Digitalization as vehicle for Financial Institutions' Growth and Effectiveness

Emeka Okereke & Ufuoma Earnest Ofierohor

Abstract:
This paper investigates empirically digitalization as a vehicle for innovation that brings about growth and effectiveness to deposit money banks in Nigeria. The data utilized for the study were sourced from Statistical Bulletin of Central Bank of Nigeria spanning from the period of 2010-2018. A documentary and econometrics technique were used for the study. Various analysis/test were conducted ranging from graphical regression analysis, test of stationarity, long-run relationship test, granger causality test to residual diagnostic tests. From the interpretation of empirical result of the study, it was discovered that digitalization has negative and significant influence on the growth and effectiveness of deposit money banks in Nigeria. Based on the findings of the study, it is recommended, among others, that Education and sensitization of customers on how to use the various mobile apps and other applications for transactions should be carried out and intensified by Deposit Money Banks (DMBs) and Central Bank of Nigeria (CBN) in other to reduce congestion in banking halls. DMBs and CBN should reduce transaction cost on automated teller machine (ATM), point-of-sale (POS) and mobile transfers, etc. in other to retain existing customers and encourage prospective ones without jeopardizing profitability, as more customers would be attracted to the bank because of digitalization innovation.

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1. Introduction

The importance of technology to our financial service industries cannot be overemphasized. A financial service industry of the 21st century thrives in a global dynamic and competitive environment. It is faced with various customers' complaints daily which can conveniently be resolved by dint of technology. Therefore, in order for banks to meet customer's needs, the concept of digitalization must be incorporated in their daily operations. In the present business environment, the use of technology for the growth and effective delivery of services by an organization is inescapable. Digitalization enables services rendered by an organization to be delivered when needed (Agboola, 2007). The advent of technology has brought about revolution in the banking system (Blommestein, 2006). It is paramount to note that the use of technology in the banking sector is indispensable.

The scourge of coronavirus disease otherwise known as COVID-19 which has taken its toe on global economy has made the use of technology essential. Most bank transactions are carried out by individuals at the comfort of their homes with the use of modern bank technologies. Prior to advent of technology, the banking hall was known to be a crowded place where thousands of people make various transactions, but with the introduction of mobile apps, automated teller machine (ATM) and point-of-sale (POS), the activities concentrated in the banking hall are now reduced. Statistical records gleaned from the CBN Statistical Bulletin shows that digital transactions are on the high year on year; as at 2017, the volume of digital transaction on point-of-sale (POS) was 146,267,156 which later increased in the year 2018 to 295,890,167. There was also a marginal increase of 142724015 in the year 2019. From the foregoing analysis, it is evidently clear that digitalization is a welcomed financial services tool in Nigeria especially in our banking sectors. Most scholars have argued forcefully that, a time will come when people will prefer the use of technology to manual way of doing things (Irechukwu, 2000). In spite of the outbreak of COVID-19, many companies in the US still render services to customers with the use of technology. The ZOOM app for instance is a common application used today by schools to deliver lectures to students while they are at home and also used by various companies for their respective meetings/seminars. However, this laudable innovation has its challenges in the banking sectors; there exists fraud as bottleneck of digitalization. In recent times, there have been issues concerning customers of financial institutions defrauded and hoodwinked by unscrupulous Nigerians with the use of smart cards linked to their accounts. Fraudsters fake their identity by dint of digitalization as bankers in a bid to get vital information from customers and eventually cart away with their monies. Owing to this backdrop, many scholars have opined for sensitization programs by bankers to customers. According to experts, it is said that pandemic disease known as COVID-19 will not disappear from the face of the earth any time soon hence people must learn to live with the virus. This makes the use of digitalization inescapable by financial institutions and other organizations in the face of fraud.

The advent of technology has brought about innovations as to how banks and other financial institutions carryout their activities. Digitalization is presently used as an instrument of competitive advantage. Customers prefer easy way of carrying out transactions (Ikechukwu and Nwakanma, 2013). For instance, a customer of a bank who was wrongly debited without any justification can conveniently lodge a complaint to the bank through their email addresses without seeing the customer care physically. Therefore for a firm to compete favorably, digitalization must be welcomed (Fitzgerald et, al., 2014). In line with the theory of dynamic capacity, when an organization is able to change with dynamic environment, it enables an organization to compete favorably by creating net products and processes (Teece and Pisano, 1994). Evidence abounds that the world biggest firms are those that are digitally

driven. For instance, some of the big firms thriving economically as a result of digitization are as follows thus: Amazon, Google and Microsoft to mention but a few. Consequently, digitalization must be fully embraced and integrated in the financial services sector of the country. To this end, it can be deduced that the growth and effectiveness of financial institutions is determined by digitalization as an impetus of innovation for growth and effectiveness. It is the object of this paper to examine the contributory effect of digitalization on growth and effectiveness of Deposit Money Banks in Nigeria.

2. Literature Review
2.1 Conceptual Review
Digitalization
As a prefatory, **digitalization** is the employment of computer and technological infrastructure by an organization in carrying out its daily activities. It can also be seen as the transition from an industrial age characterized by analogue technologies to knowledge and creativity age characterized by digital technologies and digital business innovation. There are host of digital technologies that help in payment. For instance, mobile platforms, big data and social media to mention but a few which have improved the way organizations run their activities (Ording et al., 2014). The use of Information and Communication Technology (ICT) facilities by organizations eventuate quality services without tempering with customer's excitement (Harigaya, 2017). It is fulgently clear from the study of Ording et al (2014) that firms that adopted digital transformation performed better than firms that isolated from digitalization. Therefore, it can be gleaned from the above exposition that with digitalization, a bank will be able to satisfy its customers effectively and efficiently.

Digitalization and Innovation
Innovation is the process of creating new ideas, thoughts and imaginations. With the emergence of digitalization, the banking system has become innovative in rendering services to customers. Digitalization brings about value creation in an organization and efficiency in operations (Libert et al., 2016). Virtually all the banks in Nigeria have enabling devices that can help customers carry out transactions from their comfort zones. With the various mobile apps of banks in Nigeria today, people can buy and sell goods and render services without coming to the banking hall for transactions. Digitalization has ushered in a new way for banks to carryout advertisement. Most banks have shunned the obsolete practice of going to the streets for the purpose of advertising their products. They have rather resorted to having their products and services advertised online and it has really helped in obviating operation expenses and other kindred problems.

Digitalization and Performance of Banks in Nigeria
The performance of banks can either be measured by return on assets, growth, effectiveness of services and sales growth. The performance of a firm is mostly captured by market value, profitability and growth (Cao & Zhang 2011). It is the performance of a bank that is used as a barometer to ascertain whether the firm is a going concern or not. The operational performance deals with growth and expansions in relations to market value and sales (Ishaya & Abduljeleel, 2014). When a bank performs better than its competitors it is good evidence that the bank is a going concern (Obasan, 2011). To this end, it can be argued that the performance of a bank is greatly determined by the level of technology it has attained. It is the amount of technology that bank invests in that will make it compete favorably with its contemporaries. In today's banking system, most bank transactions are effortlessly done online and customers gleefully prefer it to going to the bank for such transactions. Owing to the convenience of transactions and activities aided by digitalization, many banks all over the

world have welcomed the use of technology in order to render best services and also compete favorably in a competitive environment. In today's business environment, the performance of a banks depends greatly on technology. Technology makes ordering and delivery faster than the analog way of doing things (Loebbecke, et al., 2015).

2.2 Theoretical Review
Modernization Theory
This theory, originated from the idea of Max Weber (1864-1920), argues that for traditional societies to develop, it must adopt modern practices. This theory also stressed that, for a society to have a good standard of living, technology must be welcomed. The theory is evidenced on the modern ways in which organizations including financial institutions render their services. In today's business environment, it will be difficult to see a bank which does not use computer or other technological devices in carrying out its transactions. Technology has to some extent solved some problems plaguing banks.

Resource Based Theory
Resource based theory or view (RBT or RBV) was propounded by Wernerfelt, (1984), the theory proposes that, an organization can only have competitive advantage from its available resources. The resources of an organization can be financial, physical and intellectual resources. The resources of an organization can be threshold or core resources. An organization can have competitive advantage when its resources are durable and difficult to imitate. In today's business environment, digitalization is one of the key factors of innovation, growth and effectiveness of an organization.

Dynamic Capability Theory
The Dynamic capability theory is harmonized with RBV (RBT) and covers evolutionary resources and capabilities aspect (Wang & Ahmed, 2007). This theory hinges on the fact that for an organization to succeed it must have that capacity to change (adapt, modify, configure, reconfigure and reintegrate her resources) in a dynamic environment in order to achieve a sustained and superior performance. An organization must have human and physical resources to adapt with changing environment. When an organization is not able to cope with modern realities it tends to be classified as cash dog. Virtually all the banks in Nigeria have adapted and embraced available technology fully; any bank that fails to embrace and follow the new ways of doing will close out of competition. Therefore, banks must have the capability and capacity (resources) to change with dynamic environment.

2.3 Empirical Review
A host of empirical findings have been made on the topic of the study;
Mayowa, et al (2019) examined the effect of digitalization on the performance of commercial banks in Nigeria. A purposive method of research was adopted where in 370 non-managerial employees from commercial bank were used as sample size. Questionnaires were issued and SPSS statistical tool was used in analysis. From the result of the study, it was unraveled that digitalization has significant influence on the performance of deposit money banks in Nigeria. Nkiru, et al (2018) analyzed the influence of information and communication technology on the performance of deposit money banks in Nigeria spanning form the period of 2006-2015. The data used for the study were secondary sourced from National Bureau of Statistics and Central Bank of Nigeria Statistical Bulletin. Econometric method of data analysis was adopted utilizing E-views 9.0 software. From the result of the study, it was discovered that information and communication technology affect the return on equity of deposit money banks positively. Taiwo and Agwu (2017) investigated the effect of e-banking on operational

efficiency of banks in Nigeria. The data for the study were primarily sourced from GTB, Ecobank, First bank and UBA. SPSS was the statistical package used for the study where Pearson correlation test was conducted. From the result of the study, it was discovered that the operational efficiency of deposit money banks in Nigeria improved dramatically since electronic banking was adopted. It was concluded that more customers make use of electronic banking than coming often to the bank. Stephanie and Moses (2015) examined the impact of internet banking on the performance of financial institutions located in Kenya. The data for the study were collected with the use of questionnaires where in descriptive survey design was employed. The populations targeted for the study were thirty-one staffer of treasury Square and KCB in Kenya. From the result of the study, it was discovered that information technology helps to improve quality of services rendered.

Van and Le (2015) analyzed the effect of applying internet banking on the performance of banks as it relates to profitability ratios and operating expenses of banks located in Vietnam spanning from the time period of 2009-2014. In other to ascertain the relationship that exists between internet banking and the performance of banks, the fixed and random effect tests were conducted. It was revealed from the result of the study that internet banking affects the profitability of banks positively. Ilyas, Batu & Necla (2015) examined the relationship between internet banking and the performance of deposit money banks. Panel causality test of 30 European countries was conducted spanning from the time period of 2005-2013. From the result of the study, it was discovered that there exists a strong relationship between internet banking and the performance of banks.

3. Research Methodology

Data were obtained from the Statistical Bulletin of the Central Bank of Nigeria spanning from 2010-2018. Growth and effectiveness were captured using return on assets (ROA) of Deposit Money Banks (DMBs) in Nigeria, while digitalization (APWMNNMERNC) was captured using the sum value of transactions consummated through ATM (**A**utomated **T**eller **M**achine), POS (**P**oint **O**f **S**ale), WebPay (Interswitch **W**ebsite **P**ayment), **M**OBILE **P**AY, NIP (**N**igeria Inter-Bank Settlement System-NIBSS **I**nstant **P**ayments), NEFT (**N**ational **E**lectronic **F**unds **T**ransfer), mCASH, eBillsPay (Electronic Bills Pay), REMITA, NAPS (**N**IBSS **A**utomated **P**ayment **S**ervices) and CENTRAL PAY from the time period of 2010-2018.

The model for this paper is functionally specified thus;

$$ROA = f\left(APWMNNMERNC\right) \qquad (1)$$

In a linear form, equation is expressed thus;

$$ROA_t = \delta_0 + \delta_1 APWMNNMERNC_t + e_t \qquad (2)$$

Theoretically, it is expected that: $\delta_1 > 0$

Most conclusions are usually based on the assumption that the time series are stationary. In reality, this condition is often time violated. The consequence of this is the production of a spurious regression when the series are nonstationary. This is remedied by carrying out a unit root test. Most literature favour unit roots test like Dickey-Fuller (DF), augmented Dickey-Fuller (ADF) test and Phillips-Perron (PP) tests. These tests have been shown to have low power resulting in a type II error. Going by this, this paper adopts a superior unit root tests of dickey-fuller generalized least square (DF-GLS) proposed by Elliot, Rothenberg & Stock (1996).

4. Presentation of Empirical Results
Trend Analysis on Digitalization, Growth and Effectiveness of Deposit Money Banks from 2009-2018
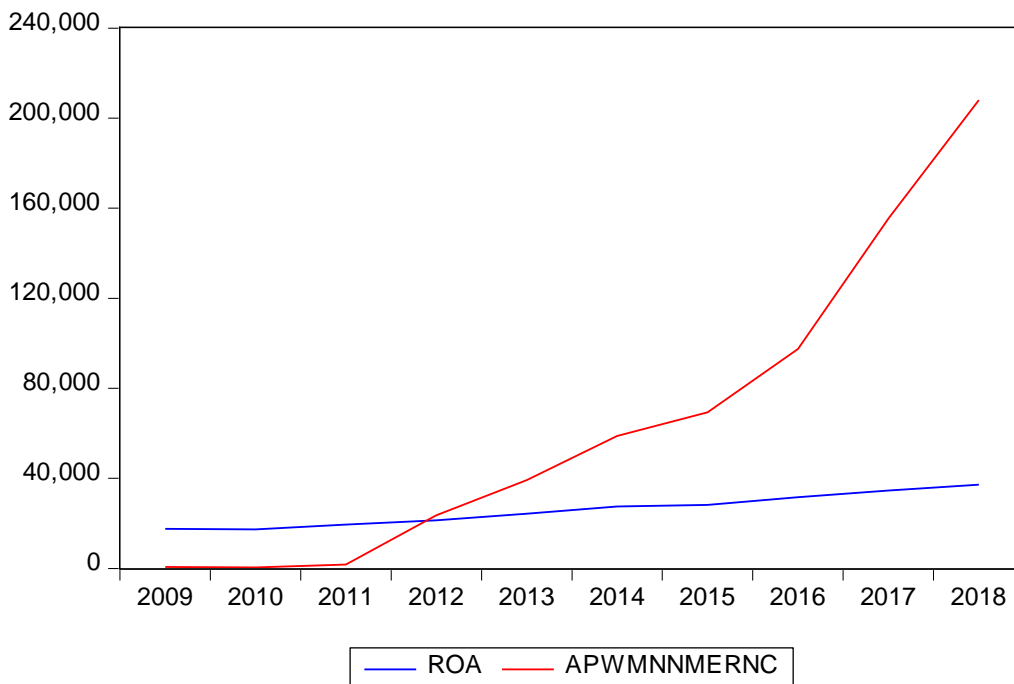
Figure 1: Trend of Digitalization, Growth and Effectiveness of Deposit Money Banks from 2009-2018
Source: Eview-11 Output (Authors' Computation).

The above figure presents the trend of movement of digitalization, growth and effectiveness of deposit money banks in Nigeria spanning from the period of 2009-2018. It is evidenced by the graph that as investment on digitalization (APWMNNMERNC) increases the growth and effectiveness (ROA) of deposit money banks increased steadily. As depicted from the graph, the growth and effectiveness of deposit money banks was poor during the year 2009-2011. The poor growth experienced can be ascribed to poor investment in digitalization by deposit money banks. But in the year 2012-2018 a steady growth and effectiveness (ROA) was experienced by deposit money banks owing to sharp investment and usage of digitalization over this period.

Table 1: Summary of Univariate Unit Root Result

	DF-GLS Result		
Variable	First Difference	Order of Integration	Decision
ΔROA_t	-4.759885 (-2.006292)	I (1)	SS
$\Delta InAPWMNNMERNC_t$	4.185425 (-2.021193)	I (1)	SS

Note: Δ = first difference operator; 5% critical value; SS = Stationary
Source: Eview-11 Output (Authors' Computation).

Table 1 above shows that return on assets (ROA) is stationary at first difference since the value of Elliott-Rothenberg-Stock DF-GLS test statistic of -4.759885 is greater than the test critical values of -2.006292 at 5% level of significance. While digitalization

(APWMNNNMERNC) was also noticed to be stationary at first difference since the value of Elliott-Rothenberg-Stock DF-GLS test statistic of -4.185425 is greater than the test critical values of -2.021193 at 5% level of significance. The level of stationarity at first difference informs us to carry out Johansen Cointegration test (1991).

Table 2: Summary of Johansen Cointegration Test

Hypothesized No. of CE(s)	Trace Statistic	0.05 Critical Value	Prob**
None*	0.998102	15.49471	0.0000
At most 1*	0.669181	3.841466	0.0054

Trace test indicates 2 cointegrating equ(s) at the 0.05 level
*denotes rejection of the hypothesis at the 0.05 level
** MacKinnon-Haug-Michelis (1999) p-values
Source: Eview-11 Output (Authors' Computation).

Table 2 captured the result of long run relationship amongst employed variables. From the Johansen cointegration test employed, it was discovered that there exists a long run relationship between digitalization (APWMNNNMERNC) and growth and effectiveness of deposit money banks in Nigeria. This decision is informed by 2 cointegrating equations at 0.05 level of significance discovered in the model. Owing to the long run relationship found amongst the employed variables, this makes it ideal for error correction model test to be adopted.

Table 3: Summary of Parsimonious Error Correction Model Test

Variable	Coefficient	t-statistics	Prob.
$APWMNNMERNC_t(-1)$	-0.006069	-4.029323	0.0564*
ECM (-1)	-2.595616	-7.640846	0.0167**
C	2.134245	2.863353	0.1034

Note: * and ** denote significance at 5% level respectively.
Source: Eview-11 Output (Authors' Computation).

Table 3 presents the short run relationship that exist among the dependent and independent variable. From the result above, a satisfactory speed of adjustment of 259.56% was discovered with a significant value of 0.0167 which is lesser than 5% level of significance. It was unveiled from the ECM output that digitalization which is captured by APWMNNNMERNC affects growth and effectiveness of deposit money banks negatively in a significant way with a coefficient of 0.6069% and a probability value of 0.0564.

Table 4: Summary of Pairwise Granger Causality Tests

Null Hypothesis:	Obs	F-Statistic	Prob.
APWMNNMERNC does not Granger Cause ROA	7	30.6450	0.0316
ROA does not Granger Cause APWMNNMERNC		1.38969	0.4185

Source: Eview-11 Output (Authors' Computation).

As evidenced from table 4, a unidirectional causality exists between digitalization (APWMNNNMERNC) and growth and effectiveness (ROA) of deposit money banks in Nigeria. It was uncovered that digitalization (APWMNNNMERNC) granger causes growth and effectiveness (ROA) of deposit money banks in Nigeria, while growth and effectiveness (ROA) does not granger cause digitalization (APWMNNNMERNC) system of deposit money banks in Nigeria. The decision is informed using 5% level of significance.

Table 5: Summary of Diagnostic Test

Test/Hypothesis Tested	Test type	Test-stats.	Prob.	Decision
Residual Normality **(Residuals are normally distributed)**	Jarque-Bera	0.920284	0.631194	Accept
Serial Correlation **(no serial correlation)**	Breusch-Godfrey LM Test	0.309518	0.7469	Accept
Heteroskedasticity **(Homoscedasticity exist)**	Breusch-Pagan-Godfrey	1.118644	0.3253	Accept

Note: (hypothesis is in null form).
Source: Eview-11 Output (Authors' Computation).

The reliance on the parameter estimates for prediction purposes is built on the residual scaling through certain diagnostics test. From table 5 above, Jarque-Bera test revealed that the residuals are normally distributed. The outcome of Breusch-Godfrey LM test shows the error terms are not serially correlated. Also, the Breusch-Pagan-Godfrey test disclose that the residual has constant variance. Conclusively, the parameter estimates of the model can be relied upon for forecasting future influence of digitalization on deposit money banks' performance in Nigeria.

5. Conclusion and Recommendations

The paper concerned itself with digitalization as a vehicle for financial institutions' growth and effectiveness in Nigeria. This is with a view to establishing its potency on Deposit Money banks' (DMBs') performance. Digitalization is a knowledge-driven and creativity-based digital technologies and innovations that has facilitated globalization and made economic transactions between organizations, institutions and individuals significantly easier and flawless leading to sustainable and profitable performance. It is transforming, converting and integrating digital technologies and innovations into every day service and non-service lives. Globally, in 2018, 80% of Europeans are having access to this technology while less than 25% are having access in Sub-Saharan Africa (United Nations General Assembly, 2019). In Nigeria, the concept of digitalization is relatively new especially in financial services delivery. Generally, the importance of digitalization cannot be overemphasized, as it has improved the quality of service to customers, reduced cost of banks' operations leading to their increased performance indexes including return on assets. This paper tilts from this, as it found evidence of significant and negative relationship between digitalization and growth and effectiveness of deposit money banks in Nigeria. In line with this, the paper concludes that digitalization has not helped in the growth and effectiveness of deposit money banks (DMBs) in Nigeria. The significant and negative influence could be caused by the fact that Nigerian banks' whopping expenditure on information and communication technologies are not fully utilized to capacity as most customers are either not literate enough, lack access or awareness to the availability of technologies, among other reasons leading customers into preferring to carry out their transactions in the banking halls. Consequently, the cost of operations of DMBs increase geometrically leading to reduction in return on assets of these banks. It could also be caused by excess official and non-official charges (charges on mobile transfer, VAT, VAT maintenance, ATM and Card maintenance, etc.) imposed by Central Bank of Nigeria (CBN) and Deposit Money Banks (DMBs) on customers' accounts, which affect their patronage. There are have been numerous complains made by customers on bank charges.

In view of the above, the following were recommended that Education and sensitization of customers on how to use the various mobile apps and other applications for transactions should be carried out by Deposit Money Banks (DMBs) and Central Bank of Nigeria (CBN) in other to reduce congestion in banking halls. DMBs and CBN should reduce transaction cost on ATM, POS, mobile transfers, etc. in other to retain existing customers and encourage prospective ones without jeopardizing profitability because more customers would be attracted to the bank because of digitalization innovation. CBN should have the strong will to follow up DMBs' compliance to approved bank charges. Finally, we want to state that the model developed in this study can be relied upon for forecasting future influence of digitalization on the growth and effectiveness of Deposit Money Banks (DMBs) in Nigeria. Again, Modernization and Resource Based Theories are applicable in this study but Dynamic Capability Theory best supports the study.

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