ELECTRONIC PAYMENT PRODUCT AND QUOTED DEPOSIT MONEY BANKS PERFORMANCE IN NIGERIA

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Abstract

Efficient payment systems are crucial for developed and less developing countries economic development and are regarded as the backbone to a highly competitive country. Innovations in the payment industry have also lead to greater access to formal financial system. This study examined the relationship between electronic payment product and quoted deposit money banks performance in Nigeria. data on different sub-variables of electronic payment product and return on equity from 2007-2018 were collected from Central Bank of Nigeria statistical bulletin, annual Central Bank of Nigeria reports, federal Inland Revenue Service, annual reports and e-business unit report of deposit money banks. Ordinary Least Square of multivariate regression based on Auto-regressive distributed Lag, unit root test, panel co-integration, granger causality and panel dynamic error correction model was used in analyzing the data. The empirical results indicate that electronic payment product significantly relate to return on equity. We conclude that electronic payment product has the potency to make positive and significant contribution to performance and recommends that Automated Teller Machine (ATM) should be put in different locations for easily accessible by customers, so that quick service and convenience is maintained hence improving bank operations to the same time constant service should be ensured in order to provide reliability of the services. Deposit money banks and other specialized organizations should conduct awareness programs for client son the importance and ease of using electronic payment products in financial transactions in local and international markets. Banks should pay attention to issuing new and modern electronic payment methods to attract new customers and fellow developments in global markets.

Keywords: Point of Sale, Automated Teller Machine, Return on Equity, Performance and quoted Deposit Banks.

Introduction

Electronic payment has become the most acceptable means of payments in today's financial transactions across the world. This is due to its efficiency (Abbasi & Weigand, 2017), convenience (Agwu, 2018), timeliness (Gerpott, 2018), security (Gathina, 2018), reliability (Gerpott, 2018), scalability (Rebia., Ladan; Usman & Garba, 2019), anonymity (Ibanichuka & Oko, 2019), acceptability (Jumba & Wepukhulu). For this reason, electronic payment studies had attracted different scholars around the globe and conducted in different parts of the world to examine the extent of electronic payment system adoption and the influencing factors that leads to its adoption at both individuals and organizational levels (Akinlo & Adebayo 2013; Akhisar., Tunya & Tunay, 2015; Chalomba & Gujral, 2016; Kosse., Cheu., Fett., Jiongo., Nield & Welte, 2017; Le., Vu., Du & Tran, 2018; Ogutu & Fatoki, 2019). Thomas and Angus (2013) find the combination of demographic and financial characteristics, detailed supply-side factors, and new technology adoption in a single analysis are unique where e-payments are concerned. Further, transaction cost is found to have the greatest effect on the adoption of e-payments as perceived by the consumer. Credit transfer is by far the most commonly used payment medium in Belgium. The use of cheques, as an e-payment instrument, has been declining steadily as commercial banks gradually increased cheque fees. Buyers have turned out to be mindful of the benefits of cashless installments and as their acknowledgment of these installments builds, an ascent in the supply of products and enterprises that can be purchased through the cashless stage is normal (Upadhyay & Jahanyan, 2016). It very well may be said about the future, that cashless installments will most likely be unable to substitute the customary physical wallet and may along these lines simply supplement existing installment arrangements (Solat, 2017). However, it is additionally a probability that a substitution will happen bit by bit and first following quite a long while be finished Shukla (2017). Regardless of what will occur, investigating what properties the clients find valuable in an electronic wallet, is a stage in transit towards a cashless society.

Payment cards are more secure and convenient for the consumers. More than 1.2 billion credit cards are now in use around the world, accepted at more than 23 million locations (Solat, 2017). The payments cards are now even more convenient with the wireless computer network which has allowed the POS to go mobile. Payment can now be done at the customers point this has increased customer satisfaction especially in the hotel industry where the technology has already been embraced. E-payment tends to benefit businesses by extending customers base, boosting cash flow, reducing costs, enhancing customer service and improving competitive advantage. E-payment improves customer service by providing choices; it can offer a wide range of payment options which makes it convenient to perform transactions (Akhisar & Tunay, 2015). The varieties in payment options also bring about competition with competitor trying to offer full range of payment options (Rafique, Rizwan, Batool,& Aslam, 2014).

Numerous African markets have been building the foundation for 'cashlessness' for quite a while including moderate and comprehensively accessible money related items, a lively and aggressive vendor commercial center, a straightforward and beneficial business condition (Agwu & Carter, 2014). Likewise, Africa's administrations and Central Banks are looking to enhance money related incorporation and drive in-bound venture, new and energizing open doors are developing for both conventional banks and Financial Technology new companies. In the last decade, innovation in the financial services sector in Africa has seen the

introduction of internet banking, multi-currency cards and mobile money transactions amongst other things. Africa is on a steady growth path with a more progressive approach in terms of financial services adopting technology (Agwu & Carter, 2014). In South Africa approximately 30-35% of retail payments are electronic and 60-65% are cash payments (Thomas & Angus, 2013). Nigeria is ranked second in Africa among countries that have significantly adopted e-payments system (Thomas & Angus, 2013). They further note that 27% of Nigerians had fully adopted the cashless system for settling bills, buying goods and paying for various services with the number rising sharply due to reliable mobile phone cash transactions. Nigeria's Trajectory reflects a substantial shift in share of consumer payment value from cash to electronic based payment between 2006 and 2011.

Past investigations on the e-payments have acknowledged the role it plays on financial performance of bank-based financial institutions. Mugambi, Njunge and Yang (2014) in their study on the effect of the credit cards on the financial performance of retail firms' portfolio acknowledges the fact that the credit cards have a positive effect on the financial performance of the commercial banks in Nigeria. Kamar (2012) in the study on the effect of the electronic credit card usage on a firm agrees with Odhiambo (2012) that there is a positive effect between the number of the credit cards, the net income from the credit cards and the profitability. Muiru (2014) in his study the effects of financial innovation on financial performance of retailers found out that the firms that had adopted some forms of financial innovation like the credit cards, mobiles and agency banking and these had a great impact on the financial performance of the retailers. According to CBK annual reports (2018), the value of transactions effected through cards in the year to June 2017 increased by 6.4 percent and 79.1 percent from Kshs 673.31 billion to Kshs716.44 billion for acquirers and issuers, respectively. The growing usage of card signifies a growing shift from cash based payments to non-cash based payments (Kosse & Welte, 2017).

Thomas and Angus (2013) indicate that Nigeria is second to South Africa as the most formalized African country in terms of formal retail penetration with retail penetration standing at around 30 per cent. The retail market is dominated by three major outlets; Tuskys, Uchumi and Naivas (Euromonitor report, 2018). Three of them (except Naivas) have already crossed into the neighbouring countries. Nakumatt is the largest retailer in Nigeria in terms of sales. It has 37 stores, followed by Tuskys which has 37 outlets, Uchumi 18 outlets and then Naivas with 19 branches. Nakumatt is also present in Uganda, Tanzania and Rwanda, while Tuskys and Uchumi are also in Uganda. Use of the formal outlets increases customer choices, while creating employment.

In retrospect, before the evolution of modern banking operations, virtually all the aspects of banking operations were done manually. It was cumbersome, transactions processing, postings and cheque settlement transactions were sluggish and time-consuming. The banks operated ledger system and manual recordings. In this 70's and early 80's of banking operations phases, transactions were shredded in multiple of commission or omission of errors, snail-pace speed and belated (Ovie, 2001). Then, cheque clearing in upcountry took about twenty-one days before value was received while local cheque took about fourteen (14) days for the same manner. The ever increasing emerging markets and its attendant customer sophistication, the passion for speedy, accurate, real time, efficient and swift service delivery has spurred banks into exploring and exploiting the opportunities in dynamic environment with complex exogenous factors. The globalization of trade and commerce unleashed pressure

effects on banks to retune their operations to key-in the global village of business dealings and to achieve optimal performance (Ashaolu,2004).

The above assertion has led banks to take giant strides into technological developments in the areas of telecommunications and information technology which are significantly impacting on businesses. The electronic banking policy came upstream in 2002 but banks implementation was at low ebb. Central Bank of Nigeria in 2002 and 2003 rolled out guidelines on Automated Clearing System and Alternative Payment Systems in Nigeria. At this phase, DMBs started to adapt and adopt technology upgrading for effective service delivery to the teaming customer needs. In 2004, e-products became imperative for service delivery channels to match with competitive emerging market in the industry. To suffice the policy implementation, in 2012, Cashless Policy and Guidelines on Debit Cards came on board by CBN to regulate the financial institutions. According to Onay et al (2008), the increased adoption and penetration of internet banking has recently redefined the playground of retail banks. Also, the emergence of the global economy, e-business and e-payment have substantially become the necessary components of business strategy and a strong catalyst for economic development, efficient service delivery and effective wide reach out to the customers and clientele.

The electronic banking revolution basically centers on changes in distribution channels using electronic products. The basis of the emergence of the modern electronic distribution channels is the result of the evolution of the concept of money. In the days of barter, the ability to pay for goods and services was reflected in the physical existence of goods, which could be used for exchange. Then, came hard cash in the form of coins made out of precious metals. This was then followed by the fiduciary money called the modern coin and paper notes. Today, individual's ability to pay for goods and services is simply reflected in accounting records of his or her bank. Thus, it is important to appreciate at the outset as its new definition is just simply information, which can be electronically transmitted to facilitate economic and financial transactions. It is this new definition of money, which has resulted in the electronic revolution of financial institutions (Balachandher, 2001). Many Nigerian banks have streamlined their operations by investing in automation to enhance performance and build competitive advantage as the environmental terrain is becoming more challenging to navigate, which needs technology adoption.

Some empirical analysis shows that electronic payment products have made significant contribution to the financial performance of the DMBs in Nigeria. Milind (2005) revealed in his study the there was no significant impact of internet banking on the financial performance of DMBs. Shuquir (2003) study also revealed negative impact of the e-products on the banks' performance. Trajhora (2005) carried empirical investigation on the impact of e-payment products on banks' performance and found that there was increase in the profitability. Siam (2006) in his study corroborated the study of Trajhora (2005), and also in De-Young et al (2007), Hernando and Neto (2007) found from their empirical results that there were significant impact on the profitability performance of the DMBs in Nigeria, hence contradicting the works of Milind (2005) and Shuquair (2003).

Therefore, it is against this backdrop of evidences and counter evidences about the impact of e-payment products (POS & ATM) on bank's performance that this study intends to provide obvious evidence of the impact of various e-products on the financial performance of DMBs by employing higher econometric models such as Panel Regression, Cointegration test, Eigenvalue and Condition Index, Durbin Watson, Granger Causality Tests in addition to

existing literature and expanding the frontier of knowledge. Also, DMBs focused more on profit-making thereby neglecting the adoption of the underpinning theory of Technology Acceptance Model to harness the full benefits of electronic payment products in their service delivery mechanism. The remainder of this empirical paper is organized as follows: Section 2 highlight the review of related literature and hypotheses development level. Section 3 presents the methodology. Section 4 discusses the empirical results, while section 5 presents the concluding remark, recommendation, limitation and suggestion for further studies

Literature Review and Hypothesis Development Level

Theoretical foundation

The Technology Acceptance Model theory was postulated by Davis (1989) and states that Perceived Usefulness and Perceived Ease of Use are the main drivers of technology and determine an individual's intention to adopt a technology. This theory supports how cash handling practices influence financial performance. According to Bátiz-Lazo (2018), the intention to use serves as mediator of the actual adoption of technology. According to TAM, the decision to adopt a technology follows the four stages, explained as follows according to Bátiz-Lazo (2018). Stage one is where the external variables such as individual user beliefs or differences with Information Technology. Their evaluation is reflected in Perceived Usefulness (PU) and Perceived Ease of Use (PeU). Whereas perceived usefulness is a user perception that using the new system would increase his/her performance in the organization and perceived ease of use is the extent to which using the new system would require minimal effort on a user's behalf (Tilakaratna, 2016).

Stage two is attitude which is a consequence of the user's beliefs of using a technology drives the user's attitude towards accepting/rejecting the technology. Stage three is intention where the attitude predicts the desirability of the user using the system and the extent of them using it. Stage four is actual use which is the user's intention to determine how well they would actually use the system. The adoption of technology depends on personal behaviour and external environment. People perceive that by using technology, they will obtain more benefits without doing much physical and mental effort (Tilakaratna, 2016).

Davis et al (1989), describe TAM as an information system theory that models how users come to accept and use a technology based system. TAM explains the perceived usefulness and usage intentions in terms of social influence and cognitive instrumental processes. They evaluated Diffusion from phenomenological view as 'technology is information and people should use it to achieve value'. TAM involves two primary predictors for the potential adopter- Perceived Usefulness (PU) and Perceived Ease of Use (PEOU) of technology as the main determinants of the attitudes toward a new Technology. PU is the degree to which a person believes that using a particular system would enhance his or her job performance. PEOU is the degree to which a person believe that using a particular system would be free of effort (Davis, 1989 cited in Fonchamnyo, 2013).

Gefen, Karahanna and Straub (2003) studied a separate and distinct interaction of both the actual e-vendor and with its IT Web site interface is at the heart of online shopping. Previous research has established, accordingly, that online purchase intentions are the product of both consumer assessments of the IT itself-specifically its perceived usefulness and ease-of-use (TAM)-and trust in the e-vendor (Nithin & Baiju, 2018). The research showed that consumer

trust is as important to online commerce as the widely accepted TAM use-antecedents, perceived usefulness and perceived ease of use. Thus these variable sets explain a considerable proportion of variance in intended behavior. The study also provided evidence that online trust is built through the belief that the vendor has nothing to gain by cheating, the belief that there are safety mechanisms built into the Web site, and lastly by having a typical interface that is easy to use.

Conceptual Framework

E-payment

An e-payment is a way of making transactions or paying for goods and services through an electronic medium, without the use of checks or cash. It's also called an electronic payment system or online payment system. The electronic payment system has grown increasingly over the last decades due to the growing spread of internet-based banking and shopping. As the world advances more with technology development, we can see the rise of electronic payment systems and payment processing devices. As these increase, improve, and provide ever more secure online payment transactions the percentage of check and cash transactions will decrease as explained by Solat (2017).

According to Daniel (1999) and Sathye (1999), they posit e-payment as the newest channel for delivering banking services in the world, and observed that e-payment refers to several types of services through which bank customers can request for information and carry out most retail banking services via computers or mobile phones. Burr (1996) describes e-payment as an electronic link between the bank and the customer in order to prepare, manage and control financial transactions.

In Anyanwokoro (1999), electronic banking is defined as the application of computer technology to banking especially the payment (deposit transfer) aspects of banking. He also defined e-payment as a system of banking with an electronic communication network which permits on-line processing of the same day credit and debit transfers of funds between member institutions of a clearing system. Electronic banking offers the convenience of conducting most of the banking transactions at a time that suits the customer. The customer can access funds and transfer funds between accounts, pay bills, make purchases and transfer money with ease at any time.

Hertzum et al (2004), defined e-payment as web-based banking. In other words, E-payment refers to the banking operations, which is done over worldwide web. However, more comprehensive and well established definition is given by the United Nations Conference on Trade and Development (UNCTAD), they describe it as the deployment over the internet of retail and wholesale banking services, which involves individual and corporate clients, and includes banking transfers, payments and settlements, documentary collections and credits, corporate and household lending, card business and some others (UNCTAD, 2002).

Omotayo (2007) defines electronic banking as a system in which funds are moved between different accounts using computerized online or real time systems without the use of written cheque. Kondabagil (2007) noted that "electronic banking is like traditional payment, inquiring and information processing systems, differing only in that it utilizes a different delivery channel. For banks to stay on track of competition there is need to be aware of the rapid and continual growth of information technology and telecommunications which encourage the introduction of electronic services of the banking activities. Also, electronic banking is defined to include the provision of retail and small value banking products and

services through electronic channels as well as large value electronic payments and other whole sale banking services delivered electronically.

In the works of Alhajri (2008), he described e-payment as the provision of banking services to customers through the use of internet technology. Migdadi (2008), views internet banking as quality service encounter of retail banks in Jordan and its quality dimensions that should be sustained to achieve specific purposes of the bank, that banks in Jordan should focus on providing a better service quality to their customers as a result of the impact of quality service delivery on the customers' retention.

In Aburime (2008) electronic banking includes systems that enable financial institutions, customer, individual and business to access accounts, transact business or obtain information on financial products and services through public or private networks including the internet. Customers access electronic banking services using an intelligent electronic device such as a personal computer (PC), personal digital assistant (PDA), Automated Teller Machine (ATM), among others.

Electronic banking can be viewed as a system by which transactions are settled electronically with use of electronic gadgets such as ATMs, POS terminals, GSM Phones and v-cards etc handled by e-holders, bank customers and stakeholders. Banking over the internet has attracted increasing intention from banks and other financial services industry, from participants, the business press, regulators and law makers, both in Nigeria and other countries.

According to Imiefoh (2012), refers to e-payment as the delivering services more effectively and in so doing, reinforces revenue increase, the goal is to ensure that a customer performs banking transactions electronically without physically visiting the brick-and-mortar institution

Khrawish and AL-Sadi (2012) defined electronic banking as the adoption of electronic means in the delivery of banking products and services. Such products and services include deposit taking, lending and payment products and provision of other electronic payment product and services such as electronic money.

In the researcher's view, the "electronic payment products are those differentiated products or services but similar in modus operandi offered by the deposit money banks to meet the perceived needs and efficient service delivery demands of the customer, in order to contend with the competitive and dynamic banking environment".

Note that electronic banking and electronic products are two siamese twins that move together through technological systems, also from the above definitions, the research defines the electronic banking as the delivery of banking products (intangible services) through the use of ATM, POS, Mobile Pay, Web Pay, SMS-Alert to the customers and banking public electronically to enhance corporate performance objective.

According to Abaenewe et al (2013), e-payment is the conduct of banking business electronically which involves the use of information communication technology to drive banking business for immediate and future goals. Electronic Banking System (EBS) is seen to be an innovative service delivery mode that offers diversified financial services like cash withdrawals, funds transfers, cash deposits, payment of utility, credit card bills, cheque book request, financial enquiries, (Onyedimekwu & Oruan, 2013).

Return on Equity

Return on equity (ROE) is a measure of financial performance calculated by dividing net income by shareholders' equity. Because shareholders' equity is equal to a company's assets minus its debt, ROE could be thought of as the return on net assets. Return on equity (ROE) deemed good or bad will depend on what's normal for a stock's peers. For example, utilities will have a lot of assets and debt on the balance sheet compared to a relatively small amount of net income. A normal ROE in the utility sector could be 10% or less. A technology or retail firm with smaller balance sheet accounts relative to net income may have normal ROE levels of 18% or more. A good rule of thumb is to target an ROE that is equal to or just above the average for the peer group (Saragih, 2018).

Figure 1: Operational Conceptual Framework of E-payment and Financial Performance of Quoted Deposit Money Bank in Nigeria.

Empirical Results

Ogutu and Fatoki (2019) examined the effect of electronic banking on financial performance of listed commercial banks in Kenya. This study was guided by four objectives, establishing the effect of mobile banking, agency banking, ATM banking and online 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. There was a strong positive correlation between financials performance of individual commercial and agency banking. There was a weak positive correlation between financial performance of individual commercial bank and online banking.

Chen and Srinivasan (2019) examined the firm value and performance implications of the growing trend of non-technology (non-tech) companies adopting digital technologies such as

artificial intelligence, big data, cloud computing, machine learning. For the entire universe of US public listed firms, we identify companies that are going digital using textual analysis of disclosure of digital-related words in corporate financial reports and conference calls. We first show that digital adoption by non-tech firms has dramatically grown in recent years. Non-tech digital adopters exhibit greater stock price co-movement with technology companies than with their industry peers, suggesting that the digital activities are making them similar to tech firms. The digital adopters hold more cash and are larger, younger and less CapEx-intensive. Digital adoption is associated with higher valuation – market-to-book ratio is higher by 7-21% than industry peers – and is higher for firms that are younger, more CapEx-intensive, exhibit higher sales growth and are in industries where digital adoption is prevalent. However, markets are slow to respond to the disclosure of digital activity. Portfolios formed on digital disclosure earn a size/book-to-market adjusted return of 25% over a 3-year horizon and generate a monthly alpha of 40 basis points. Finally, while there is no significant improvement in financial performance as measured by return-on-assets conditional on digital activities, there is a significant increase in asset turnover but also a significant decline in margins and sales growth. Managerial expertise is important for digital technology adoption, as firms with senior technology executives perform better when going digital.

Xena and Rahali (2019) evaluates the influence of the adoption of e-payment on enterprise performance. Through this study, the researcher gets a new model from author analysis based on 23 previous literature synthesis and find out six independent variables and espouse adoption of e-payment to support small-medium enterprise payment system, that are performance expectancy, culture, acceptance of technology, social influence, security and effort expectancy. The result of this study would be useful to understand about the adoption of e-payment to support the small-medium enterprise payment system.

Ibanichuka and Oko (2019) investigated the relationship between electronic frauds and financial performance of quoted banks on the Nigerian Stock Exchange. Point of sale fraud was electronic fraud proxy while return on investment was the proxy of financial performance. The researchers adopted ex-post-facto research design for the study. The study used relevant secondary data obtained from Nigerian Electronic Fraud Forum, Nigeria Deposit Insurance Corporation, and Central Bank of Nigeria (CBN) from 2013 to 2017. The relevant secondary data were analyzed using basic descriptive, Pearson Product Moment Correlation and multivariate regression in a panel data setting with econometric analyses like Unit roots, granger causality test and cointegrated test. The results showed negative and insignificant relationship between electronic fraud channels and financial performance variables. The study concluded that there is no significant relationship between the electronic fraud and financial performance of quoted commercial banks in Nigeria in the period of this study.

Chipeta and Muthinja (2018) examine the relationship between financial innovation and the financial performance of 42 commercial banks in Kenya. The financial innovations covered are the branchless banking models, which represent a departure from the traditional branch-based banking. More specifically, the financial innovations covered are: mobile banking, agency banking, internet banking and automated teller machines. we use the Koyck dynamic distributed lag model to estimate the relationship between financial innovations and bank financial performance. The model has been using dynamic panel estimation with system generalized methods of moments. The results show that financial innovations significantly

contribute to bank financial performance, and that firm-specific factors are more important in determining the firm's current financial performance than industry factors.

Table 1: Webometric Analysis of E-payment and Financial performance of Quoted Deposit Money Banks in Nigeria

Author(s) and Year	Research Topic	Journal, Volume, Numbers and Pages
Abaenewe, Ogbulu & Nelugbu (2013)	Electronic banking and bank performance in Nigeria.	West African Journal of Industrial and Academic research 16(1), 171 – 187
Adeniran, & Junadia (2017)	An empirical study of Automated Teller Machine (ATM) and uses satisfaction in Nigeria: A study of United Bank for Africa in Sokoto Metropolis	International Journal of Management Technology, 2(3), 001 – 0011
Akhisar TunAy & Tonay, (2015)	The effects of innovations on bank performance: The care of electronic banking services	Pvavedia – social and Belewiowial sciences, 19(5), 369 – 375
Aranyossy (2018)	Citizen adoption of E-government services: Evidence from Hungary	Digital transformation meeting the challenges 10(3), 4 – 3
Balaji & Balaji (2017)	A study on demonetization and its impact on cashless transactions	International Journal of Advanced Scientific Research & Development, 4(3), 58 – 64
Barngetuny & Kimuton, (2015)	Effect of e-payment on supply chain management performance in Elgeyo-Marakwet Country.	International Journal of Research in Business Mgt, 3(11), 43 – 56
Akinyomi & Adebayo, (2013)	Effect of form size on profitability: Evidence from Nigerian manufacturing sector.	Prime Journal of Business Administration and Mgt (BAM), 3(9), 1171 – 1175
Alhahri (2008)	The adoption of e-payment: The care of Omani Bank.	International review of Business Research Popes, 4(5), 120 – 128
Asamoah, Takiieddine & Amedotu (200)	Examining the effect of Mobile Money Transfer (MMT) capabilities on business growth and development impact.	Information Technology for Development, 26(1), 146 – 161
Bilgiham (2016)	General customer loyalty in online shopping: An integrated model of trust user experience and branding	Computers in Human Behaviour, 61(3), 103 – 113
Daniel (2017)	Provision of electronic banking in the UK and the Republic of Ireland	International Journal of Bank Marketing 17(2), 72 – 82
Deyoung (2017)	How the internet affects the output and performance at community banks	Journal of Banking and Finance, 31(1), 1033 – 1060
Ekwaeme (2012)	An empirical assessment of the operational efficiency of the electronic banking: Evidence of Nigerian Banks.	Review of Public Administration and management, 1(2), 108 – 132
Ene & Itah (2014)	Impact of cashless banking on banks profitability: Evidence from Nigeria	Asian Journal of Finance and Account, 6(1), 362-376
Enoruwa, Ezuem &	Electronic channels and bank	International Journal of

Nwani (2019)	performance: Evidence from Nigeria	Economics and Management Studies 6(5), 37 – 46
Adeoti & Osotimehin (2012)	Adoption of sale terminals in Nigeria: Assessment of consumers level of satisfaction.	Research Journal of Finance and Accounting, 3(1), 1 – 5
Alawiye-Adams & Afolabi (2013)	Analyzing the impact of electronic banking on the payment systems and the success factors.	Journal of Sustainable Development in Africa, 12(1), 71 – 86
Alinejadi Arhab & Mehrabi (2013)	The effect of the New Electronic Payment Instruments in the Liquidity of Banks.	Technical Journal of Engineering and Applied Sciences, 3(1), 3747 – 3751.
Antwi, Hamza, Bavoh, (2015)	Examining the effectiveness of electronic payment system in Ghana: The case e-zwich in the tamele metropolis	Research Journal of Finance and Accounting, 6(2), 163 – 177
Bupat (2012)	Customer relationship for electronic payment products: An empirical investigation in India.	Global Business Review, 13(1), 137 – 151
Teoh, Chong, Lin & Chuce (2013)	Factors affecting consumers' perception of electronic payment: An empirical analysis.	Internet Research, 23(4), 465 – 485
Jani (2015)	The influences of trust and security in the use of electronic payment system in Manado.	Journal Riset Ekonomi, Mana, Emem, Business and Akuntani, 3(1), 32 – 41
Dlozko, Epele, (2015)	Problems and rules of digital technologies introduction into e-payments.	Transformations in Business and Economics, 14(1), 42-59.
Roy & Sinha (2014)	Determinants of customers' acceptance of electronic payment system in Indian banking sector, A study.	International Journal of Scientific and Engineering Research, 5(1), 177 – 187
Premchand & Chondlry (2015)	Future of payments – epayment.	International Journal of Emerging Technology and Advanced Engineering 5(2), 110-115
Ozkan, Bindusowa, Aackney (2010)	Facilitating the adoption of e-payment systems: theoretical constraints and empirical analysis	Journal of enterprise information management, 23(3), 305 – 325
Lin, Nguen (2011)	Exploring e-payment adoption in Vietnam and Taiwan.	Journal of Computer Information System, 51(4), 31 – 49
Kaur & Pathak (2015)	E-payment system on E-commerce in India.	Karamjeet Kaur International Journal of Engineering Research and Applications, 5(2), 79-87
Ngeseza & Iravo (2013)	Challenges influencing implementation of electronic payment systems: A case study of Kenya Airways Company.	International Journal of Social Sciences and Entrepreneurship, 1(3), 509 – 520
Odi & Richard (2013)	Electronic payment in cashless economy of Nigeria: Problems and prospects	Journal of Management Research, 5(1), 138-151
Nzoro (2014)	Assessing the role of electronic payment systems in Financial Institutions: A case of a savings	Global Journal of Management and Business Research, 14(2)

	bank in Zimbabwe.	
Nwaolisa & Kasie (2011)	Electronic retail payment systems: User acceptability and payments problems in Nigeria.	Arabian Journal of Business and Management Review (OM AW. Chapter), 1(5), 66-76
Muhayiddian, Ahmed & Ismail(2011)	Technology acceptance of a gold dinar based electronic payment system.	Research in Business, 3(3), 295 – 310
Aussein, Mohamed, Ahlan & Mohamed, (2010)	E-govt. application: An integrated model on G2C adoption of online tax.	Transforming Government: people, process and policy, 5(3), 225 – 48
Ogedebe & Babatunde, (2012)	E-payment: Prospects and challenges in Nigerian Public Sector	International Journal of Modern Engineering Research (IJMER) 2(5), 3104 – 3106
Humphrey, Kim & Vale, (2001)	Realizing the gains from electronic payments; cost, pricing choice.	Journal of money, credit and banking, 33(23), 216 – 234
Ayo (2011)	Emergence of payment systems in the era of e-commerce in Nigeria: problems and prospects.	Belta Business Education Journal, 1(6), 64 – 72
Asaolu, Ayoola & Akinkoye (2011)	Electronic payment system in Nigeria, constraints and solution.	Journal of Management and Society, 1(2), 16-21

Hypotheses Development Level

These two hypotheses, formulated in the null form, also serve as robustness checks among variables of the study.

H₀₁: There is no significant relationship between point of sale and return on equity of quoted deposit money banks performance in Nigeria.

H₀₂: Automated Teller machine (ATM) does not relate to return on equity of quoted deposit money banks performance in Nigeria.

Methodological Foundation

This section indicates the methodological foundation adopted to explore the relationship between e-payment and performance of quoted Deposit Money Banks in Nigeria. This study utilizes a cross sectional research design which is a combination of both cross-sectional and time-series design properties. Panel analysis permits the study of dynamics of change with short time series. We employed the simple random sampling technique and selected 16 banks due to lack of uniformity in inception of many e-payment in some of the excluded banks and the mergers and acquisition exercise in the others, the study only captures these activities for the period of 2007 – 2018.

Panel data regarding the variables of the study were source from Central Bank of Nigeria statistical bulletin, annual Central bank of Nigeria reports, Federal Inland Revenue Service, annual reports and e-business units report of the quoted Deposit Money Banks. We utilized the ordinary Least Square (OLS) of multivariate regression based on Auto-Regressive Distributed Lag (ARDL), unit root test, panel co-integration, Grangers causality and panel dynamic error correction model (Banes jee et al 1993; Granges 1987; Abdullahi et al, 2012; Awe, 2012) with the aid of e-view version 10.

Model Specification

The model specification is based on the theory that e-payment contribute to financial performance. Specifically, the model from related empirical studies was adopted. The model specification was formulated in the following functional form as thus:

$$ROE_t = f(POS_t, ATM_t) \text{ -----(i)}$$

Expanding the functional form into mathematical model as thus:

$$ROE_t = \beta_0 + \beta_1 POS_t + \beta_2 ATM_t \text{ -----(ii)}$$

Introducing error term into mathematical model to arrive at econometric model as thus;

$$ROE_t = \lambda_0 + \lambda_1 POS_t + \lambda_2 ATM_t + u_t \text{ -----(iii)}$$

Where: ROE_t = Return on Equity for the index of time periods

POS_t = Point of Sale for the index of time periods

ATM_t = Automated Teller Machine for the index of time periods

λ_0 = Intercept

$\lambda_1 - \lambda_2$ = Regression shaped for the index of time records

t = The index of time periods

u_t = Error term for the index of time periods

Empirical Results and Discussion

Table 2: Descriptive Statistics

	POS	ATM	ROE
Mean	41.52604	59.65104	0.119786
Median	43.00000	50.00000	0.063500
Maximum	80.00000	80.00000	2.360000
Minimum	0.000000	5.000000	-0.050000
Std. Dev.	18.67466	17.36332	0.226252
Skewness	-0.252635	-0.509276	6.585106
Kurtosis	2.636948	2.850447	57.25791
Jarque-Bera	3.096838	8.478507	2.493900
Probability	0.212584	0.014418	0.495721
Sum	7973.000	9533.000	22.99900
Sum Sq. Dev.	66609.87	57583.62	9.777278
Observations	192	192	192

The study observes on the average that ATM is the most patronized electronic payment outlet among sampled dimensions of outlets. The POS channel is the least patronized channel based on its mean value of 41.53. All Payment outlets show negative skewness. A negatively skewed data set has its tail extended towards the left. It is an indication that both the mean and the median are less than the mode of the data set. The most volatile outlet based on standard deviation is the POS channel based on its standard deviation score of 18.67, and POS (18.67). While ATM shows the least volatility based on its relatively low standard deviation value of 17.35 due to consistent growth in usage overtime. This implies that POS is riskiest e-product and could make negative or unpredictable contribution to the financial performance of the listed DMBs in Nigeria, while on the contrary, ATM generates highest contribution to the financial performance of the DMBs in Nigeria with least standard deviation.

Jarque-Bera Test: Calculates kurtosis and skewness of the asymptotic data. Their values suggest that data obtained for all variables are normal. This implies the normality of the data and substantiates the validity of the regression results.

Stationarity Test/Unit Root Test (ADF - Fisher Chi-square and ADF - Choi Z-statistics).

To evaluate stationarity tendencies of employed variables, the following unit root test is carried out as presented below.

Table 3 : Unit Root Test at level (0) Output of Return on equity (ROE), Point of Sale (POS) Expenditure (POS), and Automated Teller Machine (ATM) in 16 sample Deposit money banks over the period of 2007 to 2018.

Variables	ADF - Fisher Chi-square	Prob	ADF - Choi Z-stat	Prob	Note	Discovery	Conclusion/ Decision
ROE_{it}	42.9900	0.0587	-1.28344	0.2638	0(0)	Evidence of Unit root	Not stationary
POS_{it}	41.5119	0.0787	1.25694	0.8956	0(0)	Evidence of Unit root	Not stationary
ATM_{it}	44.5401	0.0426	0.33260	0.6303	0(0)	Evidence of Unit root	Not stationary

The above table 3 which shows the stationarity tendencies at level for the selected quoted banks shows that all employed panel series variables show evidence of a unit root as their respective probability levels are higher than the 1%, 5% and 10% significance level. This shows no form of stationarity in the respective trend at level. This goes to show that, employed variables have high variations in their inherent mean, variance and autocorrelation. This means that variables are not quite stable to show predictive tendencies which is quite bad for analysis and as such will warrant the evaluation of stationarity at first difference which would be present subsequently.

Table 4: Unit Root Test at First Difference (1) Output of Return on equity (ROE), Point of Sale (POS) Expenditure (POS), and Automated Teller Machine (ATM) in 16 sample Deposit money banks over the period of 2007 to 2018.

Variables	ADF - Fisher Chi-square	Prob	ADF - Choi Z-stat	Prob	Note	Discovery	Conclusion/ Decision
ROE _{it}	100.616	0.0000	-5.89593	0.0000	I(1)	No Unit root	Stationary at 1st Diff
POS _{it}	75.8911	0.0000	-4.16833	0.0000	I(1)	No Unit root	Stationary at 1st Diff
ATM _{it}	71.7810	0.0000	-3.11747	0.0000	I(1)	No Unit root	Stationary at 1st Diff

Table 4 above shows the employed panel variable at first difference. It can be seen that all probability level are seen to be lower than the 1%, 5% and 10% significance level. This shows an absence of unit root and presence of stationarity tendencies amongst employed variable. It can be inferred from this that employed variables the variables probability distribution does not change overtime when shifted. This gives room for variables with predictive tendencies and gives rise to further tests like the co-integration test which would be carried out after determining the type of model to utilize (where pooled, random or fixed).

Panel Regressions (Ordinary Least Square)

The multiple regression was carried out using the Ordinary Least Square regression tool, as it is the best unbiased linear regression estimator, it was carried out in the differenced form.

Pooled Effects regression

To evaluate for joint influence of employed variables on the criterion, the table above which represents the pooled effect shows that;

Table 5: Pooled Effects Regression Output.

Dependent Variable: D(ROE)

Method: Panel Least Squares

Date: 12/06/19 Time: 00:32

Sample: 2007 2018

Periods included: 12

Cross-sections included: 16

Total panel (balanced) observations: 192

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	9002912.	4342048.	2.073425	0.0407
D(POS)	-0.156028	0.226288	-0.689511	0.4921
D(ATM)	3.597355	4.493480	0.800572	0.4253
R-squared	0.452563	Mean dependent var	12021453	
Adjusted R-squared	0.418666	S.D. dependent var	27231462	
S.E. of regression	25564733	Akaike info criterion	36.99777	
Sum squared resid	6.54E+16	Schwarz criterion	37.12415	
Log likelihood	-1937.383	Hannan-Quinn criter.	37.04898	
F-statistic	4.500728	Durbin-Watson stat	0.579880	
Prob(F-statistic)	0.002194			

Based on the above output in Table 5, it can be easily deduced that Point of Sale (POS) were against the apriori as they both possessed negative coefficient of -0.156028 respectively. Although, only Automated Teller Machine (ATM) showed signifying influence on profitability of firms. This goes to showed that, unilaterally, firms' expenditure of supportive infrastructure, processes and databases of the organization promotes its ability to increase their profitability. The fundamental problem of this model lies from the fact that employed predictor variables jointly account for 45.26 percent of variations in the criterion variables. The second problem with this regression type (pooled effect) is the fact that, it fails to evaluate individuality or heterogeneous tendencies that exist in each of our employed companies. Since all companies cannot be the same, we do not accept this result.

The fixed effect model shows a higher predictive ability over the pooled effect. This is seen from the light of the fact that employed predictor variables account for up to 88.64 percent of variation in the dependent variable (ROE). And the f-statistics of 4.400728 at a probability of 0.002194 which is less than the 0.05(5%) significance level. While the Durbin Watson is seen to be within the relevant range.

Fixed Effect Regressions

To deal with the issues of heterogeneity bias, the fixed effect is carried out as follows:

Table 6: Fixed Effects Regression Output.

Dependent Variable: D(ROE)

Method: Panel Least Squares

Date: 12/06/19 Time: 00:55

Sample: 2007 2018

Periods included: 12

Cross-sections included: 16

Total panel (balanced) observations: 192

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	36319009	5248544.	6.919826	0.0000
D(POS)	1.193380	0.153494	7.774764	0.0000
D(ATM)	-6.671449	2.237966	-2.981032	0.0037
Effects Specification				
Cross-section fixed (dummy variables)				
R-squared	0.886369	Mean dependent var		12021453
Adjusted R-squared	0.862586	S.D. dependent var		27231462
S.E. of regression	10094552	Akaike info criterion		35.25518
Sum squared resid	8.76E+15	Schwarz criterion		35.73542
Log likelihood	-1831.897	Hannan-Quinn criter.		35.44978
F-statistic	37.26861	Durbin-Watson stat		1.814343
Prob(F-statistic)	0.000000			

The coefficient significance level shows that all forms of E-payment expenditure by firms have significant tendencies to stimulate profitability of employed firms as they Possess probability level way below the 5% significance level. Although, Point of Sale (POS) in the form of supportive infrastructure and Automated Teller Machine (ATM) in the form of

customers vendors and other important constituencies can be seen based on their negative coefficient to drain probability and defy apriori expectations. Despite the dominance of this model (Fixed effect or LSDV model) which allows for heterogeneous factors and individuality amongst employed variables except for the intercept/constant not varying overtime. We further proceed to the Random effect to check for the common mean value of employed variables and their influence on the criterion variable.

Random Effects Model

Table 7: Random Effects Regression Output.

Dependent Variable: D(ROE)

Method: Panel EGLS (Cross-section random effects)

Date: 12/06/19 Time: 00:55

Sample: 2007 2018

Periods included: 12

Cross-sections included: 16

Total panel (balanced) observations: 192

Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	12910484	6149396.	2.099472	0.0383
D(POS)	0.975722	0.147263	6.625710	0.0000
D(ATM)	0.365332	1.944670	0.187863	0.8514
Effects Specification				
			S.D.	Rho
Cross-section random			19309520	0.7854
Idiosyncratic random			10094552	0.2146
Weighted Statistics				
R-squared	0.291183	Mean dependent var		2330274.
Adjusted R-squared	0.262831	S.D. dependent var		14832776
S.E. of regression	12735209	Sum squared resid		1.62E+16
F-statistic	10.27005	Durbin-Watson stat		1.052149
Prob(F-statistic)	0.000001			
Unweighted Statistics				
R-squared	-0.732719	Mean dependent var		12021453
Sum squared resid	1.34E+17	Durbin-Watson stat		0.127699

The random effect above shows a lower predictive ability of employed predictor variables. This is evident as the R-square of 0.291183 shows that employed predictor variables jointly account for only 29.12 percent of variation in Return on equity of financial institutions (ROE). The idiosyncratic random Rho shows 0.2146 which is very low and as such shows a disconnect between employed variables and also their inherent residuals. In this effect, Point on Sale (POS) and Automated Teller Machine (ATM) are seen to go against apriori based on their negative coefficients. Although, only Point of Sale (POS) expenditure (POS) and Automated Teller Machine (ATM) are significant stimulus to profitability. While the former

promotes it, the latter is seen to adversely affect the financial performance of sampled financial institutions.

Diagnostic test

The need therefore arises to determine which of the model is most efficient i.e. whether the pooled, random or fixed effect.

Likelihood Ratio Test

To compare the pooled regression model with the fixed effects model. The null hypothesis favors the pooled model i.e. Unobserved sectional differences are not significant.

Table 8: Likelihood ratio test output.

Redundant Fixed Effects Tests

Equation: Untitled

Test cross-section fixed effects

Effects Test	Statistic	d.f.	Prob.
Cross-section F	39.669263	(14,86)	0.0000
Cross-section Chi-square	210.972165	14	0.0000

Cross-section fixed effects test equation:

Dependent Variable: D(ROE)

Method: Panel Least Squares

Date: 12/06/19 Time: 00:57

Sample: 2007 2018

Periods included: 12

Cross-sections included: 16

Total panel (balanced) observations: 192

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	9002912.	4342048.	2.073425	0.0407
D(POS)	-0.156028	0.226288	-0.689511	0.4921
D(ATM)	3.597355	4.493480	0.800572	0.4253

R-squared	0.152563	Mean dependent var	12021453
Adjusted R-squared	0.118666	S.D. dependent var	27231462
S.E. of regression	25564733	Akaike info criterion	36.99777
Sum squared resid	6.54E+16	Schwarz criterion	37.12415
Log likelihood	-1937.383	Hannan-Quinn criter.	37.04898
F-statistic	4.500728	Durbin-Watson stat	0.579880
Prob(F-statistic)	0.002194		

The above likelihood ratio test which shows the predominance between the pooled and fixed effect is seen to show a cross-section F-statistics of 39.669263 at a probability level of 0.0000 which is seen to be below the 0.05 significance level. This leads to the rejection of the null hypothesis (the null hypothesis supports the pooled model). The alternate hypothesis which is accepted favors the fixed effect. The study therefore upholds the fixed effect over the pooled

effect. We therefore proceed to evaluate the better model between the fixed and random model.

Hausman Specification Test

To compare the random effect model with the fixed test model. The null hypothesis favours the random effects model i.e. α_i are uncorrelated with the explanatory variables (Its null hypothesis is that the random effects model is appropriate while the alternative hypothesis is the fixed effects model is appropriate).

Table 9: Hausman Specification Test output.

Correlated Random Effects - Hausman Test

Equation: Untitled

Test cross-section random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	62.161515	4	0.0000

Cross-section random effects test comparisons:

Variable	Fixed	Random	Var(Diff.)	Prob.
D(POS)	1.193380	0.975722	0.001874	0.0000
D(ATM)	-6.671449	0.365332	1.226751	0.0000

Cross-section random effects test equation:

Dependent Variable: D(ROE)

Method: Panel Least Squares

Date: 12/06/19 Time: 00:58

Sample: 2007 2018

Periods included: 12

Cross-sections included: 16

Total panel (balanced) observations: 192

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	36319009	5248544.	6.919826	0.0000
D(POS)	1.193380	0.153494	7.774764	0.0000
D(ATM)	-6.671449	2.237966	-2.981032	0.0037

Effects Specification

Cross-section fixed (dummy variables)

R-squared	0.886369	Mean dependent var	12021453
Adjusted R-squared	0.862586	S.D. dependent var	27231462
S.E. of regression	10094552	Akaike info criterion	35.25518
Sum squared resid	8.76E+15	Schwarz criterion	35.73542
Log likelihood	-1831.897	Hannan-Quinn criter.	35.44978
F-statistic	37.26861	Durbin-Watson stat	1.814343
Prob(F-statistic)	0.000000		

The Hausman specification test output via its cross section random chi square statistics of 62.161515 at a probability level of 0.0000 leads to the rejection of the null hypothesis (the null hypothesis supports the random effect). The alternate hypothesis thus upholds the effect of the fixed model. Therefore, the validity of empirical output of the fixed model stands and is binding on employed variables in the short run.

Lagrange Multiplier Test

To decide between the random effect and a simple OLS regression, we carry out the Lagrange multiplier test below;

Table 10: Lagrange Multiplier Tests output.

Lagrange Multiplier Tests for Random Effects

Null hypotheses: No effects

Alternative hypotheses: Two-sided (Breusch-Pagan) and one-sided
(all others) alternatives

	Test Hypothesis		
	Cross-section	Time	Both
Breusch-Pagan	75.37672 (0.0000)	0.414080 (0.5199)	75.79080 (0.0000)
Honda	8.681977 (0.0000)	-0.643490 --	5.684068 (0.0000)
King-Wu	8.681977 (0.0000)	-0.643490 --	4.216932 (0.0000)
Standardized Honda	10.15698 (0.0000)	-0.438603 --	3.130722 (0.0009)
Standardized King-Wu	10.15698 (0.0000)	-0.438603 --	1.637342 (0.0508)
Gourieriou, et al.*	--	--	75.37672 (< 0.01)

*Mixed chi-square asymptotic critical values:

1%	7.289
5%	4.321
10%	2.952

The above probability levels at all Lagrange types show probability level less than 0.05, we therefore reject the null hypothesis. And conclude that random effect is more superior (which supports our even more superior fixed effect). This is evidence of significant differences across firms. Based on this findings, our fixed effect still stands supreme. This shows in the selected model that;

- Assumptions 8 of classical linear regression model (CLRM) is not violated.

- The regressors included in the regression model are properly estimated.
- The regression coefficients of explanatory variables are determinate and their standard errors are finite.

Panel Co-integration Test

To evaluate for traces and entrails of long run relationship, the Kao residual co-integration test is carried out.

Table 11: Kao Residual Co-integration Test output.

Kao Residual Cointegration Test

Series: D(ROE) D(POS) D(MPAY) D(WPAY) D(ATM)

Date: 12/06/19 Time: 01:02

Sample: 2007 2018

Included observations: 192

Null Hypothesis: No cointegration

Trend assumption: No deterministic trend

Automatic lag length selection based on SIC with a max lag of 1

Newey-West automatic bandwidth selection and Bartlett kernel

	t-Statistic	Prob.
ADF	-5.046418	0.0000
Residual variance	1.38E+14	
HAC variance	8.93E+13	

Augmented Dickey-Fuller Test Equation

Dependent Variable: D(RESID)

Method: Least Squares

Date: 12/06/19 Time: 01:02

Sample (adjusted): 2011 2016

Included observations: 90 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
RESID(-1)	-0.957383	0.106700	-8.972693	0.0000
R-squared	0.474657	Mean dependent var		-294461.3
Adjusted R-squared	0.474657	S.D. dependent var		12439533
S.E. of regression	9016239.	Akaike info criterion		34.87800
Sum squared resid	7.24E+15	Schwarz criterion		34.90578
Log likelihood	-1568.510	Hannan-Quinn criter.		34.88920
Durbin-Watson stat	2.105145			

The above Error Correction estimate shows that the out of equilibrium model can be adjusted back to equilibrium by 20.2% (-0.202982). This is upheld based on the anticipated negative assigned coefficient of the Error Correction estimate (CointEq1). Which is seen to be significant as the t-statistics of -2.31752 is greater than ± 1.98 or 2. The long run coefficient shows that subject to variations, only Point of Sale (POS) expenditure (POS), and Automated Teller Machine (ATM) showed significant t-statistics of -2.01938, and 17.7481 respectively.

This shows that in the long run, Point of Sale (POS) expenditure and Automated Teller machine (ATM) represents fundamental factors that Positively stimulates profitability of financial institutions in Nigeria while

In light of long run relationship, the above Augmented Dickey Fuller t-statistics value of -5.046418 at a probability level of 0.000 which is less than the 5% significance level shows a great evidence in support of the existence of a long run relationship between employed variables. This shows that, there is evidence of similarities in trend between employed variable amidst variations and shocks in the immediate financial environment.

Implication: Economically speaking, this implies that there is existence of long run relationship in the model. The presence of co-integrating relationship depicts that the variables share mutual stochastic trend and are connected in a common long-run equilibrium. We can then conclude that all the model variables have long-run equilibrium relationship. The implication of this, the researcher reasoned, is that, if the DMBs can harness and exploit the opportunities and the full benefits which e-products modeled in this study offer, by adopting appropriate technology upgrading, robust network connectivity, awareness creation and sensitization of the these e-products to the customers, it will leap-frog their profitability performance in the long-run thereby confirming the findings of Hernando and Nieto (2007) on increased profitability performance at long run. Also, from the Unit Root Tests, the regression residuals were found to be stationary at level (1). This confirms that all the variables are perfectly co-integrated.

Panel Error Correction Model

To adjust for discrepancies between the long and short run equilibrium, the study carries out the error correction model as follows;

Table 12: Error Correction Model Estimate Test output.

Vector Error Correction Estimates

Date: 12/06/19 Time: 01:03

Sample (adjusted): 2009 2018

Included observations: 160 after adjustments

Standard errors in () & t-statistics in []

Cointegrating Eq:	CointEq1		
ROE(-1)	1.000000		
POS(-1)	0.000530 (0.00026) [2.01938]		
ATM(-1)	497.0501 (28.0059) [17.7481]		
C	-69516438		
Error Correction:	D(ROE)	D(POS)	D(ATM)

CointEq1	-0.202982 (0.08759) [-2.31752]	-0.004337 (0.01107) [-0.39171]	-0.001399 (0.00020) [-6.85389]
D(ROE(-1))	-0.738032 (0.17085) [-4.31983]	-0.344759 (0.08141) [-4.23465]	-0.004454 (0.00150) [-2.96761]
D(ROE(-2))	-0.137165 (0.19614) [-0.69931]	-0.112747 (0.09347) [-1.20626]	-0.001381 (0.00172) [-0.80163]
D(POS(-1))	1.018505 (0.39266) [2.59384]	0.417092 (0.18712) [2.22906]	0.007107 (0.00345) [2.06044]
D(POS(-2))	-0.017289 (0.41866) [-0.04130]	0.049004 (0.19950) [0.24563]	0.003281 (0.00368) [0.89229]
D(ATM(-1))	-10.16654 (4.12502) [-2.46461]	-0.937747 (1.96569) [-0.47706]	0.173482 (0.03623) [4.78772]
D(ATM(-2))	-6.978944 (4.63977) [-1.50416]	-1.444269 (2.21099) [-0.65322]	-0.061580 (0.04076) [-1.51093]
C	1960109. (2708725) [0.72363]	-1170882. (1290788) [-0.90711]	-111065.8 (23793.9) [-4.66783]
R-squared	0.650621	0.527620	0.816256
Adj. R-squared	0.501805	0.473533	0.797064
Sum sq. resids	9.18E+15	2.08E+15	7.08E+11
S.E. equation	13828578	6589728.	121472.5
F-statistic	2.356069	2.126203	47.74297
Log likelihood	-1064.977	-1020.503	-780.8886
Akaike AIC	35.89923	34.41678	26.42962
Schwarz SC	36.31810	34.83565	26.84849
Mean dependent	-645097.9	-589086.7	-116886.8
S.D. dependent	15478290	7248611.	378612.2
Determinant resid covariance (dof adj.)		1.36E+59	
Determinant resid covariance		4.45E+58	
Log likelihood		-4476.961	
Akaike information criterion		151.3987	
Schwarz criterion		153.6676	

The above Error Correction estimate shows that the out of equilibrium model can be adjusted back to equilibrium by 20.2% (-0.202982). This is upheld based on the anticipated negative assigned coefficient of the Error Correction estimate (CointEq1). Which is seen to be

significant as the t-statistics of -2.31752 is greater than ± 1.98 or 2. The long run coefficient shows that subject to variations, only Point of Sale (POS) expenditure (POS), and Automated Teller Machine (ATM) showed significant t-statistics of -2.01938, and 17.7481 respectively. This shows that in the long run, Point of Sale (POS) expenditure and Automated Teller machine (ATM) represents fundamental factors that positively stimulates profitability of banks in Nigeria

In summary; the study discovers a positive and significant influence of Point of Sale (POS) Expenditure on Return on equity in the selected financial institutions. And it is seen that there existed a positive and significant influence of Automated Teller Machine on Return on equity in the selected financial institutions.

Stacked Pairwise Granger causality test

To evaluate for causal relationship between the employed variables, the following evaluation is presented as follows;

Table 13: Pairwise Granger Causality Test output.

Pairwise Granger Causality Tests

Date: 12/06/19 Time: 00:59

Sample: 2007 2018

Lags: 2

Null Hypothesis:	Obs	F-Statistic	Prob.
(POS) does not Granger Cause (ROE)	75	6.61020	0.0023
(ROE) does not Granger Cause (POS)		10.4563	0.0001
(ATM) does not Granger Cause (ROE)	75	1.97296	0.1467
(ROE) does not Granger Cause (ATM)		0.78165	0.4616

The stacked pair wise Causality test shows the presence of bidirectional causal relationship between Point of Sale (POS) expenditure (POS) and Portability of employed financial institutions (ROE). This shows that more is expended on the salaries, wages and allowances of workers when profit rising. And also firms try to make profit rise by increasing the salaries, wages and allowances of workers. Unidirectional Causality is seen to spill from Point of Sales(POS) to profitability of employed firms. This shows that firms usually have to put supportive infrastructures in place before witnessing its effect on profits. All other variables show negligible causal relation to profitability.

Implication of the result: The result implies that if Deposit Money Banks invest heavily in e-Products (especially Point of sales and Mobile Pay), robust Information Technology, it will enhance their profitability performance. On the converse, the DMBs has been and will have to plough back part of the profit on IT Acquisitions and upgrading, procurement of more Automated Teller Machines, Point of Sale devices and general enhancement of internet banking systems that will guarantee higher and sustainable returns. This result confirms the findings of AL-Sukkar (2005) and Aladwani (2001) in their respective investigations.

Hypotheses Testing

H₀₁: There is no significant relationship between Point of Sale (POS) and Return on equity of deposit money banks in Nigeria.

The Error correction Model coefficient of 0.000530 shows a positive sign and its t-statistics of 2.01938 which is seen to be greater than the standard tabulated value of ± 1.98 or 2 leads to the rejection of the null hypothesis. The study thus concludes that there is a significant relationship between Point of Sale (POS) and Return on equity of deposit money banks in Nigeria.

Thus empirical results is in agreement with the empirical findings of Abaenewe., Uche and Faith (2013), Balaji and Balaji (2017), Jumba and Wepakhulu (2019) in Nigeria.

H₀₂: There is no significant relationship between Automated Teller Machine (ATM) and Return on equity of deposit money banks in Nigeria.

The Error correction Model coefficient of 497.0501 shows a positive sign and its t-statistics of 17.7481 which is seen to be greater than the standard tabulated value of ± 1.98 or 2 leads to the rejection of the null hypothesis. The study thus concludes that there is a significant relationship between Automated Teller Machine (ATM) and Return on equity of deposit money banks in Nigeria.

However, these empirical findings were not in conformity with the empirical results of Le., Vu., Du and Tran (2018), Mahboub (2018), Mustapha (2018) in China, Ghana and Nigeria.

Concluding Remark and Recommendations

For businesses, successful e-payment products rely on internal and external factors. To improve its internal factors; readiness such as the level of resources, awareness, commitment, governance, as well as its business strategy, a company needs its management to take a proactive and open view towards e-payment. The quantitative analysis results revealed that e-payment products significantly and positively relate to quoted deposit money banks performance in Nigeria.

Based on the above findings and concluding remark, we recommend that;

- i) Automated Teller Machine (ATM) should be put in different locations for easily accessible by customers, so that quick service and convenience is maintained hence improving bank operations to the same time constant service should be ensured in order to provide reliability of the services.
- ii) Deposit money banks and other specialized organizations should conduct awareness programs for client son the importance and ease of using electronic payment products in financial transactions in local and international markets.
- iii) Banks should pay attention to issuing new and modern electronic payment methods to attract new customers and fellow developments in global markets.

Limitation and Suggestion for Further Studies

While this empirical study has produced interesting findings, it also has some limitations. We investigated the relationship between e-payment products and quoted deposit banks performance using point of sale (POS) and automated teller machine (ATM) spanning from 2007-2018 based on country specific empirical datasets, this fact may nevertheless limit the findings' generalisability. Further studies both in developed and less developing countries should use more sub-variables of e-payment products and performance of deposit money banks spanning from 2007-2018.

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