CASHLESS ECONOMY INITIATIVES IN ENHANCING PROFITABILITY METRICS OF NIGERIA DEPOSIT MONEY BANKS

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ABSTRACT

This study investigated the impact of cashless economy initiatives on profitability metrics of Deposit Money Banks (DMBs) in Nigeria. Ex-post facto research design was adopted while data for the study were sourced from Central Bank of Nigeria (CBN) annual report and statistical bulletin, annual account and reports of 14 purposively sampled banks based on consistencies and comparability of their annual accounts and reports between 2017 and 2022 from the population of 16 DMBs listed on the Nigeria Exchange Limited. The objective was to ascertain the impact of Automated Teller Machine, Point of Sale, Internet Banking, NEFT and NIP on profitability of DMBs in Nigeria. Inferential statistics, Augmented Dickey Fuller tests for Unit roots and Pool regression data analysis were applied on profitability of listed DMBs. Findings showed that ATM has a positive and significant effect on ROA of listed banks in Nigeria while, POS, ITB, NEF and NIP had positive but insignificant effect on ROA. The study concluded that cashless economy has positively influenced profitability of DMBs. The study recommends provision of robust digital infrastructures to enhance profitability of DMBs in Nigeria.

Key Words: *Cashless economy, Digital infrastructures, Nigeria, Profitability of deposit money banks*

1.0 Introduction

The financial success of deposit money banks (DMBs) is dependent on the level of efficiency at which the core banking assets are used to boost their service delivery, create value and continually enhance the earnings of the shareholders (Ajibola, 2018). One of the metrics used in assessing the financial health of the banking industry is return on assets (ROA). The ratio is mostly used as it shows clearly how profitable is a banking institution or otherwise. It is commonly expressed as a percentage by using a bank's net income and its average assets.

A higher ROA connotes a bank that is more efficiently and productively manage its assets to generate profits while a lower ROA is a call for improvement (Rosikah et al., 2018). The profitability of deposit money banks (DMBs) over a period of time can be expressed as the overall profits and losses incurred during the time under reference. The successes recorded by a financial institution or otherwise will give room for the shareholders to evaluate and assess the results of the business strategies and activities of the banks objectively in quantitative terms (Ajibola, 2018). It is a quantitative measure for evaluation of how well or otherwise, a banking institution uses its resources to generate profit (Ovia, 2021).

Cashless economy is a society in which cash or fund is spent without being physically carried from one place to another (Nwakoby et al.,2020). The nation's quest for migrating from cash to cashless economy has been on the front burner as far back as year 2008. Economic Analysts have posited that with a

view to meeting the target of becoming one of the leading world economies by the year 2020, efforts must be made to embrace electronic payment system in its entirety. It was in this consciousness that the CBN, which is the apex regulatory body of the banking sector, came up with the cashless economy initiative to check the increasing dominance of cash in the banking sector in order to enhance e-payment system in the economic landscape and to align Nigeria's monetary system with the international best practices while discouraging movements of huge cash manually, while at the same time, increasing the proficiency of Nigeria's payment systems which will in turn improve the quality of service being offered to the banking customers (Chondough, 2021).

The cashless economy initiative scheme was conceptualized by the apex bank of Nigeria to migrate the Nation's economy from heavily cash based status to a cashless one through adoption of electronic payment system, not only to reposition the Nigerian monetary system to be in line with international best practices and discourage movement of cash manually, but at the same time increase the proficiency of Nigeria's payment system which will in turn improve the quality of service being offered to the banking public customers resulting into seamless profitability of DMBs (Ajibola, 2018). Cashless economy aims to curb some of the far-reaching consequences of high usage of physical cash in the economy, which includes, high cost of cash, high risk of using cash, high subsidy, informal economy, inefficiency and corruption (CBN, 2019). Cashless economy is not the complete absence of cash, it is an economic setting in which goods and services are bought and paid for through digital and other allied channels (Erhijakpor & Oko, 2021). According to Engert et. al. (2018), Cashless economy is an economic transaction in which there are assumed to be no transaction frictions that can be reduced through the use of money balances, and that accordingly provide a reason for holding such balances even when they earn higher rate of return.

In spite of envisaged usefulness of the proposed cashless economy scheme, there exists some problems of a cashless society such as unstable electronic value of money which has become even more volatile especially while conducting business activities with imaginary money.

The government has not been able to monitor purchases, spending habits and businesses patronized. Under this new initiative, the government and its agencies will have a total control of our transaction and therefore exposing the privacy of individuals (Ajibola, 2018). Therefore, adoption of cashless economy in Nigeria as a paradigm shift in the country's economic landscape has brought a significant impact on the development of a robust payment system and its committal huge financial outlay on information communication technology (ICT) and sustainable power across the land.

STATEMENT OF THE PROBLEM

There have been various empirical studies in the past with the outcomes revealing high level of inconsistencies in the results obtained on the conclusions of the studies on cashless economy and DMBs in Nigeria. Huge investment of the banks on the upgrade of their cashless digital platforms did not yield the expected results in terms of profitability as reflected in the trend of inconsistencies obtained from the findings of the previous researchers' empirical studies on the subject matter, some of which are shown below.

Ugwueze and Nwezeaku (2018) studied the relationship between electronic banking and the performance of Nigerian commercial banks. The study became necessary due to the increased adoption of the electronic banking which has redefined the banking service both in Nigeria and

internationally. Electronic banking was proxied by value of Point-of-Sale transactions while commercial banking performance was proxied by customers' deposits.

Engle-Granger cointegration model was used to analyze data for the sample period January 2009 to December 2013. The results show that POS is not co-integrated with both the integrated savings and time deposits but is co-integrated with demand deposits. It is recommended that the monetary authorities and commercial banks should embark on an all-inclusive enlightenment campaign for the banking public on the benefits, convenience and importance of adopting e-banking channels in completing their transactions.

Eniang-Esien and Ekpe (2019) conducted research on CBN cashless policy implementation as predictor of sustainable administration of higher education in south-south, Nigeria: implication from management perspective. The study focused on assessment of the CBN cashless policy implementation as predictor of sustainable administration of higher education in south-south Nigeria. The study adopted the descriptive survey research design.

The population for the study comprised 16, 238 administrative staff of tertiary institutions in south-south, Nigeria. The stratified and simple random samplings were employed in the study and relevant data for the study was obtained from the sampled respondents. The study revealed that the level of cashless policy implementation is significantly low.

The study found that there is a significant prediction of cashless policy in terms of infrastructure, security and awareness on sustainable administration of higher education. The study recommended that with the creation of numerous payment options, the process of cash collection will be made simple, and the cost and risk associated with cash transfer and processing reduced. This will have a strong implication on management of tertiary institutions across the country.

Fabris (2019) observed that the prospects of cashless society may not last long due to the evolution of digital currencies as seen in some countries. The study that is conducted using content analysis of empirical studies revealed global financial crisis and private crypto currencies have threatened the existence of cashless society. It concluded that economic policy makers must rise to the challenges to sustain the emergence of a cashless society. Even with the emergence of the cashless

economy, the system still accommodates crypto currency since it is also a form of cashless structure.

Ogunfeyimi (2019) explained that cashless policy transmission's impact on Nigerian economy cannot be overemphasized. This was asserted from the findings in the study where time series data was used. It revealed that there is long run relationship between the variables used and the Nigerian economy. It showed that the insignificant nature of the results may be attributed to poor infrastructure of the facilities needed to enhance the performance of the banks on cashless policy.

It is recommended that; reinforced and collaborated efforts are required from both government and deposit money banks (DMBs) to improve the provision of infrastructure that would enhance greater access to transactions and performance of the banking sector in Nigeria.

The World Bank Report (2019) stated that, the global growth slowdown due to uncertainty damping the prospects of global economy. New emerging markets and the developing economies in Europe and Central Asia regions slowed to 3.10 per cent in the year 2018 and this was projected to reduce to 2.10 per

cent in the year 2019. After the end of the year 2019, it is expected to pick up moderately in the year 2020 -22 due to offsetting moderate activity, spillover external risk, uncertainty in global policy and renewal of financial pressure in the region. Over 80 percent of unbanked persons have mobile phones and moving them to public sector, pension payments would decrease unbanked adults in the region by a good number thus, bringing a significant proportion of the society into the dragnet of cashless economy.

The data were sourced from World Bank Development indicator and Central Bank of Nigeria (CBN) Statistical Bulletin, Annual Report and Statement of Account for the year 2019. The study found that cashless policy has been a veritable tool in influencing economic performance, especially as it relates to Automatic Teller Machine (ATM) transactions and Point of Sale (POS) payment patterns. The study recommended that banks should invest more in information communication technology (ICT) so as to enhance efficiency e-payment systems as this will further enhance the revenue of the banking institutions in the long run and improve economic growth in Nigeria.

Agu et. al. (2020) conducted research on Cashless policy and the Nigerian Economy: a disaggregated approach. The objective of the study was to examine the impact of cashless policy on economic growth in Nigeria, over the period of Q12010 to Q42018. The study employed quarterly time series data using ordinary least squares (OLS) technique. The data was sourced from World Bank Development indicator and Central Bank of Nigeria (CBN) Statistical Bulletin, Annual Report and Statement of Account for the year 2019. The study found that cashless policy has been a veritable tool in influencing economic performance, especially as it relates to Automatic Teller Machine (ATM) transactions and Point of Sale (POS) payment patterns. The study recommended that banks should invest more in information communication technology (ICT) so as to enhance efficiency e-payment systems as this will further enhance the revenue of the banking institutions in the long run and improve economic growth in Nigeria.

Akintayo et. al. (2020) conducted research on impact of cashless policy on organizational performance in National control center Osogbo, Osun state, Nigeria. The study investigated the impact of cashless policy on organizational performance: A case study of National Control Center, Osogbo. The study adopted the survey research design. A total of 100 respondents were selected for the study using simple random sampling technique. Questionnaire was used to collect primary data. Data collected were analyzed using descriptive statistics. Hypotheses were tested through Pearson Product Moment Correlation analysis. The study found that there is a significant relationship between cashless policy and Organizational Performance in National control Centre Osogbo. It is agreed that the cashless system will be helpful in the fight against corruption and money laundering. The study recommended that there is the need to intensify the public enlightenment program about the cashless system so that everybody will be well acquainted with the system since it will affect everybody. Since there is a high rate of illiteracy, and all people must be brought into the system, the government should design special enlightenment programs for the non-literates, using probably signs and symbols to educate this segment on how to operate the cashless system (point of sale and mobile phone channels).

The observed inconsistencies in the findings and conclusions of the previous researchers on the subject constitute an obvious gap in literature, a development that requires further investigation and contribution to the subject of discourse. Therefore, automated teller machine (ATM), internet banking (ITB), mobile banking (MOB), point of sale terminal (POS), national electronic fund transfer (NEFT) and NIBSS instant payment (NIP) were used as proxies for the independent variables with all, in a model to determine the effect of cashless economy on the profitability of Deposit Money Banks (DMBs) in Nigeria. The returns on assets (ROA) proxied for the dependent variable and profitability metric of DMBs.

REVIEW OF RELATED LITERATURE

Conceptual Review

Cashless Economy

A cashless economy connotes a society with a practice where cash usage is at a low ebb hence, all payments are done with the use of cheques, direct transfers and credit cards from an account to the other via internet banking, as well as the use of debit cards (Nwakoby et al., 2020). Cashless system, as the name suggests, is not the total non-existence of cash, rather, it is a financial scheme where purchases and payments are consummated mainly through electronic means and channels with the deployment of computer technology applications. Erhijakpor and Oko (2021) explained the concept to mean a system where there are supposedly no transaction frictions that money balances can abridge thereby providing a motive for holding such balances despite earning a rate of return on them. Therefore, cash balances in people's wallet in a cashless economy is considered irrelevant, as one can effect payment for goods and services through the various channels available such as the usage of cards or transfer (Werigbelegha & Avery, 2019; Chondough, 2021). Nations are gradually migrating from the physical cash payment systems and are fast advancing en-route electronic payment system, particularly, card payments. Engert et. al. (2018); Erhijakpor and Oko (2021) noted that the functionality of a cashless economy is strongly improved by e-brokering, e-

finance, e-exchanges and e-money. All of these references were on payments and banking transactions within a cashless economy. Sweden, a foremost European Nation was the first adopter of cashless economy having been noted for her quest at embracing new technologies and innovation, even as a tradition the result of which, her financial system has become opaquely unique. The country has been at the forefront of banking innovation for a very long time as her first automatic cash machine was installed and commissioned for utilization in July, 1967 (Sweden Central Bank, 2023).

In the year 2023 and precisely, on 24th March, 2023, Sweden was declared the first cashless nation in the entire Globe with her economy going 100% digital. According to Sweden Central Bank (2023), about 80% of Swedes make use of cards with 58% of payments made by cards and only 6% in cash.
Hence, electronic payments increased geometrically with more restaurants and shopping centers now declining acceptance of cash payments while mobile payment services conveniently and seamlessly handle all payments from one individual to another.

AUTOMATED TELLER MACHINE (ATM)

According to Pam (2021), the automatic teller machine (ATM) card gives customers an easy and immediate access to their cash and account balances whenever the need arises. ATM is one of the most outstanding cashless banking channels all over the World. There are offsite and onsite Automated Teller Machines (ATMs) with dual functions of cash dispensing and collection of deposit. It serves as an alternative platform to the banking hall operations. It plays the role of a physical teller in the bank and in this case, the role is automated. While its services are available 24 hours daily, it is simple and convenient to use. ATMs can handle several functions including account balance enquiry, airtime top-up, changing of PIN (used for online web transactions with Visa cards issued by the banks), fund transfer, bill payments cash withdrawal and printing of mini statements (Nwakoby et al., 2020). Customer's personal information number (PIN) serves as signature on usage of the automated teller machine (ATM), therefore Customers are advised to keep their PIN to themselves so as to prevent incidence of fraud. ATM fraud was prevalent in the past while using the magnetic strip cards, however, all banks have advanced the security features of

their cards with chip and personal identification number (PIN) technology with access to change the PIN at will, a phenomenon considered more secure (Pam, 2021). Automated teller machines (ATMs) are frequently used to make a variety of online payments including utility bills, cable subscriptions, airtime, data recharges and a host of others. Customers are advised by their banks to keep their ATM cards (Debit and Credit cards) safe and never to divulge their ATM card PINs (Nwani et al., 2020).

INTERNET BANKING (ITB)

Internet banking is a channel that enables a bank customer with a personal computer and telephone to screen his account, print his own statement of account and carry out other transfer transactions in his office or at home without physically going to the location of the bank (Chondough, 2021).

It entails conduction of business transactions on the internet by the use of electronic tools like computer systems and other allied information communication technology (ICT) gadgets without going to the bank. E-commerce has been facilitated particularly with the emergence of Covid-19 pandemic by internet banking, the medium through which most payments were made (Taskinsoy, 2021).

Internet banking like mobile banking, makes use of electronic card infrastructure for execution of business payment instructions and settlement for delivery of goods and services between affected customers and the merchants without visiting the banking hall (Chondough, 2021).

Settlement of commercial bills and procurement of flights air tickets through the websites of the merchants are generally common transactions channeled through the internet banking in Nigeria.

It is an internet banking platform which gives all account holders direct access to their accounts, be it savings, current, loan and others. It provides the customers with a flexible channel for electronic financial transactions (Mohammed et al., 2022).

POINT OF SALE TERMINAL (POS)

Point of Sale (POS) and/or Point of Purchase (POP) Terminals is the location where a transaction takes place (Alalade, 2016). According to Nwakoby et. al. (2020) a POS or POP terminal is referred to as the hardware and software used in checking out, the equivalent of an electronic cash register. A POS is used in managing the selling process by a salesperson accessible interface. It allows the creation and printing of receipts. The Point-of-Sale terminal is a portable device that facilitates payments for goods and services using payment cards issued by banks and the CBN's licensed payment terminal service providers (PTSPs) in Nigeria and they include, Value-card, ETOP, ITEX, Paymaster, Citi-Serve and Easy-Fuel. All these terminals are equipped to accept payments from any type of electronic payment cards VISA, Master Card, Inter-Switch, Quick-Teller, Maestro, Cirrus, Verve, Genesis, E-Transact and others. On request, the POS terminal will be installed to Customer's shop or stores and also train some staff on its handling, free of charge depending on the level of transactions the device is being made to handle (Mohammed et al., 2022). The terminal allows customers to make payments by direct electronic funds transfer into any account without physically visiting any bank or branch of a bank. Based on market segments, value and frequency of transactions required to give the cashless initiatives a boost, banks have deployed the Point of Sale (POS) terminals to high profile merchants, hotels, eateries, supermarkets, cybercafe, filling stations, hospitals, retail outlets and others to facilitate payment for goods and services. The POS has two SIM cards and 24-hour backup batteries in the event of erratic electricity supplies. The customer can

reverse his or her transaction if there is a change of mind about the purchasing item. Customers do not need to worry about fraud or theft when entering in their Personal Identification Numbers (PINs) during transactions. POS is obtainable free from banks but, it has to be paid for where so obtained from any of the endorsed POS terminal agents (CBN, 2020).

NIBSS ELECTRONIC FUNDS TRANSFER (NEFT)

Electronic fund transfer (NEFT) is an irrevocable electronic fund transfer instruction issued for payment to a third-party bank. NEFT, usually used for high volume payments like vendor payments, staff salaries and group of staff emoluments, was introduced in Nigeria in the year 2004. NEFT transactions are processed through scheduled batch clearing sessions on NIBSS platform.

NEFT transactions are not real-time however, the beneficiaries receive value for transactions posted before the clearing sessions on the same day of the transactions' incidence. NEFT transactions involve two clearing circles, same day settlement for transactions received before the clearing sessions and the following day settlement for the transactions received after the clearing cycle. Funds can be transferred through NEFT by first logging into the internet banking platform of a given bank using the user's allotted ID and password. From the fund transfer tab, select and add the beneficiary (the receiving bank), select the type of the beneficiary like, transferring to other bank, key in the account number of the beneficiary and click on send. First, the account of the sender will be debited, and the funds will be reserved, the sender's instruction alongside other customer's instructions are transmitted to NIBSS by the bank as an electronic file for processing.

NIGERIA INTER-BANK SETTLEMENT INSTANT PAYMENT (NIP)

The Nigeria Inter-Bank Settlement Instant Payment (NIP) system is an electronic payment solution designed to facilitate real-time, seamless, and secure transactions between different banks in Nigeria. The following are its key features and functions, Real-Time Payments - NIP enables immediate fund transfers between bank accounts in Nigeria. Transactions are processed in real time, allowing beneficiaries to access funds instantly (Nwakoby et al., 2020). Wide Accessibility - The system is available 24/7, including weekends and public holidays, providing users with the convenience of making payments at any time (Mohammed et al., 2022). Interoperability - NIP is designed to support transactions across different banks within Nigeria, making it a versatile platform for both individuals and businesses to conduct interbank transactions (Nwakoby et al., 2020). Security - The system is built with robust security measures to protect against fraud and unauthorized access, ensuring the safety and integrity of transactions (Mohammed et al., 2022). Usage - NIP is commonly used for various types of payments, including personal transfers, business transactions, and bill payments, making it an essential component of Nigeria's financial infrastructure (Nwani et al., 2020). Regulation and Management - The system is managed by the Nigeria Inter-Bank Settlement System Plc (NIBSS), which is owned by all licensed banks in Nigeria, along with the Central Bank of Nigeria (CBN) (Mohammed et al., 2022).

Generally, the NIP system plays a crucial role in enhancing the efficiency and reliability of Nigeria's payment ecosystem by providing a fast and secure means of transferring funds between bank accounts (Nwani et al., 2020).

RELATED THEORY OF THE STUDY

The study is anchored on Diffusion of Innovation (DOI) theory. The theory supports this study as it harps on electronic platforms for the delivery of the services of the banks. DOI is an information systems theory that models how users align themselves with cashless economy initiatives upon its introduction while also adopting the new innovation and culture to further enhance profitability of DMBs in Nigeria. Diffusion of Innovation Theory (DOI) propounded by E. M. Rogers in 1962 and further developed by Fred Davis (1985), harps on spread of newly generated innovative ideas and technology, and the theory is made up of six major components: innovation characteristics, individual user characteristics, adopter distribution over time, diffusion networks, innovativeness and adopter categories, and the individual adoption process which are the thrusts of cashless economy in promoting the enhanced and sustainable profitability of deposit money banks (DMBs) in Nigeria. Diffusion of Innovation (DOI) Theory is one of the theories that were developed to provide better understanding of the usage and adoption of information communication technology (ICT).

EMPIRICAL REVIEW OF RELATED STUDIES

Abaenewe et. al. (2015) investigated the profitability performance of Nigerian banks following the full adoption of electronic banking system. The study became necessary as a result of increased penetration of electronic banking which has redefined the banking operations in Nigeria and around the world. Judgmental sampling method was adopted by utilizing data collected from four Nigerian banks. These four banks are the only banks in Nigeria that have consistently retained their brand names and remain quoted in the Nigerian Stock Exchange since 1997.

The profitability performance of these banks was measured in terms of returns on equity (ROE) and returns on assets (ROA). With the data collected, we tested the pre- and post-adoption of e-banking performance difference between means using a standard statistical technique for independent sample at 5 percent level of significance for performance factors such as ROE and ROA. The study revealed that the adoption of electronic banking has positively and significantly improved the returns on equity (ROE) of Nigerian banks.

Amu and Nathaniel (2016) studied the relationship between electronic banking and the performance of Nigerian commercial banks. The study became necessary due to the increased adoption of the electronic banking which has redefined the banking service both in Nigeria and internationally.

Electronic banking was proxied by value of Point-of-Sale transactions while commercial banking performance was proxied by customers' deposits. Engle-Granger cointegration model was used to analyze data. The results show that POS is not cointegrated with both the savings and time deposits but are cointegrated with demand deposits.

Obiekwe and Anyanwaokoro (2017) investigated the effect of electronic payment methods (EPM) on the profitability of commercial banks in Nigeria. The study specifically investigated the effect of automated teller machine (ATM), point of sale (POS) and mobile payment (MPAY) on the profitability of commercial banks in Nigeria. A total sample of five (5) banks

spanning 2009 and 2015 were considered for the study and Panel least squares (PLS) estimation technique was adopted as the analytical tool. Data were sourced from the Central bank of Nigeria (CBN) statistical bulletin and annual reports ad statements of accounts of the five banks used for the study. Findings revealed

that, automated teller machine (ATM) and mobile phone payment have a significant effect on the profitability of commercial banks in Nigeria while point of sale (POS) has an insignificant effect on the profitability of commercial banks in Nigeria.

Taiwo and Agwu (2017) investigated the roles e-banking adoption has played in the performance of organizations using a case study of commercial banks in Nigeria. Primary data were obtained by administering questionnaires to staff of four purposively selected banks (Ecobank, UBA, GTB and First bank). Pearson correlation was used to analyze the results obtained using the Statistical Package for Social Sciences (SPSS) and it was observed that banks' operational efficiency in Nigeria since the adoption of electronic banking has improved compared to the era of traditional banking.

Hussein and Elyjoy (2018) examined the effect of internet banking on operational performance of commercial banks in Nakuru County, Kenya. The study employed Bank-Focused Theory and the Technology Acceptance Model (TAM). This study adopted a cross-sectional research design. The study population comprised 56 employees of the commercial banks. Since the banks are few, the study adopted a census survey. Data was collected using structured questionnaires. A pilot study was conducted in Uasin Gishu County to determine validity of the research instruments where Cronbach's alpha coefficient (0.7) was employed. Data was analyzed using correlation and regression analysis. The study established that internet banking has a positive significant effect on operational performance of the commercial banks.

Ogutu and Fatoki (2019) examined the effect of electronic banking on financial performance of listed commercial banks in Kenya. The study employed quantitative research design using panel data analysis.

The targeted population of the study was the 11 listed commercial banks in Kenya. Secondary data was extracted from CBK banking supervisory reports and published annual reports of banks. The data was recorded on data collection sheets. Both descriptive and inferential statistics were used. The findings were presented using tables with associated explanations. The study found that there was strong positive relationship between mobile banking, agency banking, ATM banking and online banking and financial performance of listed commercial banks in Kenya.

Financial performance of commercial banks and m-banking were strongly and positively correlated. Summarily, majority of the empirical studies were conducted in the environment not peculiar to Nigerian landscape. The time frames considered in the previous studies were quite short thereby resulting into conflicting and inconsistent results obtained from their findings. These have significantly contributed to the knowledge gap in the literature and this situation now called for more comprehensive study on the effect of cashless economy on profitability of

Deposit Money Banks (DMBs) in Nigeria. This study therefore seeks to improve on the previous studies by making use of annual data from year 2017 to 2022.

METHODOLOGY

Research Design

The study used pool regression analysis, descriptive and inferential analyses, *ex-post facto* research design was adopted as the data used were secondary data sourced from the Central Bank of Nigeria

(CBN), Statistical Bulletin and Published Accounts and Reports of DMBs. A sample size of 14 DMBs purposively selected based on consistencies and comparability of their reports from the population of 16 listed DMBs on the Nigeria Exchange Limited were also used.

Return on assets (ROA) is the dependent (Y) variable, while the key independent or explanatory variables (X) considered in the study are automated teller machine (ATM), point of sale terminal (POS), mobile banking (MOB), internet banking (IBT), National electronic funds transfer (NEFT) and Nigeria inter-bank settlement system - instant payment (NIP).

OPERATIONALIZATION OF VARIABLES

Variables	**Proxies (Operational expression)**
Dependent Variable	
Return on assets (ROA)	Profit before interest and tax/Total assets
Independent Variables	
ATM Transactions	Volume /Value of ATM transactions
POS Transactions	Volume /Value of POS transactions
ITB Transactions	Volume /Value of Internet banking transactions
NFT Transactions	Volume /Value of NEFT transactions
NIP Transactions	Volume /Value of NIP transactions

MODEL SPECIFICATION

The model used for the study was the adaptation and modifications from the Impact of electronic banking on the performance of financial institutions in Nigeria by Okolie et. al. (2023) in their study with the model stated below,

RGDPt = (CHEt, ATMt, POSt, WEBt)

$RGDPt = \beta 0 + \beta 1CHEt + \beta 2ATMt + \beta 3POSt + \beta 4WEBt + \mu t$

Where:

RGDP = Real Gross Domestic Product (capturing economic growth).

CHE = Value of transactions on cheque payments in Nigeria

ATM = Value of transactions on Automated Teller Machines across the Country.

POS = Value of transactions on Point-of-Sale operations across the Country.

WEB = Value of transactions on Online web payments.

The model was adapted and modified by substituting some of the variables as appropriate in the explanatory variables and dependent variable,

$Y = f(x1, x2, x3, x4, x5)$ ……..…….1

$ROA = f(ATM, POS, ITB, NFT, NIP)$

$ROA = \beta_0 + \beta_1 ATM + \beta_2 POS + \beta_3 ITB + \beta_4 NFT$ and $\beta 5 NIP + \mu$ - - - - - - - - - - - - - - - - - 2

Where:
ROA = Return on Assets
ATM = Automated Teller Machine
POS = Point of sale
ITB = Internet Banking (ITB)
NFT = National electronic funds transfer (NEFT)
NIP = Nigeria inter-bank settlement system - instant payment (NIP)
β_0 and μ are the constant and error term respectively while β_1, β_2, β_3, β_4 and $\beta 5$ are the coefficient of cashless economy on profitability of Deposit Money Banks (DMBs) in Nigeria.

RESULTS AND DISCUSSION OF FINDINGS

TABLE A: Descriptive Statistics

	ROA	ATMV	POSV	ITBV	NEFV	NIPV	FSZV
Mean	1.68	3981.67	523.17	93.67	14200.33	25763.50	21.06
Median	1.63	3825.00	380.50	83.00	14446.00	22785.00	20.98
Maximum	5.09	6438.00	1410.00	185.00	14946.00	56166.00	22.45
Minimum	-5.59	1985.00	48.00	32.00	13087.00	3891.00	19.310
Std. Dev.	1.65	1449.29	459.02	52.24	638.96	17481.75	0.75
Skewness	-0.98	0.35	0.96	0.56	-0.65	0.51	-0.20
Kurtosis	7.32	2.13	2.66	2.09	2.03	2.11	2.42
Jarque-Bera	78.74	4.38	13.25	7.38	9.12	6.36	1.75
Probability	0.00	0.11	0.00	0.03	0.01	0.04	0.42
Observations	84	84	84	84	84	84	84

Significance *** 10% level of significance

Interpretation and explanation of TABLE A

ROA	1.599383 mean average for 6 years	Most listed banks have positive ROA	On the average
ATMV	3981.667	Mean value	On the average
	6438.000	Maximum value	Large variance between minimum and maximum value, means many more Customers used ATM facilities for their cash transactions which resulted into enhanced ROA of DMBs
	1985.000	Minimum value	
POSV	523.1667	Mean volume	On the average
	1410.000	Maximum volume	Large variance between minimum and maximum volume, means many more Customers used POS facilities for their cash transactions which resulted into enhanced ROA of DMBs
	48.000	Minimum volume	
ITBV	93.66667	Mean value	On the average
	185.0000	Maximum value	

	32.0000	Minimum value	Large variance between minimum and maximum value, means many more Customers used ATM facilities for their cash transactions which resulted into enhanced ROA of DMBs
NEFV	14200.00	Mean value	On the average
	14946.00	Maximum value	Large variance between minimum and maximum value, means many more Customers used ATM facilities for their cash transactions which resulted into enhanced ROA of DMBs
	13087.00	Minimum value	
NIPV	25763.50	Mean volume	On the average
	56166.000	Maximum volume	Large variance between minimum and maximum volume, means many more Customers used POS facilities for their cash transactions which resulted into enhanced ROA of DMBs
	3891.000	Minimum volume	

The above table A shows the size of the banks used as sample for the study as widely dispersed and not mainly dominated by large or mega branches of banks or small branches. Wide variations in the standard deviation values of the FSZ variables used attested to this.

Table B: Pearson Correlation Matrix

Correlation Analysis

	ROA	ATMV	POSV	ITBV	NEFV	NIPV	FSZV
ROA	1.0000						
ATMV	-0.0386	1.0000					
POSV	-0.0264	0.9739	1.0000				
ITBV	-0.0353	0.9926	0.9880	1.0000			
NEFV	-0.0380	0.9966	0.9855	0.9991	1.0000		
NIPV	0.0732	0.5343	0.5308	0.5042	0.5084	1.0000	
FSZV	-0.1157	0.2762	0.2640	0.2717	0.2735	0.1502	1.0000

From the correlation matrix table, most of the independent variables were negatively and weakly associated with ROA, like ATMV = -0.0386; POSV = -0.0264; ITBV = -0.0353; NEFV = -0.0380 and FSZV = -0.1157 while other variables were perfectly correlated or associated with ROA, they are, POSV, ATMV = 0.9739; ITBV, ATMV = 0.9926; ITBV, POSV = 0.9880; NEFV, ATMV = 0.9966; NEFV, POSV = 0.9855; NEFV, ITBV = 0.9991. This clearly shows that, there exists between the explanatory variables multicollinearity issues and to further check for the existence of multicollinearity problem in the model, variance inflation factor (VIF) test was carried out. The outcome of the test is given in Table C below:

TABLE C: VIF Test for Multicollinearity in Regression Model

Explanatory Variables	**VIF**
ATMV	10190.23

POSV	316.74
ITBV	19886.75
NEFV	15.31
NIPV	64643.41
FSZV	1.09
MEAN	13579.22

TABLE D: Breusch-Pagan-Godfrey Heteroskedasticity Test

Test	Value	P-Value
F-Statistics	3.16	0.0757
Obs*R-squared	5.22	0.64

Obviously, the VIF for each of the explanatory variables was higher and greater than the threshold of 10 and the overall VIF mean was more than 5. In addition to the above, existence of heteroskedasticity has to be checked by running Breush-Pagan-Godfrey heteroskedasticity test.

From table D above, F-statistics and Obs*R-squared values of 3.16 and 5.22 respectively indicated non-existence of heteroskedasticity problem in the model hence, P-value of 10% shows acceptance of Ho (absence of heteroskedasticity) and rejection of H1 (presence of heteroskedasticity)

TABLE E

Cross-section included: 14
Total panel observations: 84

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-40.57734	16.90403	-2.400454	0.0188
ATMV	0.012565	0.011904	1.055506	0.0945
POSV	0.006904	0.006591	1.047575	0.2982
ITBV	0.557556	0.464165	1.201202	0.2334
NEFV	-0.000673	0.001022	-0.657914	0.5126
NIPV	-0.002875	0.002494	-1.152843	0.2526
FSZV	0.972391	0.229492	4.237138	0.0001
R-squared	0.238073	Mean dependent var		1.682143
Adjusted R-squared	0.167896	S. D. dependent var		1.649000
S.E. of regression	1.504214	Akaike info criterion		3.744810
Sum squared resid.	171.9620	Schwarz criterion		3.976317
Log likelihood	-149.2820	Hannan-Quinn criterion		3.837874
F-statistic	3.392442	Durbin-Watson stat		1.546802
Prob(F-statistic)	0.003321			

From table E above, R-squared and its adjusted R-squared values were 0.238073 and 0.167896 respectively. This shows that, all the independent variables jointly explain 23.81% of the systematic variations in ROA of sampled listed banks over the six-year period (2017-2022) of the study while 83.21% of the systematic variations are captured by the error term. F-statistics of 3.392442 and p-value of 0.00 showed that ROA regression model is well specified.

HYPOTHESES: Ho1: Automated teller machine (ATM) transaction does not enhance profitability of DMBs in Nigeria. From table E above, t-value was 1.055506 and p-value was 0.09 indicating a positive influence on the ROA of the listed DMBs used as sample and this influence is statistically significant at 10% level of significance, p-value is within 10% significance level. Hence, null hypothesis should be rejected while we accept the alternative hypothesis, "ATM transaction enhances profitability of DMBs in Nigeria". The result suggests that there is a reinforced usage of ATM transactions by the customers of DMBs in Nigeria and this has positively influenced the ROA of DMBs leading to their improved performance and enhanced profitability. On the basis of efficient use of ATM transactions to generate increased return on assets, the DMBs embarked on more activities tailored towards improvement of their ATM services for better performance than DMBs with less ATM transactions in Nigeria. Ho2: Point of sale (POS) terminal transaction does not enhance profitability of DMBs in Nigeria.

From table E above, t-value was 1.047575 and p-value was 0.29 indicating a positive influence on the ROA of the listed DMBs used as sample size and this influence is not statistically significant since the p-value is more than 10% level of significance. This suggests that the null hypothesis should be accepted connoting that there is high level of usage of POS transactions by customers of DMBs and this has positively influenced the ROA of the banks leading to better performance of the banks but, the influence is not significant and can be ignored by management while planning or taking decision on improvement of ROA through POS transactions. Ho3: Internet banking (ITB) transaction does not promote profitability of DMBs in Nigeria. From table E above, t-value was 1.201202 and p-value was 0.23 indicating a positive influence on the ROA of the listed DMBs used as sample size and this influence is not

statistically significant since the p-value is more than 10% level of significance. This suggests that the null hypothesis should be accepted connoting that there is high level of usage of ITB transactions by customers of DMBs and this has positively influenced the ROA of the banks leading to better performance of the banks but, the influence is not significant and can be ignored by management while planning or taking decision on improvement of ROA through internet banking (ITB) transactions.

Ho4: National electronic fund transfer (NEFT) transaction does not enhance profitability of DMBs in Nigeria. From table E above, t-value was -0.657914 and p-value was 0.51 indicating a negative influence on the ROA of the listed DMBs used as sample size and this influence is not statistically significant since the p-value is more than 10% level of significance. This suggests that the null hypothesis should be accepted connoting that there is high level of usage of NEF transactions by customers of DMBs and this has positively influenced the ROA of the banks leading to better performance of the banks but, the influence is not significant and can be ignored by management while planning or taking decision on improvement of ROA through national electronic fund transfer (NEFT) transactions. Ho5: Nigeria inter-bank settlement system - instant payment (NIP) transaction does not enhance profitability of DMBs in Nigeria. From table E above, t-value was -1.52843 and p-value was 0.25 indicating a negative influence on the ROA of the listed DMBs used as sample size and this influence is not statistically significant since the p-value is more than 10% level of significance. This suggests that the null hypothesis should be accepted connoting that there is high level of usage of NIP services by customers of DMBs and this has positively influenced the ROA of the banks leading to better performance of the banks but, the influence is not significant

and can be ignored by management while planning or taking decision on improvement of ROA through nigeria inter-bank settlement system - instant payment (NIP) transactions. Ho6: Test of control variable (influence of the size of DMBs) on profitability of DMBs in Nigeria.

From table E, t-value was 4.237138 and p-value was 0.0001 indicating a positive influence on the ROA of listed DMBs used as sample and this influence is statistically significant at 1% level of significance since the p-value is less than 1% level of significance.

This suggests that the null hypothesis should be rejected, that is, rejecting that ‘’the size of the bank does not significantly affect return on assets (ROA) of DMBs in Nigeria’’, connoting that large DMBs significantly perform better than small sized DMBs in terms of their returns on assets employed. DMBs with large size will perform better than those ones with less sizes and since this effect is statistically significant, management should consider improving the sizes of the banks as this will increase their ROA and significantly boost their profitability.

Discussion of Findings

This study investigated the effect of cashless economy on profitability of deposit money banks (DMBs) in Nigeria. Adopting pooled data, data generated were subjected to varied statistical tests like descriptive statistics, correlation analysis, multicollinearity test, heteroskedasticity test and ordinary least square regression analysis. The descriptive statistics showed the individual characteristics of the variables used in the study and also showed that the variables were normally distributed. The result of the regression revealed that ATMV has a positive and significant effect on ROA of DMBs in Nigeria. The findings are in line with the *a-priori* expectations as it was expected that usage of ATM transaction channels will give room for enhanced ROA of DMBs in Nigeria. The results of our findings are consistent with the work of Chipeta and Muthinja (2018) on automated teller machine transactions, it was discovered that automated teller machine has positive effect on the profitability drive of deposit money banks in Kenya. This finding is in agreement with the investigation of Obiekwe and Anyanwaokoro (2017) on the effect of electronic payment methods (EPM) on profitability of commercial banks in Nigeria. The study

specifically investigated the effect of automated teller machine (ATM), point of sale (POS) and mobile payment (MPAY) on the profitability of commercial banks in Nigeria. A total sample of five (5) banks spanning 2009 and 2015 were considered for the study and Panel least squares (PLS) estimation technique was adopted as the analytical tool. Data were sourced from the Central bank of Nigeria (CBN) statistical bulletin and annual reports and statements of accounts of the five banks used for the study. Findings revealed that, automated teller machine (ATM) and mobile phone payment have a significant effect on the profitability of commercial banks in Nigeria while point of sale (POS) has an insignificant effect on the profitability of commercial banks in Nigeria. In addition to the above, findings from the regression analysis revealed that, POSV, ITBV, NEFV and NIPV were having positive but insignificant effect on ROA of listed DMBs in Nigeria.

The findings failed to support our *a-priori* expectations but in agreement with the findings of Akwam and Yua (2021) who conducted research on effects of e-money products on the financial performance of some commercial banks in Nigeria using volume of POS, mobile payments and ATM transactions as proxies of financial products and return on assets, return on equity and

earning per share as proxies of banks performance. A time series of annual data from 2005-2019 of mobile payment, POS and ATM were employed to determine their impact on ROA, ROE and earnings per share, respectively. The findings revealed that Mobile payment and POS have significant positive effect on ROA and ROE, respectively. Also, ATM transactions have a significant positive effect on earnings per share. These results corroborated with the findings of Muotolu and Nwadialor (2019) in their studies on cashless policy in Nigeria and its impact on the financial performance of commercial banks, using volumes of ATM, POS, internet payment, NEFT and NIP as proxies of cashless policy, and return on asset as proxy of bank performance.

The research work adopted panel data from 14 banks ranging from 2012 to 2017, which were analyzed using descriptive statistic, multicollinearity test, correlation testing, and heteroscedasticity testing. The findings indicated that volume of ATM transactions has significant positive impact on ROA of banks in Nigeria, however, volume of POS, internet, NEFT and NIP have insignificant positive impact on ROA of DMBs in Nigeria. This implies that all the arrays of cashless economy channels do not significantly influence return on assets (ROA) except ATMV, though they all have positive effects on ROA of DMBs in Nigeria.

Conclusion, Suggestions and Recommendations

This study investigated the effect of cashless economy on profitability of DMBs in Nigeria. The study attempted to provide empirical evidence of the effects of the cashless economy channels, ATMV, POSV, ITBV, NEFV, and NIPV on the profitability of deposit money banks (DMBs) in Nigeria. Findings from the study showed that ATMV has a positive and significant effect on return on assets (ROA) of DMBs in Nigeria. However, POSV, ITBV, NEFV and NIPV were all found to have positive but insignificant influence on ROA of listed DMBs in Nigeria. The below suggested recommendations could be considered and leveraged upon for enhanced profitability of DMBs in Nigeria through usage of various cashless digital channels. Improvement of ATM services across DMBs in Nigeria should be taken as priority as this will crystallize into increase in return on assets (ROA) value, steady trail of customers' satisfaction and patronage. While deciding on the strategies to be employed to improve ROA value, priority should not be placed on POS, ITB, NEF and NIP transactions but, on other activities that would enhance ROA, though they have positive effect on ROA, their influence thereof is insignificant.

In addition, in line with the objectives and findings, we recommend that, there is the need for enduring cashless economy support infrastructures to be put in place by the government.

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