ELECTRONIC BANKING ADOPTION AND PERFORMANCE OF DEPOSIT MONEY BANKS IN NIGERIA

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ABSTRACT

The objective of this study was to examine the impact of electronic banking adoption on performance of deposit money banks in Nigeria. The study used ATM, Internet banking, POS and mobile banking as proxies of electronic banking adoption, while Return on assets (ROA) was used to proxy bank performance. The study adopted a descriptive research design and relied on secondary data. Data were sourced from CBN Financial Report, 2021. Panel data analysis was adopted in this study. The study revealed that ATM, internet banking, POS and mobile banking have positive effect on performance of deposit money banks. The study therefore concludes that adoption of e-banking technologies enhances performance improvement of deposit money banks; and recommends deposit money banks in Nigeria that seek improved performance should adopt innovative technologies that facilitate the provision of efficient banking service delivery to customers.
Keywords: ATM, electronic banking adoption, internet banking, point of sales, mobile banking

INTRODUCTION

In today's global dynamic competitive environment, product technology is becoming more relevant, mainly as a result of changing technologies. Manufacturers and service providers that offers products that serve the needs and wants of target customers, and gain wide market acceptance are better positioned to achieve sustainable competitive advantage. Banks as service institutions play a catalytic function in developing a technology innovation-driven economy. According to Adeyemi (2012), technological innovation refer to the process through which technological advances are produced. The innovation process includes a set of activities that contribute to increase in the capacity to produce new goods and services (product innovations) or to implement new forms of production (process innovations).

Therefore, the concept of technological innovation is associated with the idea of generating, applying, and disseminating technologies. Banking technology is generally a bundle or package of different technological elements such as improved varieties of products. Banking technology consists two components: (1) a hardware aspect consisting tools that embody the technology as a material or physical object such as machines and software aspects, (2) the information base for the tool such as technical knowledge and skills about how to use the hardware aspect of the technology (Agwu, 2014).

Innovation begets new products, new processes, new markets, new behaviours and new management structures and strategies that improve firms' market-standing and betters their operations (Ateke & Harry, 2021). Innovation in the banking sector is viewed as the process of creating and popularizing new financial instruments, technologies, institutions and markets, which facilitates access to information, trading and means of payment (Agwu, 2015). Innovation generally, fosters organizational growth, prosperity and transformation in tandem with changes in internal and external environmental conditions.

According to Bahl (2012), technological innovations in the financial sector is the arrival of a new or better product or a process that lowers the cost of producing existing financial services. The financial sector is in the throes of a transformation caused by increasing globalization and deregulation. Financial innovations such as ATMs, mobile banking, debit cards, credit cards, agency banking and smart card applications are taking place at a rapid pace in the banking industry.

Adam (2005) notes that innovations provide firms with a strategic orientation to overcome problems they encounter while they strive to attain sustainable competitive advantage. Thus, this study intends to examine the effect of banking technology on the financial performance of deposit money banks in Nigeria. Technology is a key driver of change; and for change to be beneficial, the use of technology should be business driven to meet clearly defined goals. Thus, the choice of electronic banking in Nigerian banking system is not a mean stride.

Nigerian banks' gravitation to electronic banking is rooted in the drive to satisfy demands of customers and improve the efficiency and effectiveness of their operation. Customers could transact business anywhere just with a push of a button; 24 hours a day, 7 days a week; enjoy quick service delivery etc. just because transactions can be processed faster and more conveniently.

However, Nigerian banks are yet to reap fully reap the benefits of electronic banking, as they challenges at every turn, including incessant system break down and inconsistence services and the online connectivity. This has affected banks effectiveness and efficiency of operation with its attendant negative impact on productivity and overall profitability. Similarly, banks are faced with system redundancy due to rapid technological changes resulting to excessive costs hence, lower profitability, there is inadequate understanding about the drives of innovation.

In other words, while these technologies are essentially deployed by banks to provide convenience to customers and also improve their efficiency, it is hardly wholly true that deposit money banks in Nigeria are better off, on account of deploying innovative technological tools in their operations. Thus, this study intends to examine the effect of banking technology adoption on financial performance of deposit money banks in Nigeria. The specific objectives are to examine the impact of:
1) ATM adoption on financial performance of deposit money banks in Nigeria.
2) Internet banking adoption on financial performance of deposit money banks in Nigeria.

3) POS adoption on financial performance of deposit money banks in Nigeria.
4) Mobile banking adoption on financial performance of deposit money banks in Nigeria.

Theoretical framework
This study is anchored on innovation diffusion theory (Rogers, 1985). Mahajan and Peterson (1985) defines innovation as any idea, object or practice that is perceived as new by members of a social system and defines diffusion of innovation as the process by which innovation is communicated through certain channels over time among members of a social system. Diffusion of innovation theory attempts to explain and describe the mechanisms of how new inventions, in this case internet, mobile and others are adopted and how they are successful. Five critical attributes that influence the rate of adoption are relative advantage, compatibility, complexity, triability and observability.

According to Rogers (1985) the rate of adoption of innovations will depend on how adopters perceive its relative advantage, compatibility, triability, observability and complexity. Banking institutions will adopt and deploy innovative technological tools only if they consider such tools to be beneficial to them. Adoption of such innovations will also be faster in organizations that have the required competence and technical readiness to use them.

E-banking adoption
The adoption of innovations is a process that includes the generation, development and implementation of new ideas or behaviours. Innovation does not necessarily have to be new in terms of discovery or invention. Technological innovations have been identified to contribute to the distribution channels of banks. Electronic delivery channels are collectively referred to as electronic banking. Electronic banking is really not one technology, but an attempt to merge several technologies. Each of these evolved in different ways but in recent years, different groups and industries have recognized the importance of combining their workings of these technologies to achieve better results.

Innovation has been shown to be positively related to performance of firms (Abubakar & Adebayo, 2014). One key industry where there are calls for greater levels of innovation is banking. The retail banking sector is currently struggling as it comes under greater competitive pressure from a number of sources. Customers are becoming more demanding, banking services are gradually being seen as commodities and implementation of ICT networking has brought revolution in the functioning of banks and other financial institutions (Luka & Frank, 2012; Mohammad & Saad, 2011; Siam, 2006).

It is argued that dramatic structural changes are in store for financial institutions as a result of the Internet revolution, others see a continuation of trends already under way (Davis, 1989). Some banking services, including account opening, customer account mandate and transaction processing and recording have been revolutionized through the use of ICT. ICT has provided self-service facilities from where prospective customers can complete their account opening documents online. It assists customers to validate their account numbers and receive instruction on when and how to receive their cheque books, credit and debit cards (Kayode-Adedeji & Agwu, 2015).

Financial institutions in the present socio-economic environment are dependent on computer support and IT innovation, therefore, to a substantial extent, the banking industry today is clear on what emerging technologies will be.

Adopting innovative banking technologies allows for safer and more efficient retail payment that enhance the effectiveness of the financial system, boost consumer confidence and facilitate commerce. Deposit money banks adopt banking technologies to enhance their ability to compete favourably, in financial markets and improve their financial performance. According to Adepoju and Alhassan (2010) innovations have positive influence on performance of firms. Firms must innovate or adopt innovation if they must compete effectively in the dynamic and competitive business environment and achieve set goals in terms of profitability, high sales volume and large market share.

Banking operations are evolving, partly because the world has taken a quantum leap in the use of technologies in the last several years. The commonest electronic banking technologies adopted by deposit money bank in Nigeria include automated teller machines (ATM), Internet banking, point of sales (POS) and mobile banking. These are adopted as dimensions of e-banking adoption in this study.

ATM is a technology that dispenses cash and enable customer undertake routine banking transactions. It allows customers access to their accounts, pay bills, make fund transfers, and check account balance. Internet banking is described as the provision of traditional (banking) services over the internet. It offers more convenience and flexibility to customers coupled with a virtually absolute control over their banking. The idea of internet banking is to give customers access to their bank accounts via a website and to enable them to enact certain transactions on their account given compliance with stringent security checks. Mobile banking refers to provision of bank-related financial services with the help of mobile telecommunication devices. The scope of offered services may include facilities to conduct bank and stock market transactions to administer accounts and to access customized information. A POS uses a debit card to activate an Electronic Fund Transfer process (Abubakar & Adebayo, 2014).

Performance of Deposit Money Banks
Performance of deposit money banks refers to whether a bank is doing well within a trading period to realize its financial objectives. The only document that explains this is presumably the published financial statements. A fair evaluation of bank's performance should start by evaluating whether it has been able to achieve objectives set by management and stockholders (De Young, 2005). Certainly, many banks have their own unique objectives. Some wish to grow faster and achieve some long-range growth objective, others seem to prefer quiet life, minimizing risk and conveying the image of a sound bank, but with modest rewards to their shareholders. Ordinarily, stock prices and behaviour are deemed to reflect the performance of a firm. This is a market indicator and may not be always reliable.

However, the size of the bank, the volume of deposit and its profitability could be deemed as more reliable performance indicators. For the purpose of this study, profitability indicators, precisely the Return on Equity Capital (ROE) and the returns on Assets (ROA) are used to assess performance of deposit money banks. These ratios are indicators of management efficiency, and rate of returns. These profitability measures vary substantially over time and from one banking market to another (Balachandran & Balachandher, 2000). In this study however, we use ROA to represent performance.

E-banking adoption and Performance of Deposit Money Banks
Adoption of technological innovations has been noted as a potent driver of increased efficiency in banking operations (Musara & Fatoki, 2010). The role of technological innovations on efficiency in banking is paramount to successful and profitable service delivery. The use of electronic platforms play significantly improve banking transactions; for banks and their

customers. The banking sector has for the past decade, witnessed various improvements and new technologies that promise improved service delivery.

Prior empirical studies linked technology adoption to business performance. Ogbo et al. (2012) assessed the level of innovation in Nigeria's telecommunications industry with a view to ascertain how innovative the operators in the industry are; and how their innovativeness determine competitiveness in the industry. The study also found that innovation is a regular feature of Nigeria's telecommunications industry, and that innovation improves productivity and competitiveness of operators in the industry.

Similarly, Kihumba (2008) analysed the impact of innovation on financial performance of banks in Kenya between 2000 and 2007. The study particularly looked at how innovation has increased annual revenue, business volume, customer's turnover and reduced costs of operation, facilitated expansion of market share and geographical coverage of the bank. The study revealed that some financial institutions do innovate to utilize their excess capacity and to maximize their revenues within existing capacity.

In Mabruok and Mamoghil (2010), the dynamics of financial innovation and performances of banking firms was assessed. The study analysed effect of adoption of product innovation (telephone, SMS banking and so on) and process innovation (magnetic strip card, debit, ATM and credit card, Automated cash dispense) on performance of banks. The study reported that product innovation improves profitability while process innovation has positive effect on profitability and efficiency.

Malhota and Singh (2010) examined the impact of financial innovation (internet banking) on bank performance. The study also sought to determine if banks that have been offering internet banking for a relatively longer time outperformed those that only recently began to offer internet banking. Using data on financial performance of 82 commercial banks between 1998 and 2007. The results from multiple regression indicated that experienced internet banks are larger banks and have better operating efficiency ratios and rely less on traditional source of financing. The results also revealed that profitability and experience in offering of internet banking does not have any significant association.

Relatedly, Kimung (2010) examined effects of technological innovation on commercial banks' financial performance in Kenya. The study found that banks employ various technological innovation like ATM, mobile phone, internet banking services. The study also found that technological innovation improves financial performance Kenyan commercial banks through licensed bank sales, profits increment and return on equity. The study concluded that adoption of modern technological innovation is essential to banks' performance. Additionally, Korir (2014) in their study sought to establish the effect of financial innovation on financial performance of commercial banks in Kenya. Regression and correlation analysis was used to analyse the relationship between the dependent and the independent variable of the study. The study revealed a strong relationship between financial innovation and financial performance.

METHODOLOGY

This study adopted a descriptive research design to examine the effect of electronic banking on performance of deposit money banks in Nigeria. Based on the objectives of the study, secondary data was employed. In analysing the data gathered for this work, panel data analysis was adopted in this study to establish the relationship between proxies of electronic banking

(ATM, Internet banking, POS, mobile banking) and banks' performance. Based on the objective of the study, the model below was developed:

ROA f(ATM, INT, POS, MO)

Where:

ROA   -   Return on Asset (proxy for performance)
ATM -   Automated teller machine
INT   -   Internet banking
POS   -   Point of sale
MOB -   Mobile banking

Therefore, the functional relationship is linearized into ordinary least square (OLS) model

$ROA = b_0 + b_1 ATM + b_2 INT + b_3 POS + b_4 MOB + U_t$

Where

Dependent variable = ROA
Independent variable = ATM, INT, POS, MOB
Regression constant   = bo
Regression parameter = b_1-b_4
Stochastic error term = U_t

DATA ANALYSES AND INTERPRETATION OF RESULTS

Table 1: Panel least squares (fixed effect) model result

Dependent Variable: LROA
Method: Panel Least Squares
Date: 01/01/23   Time: 06:11
Sample: 2010 2021
Periods included: 12
Cross-sections included: 1
Total panel (balanced) observations: 24

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LATM	0.888586	0.836021	-3.062874	0.0229
LINT	0.096457	3.641752	0.026486	0.9790
LPOS	1.033146	0.213168	4.846633	0.0000
LMOB	0.242625	0.582866	-2.416263	0.0590
C	4.708143	3.050261	1.543521	0.1290

Effects Specification				

Cross-section fixed (dummy variables)

R-squared	0.725125	Mean dependent var	-1.259006	
Adjusted R-squared	0.639648	S.D. dependent var	0.990331	
S.E. of regression	0.041329	Akaike info criterion	-1.390267	
Sum squared resid	27.47843	Schwarz criterion	-1.739325	
Log likelihood	-61.70802	Hannan-Quinn criter.	0.526803	
F-statistic	6.143436	Durbin-Watson stat	1.826308	
Prob(F-statistic)	0.000009			

The panel least squares (fixed effect) model result is presented in Table 1. The results of the panel least square (fixed effect) regression of various expressions of technological progress on the performance (ROA) of deposit money banks in Nigeria are presented and discussed below. In Table 1, the value of the intercept which is 4.70 revealed that performance of deposit money

banks in Nigeria experience 4.70 increase when all other variables (ATM, INT POS MOB) are held constant. The estimate coefficient which is 0.09 for ATM shows that a percentage change in ATM deployment by deposit money banks will cause 0.09 per cent increase in their performance.

The estimate coefficient which is 0.88 for INT shows that a percentage change in INT will cause 0.88 per cent increase in performance of deposit money banks. The estimate coefficient which is 1.03 for POS shows that a percentage change in POS will cause 1.03 per cent increase in performance of deposit money banks. Lastly, the estimate coefficient which is 0.24 for mobile banking shows that a percentage change in mobile banking will cause 0.24 per cent increase in performance of deposit money banks.

This test is aimed at determining whether the signs and sizes of the results are in line with what economic theory postulates. Economic theory tells us that the coefficients are positively related to the dependent variable, if an increase in any of the explanatory variables leads to increase in the dependent variable and vice versa. Therefore, the variable under consideration and their parameter exhibition of *a priori* signs have been summarized. From the result in Table 1, it is observed that the signs of all parameters actually conformed to economic theories.

A positive relationship which exists between all the proxies of e-banking adoption on performance of deposit money banks in Nigeria. This indicates that increase in either deployment of ATM, INT, POS or MOB will result in positive change on performance of deposit money banks in Nigeria. From our analysis. This does conform to the *a priori* criteria because increased delivery of banking service through ATM, INT, POS, MOB over the years will lead to increase in performance of deposit money banks. The R^2 which measures the overall goodness of fit of the entire regression, shows the value as $0.7251 = 72.51$ per cent approximately 73 per cent. This indicates that deployment of ATM, INT, POS, and MOB accounts for about 73 per cent variation in ROA. Hence, the study does have a goodness of fit.

The result in Table 1, f-calculated (6.14) is greater than the f-tabulated (2.34), that is, f-cal> f-tab. Hence, we reject the null hypothesis that the overall estimate has a good fit which implies that our independent variables are simultaneously significant. The test for the existence of autocorrelation was performed using Durbin-Watson statistic. The test result indicates the non-existence of positive autocorrelation in the model, since the calculated DW is 1.82. This is judged as a good fit, as such, it will be safe to conclude the result as devoid from autocorrelation

Summarized t-test result from the panel least squares (fixed effect)

The t-test as summarized: {t-cal.}		t-tab	Corresponding probability	Remark
ATM	{3.02}	± 2.04	0.9790	Insignificant
INT	{-3.06}	± 2.04	0.0229	Significant
POS	{4.84}	± 2.04	0.0000	Significant
MOI	{-2.41}	± 2.04	0.0590	Significant

Researcher's computation (2022).

CONCLUSION AND RECOMMENDATIONS

This study set out to examine the effect of e-banking adoption on performance of deposit money banks in Nigeria. The empirical analyses revealed that proxies of e-banking adoption (ATM, internet banking, POS and mobile banking) have positive and statistically significant effect on performance of deposit money banks. The study therefore concludes that

ATM, POS, internet banking and mobile banking have significant effect on performance of deposit money banks in Nigeria. This position accentuates that statement that banking generally consists a package of different technological elements utilized to improve products. Innovation helps an organization to grow, prosper and transform in synchrony with internal and external environmental changes.

In view of the findings of the study and the conclusion reached, the study recommends that deposit money banks in Nigeria that seek improved performance should adopt innovative technologies that facilitate the provision of efficient banking service delivery to customers. In this study, ATM, POS, internet banking and mobile banking are identified as some innovative technologies that deposit money banks in Nigeria can deploy to improve their performance.

REFERENCES

Abubakar A. S., Adebayo F. O. (2014). Analysis of electronic transactions bill in Nigeria: Issues and prospects. *Mediterranean Journal of Social Sciences, 4,* 219-220.

Adam, D. A. (2005). Perceived usefulness, ease of use, and usage of information technology: A replication. *MIS Quarterly, 2*(16), 227-247.

Adepoju S. A., & Alhassan M. E. (2010). Challenges of automated teller machine (ATM) usage and fraud occurrences in Nigeria: A case study of selected banks in Minna. *Journal of Internet Banking and Commerce, 4*(5), 8-11.

Adeyemi, A. T. (2012). Impact of cashless economy in Nigeria. *American Greener Journal of Internet, Information and Communication Systems, 1*(2), 40-43.

Agwu, M. E. (2014), Reputational risk impact of internal frauds on bank customers. *International Journal of Development and Management Review, 9*(1), 175-192.

Agwu, M. E., (2015) Analysis of Obstacles to uptake of Internet Banking Services in Nigeria. *Research Journal of Business and Management, 2*(1), 99-114.

Ateke, B. W., & Harry, H. A. (2021). Customer value analysis and innovativeness of hospitality firms in Rivers State. *Nigerian Journal of Marketing*, 7(1), 1-21.

Bahl, S. (2012). E-banking: Challenges & policy implications. *International Journal of Computing & Business Research, 5*(3), 84-101.

Balachandran, B., & Balachandher, K. G. (2000). E-banking development in Malaysia: Prospects and problems. *Australasian Journal on Ageing, 23*(2), 100–103.

Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly*, 13(3), 318-339.

DeYoung, R. (2005). The performance of internet-based business models: Evidence from the banking industry. *Journal of Business*, 78(3), 893-947.

Kayode-Adedeji, T. K., & Agwu, M. E. (2015). Application of ICT to agriculture as a panacea to unemployment in Nigeria. *International Journals of Multidisciplinary Research Academy, 3*(4), 26-48.

Luka, M. K., & Frank, I. A. (2012). The impacts of ICTs on banks. *International Journal*, 3(5), 28-43.

Musara, M., & Fatoki, O. (2010). Has technological innovations resulted in increased efficiency and cost savings for banks' customers? *African Journal of Business Management*, 4(9), 1813-1821.

Mohammad, A. O., & Saad, A. A. (2011). The impact of e-banking on the performance of Jordanian banks. *Journal of Internet Banking and Commerce*, *16*(3), 109-122.

Ogbo, A. I., Itanyi, O., & Ukpere, I. (2012). Managing innovations in telecommunications industry in Nigeria. *African Journal of Business Management*, *6*(25), 7469-7477.

Siam, A. Z. (2006). Role of the banking services on the profits of Jordanian banks. *American Journal of Applied Science*, *3*(9), 1999-2004.