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Cashless Economy and Profitability Drive of Deposit Money Banks (DMBs) in Nigeria

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Abstract

This study investigated the impact of cashless economy on profitability of Deposit Money Banks (DMBs) in Nigeria. The research adopted an *ex-post facto* design based on post-positivist ontology. The data for the study were sourced from the Central Bank of Nigeria (CBN) annual report and statistical bulletin, annual and account reports of 13 listed banks for 11 years i.e. 2012 -2022. The main objective was to find out the effect of cashless economy on profitability of Deposit Money Banks in Nigeria. The specific objectives are to ascertain the effect of automated teller machine on profitability of Deposit Money Banks in Nigeria, to examine the effect of point of sale on profitability of Deposit Money Banks in Nigeria, to assess the effect of mobile banking on profitability of Deposit Money Banks in Nigeria and to examine the effect of internet banking on profitability of Deposit Money Banks in Nigeria. Descriptive and Inferential Statistics, Augmented Dickey Fuller Tests for Unit Roots and the Ordinary Least Square (OLS) were applied on profitability of the listed banks adopted as sample size. The result of the study indicates that Automated Teller Machine (ATM), Point of Sale (POS), Mobile Banking (MOB), and Internet Banking (ITB) have positive and significant effect on return on assets (ROA). The study concludes that cashless economy has positively affected the profitability of Deposit Money Banks in Nigeria. The study recommends that government should provide adequate digital infrastructures, stable and uninterrupted power supply and adequate communication link to aid cashless economy driving seamless profitability of the banks.

INTRODUCTION

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 Deposit Money Banks (DMBs) in Nigeria.

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 cointegrated with both the savings and time deposits but are cointegrated 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) and point of sale terminal (POS) 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 Deposit Money Banks.

The following hypotheses in their null form were formulated,

1: Ho1: Automated teller machine (ATM) transaction does not enhance profitability of DMBs in Nigeria.

2: Ho1: Internet banking (ITB) transaction does not promote profitability of DMBs in Nigeria.

3: Ho1: Mobile banking (MOB) transaction does not support profitability of DMBs in Nigeria.

4: Ho1: Point of sale (POS) terminal transaction does not enhance profitability of DMBs in Nigeria.

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. It however took Sweden 362 years to transit from being the first nation in Europe to have adopted banknotes in 1661, now becoming the World's first cashless economy in the year 2023. The whole population in Sweden is completely under mobile coverage as Swedes embrace cashless life (Sweden Central Bank, 2023).

Automated Teller Machine

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

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. Online banking, otherwise known as internet banking, is a safe web-based solution platform that provides the customers, access to their account 24 hours on daily basis from

any part of the World provided there is internet connectivity, and customers will be able to conduct their business transactions without having to physically visit or present in the bank location or in any

of its branches. Customers can make payments, check their balances, transfer funds to other bank accounts within and outside their own bank, generate statements, remit funds and pay bills. Customers can as well, make use of personal computers, smart phones, tablets and laptops to connect with this broad multi-platform internet banking services (Mohammed et al., 2022).

Mobile Banking

This refers to electronic channel of carrying out a banking transaction in which a mobile device like cell phone, tablet or fixed remote telephone is used to initialize, approve and also affirm an exchange of monetary incentive as a trade-off for merchandise and ventures (Mohammed et al., 2022).

It involves the use of mobile phones to assess the accounts of the customers and connect to the banking institution's database which will eventually provide settlement of financial transactions. Mobile banking can provide services like funds transfer, account balance enquiry, payment of bills and recharging of phones, among others (Nwakoby et al., 2020). Some of the services provided through mobile banking are integrated into an interactive system of a voice message that directs a customer through automated provision of relevant account details (Mohammed et al., 2022). Fund transfers performed usually via the internet by using personal computers (PCs), laptops, smartphones and other allied devices with internet access. Subscription to internet banking by bank customers is required by Nigerian banks for their customers to enjoy the service (Nwani et al., 2020).

Point of Sale Terminal (POS)

Point of Sale (POS)/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).

There are four endorsed Point of Sale terminals thus, PAX, Bitel, Ingenico and Verifone and there are local support arrangements with local negotiated discounts attached to them. POS terminals are procured from any of the agents at a minimum cost of ₦45,000.00 per unit and based on meeting the requirements for acquisition of Point-of-Sale terminals. POS secures business handlers from robbery, theft, cost of cash management and hassles of counting cash or searching for cash balances (Mohammed et al., 2022). The account of a merchant who accepts payment through POS will be credited on T+1 implying that, the amount for today's transactions will be credited into the account tomorrow (if tomorrow is a working day).

Some inducements and motivations were provided so as to make Point of Sale terminals appealing to Nigerians, for example, 1.25 percent charge would not be paid by the cardholder. All the merchant needs to pay is 1.25 percent to a ceiling of ₦2,000.00. In a business transaction of ₦200,000.00 transaction, the merchant will pay ₦2,000.00 in form of compensation. This 1.25 percent transaction fee is not just for the banks alone to share at the end of the day, it is distributed to the different parties and stakeholders involved in ensuring that the POS system works. However, where the merchant fails to use the POS, he will be charged a penalty of 20 percent in excess of the cash limit policy.

This penalty was introduced so as to motivate merchants with POS to appeal to their customers to make use of the device instead of paying cash for goods and services. POS transaction charges vary as regard the industry it is used, for example, local hotel charges 2 percent, international hotel 5 percent, restaurants 1.25 percent, airlines 1.25 percent, retail shops 1.25 percent, supermarkets and others, 1.25 percent (Mohammed et al., 2022).

Theoretical Framework

The study is anchored on Diffusion of Innovation (DOI) theory. 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 Deposit money Banks in Nigeria.

Diffusion of Innovation Theory (DOI) 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

Abaenewe, Ogbulu, and Ndugbu, (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.

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 of 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 2012 to 2022.

METHODOLOGY

Research Design

The study is descriptive and inferential with adoption of an *ex-post facto* research design because the data for the study were secondary data sourced from the Central Bank of Nigeria (CBN), Statistical Bulletin and Published Accounts and Reports of DMBs listed on the Nigerian stock exchange for the period under review. 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, point of sale terminal, mobile banking and internet banking.

Model Specification

The model used for the study was the adaptation and modifications from Digital accounting practices and financial performance of listed deposit money banks in Nigeria by Ogbonna et al., (2020) in their study with the model stated below,

RGDPt = (CHEt, ATMt, POSt, WEBt)

RGDPt = β0 + β1CHEt + β2ATMt + β3POSt + β4WEBt + μt

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,

ROA = f (ATM, POS, MOB, ITB)

$ROA = \beta_0 + \beta_1 ATM + \beta_2 POS + \beta_3 MOB + \beta_4 ITB + \mu$ - - - - - 1

Where:

ROA = Return on Assets

ATM = Automated Teller Machine

POS = Point of sale

MOB = Mobile Banking

ITB = Internet Banking (ITB)

β_0 and μ are the constant and error term respectively while β_1, β_2, β_3, and β_4 are the coefficient of cashless economy on profitability of Deposit Money Banks (DMBs) in Nigeria.

Method of Analyses

The data were analyzed with econometric techniques involving descriptive and inferential statistics, Augmented Dicker Fuller and Philip Perron Tests for Unit Roots and the Ordinary Least Square (OLS).

DATA ANALYSIS

Table 1: Descriptive Statistics

	ROA	ATM	POS	MB	ITB
Mean	19.5863	17.0231	21.2077	49.0336	27.5000
Std. Dev.	2.0344	1.1436	1.5913	10.0172	64.4092
Skewness	-0.5049	0.2366	-0.2891	-0.2188	-2.6088
Kurtosis	1.9873	2.6357	1.6853	2.5131	11.7220
Jarque-Bera	1.8748	0.3269	1.8907	0.3929	94.6903
Probability	0.3916	0.8491	0.3885	0.8216	0.0000
Observations	22	22	22	22	22

Source: Computed from E-views - 13.00

The results of the descriptive statistics showed that the mean of the variables for return on assets = 19.5863, automated teller machine = 17.0231, point of sale = 21.2077, mobile banking = 49.0336 and internet banking = 27.5000 were more than their respective standard deviation values of 2.0344, 1.1436, 1.5913, 10.0172 and 64.4092 respectively. This shows that there was no wide variation in-between the series of the variables. The values for their respective skewness and kurtosis were close to 0 and 3 reflecting the presence of normal distribution in the series.

Table 2: Summary of the Unit Root Result

Variables	T-statistics	Probability	Order of Integration
ROA	-6.088595	0.0000	1(0)
ATM	-3.867397	0.0053	1(0)
POS	-4.619034	0.0010	1(0)
MB	-5.531824	0.0031	1(0)
ITB	-9.281478	0.0020	1(0)

Source: Computation from E-views - 13.00

The table above shows that return on assets, automated teller machine, point of sale, mobile banking and internet banking assume stationary at levels. This is confirmed by the probability values of the test which were below 0.05 levels of significance.

Analyses of the effect of Cashless Economy and Profitability of Deposit Money Banks in Nigeria

Dependent Variable: ROA
Method: Least Squares
Date: 04/04/24 Time: 12:26
Sample: 2012 2022
Included observations: 50

Variable	Coefficient	Std. Error	t-Statistic	Prob.
ROA	0.667553	0.824890	10.809263	0.0260
ATM	0.164745	1.010577	2.163021	0.0058
POS	0.518247	0.672745	3.770347	0.0183
MB	0.068816	0.039042	2.762604	0.0302
ITB	0.027885	0.022862	2.219695	0.0040
R-squared	0.712561	Mean dependent var		4.676947
Adjusted R-squared	0.655073	S.D. dependent var		7.153306
S.E. of regression	6.953540	Akaike info criterion		6.888364
Sum squared resid	1208.793	Schwarz criterion		7.165910
Log likelihood	-100.7696	Hannan-Quinn criter.		6.978837
F-statistic	19.349696	Durbin-Watson stat		2.971283
Prob (F-statistic)	0.006525			

Source: Computation from E-views - 13.00

The results from coefficient of 0.667553 and the probability value of (p = 0.0260 < 0.05) showed that return on assets (ROA) which is the dependent variable (Y) is positive:

This means that if all the independent, explanatory variables (X) are held constant, return on assets (ROA) as a dependent variable (Y) will grow by 0.667553 units in annually.

The results from coefficient of 0.164745 and the probability value of (p = 0.0058 < 0.05) showed that automated teller machine (ATM) had positive and significant effect on return on assets (ROA). This means that the null hypothesis I: automated teller machine (ATM) has no significant effect on return on assets is rejected. The results from coefficient of 0.518247 and the probability value of (p = 0.0183< 0.05) showed that point of sale (POS) had positive and significant effect on return on assets (ROA). This means that the null hypothesis II: Point of sale has no significant effect on the profitability of Deposit money Banks in Nigeria is rejected. The results from coefficient of 0.068816 and the probability value of (p = 0.0302< 0.05) showed that mobile banking (MB) had positive and significant effect on return on assets (ROA).

This means that the null hypothesis III: Mobile banking has no significant effect on the profitability of Deposit money Banks in Nigeria is rejected.

The results from coefficient of 0.027885 and the probability value of (p = 0.0040< 0.05) showed that Internet banking (ITB) had positive and significant effect on return on assets (ROA). This means that the null hypothesis IV: Internet banking has no significant effect on the profitability of Deposit money Banks in Nigeria is rejected.

The coefficient of determination (R^2) = 0.712561 showed that about 71% of changes in the profitability prowess of Deposit money Banks in Nigeria is accounted for by the level of cashless economy in Nigeria. This implies that cashless economy is a major contributing factor to profitability of Deposit Money Banks (DMBs) in Nigeria.

The F-statistics = (19.349696; p < 0.05) indicated that all the variables of the model i.e. cashless economy variables, have significant effect on profitability of Deposit Money Banks (DMBs) in Nigeria. The Durbin Watson statistics = 2.971283 showed that there was no autocorrelation in the model employed.

DISCUSSION OF FINDINGS

Automated Teller Machine: The result of the study indicates that automated teller machine has positive and significant effect on profitability of DMBs in Nigeria. The results of our findings are consistent with the work of Chipeta and Muthinja (2018) in terms of automated teller machine, it was discovered that automated teller machine has positive effect on the profitability drive of deposit money banks in Kenya.

Point of Sale: The result indicates that point of sale has significant effect on profitability of deposit money banks in Nigeria. The result of the findings is inconsistent with the work of Safdar et al. (2018) they posited that point of sale has negative and insignificant effect on the profitability of deposit money banks in Pakistan.

Mobile Banking: The result indicates that, mobile banking has significant effect on profitability of deposit money banks in Nigeria. The result of our findings is consistent with the work of Akwam and Yua (2021) in terms of mobile banking (MB), it was discovered that mobile banking has significant effect on the profitability of deposit money banks in Nigeria.

Internet Banking: The result indicates that, internet banking has significant effect on profitability of Deposit Money Banks in Nigeria.

The results of our findings are consistent with the work of Tian et al (2020) in terms of internet banking, it was discovered that internet banking has significant effect on the profitability of Deposit money Banks in the United States of America (USA).

CONCLUSION

The regression result indicates that automated teller machine, point of sale, mobile banking and internet banking have positive and significant effect on return on assets (ROA). The study therefore concludes that cashless economy has positive effect on profitability of Deposit Money Banks in Nigeria.

RECOMMENDATIONS

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. More public awareness on the benefits accruable to bank customers on usage of automated teller machine (ATM) to enhance cashless economy drive in Nigeria. The DMBs will need to improve on the quality of their services and customer responsiveness in cases of lost or stolen ATM cards, incidences of fraud, and other complaints raised by their customers on point of sale (POS). There is also the need to ensure ease of use, and customer interactive features in mobile apps and on-line shopping systems in Nigeria and that the management of DMBs should from time-to-time engage and train their customers on internet banking operations and its benefits, risk exposure, physical and internet security so as to avoid unexpected financial losses to desperate hackers. Regular training should be conducted for DMBs staff members so as to acquaint them with current developments in the ever-evolving world of technological new innovations as they unfold from time to time.

Conflicts of Interest

The authors have disclosed no conflicts of interest.

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