

Electronic Banking and Profitability of Commercial Banks in Nigeria

Eze, Gbalam Peter¹ & Egoro, Steven²

¹Department of Finance and Accountancy, Niger Delta University, Bayelsa State, Nigeria.
Email: geps@yahoo.com Tel: 08036248431

²Department of Finance and Accountancy, Niger Delta University, Bayelsa State, Nigeria.
Email: steven_egoro@yahoo.com Tel: 08034367383

Abstract

This study is on the impact of electronic banking on the profitability of commercial banks in Nigeria. The study sought to examine the relationship between different e-banking channels and the profitability of commercial banks in Nigeria. Four e-banking channels (automatic teller machines, electronic mobile banking, internet banking transactions, and point of sales services) were identified and regress against the profit before tax of commercial banks operating in Nigeria between 2006 and 2014. The study used the confirmed ECM model (via residual diagnosis) to test the formulated hypotheses. The results revealed that the over impact of electronic banking on the profitability of commercial banks was significant; whereas, the impact of the individual channels was varied. The study recommends, amongst others that, commercial banks should intensify effort to deploy more ATM delivery points and also make them more effective and efficient and that the regulatory authorities should also collaborate with the banks to put in place an enabling operating environment and regulatory framework to bring out optimal deployment of these services to customers. This is especially with respect to addressing the issue of failed transactions.

Keywords: e-banking, automatic teller machines, electronic mobile banking, point of sales services, internet banking transactions, profit before tax.

1.0 Background to the study

The financial system of any country provides the catalyst through financial intermediation for productive activities to ensure economic growth and development (Olowo, 2008). The Nigerian financial sector is undoubtedly the most important in the political-economic systems; because, it provides the necessary lubricant that keeps the wheel of the economy turning and it is an engine for economic growth. Electronic banking is the use of electronic and telecommunication networks to deliver a wide range of value added products and services to bank customers (Steven, 2002). The use of information technology in banking operations is called electronic banking. Ovia, (2001) argue that Electronic banking is a product of e-commerce in the field of banking and financial services. In what can be described as Business-to-consumer (B2C) domain for balance enquiry, request for cheque books, recording stop payment instruction, balance transfer instruction, account opening and other forms of traditional banking services. Banks are also offering payment services on behalf of their customer who shop in different e-shops.

Delgado (2004) describes e-banking as the provision of banking services to customers through the internet. Electronic banking is defined to include the provision of retail and small value banking products and services through electronic channels as well as a large value electronic payment and other wholesale banking services delivered electronically. Alsmadi and Alwabel (2011) expressed that the definition of electronic banking varies among researchers partially because electronic banking refers to several types of services through which bank customers can request information and carry out banking services. Almost all banks in Nigeria offer online, real-time banking services. Banks that are not able to brace up to this new development are rapidly losing their customers. Online, real-time banking system has now become commonplace as customers are offered the ease of operating an account in any branch of their bank's network.

The evolution of electronic banking in Nigeria can be traced to 1986 when the banking sector was deregulated. The result of this deregulation brought far-reaching transformation through computerization and improved bank service delivery. Competition with new products became strong within the system while customer sophistication posed a

challenge for them, hence the reengineering of processing techniques of business accounts encourage the automation of financial services especially among new generation of commercial and merchant banks (Oluwatolani, Joshua & Philip, 2011).

The 21st century has witnessed a dramatic revolution in the financial service industry as a result of the rapid advancement in technological transformation which has become known as e-developments. These changes have engulfed all areas of financial intermediation and financial markets such as e-finance, e-money, e-banking, e-brokering, e-insurance, e-exchange and e-supervision. Thus, information technology (IT) is turning into the most important factor in the future development of banking, influencing bank's marketing and business strategies. As a result of rapid advancement in IT and intensive competition in the banking sector, the adoption of e-banking is being increasingly used as a channel of distribution for financial services. (Mahdi & Mehrdad, 2010 cited in Fonchamnyo , 2013).

The world has witnessed an upsurge of electronic payment instruments meant to facilitate trade and simplify payments. Before the introduction of electronic payment into Nigerian banking system; customers had to walk into the banking hall to do transactions of all kinds. They had to queue up and spend more hours to talk to a teller to make their transactions. Inconveniences caused by these long queues discourage most customers who sometimes renegade from the queues in annoyance. For many years, bankers, IT experts, entrepreneurs and others have advocated for the replacement of physical cash and the introduction of more flexible, efficient and cost effective retail payment solutions (Siyanbola, 2013). Electronic banking has experienced explosive growth and has transformed traditional practices in banking. (Gonzalez, 2008).

Nigeria did not embrace electronic banking early, compared to developed countries of the world. In the year 1986, Societe Generale Bank of Nigeria (SGBN) now called Heritage Bank Plc. introduced online, real-time banking within its 5 branches in Lagos metropolis. However, many of the Nigerian banks adopted electronic banking system in the early 2000s. Today the ATM, Mobile, Web, and POS are major e-payment channels currently in use in Nigeria. In the recent years, electronic banking has been viewed as a driving force that is changing the landscape of the banking industry fundamentally, in particular, towards a more competitive industry. E-Banking has blurred the boundaries between different financial institutions, enabled new financial products and services and made existing financial services available in different packages. (Agbala, 2008).

This study is carried out to identify the contributions of the adoption of the various electronic banking channels to the profitability of commercial banks in Nigeria.

1.1 Statement of the problem

The Nigerian financial system is dominated by the money market, which is designed as a means of liquidity adjustment and also a potential path for economic growth and development. As a corollary, the efficiency of payment system, and of course, the ease with which transactions are perfected in the system is very vital its proper functioning and profitability. Electronic banking emerged to enable the banking system achieve the required vibrancy that is expected. It is expected that with the embrace of electronic banking by the Nigerian banking system, the performance and profitability of commercial banks will be enhanced. Over the years, the banks have introduced different shades of electronic banking channels, all with a view to achieving enhanced efficiency, effectiveness, and economy.

This does not, however, mean that the Nigerian banking system is not efficient: it goes a long way to explain that there is serious need to evaluate its performance and profitability in relation to the various channels of e-banking introduced into the system.

The system should be deep and broad to be able to absorb large volumes of transactions with attendant cost saving benefits. (Okafor, 2012). Over the years, the Nigerian commercial banks have been associated with weak domestic payment systems, which have also hindered efficient liquidity management and have obstructed the development of the banking system. There is, therefore, need to investigate various e-banking channels in order to assess their individual as well as combined contributions to the financial performance and profitability of commercial banks. Given the above scenario, therefore, this study focuses on finding how e-banking has been able to enhance the profitability of commercial banks in Nigeria, so as to fill the research gap.

1.2 Objectives of the study

The main objective of this study is to examine the relationship between e-banking and the profitability of commercial banks in Nigeria. More specifically, the study seeks to achieve the following objectives:

1. To determine the impact of automated teller machine (ATM) transaction on the profitability of commercial banks in Nigeria.
2. To ascertain the influence of Point Of Sales (POS) terminal transactions on the profitability of commercial banks in Nigeria.
3. To investigate the contribution of Electronic Mobile Banking (EMB) to the profitability of commercial banks in Nigeria.
4. To evaluate the impact of Internet (WEB) Banking transactions on the profitability of commercial banks in Nigeria.

1.3 Research Questions

The study seeks to provide answers to the following research questions as a guide to achieving the above stated objectives:

1. How do automated teller machine (ATM) transactions impact on the profitability of commercial banks in Nigeria?
2. To what extent to Point Of Sales (POS) terminal transactions influence the profitability of commercial banks in Nigeria?
3. Do Electronic Mobile Banking (EMB) significantly contribute to the profitability of commercial banks in Nigeria?
4. What is the impact of Internet (WEB) Banking transactions on the profitability of commercial banks in Nigeria?

1.4 Research Hypotheses

In order to provide answers to the above questions, the following hypotheses have been formulated in null form:

H₀₁: ATM transactions have no significant impact on the profitability of commercial banks in Nigeria.

H₀₂: Point-of-sales transactions do not have any significant influence on the profitability of commercial banks in Nigeria.

H₀₃: E-Mobile banking has no significant contribution on the profitability of commercial in Nigeria.

H₀₄: There is no significant relationship between internet (WEB) banking services and the profitability of commercial banks in Nigeria.

1.5 Organisation of the paper

This paper is organised in five sections. Section one is the introduction. Section two is the review of related literature, the third section talks about the methodology of the study, section four presents and analysis the data, and finally, section five summarises, makes recommendations and concludes the work.

2.0 Review of Related Literature

This section reviews related and relevant to the subject matter under conceptual framework, theoretical review and empirical review.

2.1 Conceptual framework

Electronic banking can be described as using the internet as delivery mode for the provision of services like opening a deposit account, electronic bill payment, online transfers, online withdraws, and in fact, any other online banking transaction. Allen et al (2002) gave the definition of electronic finance (e-finance) as the provision of financial services and market using electronic communication and computation. Electronic banking has also been defined by Laford and Li (2005) as the medium of using electronic devices, like internet, wireless connections, networks, ATM, phone and cell phones in banking services. These services are part of providing currency for the economic system of the country. Electronic banking services can be grouped into four major classes, namely:

- a) Telephone banking – This form of electronic banking model can be considered as a form of distance or virtual banking, which is basically the delivery of branch financial services via telecommunications devices where the bank's clients can perform retail banking transactions by calling a phone or mobile communication unit, which is linked to an automated system of bank by utilizing Automated Voice Response (AVR) technology. (Balachandher et al, 2001). It allows clients to phone their financial institutions to check account balances, pay certain bills, transfer funds between accounts and change PIN.
- b) Internet banking (Online or WEB banking) – this form of electronic banking model involves conducting banking transactions such as account enquiry, printing account statements, funds transfer, payments for goods and services, etc, on the internet (World Wide Web), using electronic tools such as the computer without visiting the banking hall. E-commerce is greatly facilitated by internet banking and is mostly used to effect payment. Internet banking also uses the electronic card infrastructure for executing payment instructions and for final settlement for goods and services over the internet between the merchant and the customer. Currently, the most common internet payments are for customer bills and purchase of air ticket through websites of the merchants. (Littler, 2006).
- c) Mobile banking (m-banking) – This form of electronic banking involves the use of mobile phone for settlement of financial transactions. It supports person to person transfers with immediate availability of funds for the beneficiary. Mobile payments use the card infrastructure for execution of payment instructions as well as secure short message service (SMS) messaging for confirmation of receipt to the beneficiary. Mobile banking is meant for low value transactions, where speed of completing the transaction is key. The services covered under this product include account enquiry, funds transfer, phones recharge, change of passwords, and bill payments, which re offered by few institutions. (Sathye, 1999).
- d) Electronic card – This form of electronic banking is a physical plastic card that uniquely identifies the holder and can be used for financial transactions on the internet. For instance, Automatic Teller Machine (ATM) and Point-of-sale (POS) terminals are used to authorise payments to the merchant or seller (James, 2009). The various types of electronic cards include debit card, credit card, releasable card, which require visiting the banks for replenishment. (James, 2009).

2.1.1 The Entry of Nigerian Banks into Electronic Banking

Electronic banking both as a medium of delivery of banking services and as a strategic tool for business development, has gained wide acceptance internationally and is fast catching up Nigeria with more and more banks entering the fray. Nigeria can be said to be the threshold of a major banking revolution with net banking having already been unveiled (Ovia, 2001). Of all the sectors in the Nigeria Economy, Banking stands out despite “a not too good” economy. Electronic banking provides the facility of accessing customer accounts from anywhere in the world by using a home computer with Internet connection, is particularly fascinating to Non-Resident Nigerians and High Net worth Individuals having multiple bank accounts. The growth potential is, therefore, immense. Further incentives provided by banks would dissuade customers from visiting physical branches, and thus get ‘hooked’ to the convenience of armchair banking.

At present, the situation does not seem to have shown any significant improvement. Whereas about 90 percent of the banks in the country offer other forms of electronic banking services like telephone banking. ATM and electronic fund transfer, Internet banking is yet to take centre stage. This aspect of banking is still at the basic informative stage (Ovia, 2001) this is so despite the widely acclaimed benefits of Internet banking against the traditional branch banking practice. Part of the reasons identified for the inability of banks in Nigeria to take full advantage of this mode of banking includes lack of adequate operational infrastructure like telecommunication and power, upon

which Electronic banking generally relies. Due to the inability of the banks to integrate their operations into the Internet development process, Internet banking can be said to have less in the existing banking structure in the country.

Earlier articulate reasons why Internet Banking was having a moderate economic impact in the country include that Nigerian bank customers are not on the average trained on for teller jobs and the working of internet banking, a situation which makes transaction processing via internet banking prone to error; the absence of a clearly defined legal framework for internet banking, leaving banks with inadequate legal cover to provide the services; and poor telecommunication infrastructure all over the country. In addition, the fact that internet assuage in the country has been abused by cybercriminals makes its window unattractive for domestic banking operations and legitimate international operations. The inherent fear associated with patronizing internet banking services in Nigeria is again re-enforced by the growing evidences that the world over, dubious Nigerians use fake websites to scoop funds from unsuspecting victims. In some cases, these crimes are committed using existing bank sites.

2.1.2 Threats of Cyber-Crimes on the Nigerian Banking Premises

The Advances fee fraud or 419, which is one of the most popular of all internet frauds, Has its origin from Nigeria in the 1980s. Its development and spread follows the path of the developments in information technology at inception, postal letters were used as key media for committing 419 frauds. Later in the early 1990s, it became integrated into telecommunication facilities such as the telephone and fax from the late 1990s following the introduction of computers and internet, 419 crimes became prevalently perpetrated through the use of e-mail and other internet means (Amedu, 2005). The latest dimension taken by the perpetrators of this crime is the use of fake internet bank site, and using that to encourage victims to open accounts with them.

The country is country is the third highest ranked in internet ‘money offer’ frauds. As was reported in one of the national newspapers, frauds and forgeries in Nigerian bank as at June 2005 stood at 329 or N1.15 billion monetary equivalent, against 222 cases or N1.47 billion monetary equivalent in April same year. There is even global suspicion that a Nigerian crime syndicate that coordinates global crimes such as money laundering, bank fraud and 419 seams exists today. These issues basically defeat the key ingredients of electronic banking, which includes confidentiality, integrity and availability.

Several factors are responsible for the above situation. They include inordinate tolerance for corruption among Nigerian public and government agencies; weakness of the existing legislative/judicial institutions to make and enforce relevant laws on cybercrimes; quality of graduates in terms of professional values and ethics; chronic unemployment among graduates, and the widening gap between the few rich and the many poor caused mainly by bad governance. In the main, erosion of good value principles and corruption constitute the greatest cause of rising cyber-crimes among Nigerian (Domestic electronic payment in Nigeria) (Amedu, 2005). This, according to transparency International, is worsened by fact that several generations of Nigerians have been raised in this norm. Hence, what is seen as a dangerous global crime is socially acclaimed and glamorized in Nigeria.

2.1.3 The Regulatory Challenges

At the national level, the Nigerian government and the relevant regulatory agencies have strived to match the rapidly changing electronic banking environment with necessary regulations and frameworks (Soludo, 2005). Earlier efforts made to this effect included the enactment of the Failed Banks (Recovery of Debts) and Malpractices in Bank Decree No. 18 of 1994, and the Money Laundering of 1995. However, as noted above, poor enforcement procedure rendered these instruments very inactive in checking the menace of financial crimes. By the late 1990s, following record growth internet and computer usage in the country, almost all the regulations guiding the banking industry, including the Banks and Other Institution Act of 1991, were lacking adequate provisions to accommodate the emerging trend. Not even a mention of electronic banking or any manner of its application was mentioned in any of

those prevailing regulatory documents. The situation created a lot of gaps between the levels of CBN regulatory tools and the advances in information technology. This at the same time made the banks vulnerable to all kinds of risks, including transaction, strategic, reputation and foreign exchange risks (Soludo, 2005). This deficiency notwithstanding, it is not until 2003 when the maiden guidelines on electronic banking came into force.

The electronic banking guidelines emerged from the findings of a Technical Committee on Electronic Banking set up by the Central Bank of Nigeria in 2003 to find appropriate modalities for the operation of electronic banking in the country. It was indeed the findings and recommendations of the committee that led to the adoption of a set of guidelines on Electronic Banking in August 2003. Of the key provisions of the guidelines, only a section deals with issues relating to Internet Banking Section 1.3 paragraph 4 of the guidelines, exceptionally stresses that banks should put in place procedures for maintaining the bank's Web site, including the various security features needed for Internet banking services (CBN, 2003).

Despite its numerous technical specifications, the guidelines have been widely criticized as not being enough to check the growing popularity of Electronic banking against the backdrop of growing sophistication in technology related crimes and frauds. Closer examination of the contents of the guidelines equally shows that the document fails to meet up with the four key areas where Electronic banking may have regulatory impact – changing the traditional lines upon which existing regulatory structures are laid; handling concerns about existing public policy issues; changing the nature and scope of existing risks; and rebalancing regulatory rules and industry discretion. Again, some important recommendation of the Technical Committee that gave rise to the adoption of the guidelines was completely omitted. This is especially so with paragraph 6.1 of the Committee's report, which among others recommended that all banks, intending to offer transactional services on the Internet /other e-banking products, should obtain an approval-in-principle from CBN prior to commencing these services.

Part of the criticisms is that the recent guidelines are capable of constraining the practice and development of Electronic Banking Nigeria. One of such areas, for instance, is the requirement on electronic banking product development. While acknowledgement that the existing regulations would apply wholly on electronic banking, section 4.2 of the Guidelines emphasizes that only banks, which are licensed, supervised and with physical presence in Nigeria, are permitted to offer electronic banking services in Nigeria, and that virtual banks are not to be allowed. The Guidelines also gives indications that the products/services can only be offered to residents of Nigeria with a verifiable address with the geographic boundary of Nigeria; any person residing physically in Nigeria as a citizen, under a resident permit or other legal residency designation under the Nigerian Immigration Act; any person known herein as a "classified person" who neither is temporarily in Nigeria. The Guidelines go further to indicate that the e-banking service should be offered in Naira only; and that where such a service is to be provided in foreign currency, it should be to only the holders of ordinary domiciliary accounts, and conform with all foreign exchange regulations

2.1.4 Electronic Banking Profitability and Efficiency

Commercial banks assaulted by the pressure of globalization, competition from nonbanking news ways to add value to the services. The question "what drives performance?" is at the top in understanding superior performance and hence striving for it. Substantial research efforts have gone into addressing this question, starting from the strategic level and going down to operational details. A key study bench marking the strategies of leading retail banks and retail banks was carried out by the bank strategies of leading retail banks and (Vander Velde 1992). This study is based on the opinions of heads of retail banks at all us commercial banks established the linkage between marketing, operations, organizing excellence. This finding led to the formulation of the service management strategy encapsulated in the trail operational capabilities service quality-performance (-SQ-P) (Foth and Jackson 1995). The C- SQ-P trail is, in turn, a focused view of the service profit chain described by (Heskett et al, 1994) based on their analysis of successful service organizations.

2.2 Theoretical Framework

The nature of the implication of electronic banking has for some time been a subject of debate amongst different schools of thought. There is a huge survey of literature, which investigated theoretical and empirical aspects of evaluating the efficiency electronic banking. This section presents theories on electronic banking.

2.2.1 Theory of Reasoned Action (TRA)

Many technology adoption research studies have used this theory. According to this theory, an individual's intent to adopt an innovation is influenced by his attitude toward the behaviour and subjective norm. Subsequently, a person's behaviour is determined by his intention to perform the behaviour. The attitude toward performing the behaviour is an individual's positive or negative belief about performing the specific behaviour. In fact, attitudes are comprised of the beliefs a person accumulates over his lifetime. These beliefs are created from experiences, outside information, or from within the self. Only a few of these beliefs, however, actually influence attitude.

Subjective norm is beliefs about what others will think about the behaviour. In other words, it is the perceived influences of social pressure on an individual to perform or not perform the behaviour. "The person's belief that specific individual or groups think he should or should not perform the behaviour and his motivation to comply with the specific referents.

2.2.2 The Decomposed Theory of Planned Behaviour

The second reviewed theory is the Decomposed Theory of Planned Behaviour (DTPB). The theory was developed by Taylor and Todd (1995). The theory postulates that the intention to use a certain technology is influenced by attitude, subjective norm and perceived behavioural control. Starting from the research conducted by MdNor and Pearson (2008), Karahanna, Straub, and Chervany (1999), certain influencing factors were selected: the attitude toward behaviour and the perceived behavioural control.

2.2.3 Innovation Diffusion Theory

The third theory taken into consideration is the Innovation Diffusion Theory (IDT) that explains individuals' intention to adopt a technology as a modality to perform a traditional activity. The theory is developed by Roger's (1983). The critical factors that determine the adoption of an innovation at the general level are the following: relative advantage, compatibility, complexity, trial ability and observability. (Rogers, 1995). Researchers such as Tan and Teo (2000), Gerrard and Cunningham (2003) and MdNor and Pearson (2008) had tested the theory on the e-banking adoption. The nominalized factors are complexity, triability and observability.

The underpinning theory employed in this work is a theory arising from the decomposed theory of planned behaviour. This theory considers that the use of technology is influenced by attitude, subjective norm and perceived behavioural control. The theory argues that the lesser the ratio of currency outside banks to broad money supply the higher the intermediation efficiency and vice-versa. This suffices that when the currency outside banks diminishes as a result of the increase in the use of electronic forms of payment, particularly ATM and other e-card products, as well as banking habits, the intermediation efficiency will be positive, otherwise it will be negative.

2.3 Empirical Review

As earlier mentioned, e-banking system is said to have increased the performance of the banking industry. Several researches have been carried out to find the extent to which e- banking has impacted on banks using both qualitative and quantitative data. Though, there still lie divergent views. Milind (2005) reported that transaction with internet

banking does not have a significant impact on performance and risk profile; and, thus, concluded that internet banking has not proved to be a performance enhancing tool in major credit unions in Australia. Abaenewe et al (2013) analysed the effect of e-banking on bank performance in Nigeria. They found that e-banking has positively and significantly impacted on return on equity; while e-banking did not impact significantly on return on assets. Similarly, Ibukunle and James (2012) claimed that e-banking has led to increased customer satisfaction, improved operational efficiency, reduced transaction time, better competitive edge, reduced running cost and ushered in swift response in service delivery.

In their research, Sana, Mohammed, Hassan and Monina (2011) investigated the impact of e-banking on the profitability of Pakistani banks. Their findings reveal that e-banking has increased the profitability of banks, hence enabling them to meet their costs and earn profits in short span of time. Also, the illiteracy of customers is not regarded as a major impediment in provision of their products. Furthermore, Olorunsegun (2010) found that bank has an effective e-banking system which has improved its customers' satisfaction, by critical appraisal of e-banking in unity bank. Elisha (2010) studied the prospects of e-banking in a developing economy. The study showed that e-banking serves several advantages to Nigeria banking sector: provides convenience and flexible advantages. It also provides transaction related benefits like easy transfer, speedy transaction, less cost and time saving. Commission, (2011) investigated internet banking and performance of micro and small enterprises in Costa Rica. The result shows that internet use is limited in MSE daily operations because of limited access to computer and the relatively low penetration of internet services.

Agboola (2001) studied the impact of computer automation on banking services in Lagos using 6 banks and concluded that electronic banking has tremendously improved the services of the banks to their customers. Lustsik (2004) explores the implementation of techniques of activity-based-costing (ABC) in the banking sector on the example of Estonia bank in order to analyze the cost structure for traditional and electronic channel transactions. The methodology and empirical parts of the study were based on Hans bank's analysis and statistical report as well as on Hans banks internal documents that stipulate rules for cost allocation and limit cost calculation. The findings of the study revealed that banks additional profits on the transactions effected via electronic channel banking services have high profitability for banks, as the absolute unit cost numbers are lower than those of fees collected from clients.

Trajhavo (2005) carried out an empirical investigation on the impact of electronic banking on bank profitability. The study was designed to test profit sensitivity to such factors as the size of institution in terms of both number.... The model of the study projects profitability measured in net present value and internal rate of return over a five years' time horizon considering anticipated migration of customers from traditional to online channels. The results of the study revealed that it is not possible to blindly state that internet banking is always profitable because very small institutions only offer a limited set of internet banking and are not likely to achieve profit unless they are able to persuade a very substantial portion of their customers to bank online; that internet banking provides financial institutions with array of applications including home banking with electronic bill payment, check images, authenticated online applications, online statement modules, e-commerce finance services portal and online lending application for consumers loans. The implication of the study above is that there will increase in bank performance if the use of electronic banking system is improved and practiced in Nigeria irrespective of size.

Siam (2006) examined the effect of electronic banking on bank's profitability in Jordan. The population of the study included all working banks in Jordan which have sites on the internet for the periods of 1999-2004. The result from the data analysis that were gathered from the study instrument (questionnaire) showed that there is a correlation with statistical significance between electronic banking and banks profitability; showing a negative effect in profitability in the short run and a positive effect in profitability in the long run. Thus, managers and banks employees in the area prefer their banks to expand their electronic operation in servicing customer but not converting all banks to total electronic banks.

Hernando and Nieto (2007) attempted to fill this gap by identifying and estimating the impact of the adaptation of a transactional web site on financial performances using a sample of 72 Deposit Money banks in Spain over the period 1994-2002. The analysis of the sample is based on several financial performance ratios. These financial ratios measure business activity as a percentage of average total assets and profitability. The results showed that the impact of transactional web adoption on banks performance take to appear. The adoption of the internet as a delivery channel involves a gradual reduction in overhead expenses. This effect is statistically significant after one and half year after adoption. The cost reduction translates into an improvement in banks profitability, which becomes significant after one and half year in terms of return on assets (ROA) and after three years in terms of return on equity (ROE).

Onay, Ozsoz and Ash (2008) investigated the impact of internet banking on banks profitability. Their analysis covered thirteen (13) banks that have adopted online banking in Turkey between 1996 and 2005. Using the approach of Hernando and Nieto (2007) and by using specific and macroeconomic control variables; they investigated the impact of internet banking on the return on assets (ROA) and return on equity (ROE). The results of the findings show that internet banking starts contributing to banks return on equity (ROE) with a time lag of two years confirming the findings of Hernando and Nieto while a negative impact is also observed for one and half years of its adoption.

Madueme (2010) studied the impact of ICT on banking efficiency in Nigeria employing a survey of 13 banks. Based on the CAMEL rating and a transcendental logarithmic function of the banks, it was revealed that the efficiency values obtained through the CAMEL rating system were higher during post adoption era than before adoption and estimated that a 1% increase in ICT capital on average leads to 0.9185 Naira increase in bank output post ICT adoption era. Maiyaki and Mokhtar (2010) employing a survey of 407 bank customers in 33 organizations in Kano State of Nigeria studied the effects of availability of electronic banking facilities among other factors. They study reveals that the availability of electronic banking facilities such as ATM, online banking and telephone banking do not have significant influence on customer's bank choice decision.

Carvalcio and Siegel (2011) investigated the return on investment for online banking services and analysis of financial account aggregation. The return on investment of the account aggregation technology was evaluated using the calculation of earnings before interest and taxes (EBIT) and the net present value (NPV) for a period of five years. The sample covers three basic bank sizes according to the number of its online accounts; medium banks those with 2.8 to 6.0 million online accounts and large banks, those with 8.8 to 16 million online accounts. The study concluded that account aggregation is a compelling technology that should become a commodity in the sense that most important banks will provide it and it will represent no more a differentiated competitive advantage.

3.0 Methodology

3.1 Study design

The design of this study is investigative econometric research as it is meant to investigate and analyse the relationship between two variables, namely, electronic banking and profitability. The study identified four e-banking channels, including automated teller machines, electronic mobile banking, point of sales, and internet banking transactions as indicators of electronic banking in Nigeria; while, profit before tax (pbt) was used as the indicator of profitability. The study used quarterly aggregate bank data for the period 2006 to 2014 for this study. The secondary data were collected from Central Bank of Nigeria statistical bulletin, CBN annual reports and accounts, and Nigerian Deposit Insurance Corporation (NDIC) annual reports and accounts.

3.2 Data analysis method

Descriptive statistics were used to show the means, frequency distribution, variances and standard deviations which were used as a form of summarizing data tabulation. In other words, it shows a summary statistics for the series. Since this study is interested in establishing relationships between variables and possible projections, we employed

multiple regression and correlation analysis. A regression line of a variable, y on x is an equation model that expresses the relationship between y (the dependent variable) and x (the independent or explanatory variable). Symbolically, the linear regression is as follows: $Y = f(x)$, that is a function y is a function of x; $Y = b_0 + b_1x_1 + b_2x_2 + \dots + b_nx_n + u$ linear form, where y = the dependent variable, profitability; x = the independent variable, electronic banking; b_0 = the intercept, that is, the value of the dependent variable y, when the explanatory variable x assumes a value of zero; $b_1 \dots b_n$ = coefficients of the explanatory variable or the slope; that is, the rate at which a change in the explanatory variable affects the behaviour of the dependent variable. The Ordinary Least Square (OLS) technique was used to estimate the link electronic banking variables and bank performance indicators, using multiple regression models. The OLS enabled us to estimate their individual variables coefficients, coefficient of determination (R^2), t-statistic, f-statistic (and their respective probabilities), and the Durbin Watson statistic, which enables the study to make inferences and evaluate the significance of the estimated parameters of the regression model, and also test the hypotheses formulated in section 1.4 above.

In order to test for stationarity, robustness, and long-run equilibrium relationship among the variables, unit root and co-integration tests were performed. This enabled the study to examine and draw inferences based on maximum likelihood approach of Johansen (1991) which identifies long-run associations that exist among integrated time series data. The Johansen co-integration test is based on the maximum Eigen-value of the stochastic matrix. The model is also a form of vector error-correction model (VECM) where only one integrating relationship exists between the variable concerned (Hallan and Zanolli, 1993). The model further helps the study to check for the presence of co-integrating relationships among the variables and also to identify the number of stationary long-run relationships that exist among the integrating variables.

Apriori expectation is that the independent variables should cause changes in the dependent variable both on the short-run and on the long-run. But in reality, the relationship could be the other way round.

3.3 Model specification

The mathematical form of the model is specified in a functional relationship as follows;

$$PBT = f(ATM, POS, EMB, IBT) \dots\dots\dots (1)$$

Where:

- PBT = Profit before tax
- ATM = Automated Teller Machine transactions
- EMB = Electronic Mobil Banking
- POS = Point on Sales services
- IBT = Internet Banking transactions

The OLS linear regression equation based on the above functional relation for models 1 is econometrically stated as:

$$PBT = b_0 + b_1ATM + b_2POS + b_3EMB + b_4IBT + e \dots\dots\dots (2)$$

Where e = Error term

Transforming equation 2 to the natural logarithm, we have:

$$\text{LogPBT} = b_0 + b_1\text{logATM} + b_2\text{logPOS} + b_3\text{logEMB} + b_4\text{logIBT} + e \dots\dots\dots (3)$$

The formed natural logarithm in equations 3 is adopted because most time series data have an unequal variance (heteroskedastic in nature), thus the natural logarithm helps to stabilize the variance within the sample, which helps to improve our analysis.

3.5.1 Theoretical (a priori) expectations

The a priori expectation is that all the coefficients of the explanatory variables in this study should be positive. That is, $b_1, b_2, b_3, b_4 > 0$. In other words, there should be a positive relationship between e-banking and commercial bank profitability.

3.5.2 Variables definition

Dependent Variable

Profit before tax

This represents the net income of the bank before charging taxation.

Independent Variables

Automatic Teller Machine (ATM) transactions- This is measured by the volume of transactions on the ATM machines for each year over the period of the study.

Point of Sales-This variable is measured by the annual volume of POS transactions for the period under study

Electronic Mobile Banking – This includes the volume of annual electronic mobile banking services provided to customers yearly, for the period.

Internet banking transactions (IBT) - This includes the volume of annual internet banking transactions provided to customers yearly, for the period.

4.0 Data Analysis and Interpretation

4.2 Descriptive statistics

Table 4.2 below shows the summary characteristics of the individual variables – that is, the mean, median, maximum, minimum, standard deviation, skewness, kurtosis, as well as Jarque-Bera statistics and their respective probability values.

Table 4.2 Descriptive statistics

	PBT	ATM	EMB	POS	IBT
Mean	7157259.	72689643	450946.3	706888.3	6621054.
Median	1876943.	26744606	454703.0	355060.5	4060220.
Maximum	27313595	2.37E+08	828401.0	2673844.	21901257
Minimum	47198.40	1633957.	49219.00	5138.000	616523.0
Std. Dev.	8491316.	78841874	250103.1	765098.5	6149875.
Skewness	0.850085	0.883494	-0.150498	1.317646	1.001806
Kurtosis	2.139096	2.301600	1.857855	3.415869	2.834426
Jarque-Bera	5.447605	5.415015	2.092642	10.67656	6.062816
Probability	0.065625	0.066703	0.351227	0.004804	0.048248
Sum	2.58E+08	2.62E+09	16234066	25447980	2.38E+08
Sum Sq. Dev.	2.52E+15	2.18E+17	2.19E+12	2.05E+13	1.32E+15
Observations	36	36	36	36	36

Source: Eviews 7.0 output

The Jarque-Bera probability values reveal that only EMB is normally distributed, while all others are not.

4.3 Correlation analysis

Table 4.3 below shows the correlation analysis results among the pairs of the variables.

Table 4.3 Correlation analysis results

	LPBT	LATM	LEMB	LIBT	LPOS
LPBT	1.000000				
LATM	0.940823	1.000000			
LEMB	0.859721	0.901835	1.000000		
LIBT	0.910442	0.881650	0.753585	1.000000	
LPOS	0.887537	0.901780	0.900976	0.839163	1.000000

Source: Eview 7.0 output

The results of the correlation analysis show that all the variables (dependent and independent) are highly positively correlated with each other.

4.4 Level series regression estimates

Table 4.4 below shows the results of the level series OLS regression estimates of the parameters.

Table 4.4 Results of the level series OLS regression estimates

Dependent Variable: LPBT
 Method: Least Squares
 Date: 12/27/16 Time: 15:42
 Sample: 2006 2014
 Included observations: 9

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-11.50509	7.878882	-1.460244	0.2180
LATM	0.278726	0.581844	0.479039	0.6569
LEMB	0.430189	0.935695	0.459753	0.6696
LIBT	1.047878	0.666540	1.572116	0.1910
LPOS	-0.082250	0.693615	-0.118582	0.9113
R-squared	0.941074	Mean dependent var		15.99178
Adjusted R-squared	0.882148	S.D. dependent var		1.892008
S.E. of regression	0.649518	Akaike info criterion		2.275007
Sum squared resid	1.687492	Schwarz criterion		2.384576
Log likelihood	-5.237533	Hannan-Quinn criter.		2.038557
F-statistic	15.97047	Durbin-Watson stat		2.933268
Prob(F-statistic)	0.010008			

Source: Eview 7.0 output

The level series regression estimates on table 4.4 show a Durbin-watson statistic of 2.9, indicating the presence of autocorrelation; and suggesting that the variables may be non-stationary, which render the results spurious and not meaningful. This therefore, requires further and more rigorous econometric analysis including stationarity tests - unit root, cointegration, and error correction mechanism to establish stationarity of the variables as well as long run and short run equilibrium relationships of the variables in the model.

4.5 Stationarity test results

Since, most time series data exhibit a non-stationary characteristics and the presence of autocorrelation having the revealed in the level series estimates, the individual variables are passed through stationarity test, specifically unit root, in order to make the variables stationary and amenable for further analysis. The results are summarised on table 4.5 below.

Table 4.5 Summary of ADF Unit Root Test Results

Variable	ADF – Test statistic @ 1st difference	Test Critical Values @5%	Order of integration	Remarks
LPBT	-4.049229	-3.403313 p-value = 0.0233	I(1)	Stationary
LATM	-4.006689	-3.403313 p-value = 0.0245	I(1)	Stationary
LEMB	-7.059755	-3.694851 p-value = 0.0037	I(1)	Stationary
LPOS	-3.962281	-3.517595 p-value = 0.0313	I(1)	Stationary
LIBT	-6.512987	-3.403313 p-value = 0.0019	I(1)	Stationary

Source: Author's compilation from Eview 7.0 output

Table 4.5 above presents the summary results of the ADF unit root tests. The results show that the null hypotheses of a unit root test for first difference series for all the variables can be rejected at all the critical values indicating that the level series which is largely time-dependent and non-stationary can be made stationary at the first difference and maximum lag of one. Thus, the reduced form model follows an integrating order of I(1) process and is therefore a stationary process. It also reveals that the test of stationarity in the residuals from the level series regression is significant at all lags. Furthermore, this indicates that the regression is no more spurious, but real. That is to say, all the variables are individually stationary and stable. At this level, all the t-statistic became significant at 5 percent.

Having established the stationarity of the individual variables, meaning the criteria for conducting co-integration has been met, the study now attempts to establish the stationarity of the linear combination of the variables to ascertain whether there could be a long-run equilibrium relationship between the dependent variables and the independent variables (that is, they form co-integrating equations). The study used Johansen co-integration test and the results are presented below.

4.5 Johansen Co-Integration test results

Table 4.6 Johansen Cointegration test results

Sample (adjusted): 2006Q4 2014Q4
 Included observations: 33 after adjustments
 Trend assumption: Linear deterministic trend
 Series: LPBT LATM LEMB LIBT LPOS
 Lags interval (in first differences): 1 to 2

Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.769888	117.9070	69.81889	0.0000
At most 1 *	0.590056	69.42378	47.85613	0.0002
At most 2 *	0.525168	39.99653	29.79707	0.0024
At most 3	0.350403	15.41833	15.49471	0.0513
At most 4	0.035186	1.182049	3.841466	0.2769

Trace test indicates 3 cointegrating eqn(s) at the 0.05 level

* denotes rejection of the hypothesis at the 0.05 level

**MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None *	0.769888	48.48325	33.87687	0.0005
At most 1 *	0.590056	29.42725	27.58434	0.0287
At most 2 *	0.525168	24.57821	21.13162	0.0157
At most 3	0.350403	14.23628	14.26460	0.0505
At most 4	0.035186	1.182049	3.841466	0.2769

Max-eigenvalue test indicates 3 cointegrating eqn(s) at the 0.05 level

* denotes rejection of the hypothesis at the 0.05 level

**MacKinnon-Haug-Michelis (1999) p-values

Source: Compiled from *eviews7.0* output.

The results of the Johansen co-integration test presented above indicate at least three co-integration equations for both trace and max-eigen statistics. The result, therefore, confirms the existence of co-integration among the variables. Consequently, we can conclude that there exists a long run equilibrium relationship between electronic banking indicators and profitability of commercial banks in Nigeria.

4.6 Error correction mechanism (ECM)

Having established long run equilibrium relationship between the dependent and independent variables, the study now switches over to establish short run relationships between the dependent and independent variables using the error correction mechanism. Since the variables were found to be stationary at first difference, the error correction mechanism is tested using first differenced series. The results are presented below.

Table 4.6 Error correction mechanism (ECM)

Dependent Variable: D(LPBT)
 Method: Least Squares
 Date: 12/31/16 Time: 07:34
 Sample (adjusted): 2006Q2 2014Q4
 Included observations: 35 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.080265	0.057367	1.399151	0.1724
D(LATM)	0.248257	0.137062	1.811282	0.0805
D(LEMB)	0.052218	0.155733	0.335306	0.7398
D(LPOS)	0.373693	0.138755	2.693188	0.0116
D(LIBT)	-0.028338	0.207100	-0.136831	0.8921
ECM(-1)	-0.267611	0.127708	-2.095495	0.0450
R-squared	0.301406	Mean dependent var		0.181737
Adjusted R-squared	0.180958	S.D. dependent var		0.258549
S.E. of regression	0.233989	Akaike info criterion		0.087722
Sum squared resid	1.587778	Schwarz criterion		0.354353
Log likelihood	4.464874	Hannan-Quinn criter.		0.179763
F-statistic	2.502385	Durbin-Watson stat		1.767529
Prob(F-statistic)	0.053121			

Source: Eview 7.0 output

The results of the error correction model (ECM) on the table above shows that ECM is appropriate signed with a negative co-efficient of -0.267611 and a probability of 0.045, which is significant. Since the ECM is both negative and significant, it shows that the present value of LPBT adjusts rapidly to changes in LATM, LEMB, LPOS and LIBT, respectively. The ECM value of -0.267611 shows a feedbacks of about 26.76% from the previous period disequilibrium of the present level of PBT in the determination of causality between the past level of PBT and the present and past level of ATM, EMB, POS, and IBT. The coefficient of multiple determinations denoted as R^2 shows that 30.14% variation in PBT can be explained by the combined effect of ATM, EMB, POS, and IBT while the remaining 69.86% is being included by the stochastic error term. The Durbin Watson statistics of 1.67 shows that the presence of autocorrelation in the model is inconclusive as the Durbin Watson statistics falls under the positive side of the inconclusive region.

The study further proceeds to residual diagnostic tests such as serial correlation LM test, heteroskedasticity test, and histogram normality test to ascertain the status of the residuals as basis for making inferences about the model.

Table 4.7 Serial correlation LM test results

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	0.978013	Prob. F(2,27)	0.3890
Obs*R-squared	2.364307	Prob. Chi-Square(2)	0.3066

Source: Eview 7.0 output

Durbin-Watson stat = 2.0007

The observed r-squared statistic on the Breusch-Godfrey serial correlation LM test result shows a statistic of 2.364307 and a probability chi-square of 0.3066, meaning, we cannot reject the null hypothesis, that there is no

serial correlation among the residuals. Also, the Durbin Watson is 2.00 which indicate absence of autocorrelation. The study can conclude that residuals are not serially correlated.

Table 4.8 Heteroskedasticity test results

Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	0.525875	Prob. F(5,29)	0.7547
Obs*R-squared	2.909579	Prob. Chi-Square(5)	0.7139
Scaled explained SS	1.533280	Prob. Chi-Square(5)	0.9092

Source: Eview 7.0 output Durbin-Watson stat = 1.75

The observed r-squared statistic on the Breusch-Pagan-Godfrey heteroskedasticity test result shows a statistic of 2.909579 and a probability chi-square of 0.7139, meaning, we cannot reject the null hypothesis, that there is no heteroskedasticity among the residuals. Also, the Durbin Watson is 1.75, which is close to 2.00 indicating absence of autocorrelation. The study can conclude that the residuals are not heteroskedastic.

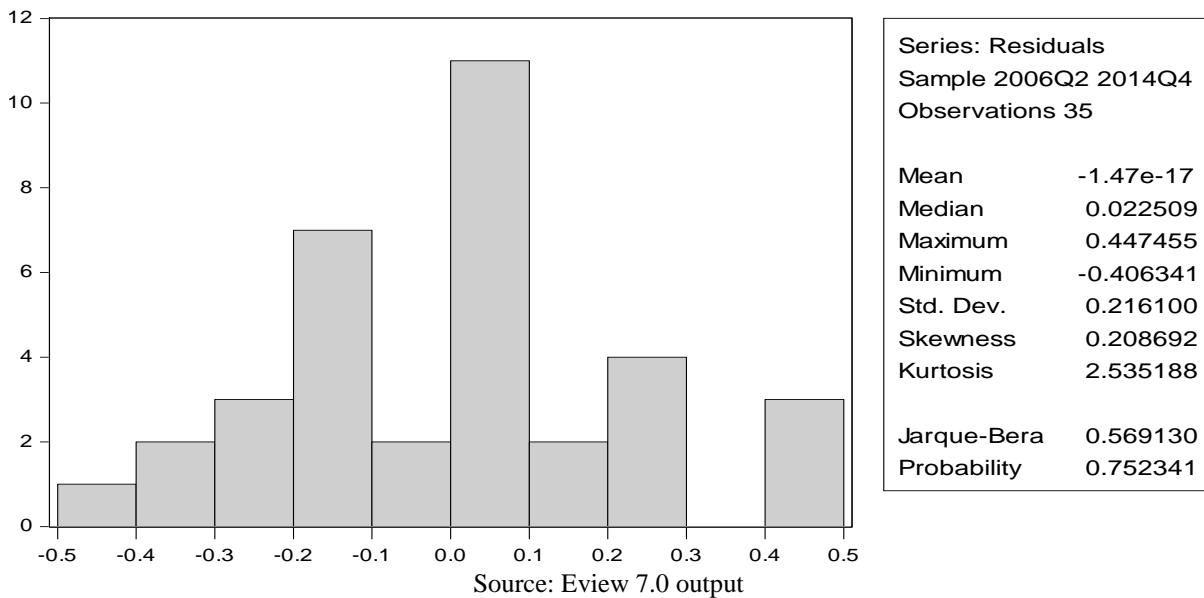


Fig.1 Histogram normality test result

The histogram normality test result presented above shows a Jarque-Bera statistic of 0.569130 with a probability of 0.752341, indicating that the residuals are normally distributed.

The results of the residual diagnosis above confirm the validity of the model as a basis for estimating the relationship between the dependent variable (profitability) and the independent variable (electronic banking).

4.7 Test of Hypotheses

Having established the validity of the error correction model, the formulated hypotheses can now be tested and inferences made based on the model.

4.7.1 Hypothesis 1

H₀₁: ATM transactions have no significant impact on the profitability of commercial banks in Nigeria.

The results on table 4.6 above show that LATM has a t-statistic of 1.811282 with a probability value of 0.0805, which indicates that it is statistically significant at 5 percent. The null hypotheses cannot, therefore, be rejected; but accepted. This means that Automatic Teller Machines (ATM) transactions have insignificant impact on the profitability of commercial banks in Nigeria. The impact is, however, significant at 10 percent level.

4.7.2 Hypothesis 2

H₀₂: Point-of-sales transactions do not have any significant influence on the profitability of commercial banks in Nigeria.

The results on table 4.6 above show that LPOS has a t-statistic of 2.69188 with a probability value of 0.0116, which indicates that it is statistically significant at 5 percent. The null hypotheses can, therefore, be rejected. This means that Point of sales transactions have a significant influence on the profitability of commercial banks in Nigeria.

4.7.3 Hypothesis 3

H₀₃: E-Mobile banking has no significant contribution on the profitability of commercial in Nigeria.

With respect to E-mobile banking, the results on table 4.6 above show that LEMB has a t-statistic of 0.335306 with a probability value of 0.7398, which is insignificant at 5 percent. This means that the null hypothesis cannot, therefore, be rejected; and that, E-mobile banking has no significant contribution on the profitability of commercial banks in Nigeria.

4.7.4 Hypothesis 4

H₀₄: There is no significant relationship between internet (WEB) banking services and the profitability of commercial banks in Nigeria.

On internet banking transactions (IBT), table 4.6 above shows that LIBT has a t-statistic of -0.136831 with a probability value of 0.8921, which is statistically insignificant. The null hypothesis cannot, therefore, be rejected; but accept to the effect that internet banking transactions have no significant relationship with the profitability of commercial banks in Nigeria.

Overall, table 4.6 above shows a f-statistic of 2.502385 with a probability value of 0.053121, which is significant at 5 percent. This indicates that the combined effect of electronic banking indicators is significant to the profitability of commercial banks in Nigeria.

4.8 Discussion of findings

The study was set to examine the relationship between electronic banking and the profitability of commercial banks in Nigeria. Indicators of electronic banking used in the study included volumes of ATM transactions, electronic mobile banking (EMB) transactions, Point of sales (POS) services, and internet banking transactions (IBT), while profit before tax was used to represent profitability. The results of the empirical analysis show that there is a strong positive relationship between electronic banking and the profitability of commercial banks in Nigeria. This agrees with Delgado et al (2004) who observed a positive relationship between e-banking and bank performance due to higher financial costs and lower fee income of e-banking. Also, Lustsik (2004) found that banks made additional profits on the transactions effected via electronic channel banking services as the absolute unit cost numbers are lower than those of fees collected from clients. The results, however, contradict Siam (2006) who examined the

effect of electronic banking on bank's profitability in Jordan. The population of the study included all working banks in Jordan which have sites on the internet for the periods of 1999-2004. The result from the data analysis that were gathered from the study instrument (questionnaire) showed that there is a correlation with statistical significance between electronic banking and banks profitability; showing a negative effect in profitability in the short run and a positive effect in profitability in the long run. This is also the position in Hernando and Nieto (2007), which showed that the impact of transactional web adoption and adoption of the internet as a delivery channel involves a gradual reduction in overhead expenses. This effect is statistically significant after one and half year after adoption. The cost reduction translates into an improvement in banks profitability, which becomes significant after one and half year in terms of return on assets (ROA) and after three years in terms of return on equity (ROE).

5.0 Summary, Conclusions, and Recommendations

5.1 Summary of findings

From the results of analysis of empirical data and the discussion above, the findings of this study are hereby summarized as below:

- a. That there is a strong positive and significant relationship between electronic banking and profitability of commercial banks in Nigeria.
- b. That, ATM transactions have a positive and significant impact on the profitability of commercial banks in Nigeria.
- c. That, internet banking transactions have a positive contribution to the profitability of commercial banks in Nigeria
- d. That, Point of sales services have a positive but insignificant influence on the profitability of commercial banks in Nigeria.
- e. That, electronic mobile banking has a negative; but insignificant effect on the profitability of commercial banks in Nigeria.

5.2 Conclusion

The study was carried out in order to assess the relationship between electronic banking services and the profitability of commercial banks in Nigerian. Many literatures and academic publications from different authors in electronic banking services were reviewed in the course of this work. Also, empirical data were gathered, analysed and interpreted. The evidence of the impact of the adoption of electronic banking (the internet) as a delivery channel of bank products and services on bank profitability is mixed at both sides. However, the more recent studies, including this one, seem to find a positive relationship between e-banking and profitability; even though, even in the present study, it cannot be concluded that adopting e-banking decision is the key factor in improving bank profitability. Nevertheless, it can be argued, that as the intensity and experience in the deployment and usage of internet services increases, the profitability, and by implication, the overall financial performance of multichannel banks is likely to improve.

5.3 Recommendations

Following the above inferences from empirical evidence, the study hereby makes the following recommendations:

- 1) That, commercial banks should intensify effort to deploy more ATM delivery points and also make them more effective and efficient.
- 2) That, commercial banks should endeavour to reactive all moribund ATMs in order to ease the tension experienced by customers in trying to get their services; and also to reap the benefit in terms of cost reduction.

- 3) Just as customers have come to accept ATMs transactions, other e-banking channels like electronic mobile banking, POS, internet (WEB) banking can even become more acceptable if quick response to complaints from customers about failed transactions is achieved.
- 4) Banks should investigate factors that would make electronic banking channels more attractive to customers, noting the setbacks with a view to addressing them, so that, Nigerians will begin to get the full benefits of e-banking as in other climes.
- 5) The regulatory authorities should also collaborate with the banks to put in place an enabling operating environment and regulatory framework to bring out optimal deployment of these services to customers. This is especially with respect to addressing the issue of failed transactions.

References

- Abaenewe, O., Ogbulu, Maxwell, M.O. Ndugbu. (2013). Electronic banking and bank performance in Nigeria. *West Africa Journal of Industrial and Academic Research*. 6 (1), pp 171- 187.
- Aburine, T. U. (2008) Determinants of bank profitability: macroeconomic evidence from Nigeria, Deaken University, working paper, p1-10
- Agbaje, O., & Ayanbadejo, K. (2013).Electronic payment and economic growth in Nigeria. *A Report by RTC Advisory Services Ltd.*
- Agboola, A. A. (2001) Impact of electronic banking on customer services in Lagos, Nigeria, *Ife Journal of Economics and Finance*, Vol. 5(1&2)
- Akinyele, S.T., & Olorunleke, K. (2010). Technology and service quality in the banking industry: An empirical study on the various factors of electronic banking. *International Journal of Business Management*, 4 (4), 209- 221.
- Al-Smadi, M.O. and Al-wabel S.A. (2011) The impact of electronic banking on the performance of Jordanian Bank. *Journal of Internet Banking and Commerce* Vol.16 No.2.
- Amedu, U. M. (2005). Domestic electronic payment in Nigeria: The challenges. *Central Bank of Nigeria Bullion*, vol. 29, No. 1, January/March.
- Anyanwokoro, M. (1999) *Theory and policy of money and banking*. Enugu, Hossana Publications.
- Auta, E.M. (2010). E-Banking in developing economy: Empirical evidence from Nigeria. *Journal of Applied Quantitative Methods*, 5 (2), 212- 222.
- Berentsen, A. (1998), Monetary Policy Implications of Digital Money. *Kyklos*, Vol. 51, pp. 89 117.
- Carvalcio, T. and Siegel, M. (2011) Return on investment: an analysis of financial account aggregation. *MIT Sloan School of Management working paper* 4384-02, August
- CBN (2014) *Central Bank of Nigeria annual reports and statement of accounts 2014*.
- Chibueze, A.Z., & Maxwell, O.O., & Osondu, N.M. (2003).Electronic banking and bank performance in Nigeria. *West African Journal of Industrial and Academic Research*, 6 (1), 1- 17.
- Cohen, Benjamin J., (2001) Electronic money: new day or false dawn?" *Review of International Political Economy*, Vol. 8, pp. 197—225.
- Daniel, E. (1999). Provision of electronic banking in the UK and republic of Ireland". *International Journal of Bank Marketing*.17 (2), 72- 82.

- Delgado, J., Hernando, I. and Nieto, M. J. (2004). Do European primarily internet banks show scale and experience efficiencies? *Working Paper* No. 0412, Banco de Espana, Madrid.
- Dogarawa, A. B. (2005). The impact of e-banking on customer satisfaction in Nigeria. [Online] Available: <http://mpira.ub.uni-muenchen.de/23200/> (September 15, 2013).
- Fonchamnyo, D.C. (2013). Customers' perception of e-banking adoption in Cameroon: An empirical assessment of an extended TAM. *International Journal of Economics and Finance*, 5 (1), 166- 176.
- Freedman, C., (2000). Monetary policy implementation: past, present, and future – will electronic money lead to the eventual demise of central banking? *International Finance*, Vol. 3, No. 2, pp. 211—27.
- Friedman, B., (1999), The future of monetary policy: the Central Bank as an army with only a signal corps? *International Finance*, Vol. 2, No. 3, pp. 321-38.
- Gertignon, S. (2008) Is internet banking in India consumer concern and changing bank strategies. *Global Journal of Business Research*, 2(1) 43-51.
- Gonzalez, M.E. (2008). An alternative approach in service quality: An e-banking case study". *Quality Management Journal*, 15(1), 41- 58.
- Goodhart, Charles A. E., (2000), Can central banking survive the IT revolution? *International Finance*, Vol. 3, No. 2, pp. 189-209.
- Helleiner, E. (1998), Electronic money: a challenge to the sovereign state? *Journal of International Affairs*, Vol. 51, 387-409.
- Hernando, I. and Nieto, M. J. (2007) Is the internet delivery channel changing banks' performance?: The case of Spanish banks. *Journal of Banking and Finance*, 31(1083-1099)
- Idowu, B. (2011) Legal implications of electronic banking in Nigeria. *The Punch*. P.65.
- Izogo, E.E., Nnaemeka, O.C., Ezema, K.S., & Onuoha (2012). Impact of demographic variables on consumers' adoption of e-banking in Nigeria: an empirical investigation. *European Journal of Business and Management*, 4 (17), 27- 39. [Online] Available: [http:// www.iite.org](http://www.iite.org) (July 2, 2013)
- King, M., (1999) Challenges for monetary policy: new and old. *Bank of England Quarterly Bulletin*. November, pp 397 - 415.
- Kobrin, Stephen J., (1997) Electronic cash and the end of national markets. *Foreign Policy*, No. 107 (Summer), pp. 65—77.
- Lee, B. and Longe—Akindemowo O. (1999) Regulatory issues in electronic money: a legal—economics analysis. *Netnomics*, Vol. 1, pp. 53—70.
- Lustik, O. (2004) Can e-banking be profitable in Tartu? Tartu University press ISBN 9985- 4-0400.
- Mahdi, S., & Mehrdad, A. (2010). E-banking in emerging economy: empirical evidence of Iran. *International Journal of Economics and Finance*, 2 (1), 201- 209.
- Madueme, I. S. (2010) Evaluation of the impact of information communication technology on banking efficiency using the transcendental logarithmic production function and CAMEL rating. *International Journal of Engineering Science and Technology*, 2(1) 1-6.
- Maiyaki, A. U. and Mokhtar, S. S. U. (2010) Effects of electronic banking facilities, employment sector and

- age-group on customer's choice of banks in Nigeria. *Journal of Internet Banking and Commerce*, Vol. 15(1)
- Mohammed, S.K., Siba, S.M., & Sreekmar. (2009). Service quality in internet banking: empirical evidence. *International Journal of Indian Culture and Business Management*, 2 (1), 30- 46.
- Oluwatolani, O., Joshua, A., & Philip, A. (2011) The impact of information technology in Nigeria's banking Industry. *Journal of Computer Science and Engineering*, 7(2), 63- 67.
- Omotayo, G. (2007) A dictionary of finance. West Bourne, England: West Bourne Business School.
- Onay, C., Ozsoz, H. and Ash, D. (2008) The impact of internet banking on banks profitability: The case of Turkey. *Oxford Business and Economics Program* June, 22-24.
- Ovia, J. (2001). Internet banking practices and potentials in Nigeria. *Paper Delivered at a Workshop Organized by Institute of Chartered Accountants of Nigeria at Lagos*.
- Santomero, A.M., and Seater J.J., (1996), Alternative monies and the demand for media of exchange. *Journal of Money, Credit and Banking*, Vol. 28, pp. 942-60.
- Shy, Oz, and Tarkka, J. (2002) The market for electronic cash cards. *Journal of Money, Credit and Banking*. Vol. 34, pp. 299-314.
- Siam, A. Z. (2006) Role of the electronic banking services on the profiles Jordanian banks. *American Journal of Applied Sciences*, 3(9) :1999-2004.
- Siyanbola, T.T. (2013). The effect of cashless banking on Nigerian economy. *E-Canadian Journal of Accounting and Finance*, 1 (2), 9- 19.
- Tanaka, T. (1996) Possible economic consequences of digital cash. *First Monday*. Vol. 1, No. 2, available on the web at: http://www.firstmonday.org/issues/issue2/digital_cash/index.htm.
- Trajhova, N. (2005) Global finance names the world best internet bank in Middle East and Africa. (online-www. http/).
- Woodford, M., (2000), Monetary policy in a world without money. *International Finance*, Vol. 3, pp. 229 – 260.