) examined how electronic banking impacted the profitability of an Iranian bank, using quarterly data from 2004 to 2012. The authors employed multiple regression analysis. They found that the bank's profitability, measured by ROA, is significantly and positively correlated with the growth of electronic banking.

METHODOLOGY
Model specification
The model specified for this study was adopted from Enoruwa, Ezuem & Nwani (2019), and is given below:

$$TBD = f(ATM + IB + POS + e)$$

The econometric model is stated as:
$$TBD = b_0 + b_1 ATM + b_2 IB + b_3 POS + e$$

Where:

TBD	=	Total bank deposit used as proxy for performance
b₀	=	constant
b1, b2, b3	=	Parameters of regression model
ATM	=	Automated teller machine
IB	=	Internet Banking
POS	=	Points of Sales
e	=	Error term

DATA ANALYSIS, RESULTS AND DISCUSSIONS

Study's regression result output
Dependent Variable: TBD
Method: Least Squares
Date: 06/19/24   Time: 14:24
Sample: 2009 2022
Included observations: 14

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	2994.105	908.3736	3.296116	0.0081
ATM	0.506443	0.314320	1.611236	0.1382
IB	-5.633665	3.774157	-1.492695	0.1664
POS	2.644289	0.474459	5.573278	0.0002
R-squared	0.955201	Mean dependent var		8538.253
Adjusted R-squared	0.941761	S.D. dependent var		5898.727
S.E. of regression	1423.524	Akaike info criterion		17.59461
Sum squared resid	20264204	Schwarz criterion		17.77720
Log likelihood	-119.1623	Hannan-Quinn criter.		17.57771
F-statistic	71.07286	Durbin-Watson stat		1.140358
Prob(F-statistic)	0.000000			

Source: Researchers computation using E-Views 12

Test of hypotheses
The Decision rule is as follows:
Select the hypothesis that is not true (H0) and reject the alternative hypothesis (H1) if the t-calculated exceeds the t-tabulated; alternatively, reject the null hypothesis (H0) and accept the alternative hypothesis (H1). The significance of the estimated parameter (P1) is tested using the t-statistic.

H01: ATMs do not significantly impact the total deposit amount collected by Nigerian deposit-taking institutions.

From the table, the study shows that ATM (1.611236) is less than (going by absolute values) 1.96, which represents the t–tabulated; implying that ATM is statistically non-significant. Hence, the null hypothesis is accepted, and it is concluded that there is no significant effect of ATM on the total deposits of deposit money banks in Nigeria.

H02: Online/internet banking has no significant impact on the overall deposit levels of Nigerian deposit-taking institutions.

From the table, the study shows that IB (1.492695) is less than 1.96 in absolute value, which corresponds to the t-table value. This implies that IB is statistically non-significant. Therefore, the

study accepted the null hypothesis and concluded that there is no significant effect of IB on the total deposits of deposit money banks in Nigeria.

H03: POS transactions do not significantly impact the total deposit amount generated by Nigerian deposit-taking institutions.

From the table, the study shows that POS (5.573278) is greater than 1.96 in absolute value, which corresponds to the t-table value, indicating that POS is statistically significant. Therefore, the study accepts the alternative hypothesis and concludes that there is a significant effect of POS on the total deposits of deposit money banks in Nigeria.

The main goal of this study was to examine how virtual and digital banking influence the performance of Nigerian deposit money banks to achieve three primary objectives. The study employed the ordinary least squares empirical analysis to reach these objectives and presented the following findings. Using TBD as a proxy, further analysis of the data revealed no significant correlation between ATM performance and deposit money bank performance in Nigeria. This finding contradicts academic theories that propose ATMs are becoming central to Nigerian banks' efforts to innovate their services. The results showed that online banking was not statistically significant. Additionally, the data analysis found a positive but non-significant correlation between internet banking and the performance of Nigeria's deposit money banks. This research challenges claims that information technology deployment is increasingly important to internet banking in Nigeria, as well as the notion that IT spending in the banking sector exceeds that of any other sector in the country. The findings indicated a strong correlation between the performance of Nigerian deposit money banks and their point-of-sale systems. Overall, this study confirms that technological advancements have a beneficial impact on the banking sector.

CONCLUSION AND RECOMMENDATIONS

This investigation examined the impact of digital and internet banking on the profitability of Nigerian deposit money institutions. The term "virtual" or "digital" banking describes the delivery of banking products and services via the use of digital communications or data technology, allowing bank clients to do some financial transactions without going to the financial institutions physically. When taking out cash, using electronic banking systems eliminates the need for paper money, checks, and withdrawal slips. Computerized banking systems no longer support payments made with cash, yet transactions may continue to be performed without them and without requiring actual money or additional payment methods like cheques.

Several e-payment channels, including online banking, ATMs, point-of-sale systems, and internet instant payments, were introduced with the rise of virtual and digital banking. Using an automated teller machine (ATM), bank customers can access basic teller services outside of the banking hall without needing to speak with a bank teller in person. Tasks such as cash withdrawal, cash deposit, fund transfers, bill payments, account balance inquiries, account opening, and other teller services can be performed by ATMs. Customers can thus complete certain financial operations using the ATM without visiting the bank. Mobile banking is an electronic banking system that allows users of mobile phones and other devices to perform transactions with banks. The bank's software is installed on a smartphone or similar device, which is used to carry out these transactions. To use it, the user might also need to complete some basic biometric tasks.

Typically, the consumer must first authenticate with their username and password on the mobile device before being able to complete transactions. A point-of-sale (POS) is a mobile device or system that accepts bank card payments for goods and services. In Nigeria, POS is widely accepted by urban residents and is used in stores, gas stations, boutiques, churches, and other establishments. When using POS, which is an electronic payment system, the cardholder must first insert their bank card into the machine, enter their PIN and the amount to be deducted, and then click "OK" to finish the transaction.

The recommendations that follow are consistent with the findings:
1. Monetary authorities should thoroughly educate the public banking sector about the benefits, practicality, and importance of transacting through electronic banking channels.
2. Banks should adopt electronic banking products more actively to accomplish the goals of Central Bank policies.
3. The primary driver of growth and development in Nigeria's economy has been banking, a part of the financial sector. Banks should consequently prioritize accepting deposits and settling financial obligations.
4. Since the payment aspect of banking should be the main focus of electronic banking operations, most technological advancements are made to support these payment-related activities.

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