American Journal of Humanities and Social Sciences Research (AJHSSR)
e-ISSN : 2378-703X
Volume-02, Issue-08, pp-92-100
www.ajhssr.com
Research Paper Open Access

Impact of Information Technology on Performance of Banks in Nigeria

Chukwukaelo, Uche[1], Onyeiwu, Charles[2], Amah, Peter[3]
[1]*University of Lagos, Akoka , Yaba, Nigeria*
[2]*University of Lagos, Akoka, Yaba, Nigeria*
[3]*University of Lagos, Akoka, Yaba, Nigeria*

ABSTRACT: Over the last two decades, the Nigerian banking sector has witnessed some upsurge in the use of technology for service delivery. However, concerns have been expressed as to whether cost and other challenges of adopting information technology can be justified by performance. Accordingly, this study sought to examine the relationship between different e-banking channels and the profitability of organisations in Nigeria. Four e-banking channels,(automatic teller machines, point of sales, internet banking transactions and electronic mobile banking) were identified and regressed against return on equity (ROE) of Deposit Money Banks operating in Nigeria between 2006 and 2016. A panel data regression model was formulated and tested using the generalized method of moment approach. The result revealed that the overall impact of electronic banking on profitability of Deposit Money Banks operating in Nigeria was significant and positive. The study recommends that critical stakeholders and beneficiaries of electronic banking – the government, regulatory authorities and the banks should collaborate to put in place an enabling operating environment and an effective regulatory framework to bring about optimal deployment of these services to customers

KEYWORDS: *Information technology, Deposit money banks, Profitability, Generalized method of moments.*

I. INTRODUCTION

The rapid advances in information technology and computer networks such as the Internet and Telecommunication systems had enabled the development of electronic commerce at a global level. The nearly universal connectivity which the Internet offers has made it an invaluable business tool which has created a new type of economy called the digital economy, (Shah and Clarke, 2000). This digital economy has resulted in the emergence of technological development such as the e-developments which culminated in the emergence and rapid advancement in all areas of financial intermediation and financial markets: e-finance, e-money, e-banking, e-brokering, e-insurance, e-exchanges, and even e-supervision. New information technology (IT) innovation is turning into the most important factor in the future development of banking, influencing and shaping banks' marketing and business strategies. The driving forces behind the rapid transformation of banks are influential changes in the economic environment: innovations in information technology, innovations in financial products, liberalization and consolidation of financial markets, deregulation of financial inter-mediation etc. These and other factors make it complicated to design a bank's strategy, whose application is not threatened by unforeseen developments and changes in the economic environment. The question is no longer whether the emergence of Internet has been a threat or an opportunity as those who have decided to protect themselves from the threats instead of using the opportunities are determined to vanish from the marketplace. One of the fall-out of the internet technology in the banking industry is e-banking. Electronic banking (e-banking) is the newest delivery channel for banking services. The definition of e-banking varies amongst researchers partially because electronic banking refers to several types of services through which bank customers can request information and carry out most retail banking services via computer, television or mobile phone (Daniel, 1999; Mols, 1998; and Sathye, 1999). Burr (1996), for example, describes it as an electronic connection between bank and customer in order to prepare, manage and control financial transactions. For this study, we shall adopt the definition of electronic banking as defined by the Basel Committee (2003) as the provision of retail and small value banking products and services through electronic channels. Thus e-banking consists of Internet banking, telephone banking, PC Banking, mobile banking, TV based banking and ATMs. In the present study the focus is mainly on the development and the future of these platforms and their impact on commercial banks profitability.

According to Lin et al., (2009) many banks, both in the public and private sector have been using internet banking and perform their main activities electronically such as writing checks, paying bills transferring funds, printing statements, and inquiring about account balance. However, the exact impact of e-banking on the bank performance has proved elusive. The knowledge of the exact contribution of e- banking to banks performance will inform management investment decisions on technology deployment. In line with this perception, numerous studies have been carried out on the effect of e-banking on the profitability of commercial banks. Shuqair (2003) argues that in the short run, electronic banking service will have a negative effect on the bank's profitability because of employee training costs and electronic infrastructure costs. However, Onay, Ozsoz and Helvacioglu (2008) found that electronic banking positively affects bank profitability. According to Central Bank of Kenya (2010) more investment in electronic technology enables considerable reduction in transaction costs and therefore eliminates the need for minimum balance requirements, thereby expanding banking access. Within the Nigerian context, the Nigerian financial system has the peculiarity of being dominated by the money market, which is designed as a means of liquidity adjustment and a potential path for economic growth and development and therefore the efficiency of payment system, and of course, the ease with which transactions are perfected in the system is very vital to its proper functioning and profitability. Over the years, the Nigerian 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. Electronic banking would enable the banking system to 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 economies of scale. The significance of this study is partly that the outcome can be applied in the development of national policy framework for e-Banking adoption, which is relevant to the national policy of using the banks to facilitate economic and social growth. The outcome of this study will also have important contributions to financial institutions, particularly commercial banks who would appreciate the relative benefit of e-banking services and its impact on profitability of Nigerian banks. Moreover, the banks will obtain valuable information about customers' response when the full range e-banking services are put in place in the foreseeable future. There is, therefore, need to investigate various e-banking channels to assess their individual as well as combined contributions to the financial performance and profitability of deposit money banks. To achieve the objective of this paper it is divided into five parts namely introduction, literature review, methodology, data analysis and discussion of finding and finally conclusion and policy recommendation.

II. LITERATURE REVIEWS

2.1 Relevant theories

2.1.1 Technology Acceptance Model (TAM)

The technology Acceptance Model was developed in 1989 by Fred Davis. The model was originally designed to predict user's acceptance of Information Technology and usage in an organizational context. The model posits that user acceptance is determined by two key beliefs, namely perceived usefulness and perceived ease of use. Perceived usefulness (U) is defined as the extent to which a person believes that using a particular technology will enhance her/his job performance, while perceived ease of use (EOU) is defined as the degree to which a person believes that using a technology will be free from effort, Davis, (1989). The theory argues that the consumers' attitude towards using modern technology is influenced by perceived usefulness and perceived ease of use. The theory uses psychometric scales to measure usefulness and ease of use. Perceived usefulness is measured on scales of whether work is done more quickly, job performance, increased productivity, effectiveness and usefulness. Perceived ease of use scales included whether the technology is easy to learn, clear and understandable, easy to become skillful, easy to use, controllable and easy to remember. TAM also proposes that external factors affect intention and actual use through mediated effects on perceived usefulness and perceived ease of use. TAM has been criticized for its failure to take to account the costs involved in acquiring a modern technology. The organization may be willing to adopt a modern technology but may not have the necessary resources (financial or human) to do so. Despite this short coming, TAM is still one of the most useful models in explaining the adoption of technology in the organizational context. This theory is relevant in the adoption and deployment of e-banking facilities in Nigeria.

2.1.2 Innovation Diffusion Theory (IDT)

This theory was developed by Everett Roger who argues that diffusion is the process by which an innovation is communicated through certain channels over time among the participants in a social system (Ratcliff, Van Zandt & McKoon, 1999). Meso et al. (2006) stated that not all innovations are adopted, even if they are good, it may take a long time for an innovation to be adopted. Rogers proposes that there are four main elements which influence the spread of a new idea which are the innovation itself, communication channels, time and a social system. According to Ratcliff et al. (1999), innovation is an idea, practice or project that is perceived as new by

an individual or other unit of adoption. Rogers (2004) described the innovation-decision process as an information seeking and information processing activity where an individual is motivated to reduce the uncertainty about the advantages and disadvantages of an innovation. He explains that the innovation-decision process has five steps which include: knowledge, persuasion, decision, implementation and confirmation. Rogers (2004) described the innovation diffusion as an uncertainty reduction process. He has also proposed attributes that can help reduce uncertainty regarding the innovation which are relative advantage, compatibility, complexity, triability and observability. Relative advantage must do with the idea giving an organization an edge while compatibility has to do with the degree to which the innovation is seen to be consistent with the values of the organization and the needs of the potential adopters. Triability is the degree to which an innovation may be experimented on with a limited basis. Observability relates to the degree to which the innovation is observable by others.

2.2.0 Empirical Review

Lustsik (2004) explored 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 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. Lee and Hwan, (2005) examined the relationship between service quality, customer satisfaction and profitability. It was revealed that perception quality is an antecedent of attitude, service quality is an antecedent of customer satisfaction, customer satisfaction directly affects purchase intention and customer satisfaction is an antecedent of profitability. 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. Siam (2006) examined the effects of electronic banking services on bank's profitability in Jordan. The study showed electronic banking services having a negative effect on bank's profitability in the short run and positive effect on bank's profitability in the long run. Malhotra and Singh (2007) examined the current state of internet banking in India and its implication for the Indian banking industry. They also analysed the performance of an internet banking group in comparison to non-internet banking group and impact of internet banking on business performance and risk. Result showed that nearly 57% of the Indian commercial banks are providing transactional internet banking services. The analysis indicates that internet banks have better operating efficiency ratios and profitability as compared to non-internet banks. Also internet banks rely more heavily on core deposits for funding than non-internet banks do. The multiple regression results revealed that the profitability and offering of internet banking do not have any significant association. However, on the other hand, internet banking has a significant and negative association with risk profile of banks, which shows that the adoption of internet banking has not increased the risk profile of 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. The results showed that the impact of transactional web adoption on banks performance take time 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). De Young, Lang and Nolle (2007) analyzed the effect of e-banking on the performance of banks by studying US community banks markets and compared the performance of virtual click and mortar banks with brick and mortar banks. Their study concluded that e-banking improved the profitability of banks hence increasing their revenues. Besides, e-banking is largely driven by the factors of minimizing the operating costs and maximizing operating profit. According to the study, Internet adoption led to increased movements of deposits from checking accounts to money market deposit accounts, increased use of brokered deposits and higher average wage rates for bank employees. 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. Karim and Hamdan (2010) examined the effects of information technology on the Jordanian banking industry. Findings revealed that IT is having a positive impact on business performance measured in terms of ROA, ROE, market value added and net profit margin. Ahmad et al., (2010) examined the relationship between customer satisfaction and performance of conventional banks operating in Pakistan. The study showed that there is a significant positive relationship between customer satisfaction and performance of conventional bank. Also, customer satisfaction helps to increase the bank performance due to greater profitability, increased market share and more return on investment. Similarly, customer satisfaction generates positive outcomes for long term profitability. In their research, Sana, Mohammed, Hassan and Monina (2011) investigated the impact of e-banking on the profitability of Pakistani banks. Their findings revealed 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.

2.3.1 Empirical Review on E-Banking and Banks Profitability – Nigerian Experience

Within Nigerian context, some studies have been carried out in this area of e-banking. 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. Auta (2007) examined the impact of e-banking in Nigeria's economy. The study revealed that customers are satisfied with e-banking system providing convenience and flexible advantages such as easy transfer, speedy transaction, less cost and time saving benefits to its customers. Opara et al., (2010) investigated the impact of technology on relationship marketing orientation and business performance of Nigerian banks. The study revealed that technology exists as a moderating variable in the relationship marketing orientation and business performance relationship of the Nigerian banks. 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 provides several advantages to Nigeria banking sector: it provides convenience and flexibility advantages. 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 Abaenewe, Ogbulu and Ndugbu (2013) investigated the effect of adoption of e banking on the profitability of Nigerian banks. The study revealed that the adoption of electronic banking positively and significantly improved the returns on equity (ROE) of Nigerian banks. On the other hand and on the contrary, it also revealed that e-banking has not significantly improved the returns on assets (ROA) of Nigerian banks.

2.4 E-banking and Operational Efficiency of Nigerian Banks

Operational efficiency of e-banking in Nigeria can be assessed by critically evaluating the banking operations between two periods. These include pre-and e-banking period in Nigeria.

2.4.1 Pre-Electronic banking period (1982-1995)

The first bank in Nigeria was established in 1892 (then African Banking Corporation). There was no banking legislation until 1952, and during this period three foreign banks (Bank of British West Africa, Barclays Bank, and British and French Bank) and two indigenous banks (National Bank of Nigeria and African Continental Bank) were established, with a total number of 40 branches (Osabuohien, 2008 cite Iganiga, 1998). As at 1988, the Nigerian banking system consisted of the CBN, 42 commercial banks and 24 Merchant Bank (Osabuohien, 2008 cite Iganiga, 1998 and Adam, 2005). Between the period of 1892-1995, banking transactions were mostly paper-based transactions. Manual processing of documents was in use. These resulted to slow pace of banking operations vis-à-vis their employees' productivity cum overall performance. Ovia (2005) have it that banks' customers were inevitably made to spend several hours in the congested banking halls in carrying out their transactions. This implies that pre-electronic banking periods were days when banking halls were characterized by long queues mainly because of delays in the traditional banking operations thereby leading to low operational efficiency in the banking sector.

2.4.2 E-banking Period (1996-present)

The introduction of e-banking (e-payment) products in Nigeria commenced in 1996 (Dogarawa, 2005 cite Sanusi, 2002). It is a situation whereby Nigerian banks perform their banking operations through electronic means. Irechukwu (2000) lists some banking services that have been revolutionized using ICT as including account opening, customer account mandate, and transaction processing and recording. Akinlili (1996) added

that ICT application can be seen in almost all areas of banks' activities. This phenomenon is capable of bringing about speedy operations and enhanced productivity (Osabuohien, 2008 cite Adeoti, 2005; Ova, 2005). Electronic banking became prominent after the Central Bank of Nigeria banking reformation exercise in June 2004, which was geared towards strengthening capital base of banks in the country and making the emerging banks much stronger and reliable. The surviving banks, after the reformation exercise, have been able to catch up with global developments and now operate with better service delivery. Before this period, it took time for transaction to be completed on the floor of Nigerian banks, customers were driven away from banking transactions just because of poor services and facilities. But with e-banking, the Scenario is different. The banks official website (all the banks have their own websites) properly enlightened customer or public as to the activities of the banks. It can give any visitor or customer all the information about the operations of the banks such as account opening information, information about internet banking viz: access to online balance of customer's account, transfer of funds to third party and access to all transfer history on customers account. Customers do not need to wonder whether a cheque has cleared or a deposit has been posted. At the click of a button, customers can easily check the status of their current, saving and any other type of account.

III. METHODOLOGY

3.1 Research Design

The design of this study is quantitative as it is meant to collect and analyse given data on 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, return on equity (ROE) was used as the indicator of profitability. The study used annual data on banks for the period 2006 to 2016 for this study. The secondary data was collected from Central Bank of Nigeria statistical bulletin, Central Bank of Nigeria (CBN) annual reports and accounts, and Nigerian Deposit Insurance Corporation (NDIC) annual reports and accounts and the Nigerian Inter-Bank Settlement System(NIBSS)

3.2 Model Specification

Descriptive statistics will be 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 statistic for the series. Since this study is interested in establishing relationships between variables and possible projections, multiple regression and correlation analysis will be employed. The study anchors on the role of electronic banking in organizational profitability. This theory emphasized the intermediation roles of deposit money banks in any economy. Shehu et al (2013) specified model for the relationship between electronic banking products and performance of DMBs is adapted for this study thus:

$$ROE = \beta_{0it} + \beta_{1it}\, ATM_{it} + \beta_2\, ED_{it} + \beta_3\, SMSA_{it} + \beta_4\, EM_{it} + e_{it} \qquad (1)$$

Where
ROE = Return on equity
β1 – β4 = Slope coefficient
β0 = Intercept
ATM = Automated Teller Machine
ED = Electronic Direct
SMSA = SMS Alert
EM = Electronic Mobile
e = error term
In line with Shehu et al (2013) with modifications, the model for the study can be specified

$$ROE = f\,(ATM, POS, WBT, INTBANK) \qquad (2)$$

Where
ROE = Return on equity (proxy for deposit money banks' profitability)
ATM = Automated Teller Machine payment method
POS = Point of Sale payment method
WBT = Web Based Transactions
INTBANK = Internet Banking
f = functional relationship notation
Transforming equation (2) into its panel data form:

$$ROE_{it} = \beta_0 + \beta_1 ATM_{it} + \beta_2\, POS_{it} + \beta_3 WBT_{it} + \beta_4 INTBANK_{it} + Uit \qquad (3)$$

$$ROE_{it} = \beta_0 + \beta_1 ATM_{it} + \beta_2\, POS_{it} + \beta_3 WBT_{it} + \beta_4 INTBANK_{it} + Uit + f_{it} \qquad (4)$$

$$ROE_{it} = \beta_0 + \beta_1 ATM_{it} + \beta_2\, POS_{it} + \beta_3 WBT_{it} + \beta_4 INTBANK_{it} + Uit + Wit \qquad (4)^*$$

Where

Uit + f_{it} = Wit
i = 10 (number of banks) and t = 11 (number of years)
Ui = firm-specific error term
f_{it} =idiosyncratic error term
Wit = error term for the random effect model
Equation (iii) represents the fixed-effect model and equation 4 (4)* represent the random-effect model.;

IV. DATA ANALYSIS AND DISCUSSION OF RESULTS

4.1 Descriptive Statistics

Table 4.1: Descriptive Statistics

	ATM	WBT	INTBANK	POS	ROE
Mean	2.34E+08	3331006.	3.66E+10	10917722	12.32727
Median	2.95E+08	1955249.	2.39E+10	2100673.	11.10000
Maximum	4.71E+08	10499911	1.03E+11	47743919	21.90000
Minimum	7738142.	206028.0	9.02E+08	84193.00	0.400000
Std. Dev.	1.83E+08	3290766.	3.79E+10	16254477	6.902042
Skewness	-0.074264	1.196566	0.627302	1.372770	-0.184530
Kurtosis	1.278706	3.120998	1.958128	3.441778	1.794502
Jarque-Bera	1.368086	2.631622	1.218951	3.544364	0.728490
Probability	0.504573	0.268257	0.543636	0.169962	0.694721
Sum	2.57E+09	36641068	4.02E+11	1.20E+08	135.6000
Sum Sq. Dev.	3.36E+17	1.08E+14	1.44E+22	2.64E+15	476.3818
Observations	11	11	11	11	11

Source: Output from E-view (2018)

Table 4.1 above highlights descriptive statistics of variables. Return on Equity (ROE) which is the dependent variable has a mean of 12.3% and a standard deviation value of 6.902042. This implies that the return on equity of Nigeria bank reflected a positive performance on the average. Point-of-sales transactions (POS) have a mean value of 10,917,722 and a standard deviation of 6.902042. Web based transaction (WBT) has a mean value of 3,331,006 and a standard deviation of 37,900,000,000. Internet banking also has a mean value of 36,600,000,000 and standard deviation of 37,900,000,000. Also, ATM has a mean of 234,000,000 and a standard deviation of 183,000,000

4.2 Regression Results

However, to examine the relationship between the dependent variable ROE, and the independent variables, OLS regression analysis was used in form of panel data between (2006 to 2016)

Table 4.2: ROE panel regression results

Dependent Variable: ROE				
Method: Least Squares				
Date: 04/07/18 Time: 02:11				
Sample: 2006 2016				
Included observations				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.771858	4.050355	-0.190566	0.8552
ATM	1.08E-08	2.38E-08	0.452901	0.0655
INTBANK	-2.37E-10	1.90E-10	-1.246563	0.0290
WBT	1.15E-05	4.19E-06	2.753400	0.0331
POS	-1.76E-06	8.07E-07	-2.178650	0.0722
R-squared	0.700148	Mean dependent var		12.32727
Adjusted R-squared	0.500247	S.D. dependent var		6.902042

S.E. of regression	4.879276	Akaike info criterion	6.310826
Sum squared resid	142.8440	Schwarz criterion	6.491687
Log likelihood	-29.70954	Hannan-Quinn criter.	6.196818
F-statistic	33.502469	Durbin-Watson stat	2.967436
Prob(F-statistic)	0.003588		

In Table 4.2, the study focuses on the test of significance of relationship between the dependent and independent variables using OLS regression technique. The differences in these results are based on the assumptions made about the explanatory variables and cross sectional error term. The results revealed differences in magnitudes of coefficients and signs, and also reflected changes in the significance of certain variables. In table 4.2, we observed that the OLS regression model shows that the R-squared value was (0.700148). This indicates that the independent variables jointly explain about 70.0 % of the systematic variations in the performance of return on equity (ROE) across all the banks sampled in this study and over the eleven-year period (2006-2016). The adjusted R-Squared value was however lower at 50% This means that any model that includes the various explanatory variables may be appropriate in explaining substantial changes in financial performance with internet banking and other web-based transactions being significant at 5% level. The F-statistics (33.502469) and its p-value (0.003588) show that the ROE panel random effect regression model is generally significant at 5% levels. Also, the Durbin Watson statistics (DW) of 2.967436 also confirms the validity of the model and indicates the model is sufficiently free from autocorrelation problems.

We further tested the robustness of the results using the Generalized Method of Moments,(GMM). GMM is essentially a test of over-identification condition constraint of a model: showing whether data does support the estimated model. This tested with the J-statistics with the null hypothesis that expected value of the first moment is zero

Ho: $E(U_t(\partial)) = 0$

GMM selects the estimator such that the sampling error with respect to estimated value is as small as possible or close to zero

Table 4.3: Generalized Method of Moments

Dependent Variable: ROE				
Method: Generalized Method of Moments				
Date: 04/07/18 Time: 02:14				
Sample: 2006 2016				
Included observations				
Linear estimation with 1 weight update				
Estimation weighting matrix: HAC (Bartlett kernel, Newey-West fixed bandwidth = 3.0000)				
Standard errors & covariance computed using estimation weighting matrix				
Instrument specification: ATM INTBANK WBT POS ROE				
Constant added to instrument list				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.873583	1.449977	-0.602481	0.5689
ATM	1.68E-08	2.17E-08	0.771322	0.0498
INTBANK	2.97E-10	2.73E-10	-1.087012	0.0388
WBT	1.15E-05	2.42E-06	4.759980	0.0031
POS	1.67E-06	6.54E-07	-2.559789	0.0429
R-squared	0.694850	Mean dependent var		12.32727

Adjusted R-squared	0.491417	S.D. dependent var	6.902042
S.E. of regression	4.922190	Sum squared resid	145.3677
Durbin-Watson stat	2.920290	J-statistic	3.445926
Instrument rank	6	Prob(J-statistic)	0.043408

Source: Output from E-view (2018)

As shown in table 4.3 which gives a more robust result being a product of a dynamic system, the result shows that 69.% of the variance in ROE can be explained by the explanatory variables. All the explanatory variables including ATM, INTERBANK, POS and WBT are significant at 5% and they individually have positive impact on profitability. The J statistics and Probability of J-statistics show that the overall impact of electronic banking on banking profitability is significant with the p-value of 0.043408. The result reflects the high elasticity of the return on investment on each of the discussed e-banking channels as reflected in the coefficients as 1% investment and deployment of POS would result in about 1.67 increase in return on equity. In the same manner 1% increase in investment in ATM INTBANK, WBT would result to 1.68%, 2.97% and 1.15% increase in return on equity respectively.

V. CONCLUSION

This study reveals that the introduction of electronic banking in Nigeria has a strong influence on the profitability of deposit Money Banks. This finding is in line with findings of Karim and Hamdam(2010), Sana et –al,(2011) and Abaenewe et-al.,(2013). However, the introduction of the system, involves commitment of huge amount of financial resources on computer technology and telecommunication facilities. Computer technology is a primary requirement for the proper functioning of electronic banking. The major problems hindering the effective operation of e- banking in Nigeria are infrastructural deficiencies such as erratic power supply, inadequate government support and high charge on payment terminals (POS, ATMS), etc. However, the introduction of electronic banking system has also contributed significantly to bank income by way of fee or charges from these services and through economy of scale.

VI. RECOMMENDATIONS

In line with the conclusion and major findings, and to give the growing trends in electronic banking in the Nigerian Deposit Money Banks a vision in the right directions, some pertinent recommendations that would enhance e-banking in the Nigerian banking sector are:

i. Inadequate internet and IT knowledge by customers is a major problem militating against the growth of e-banking in the country. Government and regulatory agencies should consider developing IT policies that cater for the citizens deficiencies. Government should equip Secondary schools and tertiary institutions in Nigeria with computers and enforce usage.

ii. Furthermore, to counter the threats and insecurity posed to e-banking, like money laundering, fraud, among others, necessary legal codes backing the industry must be established and fully followed up as this will enhance the growth of the industry.

iii. Regulatory authorities like CBN (Central Bank of Nigeria) must enforce fully new standards and policy on the charges on electronic transactions and those bordering on key issues such as: technology and Security Standards; monetary policy; legal issues and; regulatory and supervisory Issues and bring these in line with global best practices.

REFERENCES

[1]. Ahmad, A., Muhammad, B. and Sultan M. (2010). Impact of customer satisfaction on performance of commercial banks in Pakistan. Interdisciplinary Journal of Contemporary Research in Business, 2(8), 316-322.

[2]. Agboola, A. A. (2001) Impact of electronic banking on customer services in Lagos, Nigeria, Ife Journal of Economics and Finance, Vol. 5(1&2)

[3]. Auta, E.M. (2010). E-Banking in developing economy: Empirical evidence from Nigeria. Journal of Applied Quantitative Methods, 5 (2), 212- 222.

[4]. Basel Committee on Banking Supervision, 2003, Risk Management Principles for Electronic Banking, July 2003

[5]. Burr, W. (1996), Wie Informationstechnik die Bankorganisation verändern könnte, Bank under Market. Vol. 11.

[6]. 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

[7]. Central Bank of Kenya (2010). Bank Supervision Annual Report. 16), 3556-3563. -1464.

[8]. Daniel, E. (1999), Provision of e-banking in the UK and the Republic of Ireland, International Journal of Bank Marketing. Vol. 17(2), PP. 72-82.
[9]. Chen, S. C., & Li, S. H. (2010). Consumer adoption of e-service: Integrating technology readiness with the theory of planned behavior. *African Journal of Business Management*, *4*(16), 3556-3563.
[10]. Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology.*MIS quarterly*, 319-340.
[11]. De Young, R., Lang, W. W., & Nolle, D. L. (2007). How the Internet affects output and performance at community banks. *Journal of Banking & Finance*, *31*(4), 1033-1060.
[12]. 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)
[13]. Karim A. J. and A.M. Hamdan (2010). The impact of internet technology on improving bank performance matrix: Jordanian banks as case study. European, Mediterranean and Middle Eastern Conference on Information Systems, 1-15.
[14]. Lee M. C. and Hwan, I. S.. (2005). Relationship among service quality and profitability in the Taiwanese banking industry. International Journal of Management, 22(4), 635-648.
[15]. Lin, T. T., Lee, C. C., & Chiu, T. F. (2009). Application of DEA in analyzing a bank's operating performance. Expert Systems with Applications, 36(5), 8883-8891.
[16]. Lustik, O. (2004) Can e-banking be profitable in Tartu? Tartu University press ISBN 9985- 4-0400.
[17]. Madueme, I. S. (2010) Evaluation of the impact of information communication technology on banking efficiency using the trancedential logarithmic production function and CAMEL rating. International Journal of Engineering Science and Technology, 2(1) 1-6.
[18]. 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)
[19]. Malhotra P. and Singh, B. (2007). Current state of internet banking in India and its implication for the Indian Banking industry. Eurasian Journal of Business and Economics, 2(4), 43-62.
[20]. Meso, P., Checchi, R. M., Sevcik, G. R., Loch, K. D., & Straub, D. W. (2006). Knowledge spheres and the diffusion of national IT policies.The Electronic Journal of Information Systems in Developing Countries, 23.
[21]. Mols, N. (1998), the Behavioural Consequences of PC banking: International Journal of Bank Marketing, Vol. 16(5), PP. 195–201.
[22]. Olorunsegun, S. (2010), The impact of Electronic Banking in Nigeria Banking System. Unpublished MBA Research Project.
[23]. 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.
[24]. Opara C. B., Ayopoo, O. and Darego W. M. (2010). Analysis of impact of technology on relationship marketing orientation and bank performance. European Journal of Scientific Research, 45(3), 291-300.
[25]. 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.
[26]. Ratcliff, R., Van Zandt, T., & McKoon, G. (1999).Connectionist and diffusion models of reaction time.Psychological review, 106(2), 261.
[27]. Rogers, E. M. (2004). A prospective and retrospective look at the diffusion model.Journal of Health Communication, 9(S1), 13-19.
[28]. Sathye, M. (1999), Adoption of Internet banking by Australian consumers: an empirical investigation, International Journal of Bank Marketing, Vol. 17(7), PP. 324-34
[29]. Shah and Clarke (2009), E-Banking-Management-Issues-Solutions-and Strategies,(1st ed.),University of Hull, UK.
[30]. Siam, A. (2006). Role of the electronic banking services on the profits of Jordanian banks. *American Journal of Applied Sciences*, *3*(9), 1999-2004.
[31]. Shuquair (2003), Alternative monies and the demand for
[32]. media of exchange. .*Journal of Money, Credit and Banking*, Vol. 28, pp. 942-60
[33]. Trajhova, N. (2005) Global finance names the world best internet bank in Middle East and Africa. (onlinewww. http/).