

## THE EFFECTS OF ELECTRONIC INNOVATION ON THE FINANCIAL PERFORMANCE OF COMMERCIAL BANKS

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### Abstract

Given the overwhelming success of electronic innovation on financial performance, banks in Nigeria have embraced electronic banking and radical changes have taken place in the Nigerian financial landscape. Today, banks rely heavily on ICT to drive most of its products and services. For instance, Automated Teller Machine (ATM), point of sale machine (POS), e-transact facilities which culminate into the cashless way of doing business, this development have opened the window for easy banking transaction at the shortest possible time. However, despite this innovation Nigerian banks are yet to be proficient in service delivery. The sector is bedeviled by lack of infrastructure (broadband) coupled with stringent monetary policies and cybercrime. The paper therefore assessed the impact of electronic innovation on the financial performance of commercial banks. Five (5) banks were surveyed, using their annual financial statements and accounts two profitability ratios (ROA and ROE) were computed. The result shows that banks are not efficient thereby performs averagely poor. The study therefore, concludes that electronic innovations have not fully impacted in banking operations. To improve banking services, adequate infrastructure that can facilitate through the Public Private Partnership (PPP) initiative. This will reduce the persistent network failure and cybercrime (hackers). It will also increase customers' confidence and enhance the banks financial performance.

**Keywords:** *E-Banking, Innovation, Financial Performance, Mobile Phone Service, Automated Teller Machine.*

### Background to the Study

The advent of technology has no doubt assist the world to carry out several tasks in the simplest and possible method. Therefore, it is not an exaggeration to say that technology is the life wire of banking business in a modern world. The digression from crude banking system to a more sophisticated banking operation has made banking transaction easier and comfortable, as well as cost effective. In both developed and developing countries, raw cash movement is usually restricted, as most of the banking transaction goes through electronic channels. This however, makes cash movement a simple task, less stressful, cost and time saving.

Nigeria is not left alone in this trend, as the Central Bank of Nigeria (CBN) introduced cashless banking policy, with Lagos State used a the pilot scheme. However, this policy has been lagged twenty five (25) years in implementation when compared with what has happened in other developing economics and some least developing countries across the globe, and even on the African continent. Report shows that cashless policy has been in operation in smaller countries in Africa with less per capital income but vibrant banking and

public sector infrastructure which has reduced the default rate arising from interruptions. Countries that had assumed same global economic rating with Nigeria such as Egypt, Morocco and South Africa have been enjoying alternative payment options more than twenty five (25) years now (Ovih, 2013).

E-banking is expected to reduce the level of cash in circulation, to reduce cost associated with cash handling, invariably saving banks cost of operation. This system is expected to encourage the use of electronic and cheque payments for goods and services as the alternative to cash payments. Information technology-enhanced payment system such as electronic payments mode are laudable innovations in the Nigeria's banking sector. They provide a range of convenient electronic payment mechanism that make banking services available to customers without necessarily having physical and face to face contact with the banks. The channels through which e-banking activities are carried out includes: electronic cards such as Automated Teller Machine (ATM) credit and debit cards (point of sale), internet banking and mobile banking services. However, these facilities are driven by vibrant electronic system and high technical sophisticated broadband infrastructure and skilled labour. Therefore efficiency in banking services can be enhanced through intensive funding to provide the necessary infrastructures, this will hastening economic growth and development.

### **Problem Statement**

Anywhere in the world, cashless policy is driven by vibrant electronic system. However, its commencement in Nigeria has become a surprise, especially when the country's electronic banking system, has not been thoroughly perfected. The system is also bedeviled by low broadband infrastructure to drive the network connectivity, which led to bank customers spending several hours in banking halls and in front of ATM when making transactions. This type of frustration defies customers' confidence in the system. Thus the object of easing congestion in the bank is defeated (special report, 2013). At the same time an alternative source of energy must be provided by banks due to irregular power supply, hence the cost of running these machines escalate associated with high cost of maintenance totaled to an annual figure N29.7 billion. On the other hand while fraudulent activities have been on the increase, rising from 1,532 cases in 2010, to 3,380 in 2012 (Ovih, 2013). In this vain, one wonders if innovation has improved on bank performance or not.

### **Objectives**

The aim of this paper is to:

1. Examine the effect of information technology innovation on service delivery in the banking sector.
2. Examine the impact of information technology innovation on financial performance of banks.

### **Literature Review**

Indeed information technology have made banks to be innovative in terms of service delivery by offering different types and forms of banking business at the convenient of bank client at the shortest possible time and cost. However the range of products and services provided by banks over the electronic channel vary widely in content, capability and sophistication. E-banking is described by Salahi and Zhila (2008), as an electronic connection between bank and customer in order to prepare, manage and control financial transactions. Gupta, (2008), Kamel, (2005) hold that e-banking is transforming the banking and financial industry in terms of the nature of core products/services and the way these are packaged, proposed,

delivered and consumed. It is also seen as an invaluable and powerful tool driving development, supporting growth, promoting innovation and enhancing competitiveness, improve business efficiency, service quality and attract new customers (Kannabiran and Narayan, 2005).

From the several studies conducted on information technology innovations on business efficiency, most research confirms on the positive impact of technology innovations on business performance (Thornton and White 2001, Rafiu, 2007; Mahdi and Mehrdad, 2010). While Chiemekwe et al (2006), Agboola (2006), among others identified some hindering factors to effective utilization of IT innovations and quality service delivery in the banking sector.

### **Theoretical Framework**

The theory of innovation as reviews in the studies of Schumpeter (1928 and 1939) which was later supported by Porter (1992) is the Schumpeter theory of innovation which argues that entrepreneurs creates opportunity for new profits through innovation by generating activities which would expand and transform the circular flow of income. Schumpeter proposed an interesting allusion to innovation in the banking sector as found in his discussion on the banking acts of 1930's where he commented the 1933 act which introduced an important reforms which included the strengthening the federal reserve's power to regulate member banks extension of credit for speculative purposes and the like.

Other theories of innovation include innovation diffusion theory (Roger, 1983; Brancheay and Wetherbe, 1990; Mibre and Benbasart, 1991; Dillon and Moris, 1996; Lundblad and Jennifer, 2003), Task-technology fit theory (Godhue and Thompson, 1995); Zigurs and Buckland, 1998; Jungles and Watson, 2006, 2006; Barnes, 2003; Perry, O'hara, Sellen, Brown and Harper, 2001; Gebaner and Ginburg, 2006; Turel, 2006; Gebaverl and Shaw, 2004; Zheng and Tuan, 2007) and Technology Acceptance Model (Davis, 1989; Davis, 1993; Perdersen, Leif, Mettlie and Thorbjornsen, 2002; Wang, Wang, Lin and tang, 2003). Schumpeter theory of innovation has been adopted in this study because its best suit the study at hand.

### **Forms of information technology innovations in the banking sector:**

#### **1. Automated Teller Machine (ATM)**

An ATM is a combination of a computer terminal record-keeping system and cash in vault in one unit, that permit customers to make cash withdrawals without entering into the baking hall. It is a book-keeping system with a plastic card containing a Personal Identification Number (PIN) or by punching a special code number into the computer terminal linked o the bank's computerized record 24 hours per week. Once access is gained ATM offers varying banking services to customers and mostly located outside the bank, and usually at strategic places like airport shopping mall, filing stations and business concentrated areas.

ATM was first introduced to function as cash dispensing unit. However, as technology advances, ATM has been able to provide other services such as making deposits fund transfer and bill payments to corporate bodies. Once there is free flow of network services, this device serves as the fastest means of retail banking transaction.

#### **2. Point of Sale Machine**

This is an online system that allows customers to transfer funds instantaneously from their bank accounts to merchant accounts when making purchases using debit card (Echekoba, and Ezu, 2012). This is designed purposely to service customers shopping payment requirements instead of handling cheques and cash within and after banking hours.

3. **Telephone Banking**

Telephone banking is a form of e-banking facility conducted through telecommunication devices (Leow, 1999). Telephone banking has numerous advantages for both customers and banks. For customers, tele-banking provides increased convenience, expanded access and significant time saving; it offers retail banking services at their homes and offices. For the banks, the cost of services delivery is substantially reduced, as it requires only internet services without installation of any machine. Once the bank customer's phone possesses the accessory software and activated, usually cost of transaction is borne by the customer. It also has almost all the service features of ATM, except that it lacks the means of dispensing cash.

4. **Personal Computer Banking (PC-Banking)**

This is a form of service which allows customers using their Pcs to access information about their accounts through a proprietary network, usually with the help of preparatory software installed on their Pcs. Once access is gained, the customer can perform many retail banking factors. This encourages the growth of Pc-banking which virtually establishes a branch in the customer's office or home, and offer 24 ours services. It equally has the benefits of telephone and ATM banking except for cash dispense.

5. **Internet Banking**

Internet banking is described as the provision of traditional banking services over the internet. Therefore, Internet banking enables customers to carry out certain transactions on their accounts with stringent security checks. It offers more convenience and flexibility to customers with absolute control over their banking activities. It is the most cost effective mean of e-banking.

6. **Branch Networking**

Branch networking is a system of computerized connection of bank branches that are scattered in a wide geographical location into one unified system in the form of a Wide Area Network (WAN) for creating and sharing of merged customers, information and records (Chorafas, 1998). It offers quicker rate of inter-branch transaction as distance barriers are eliminated. With several networked branches serving the customers as one system, there is simulated division of labour among bank branches with its associated positive impact on productivity among branches. It curtails customer travel long distance to bank's branches while it offers more time for customer's activities (Omotoso et al, 2012).

7. **Regis Coping Machine or Image Machine**

This machine is a photographic and signatures verification system that permits a bank to automatically store the signatures and photograph of account holders. The benefit here is to help prevent payment of proceeds of cheques to fraudsters (Omotoso, et al 2012).

**Benefits of E-Banking**

From a survey finding by Booz, Allen and Hamilton (1996), conclude that e-banking is a cost effective system of banking transactions. They found that an estimated cost providing the routine business of a full service branch in USA is \$1.07 per transaction as compared to 54 cents telephone banking, 27 cents for ATM banking and 1.5 cents for internet banking. In Finland, one online transaction costs the bank an average of just 11 cents, compared to \$1 for a transaction in the branch (Echikson, 2001). In the same vein,

average payment in internet banks or via direct debit cost 4 times less, than payment in branch. However, Amrit (2007), posited that risk management, infrastructure development and policy formulation are the three major challenges of E-banking in Nepal. The research findings of Oteka and Ikpetan (2011) also admit that e-banking in Nigeria enjoys reduction in operation cost, increase in bank branches networks, but acknowledged the existences of insecurity unreliability of internet services, power failure, in accessibility of internet services by rural populace are obstacles to full implementation of e-banking.

### **Measures of financial performance**

Firms secures whatever capital it needs and employs it (finance activity) in activities, which generate returns on invested capital (production and marketing activities). It may be difficult to separate the finance functions from production, marketing and other functions, but the functions themselves can be readily identified. The functions of raising funds, in vesting them in assets and distributing returns earned from assets to shareholders and the attempts to balance cash inflows and outflows are collectively known as finance functions. It is therefore imperative for management of organizations to ensure that the funds of the enterprise are utilized in the most efficient manner. This decision has far-reaching consequences for the firm because they influence the size, profitability, growth, risk and survival of the firm, and as a consequence, affect the overall value of the firm (Pandey, 2010).

The financial strengths and weaknesses of the firm can be fully analyzed using information reported in accounting and financial statements. It is of importance for management to have interest in knowing financial strength of the firm to make their best use and or, financial weaknesses to take suitable corrective actions. Thus, financial analysis is the process of identifying the financial strengths and weaknesses of the firm by properly establishing relationships between the items of the balance sheet and the profit and loss account. These relationships are established by calculating ratios; this ratio is used as a benchmark for evaluating the financial position and performance of a firm. Therefore, several analyses may be done on the basis of the information in the financial statements, e.g. profitability, liquidity efficiency of assets management, debt management, cash flow and market value (Brigham and Ehrhardt, 2003, Correia, Flynn, Uliana and Wormald, 2003). Liquidity ratio measures the firm's ability to meet short term obligations, while leverage ratios show the proportion of debt and equity in financing the firm's assets. Activity ratio on the other hand measures the firm's efficiency in utilizing its assets. Likewise the overall performance and effectiveness of the firm is measured by profitability ratios. Profitability ratio is the choice of analysis in this study. Although several profitability ratios are available, return on asset and return on equity are assumed to be adequate for this study.

### **Challenges of E-Banking in Nigeria**

#### **1. ATMMaintenance Cost**

The huge cost of maintenance spend on automated teller machine used by the commercial banks in the country is alarming. This amount to about N29.7 billion annually on the almost 10,000 machines deployed for electronic payment and cash transactions. To reduce cost, banks reduced the rate of maintaining these machines as a result of withdrawal of N100 charges on transactions made by customers, as the banks no longer found the services profitable and the machines very expensive to maintain. Added to this, is the cost of sustaining the increase number of staff in the banking halls, due to the mal-functioning process of these machines which often lead to congestion (Ovih, 2013.).

2. **Prone to Insecurity**

Fraud has taken different dimension with the advent of information technology. It starts from bank insiders, to electronic card and the internet hackers. Over the years banks have continued to devise creating ways of fleecing the account of customers through illegal charges. According to central bank governor, more than N6 billion worth of unjustified charges by the bans on their customers was recovered by the apex bank in just one year (special report, 2013). Also in the chartered institute of bankers of Nigeria (CIBN) report indicates that there were 1,419 cases bordering in excess charges and other infractions.

Prevalence of fraud is more attributed to ATMs and other banking transactions through the internet. According to the 2012 banking sector report by the NDIC, the number of fraud detected in the banking system grew from 1532 in 2010, to 2,352 and 3380 cases in 2011, 2012 respectively. As a result, the sum of N18.04 billion was lost by commercial banks in 2012 against N28.44 billion in 2011 and N21.29 billion (special report 2013).

3. **Low ICT Infrastructure**

Though there is a growing dependence on internet technology, there has been low supply in terms of connection speed. Thus, the low broadband infrastructure to drive the network connectivity stands as a challenge to the banking sector. This has led to the insistence network failures that frustrate customers during transaction and causes long queues in front of ATM, Pos machines.

4. **Lack of E-workforce**

Nigeria was rated low on the technological achievement index by the UNDP human development. This is largely connected with technological incapacities of the country. Moreover, inadequate knowledge of best practices in IT utilization as well as IT-related skill deficiencies also constitutes a constrain to the optimal utilization of ICT in the banking industry (Omotoso et al 2012).

5. **Stiff Regulations**

In spite of the important role of the financial sector, banks have traditionally, albeit unduly been heavily regulated in the monetary authorities. These controls and regulations lead developing country's financial markets to be characterized by financial repression. Apart from this, the direct intervention in the banking sector's operations leads in some cases to highly concentrated market structures in the banking industry which in turn have implications on saving mobilization, intermediation and bank performance (Howard and Hayness, 2001). For instance recent directives by the CBN on the gradual abolition of commission on turnover and N100 charges on transaction on ATMs other than the customer's bank; increase in reserve for public funds to 50%, will affect banking operations. This is in addition to the high cost of incurring and maintenance of information and technology gargets.

**Methodology**

This research adopt secondary source of data collection. A sample of 5 banks has been randomly selected. They are Sterling Bank, UBA, Union Bank, First bank and Zenith Bank. A period of 2000-2012 is the scope of the study. The financial statements of these banks were analyzed. Pre and post analyses of two financial ratios (profitability) were measured-Return on Asset (ROA) and Return on Equity (ROE). However,

Ceylan, Emre and Asl (2008), reveals that in a cross sectional study, it is more reliable to use the before tax figure as opposed to after tax figure since tax rates differ across banks based on non-performance related factors. Hence the paper uses the pre-tax profit in computing ROA. In this type of analysis the higher the ratio the better the efficiency of the bank.

**Model for Analysis**

$$\text{ROA} = \frac{\text{PBT}}{\text{TA}}$$

$$\text{ROE} = \frac{\text{PAT}}{\text{EQT}}$$

**Where:** PBT = Profit Before Tax

TA = Total Assets

PAT = Profit After Tax

EQT = Equity i.e. Share Holders Funds

**Table 1a: Return on Assets Ratios Post-Innovation**

Year	Zenith ROA in %	UBA ROA in %	Union Bank ROA in %	First Bank ROA in %	Sterling Bank ROA in %
2008	3.1	3.6	3.3	3.3	3.3
2009	2.3	1.6	-30.9	0.4	-4.4
2010	2.3	-0.6	-1.5	1.6	1.4
2011	2.6	-1.6	-12.4	0.02	1.1
2012	3.9	2.4	0.9	-0.3	1.3

**Source:** computed by researchers using financial statements of sampled banks.

**Table 1b: Return on Assets Ratios Pre-Innovation**

Year	Zenith ROA in %	UBA ROA in %	Union Bank ROA in %	First Bank ROA in %	Sterling Bank ROA in %
2000	3.9	3.2	3.1	2.8	NA
2001	4.1	0.8	3.3	2.9	NA
2002	3.6	1.1	2.7	1.9	NA
2003	3.5	2.4	3.1	4.2	NA
2004	3.0	2.7	2.7	4.5	NA

**Source:** computed by researchers using financial statements of sampled banks.

**Table 2a: Return on Equity Post-Innovation**

Year	Zenith ROE in %	UBA ROE in %	Union Bank ROE in %	First Bank ROE in %	Sterling Bank ROE in %
2008	621.0	21.3	488.7	189.4	103.8
2009	164.0	6.9	4141.9	282.1	-106.0
2010	238.3	-3.36	346.1	221.5	66.5
2011	281.5	-1.02	1445.5	290.9	88.0
2012	610.3	21.5	6.3	-5019.6	88.6

**Source:** computed by researchers using financial statements of sampled banks.

**Table 2b: Return on Equity Ratios Pre-Innovation**

Year	Zenith ROE in %	UBA ROE in %	Union Bank ROE in %	First Bank ROE in %	Sterling Bank ROE in %
2000	322.4	602.6	29.4	29.9	NA
2001	235.5	139.2	40.96	27.4	NA
2002	682.2	160.1	375.7	391.6	NA
2003	285.7	234.4	524.6	812.8	NA
2004	335.2	328.2	461.9	633.7	NA

**Source:** computed by researchers using financial statements of sampled banks.

### Data Analysis

Table 1a, presents return on assets of the five sampled banks between 2008 to 2012 post innovation periods. From the analysis table all banks record negative ratios in one or more years except for Zenith bank. The negative values indicate a worse situation indicating the inability of the assets employed to yield returns. Union bank experiences the highest negative ratios for three consecutive years with -30.9 per cent, -1.5 per cent, and -12.4 per cent. It is therefore, seen as the least performing bank. More so, the positive values are rather not too encouraging with a highest value at 3.9 per cent. However, in ratio analysis the higher the ratio the better the performance assessed. Comparatively, table 1b analyses the ratios at the pre-innovation period. The result shows that all banks have positive return on asset revealing that assets employment are yielding returns on investment, except for sterling bank, whose result could not be attained due to inaccessibility of data (started commercial banking in 2006). This simply means that banks in this period perform better in the post-innovation era. The pre-innovation least return on asset ratio is 0.8 per cent and 4.5 per cent is the highest. This further signifies a better performance.

The return on equity ratio shows the rate of return on investors' funds is presented in tables 2a and 2b for both pre and post-innovations. Table 2a depicts similar features with that of table 1a, where some ratios are negative in some of the years among banks except again for Zenith bank. Similarly, negative returns on equity ratio signify a non return on investors capital employed. The highest rate of return is 4141.9 per cent



and -5019.6 per cent the highest negative value. Conversely, the pre-innovation rates depict positive values for all banks and years under analysis. Having a 27.4 per cent least value and 812.8 per cent highest value.

### **Discussion of Findings**

From the analysis it is clear to ascertain that financial performance of deposit money banks are better before the advent of information technology in the industry. This is because all ratios for both returns in the pre-innovation period are positive and relatively higher than its corresponding post-innovation rates. However, this condition negates the postulations of the theory of innovation that advocate success achievement with organizational innovation. The reason for banks experience in Nigeria is not farfetched. It is known that electronic banking facilities are energy consuming gargets, while the supply of power in Nigeria remains erratic. Hence banks incur extra operation cost, as they must make provision of alternative sources of energy. In addition, the maintenance of these machines is high due to lack of local technical expertise in making repairs and maintenance; large number of staff are visible in the banking hall, which are ought not to be with e-banking processes due to infractions in administration; stringent monetary policies that stiffens banks' liquidity profile, hence reduce their ability to engage in business rewarding ventures. Base on these facts, it is therefore certain that the advocacy of the theory of innovation remains valid.

### **Conclusion**

Based on the result findings one can adequately conclude that Nigerian banks are yet to reap the impact of electronic banking that result to reduction in operation costs. However this could be tantamount to the enormous challenges facing the banking industry. This owe to the poor performance experienced by banks which can be improved by taken adequate measures that will enhance electronic banking operation as a cost and time saving mechanism.

### **Recommendations**

1. Enhance confidence in the system: Government should partner with private entrepreneurs to establish domestic internet facilities, being locally based, it will become easier to track, control and monitor activities operated in the platform.
2. Making internet infrastructures locally based, this will attract people into acquired the technical skills for maintenance and installation works. This will reduce the cost of hiring foreign technical expertise.
3. Automated card should be designed in such a way to ensure confidence in the convenience and the security of every transaction, through an in build transaction history with client's image.
4. A specialized network should be added to analyze data and detect transactions on the internet which are most likely to be fraudulent.
5. There is an urgent need to review laws on banking fraud to be relevant to the current demands. This can be made possible by providing a national bio-metric data of the citizenry that will be able to trace, dictate and identify criminal activist by means of bio-evidence(s).
6. Banks should required by the apex financial authority to extend ATMs POS to the rural areas. However, this can be successful when there s regular supply of electricity, this will reduce the cost of generating alternative source of energy that eats deep into the financial resources of banks. This extension will expand banks investment opportunities by attracting more customers.

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