Finametric Analysis of Financial Innovation and Economic Growth in Nigeria

Monday A. Gbanador
Department Of Banking and Finance
School of Financial Studies
Port Harcourt Polytechnic, Rumuola Port Harcourt
Rivers State, Nigeria.
email: monday.gbanador@portharcourtpoly.edu.ng

Blessing Owate Obari
Department Of Accountancy
School of Financial Studies
Port Harcourt Polytechnic, Rumuola Port Harcourt
Rivers State, Nigeria.

Nekabari Opgah
Bursary Department
Port Harcourt Polytechnic, Rumuola Port Harcourt
Rivers State, Nigeria.

DOI: 10.56201/ijssmr.v9.no11.2023.pg205.217

Abstract

The study empirically investigates the effect of financial innovation on economic growth in Nigeria using quarterly time series data spanning through the periods of 2010 to 2021 while historical data design was adopted for the study. The Gross Domestic Product was used as proxy for the dependent variable while Automated teller machine, Web banking, Mobile banking and Point of sale transactions were adopted as proxies for the independent variables. The Augmented Dickey Fuller (ADF), Phillips-Perron, Breusch-Pagan-Godfrey heteroskedasticity test, CUSUM test, Johansen cointegration test, Parsimonious Error Correction model and the fully modified Least Square were used for the data analysis. The outcome of the Johansen Cointegration and the fully modified least squares indicated evidence of long-run relationship between financial innovation and economic growth in Nigeria. From the foregoing, the study concludes that the adoption of financial innovation enhances economic growth in Nigeria. Based on the findings, the study suggests that appropriate policies should be formulated to build the confidence of customers regarding the reliability of financial innovation products.

Key words: *Automated Teller Machine; Point of sale; Web banking; Mobile banking; Economic growth; Financial innovation.*

1.0 Introduction

A financial system that is well-developed acts as a catalyst for the promotion of economic growth by allowing economic agents to diversify their portfolios as well as meet their liquidity requirements. Financial innovations encourages a higher level of savings and capital accumulation, thus, a higher level of economic growth (Levine, 1997; Mishra, 2008).

The dynamic and unique nature of the financial industry and the need for a cashless economy necessitated the adoption of the electronic banking system. With this system of banking, customers can consummate transactions without visiting the banking premises. This is made possible because transactions are done using the necessary information technology infrastructures provided by the banks. The hardware, software, networks and other relevant equipment that makes information technology based services possible is called Information technology infrastructure (Gbanador 2021; Gbanador, 2023a).

Tahir et al (2018) holds the opinion that financial innovation is the introduction of current financial instruments in financial intuitions and markets via new technologies. This includes process, product and institutional innovation. As in Motsatsi (2016), financial technology influences efficiency and productivity in the banking industry. Thus, promotes competition amongst financial institutions in terms of providing financial services to the public such as capital for investment, and offer minimum lending rates in order to facilitate household consumption and investment, which as a result promotes economic growth. Ignazio (2007) defines financial innovations as the developments of new financial products, new ways of delivering already financial services or new financial services with new processes. Thus, financial innovations can take different ways.

Literature survey indicates that financial innovation lubricates economic growth; however, the causality and quantum of growth rates in emerging economies are yet to be specified (Levine, 1997; Gbanador, Makwe & Olushola, 2022). Financial innovation has transformed and restructured banking services globally, and its impact on economies is becoming increasingly noteworthy (Bara & Mudzingiri, 2016).

Victor, Obinozie & Echekoba (2015) believe that the effectual use of various advanced banking technologies, as well as applications of digitalization in banking operations, has become one reason for banks' deposit money to be redirected toward an unforeseen improvement in the setup of banking products and various instruments, which are key means to stimulate customer needs and, thus, the economy.

Gbanador, Makwe & Olushola, (2022) posits that financial innovation necessitated the deployment of various electronic payment channels to enhance the performance of banks in term of return on investment, market share, efficient service delivery, etc. if properly utilized. It could also serve as a veritable tool or technique to give the bank an edge over its competitors. Reckoning with Kamau and Oluoch (2016), numerous banks have leveraged financial innovation as a potent tactical

variable to overcome any sort of rivalry among deposit money institutions, allowing banks to increase their efficiency while preserving their market effectiveness.

The application of new technologies to introduce new financial instruments into financial institutions and markets is referred to as "financial innovation". All types of innovation are covered, including process, product, and institutional. Process innovation includes new ways of doing business and utilizing information technology, such as the Automated Teller Machine (ATM), mobile banking, and online banking (Abor, 2005).

The Researchers' literature survey shows that majority of the studies conducted using the Nigeria data tend towards the nexus between financial innovation and the Performance of Deposit Money Banks. However, only a handful of these studies examined how financial innovation influence the performance of the economy (Osuigwe, 2022; Okoye, Nwisienyi & Obi, 2019; Chuekwuwulu, 2019; Adesete, Auwal & Risikat, 2020). The paucity of empirical work in this aspect of financial innovation, creates the need to conduct a finametric analysis of financial innovation on economic growth in Nigeria.

2.0 Literature Review

Kapoor (2014) propounded the Bank focused theory. The theory is built on the foundation that banks utilized non-traditional though conventional but minimal cost delivery channels to offer financial services to its clients. These channels are online banking, point of sales, mobile pay, etc. Thus, banks provides arrays of financial services without recourse to the customers' account domiciled branch via the electronic payment channels. This theory is pertinent to this study because it hinges on the electronic payment channels which is the hallmark of the CBN cashless policy (Gbanador, 2023b).

Another theory upon which this study is anchored is the Technology Acceptance Model (TAM). F.D. Davies (1989) propounded the Technology Acceptance Model which stipulates that users' acceptance of technology is built on its perceived usefulness and the ease of use. TAM employs psychometric scales in measuring perceive usefulness and ease of use. The implication of this theory is that users of technology will accept a technology if it is useful and also easy to utilize. Though, TAM is criticized because of some reasons amongst which is its failure to put into consideration the cost of deploying technological infrastructure, the usefulness of the theory is eminent because it is one of the prominent theory regarding the adoption of information technology by corporations. E-payment channels provided by banks to clients are expected to be easy to use as well as useful to both the bank and clients, else the purpose for which it was deployed will be defeated (Gbanador, 2023a).

In a recent study, Osuigwe (2022) investigated the influence of financial innovation on economic growth in Nigeria. The study employed the ex-post facto research design because of the time series nature of the data. The Automated teller machine, Mobile banking, Point of sale and Internet banking were used as proxy for the independent variable while the annual growth of Gross Domestic Product was used as proxy for the dependent variable. The Augmented Dicker-Fuller

test, Phillip-Perron test, and Ordinary Least Square (OLS) were utilized for data analysis. The regression result indicated that the automated teller machine, point of sale, mobile banking and internet banking have positive and significant influence on annual growth of gross domestic product (RGDP). The study concludes that financial innovation has positive influence on economic growth in Nigeria and therefore, recommends the need for increased public education and awareness on the benefits of automated teller machine to enhance financial innovation in Nigeria.

Bara & Mudzingiri (2016) examined financial innovation on economic growth in Zimbabwe using financial time series for the periods of 1980-2013. The study employed the Autoregressive Distributed Lag (ARDL) bounds tests and Granger causality tests. The findings revealed that financial innovation has a link with economic growth in Zimbabwe and that the relationship is a function of the independent variable that is used to measure the dependent variable. In a similar study, Okoye, Nwisienyi & Obi (2019) assessed the effect of financial technological innovations on economic growth in Nigeria. The secondary data design was adopted for the study using quarterly time series within the periods of 2009 to 2019. The sum of ATM, POS, Mobile phone transfer transactions, Internet transfer transactions and inflation rate were used as independent variables while GDP was used as the dependent variable. The Autoregressive Distributed Lag (ARDL) was used to analyze the data. The findings indicated a weak but positive effect between economic growth and some products of financial innovation. The study therefore, recommends the implementation of policies that will enhance the penetration of financial technological innovations.

Chukwunulu (2019) employed the Generalized Methods of Moments (GMM) to examine the influence of financial innovation on the growth of the Nigerian economy using time series data within the periods of 2008 and 2017. The values of Automated teller machine (ATM) transactions, Web transactions, Point-of-sale (POS) transactions, and Mobile payments transactions were used as proxies for the independent variables while the Gross Domestic Product was used as proxy for the dependent variable. The findings showed that the independent variables have a positive and significant influence on the GDP. Therefore, the study concludes that financial innovation influences the growth of the Nigerian economy.

In a related study, Gbanador, Makwe & Olushola (2022) examined the effect of financial innovation on the performance of Deposit Money Banks in Nigeria using time series data covering the periods, 2009 – 2021. The Point of sales, Automated Teller Machine, Internet Banking and Mobile Banking served as the independent variables while assets of the Deposit Money Banks was used as the dependent variables. The Autoregressive Distributed Lag (ARDL), heteroskesdasticity and CUSUM test were used for data analysis. The findings showed that POS had the highest performance while internet banking had the least. Furthermore, the variables are statistically significant. The study therefore recommends that internet accessibility should be made cheaper for easy access and usage.

Similarly, Ozurumba & Onyeiwu (2019) examined the impact of financial innovation on economic growth in Nigeria within the periods of 2012 to 2018. NIBSS instant payment (NIP), Automated

teller machine (ATM) and Agent banking were used as proxy for economic growth while the Real GDP was adopted as proxy for the dependent variable. The descriptive research design was adopted for the study while the Ordinary least square multiple linear regression was used for the data analysis. The findings revealed that NIP and agent banking positively influenced economic growth while the ATM has a negative but significant effect on economic growth in Nigeria. The study therefore, recommends that the Central Bank of Nigeria should create more innovative payment channels in the system.

Adesete, Auwal, & Risikat, (2020) using the autoregressive distributed lag (ARDL) model investigated the effect of financial innovation on economic growth in Nigeria using quarterly time series data between the periods of 2010 to 2020. The value of Automated teller machine, Cheque, web banking transactions, point of sale and mobile payments were used as proxy for the independent variable while the Real GDP is adopted as the dependent variable. The findings reveals that financial innovation channels is capable of fostering economic growth in Nigeria. Therefore, the study suggests the need to strengthen the relevant polices in order to enhance the performance of financial innovation channels.

Methodology

This study adopted the historical data design. The reason for the adoption of this research design is attributed to the nature of the sources of data used for the study. A quarterly time series data spanning through the periods of 2010 to 2021 was gathered from the CBN Statistical Bulletin while the Ordinary Least Squares (OLS) multiple regression econometric technique was used to analyze the data. The Gross Domestic Product (GDP) was used to proxy economic growth while the ATM, WB, MB and POS were used to proxy financial innovation.

Model Specification

The functional specification of the model is presented as:

$$GDP = f(ATM, WB, MB, POS) \quad (1)$$

Where:

GDP = Gross Domestic Product
ATM= Automated teller machine
WB = Web banking
MB = Mobile banking
POS = Point of sales

The OLS linear regression equation based on the above functional relation is;

$$GDP = \beta_0 + \beta_1 ATM + \beta_2 WB + \beta_3 MB + \beta_4 POS + U_t \quad (2)$$

GDP, ATM, POS and MB are as defined earlier while;

$\beta 0$=Regression Constant

β_1, β_2 β_3, and β_4 = Regression coefficient.

Ut =Stochastic Error Term

If equation (2) is specified in its logarithmic form (Log-linear) it becomes:

$$LGDP = \beta_0 + \beta_1 LATM + \beta_2 LWB + \beta_3 LMB + \beta_4 LPOS + U_t \quad (3)$$

Where:
L = Logarithmic Form
The apriori expectation = $\beta_1 > 0$, $\beta_2 > 0$, $\beta_3 > 0$, $\beta_4 > 0$.

4. Results and Discussion

Table 1: Unit Root (Stationarity) Test

Variables	Augmented Dickey-Fuller (ADF)Test Statistic	Mackinnon's Critical Values at 1%, 5% and 10% respectively			Order of Integration	Prob.
LGDP	-13.46635	-3.584743	-2.928142	-2.602225	I(1)	0.0000
LATM	-3.930088	-3.584743	-2.928142	-2.602225	I(1)	0.0004
LWB	-3.930088	-3.584743	-2.928142	-2.602225	I(1)	0.0001
LMB	-5.394835	-3.584743	-2.928142	-2.602225	I(1)	0.0000
LPOS	-6.029870	-3.584743	-2.928142	-2.602225	I(1)	0.0000

Source: Researchers' computation using Eviews 12

The outcome of the Augmented Dickey-Fuller unit root test for stationarity as depicted in Table 1 shows that all the variables are stationary at order (1).

Table 2: Unit Root (Stationarity) Test

Variables	Phillips-Perron (PP)Test Statistic	Mackinnon's Critical Values at 1%, 5% and 10% respectively			Order of Integration	Prob.
LGDP	-11.82307	-3.581152	-2.926622	-2.601424	I(1)	0.0000
LATM	-7.972710	-3.581152	-2.926622	-2.601424	I(1)	0.0000
LWB	-7.293810	-3.581152	-2.926622	-2.601424	I(1)	0.0000
LMB	-10.20558	-3.581152	-2.926622	-2.601424	I(1)	0.0000
LPOS	-11.54395	-3.581152	-2.926622	-2.601424	I(1)	0.0000

Source: Researchers' computation using Eviews 12

The Phillips-Perron unit root test was used to validate the result of the ADF test for stationarity. The outcome of the Phillip-Perron test as shown in Table 2 confirms that all the variables are stationary at order (1).

Based on the outcome of the unit root tests of these variables the ADF and PP analyses satisfies the condition for the adoption of Johansen Cointegration test.

Table 3: Johansen Cointegration Test

Date: 06/15/23 Time: 16:55
Sample (adjusted): 3 48
Included observations: 46 after adjustments
Trend assumption: Linear deterministic trend
Series: LGDP LATM LWB LMB LPOS
Lags interval (in first differences): 1 to 1

Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.850008	148.4590	69.81889	0.0000
At most 1 *	0.578372	61.18912	47.85613	0.0017
At most 2	0.230105	21.46205	29.79707	0.3295
At most 3	0.184897	9.432973	15.49471	0.3268
At most 4	0.000623	0.028675	3.841465	0.8655

Trace test indicates 2 cointegrating eqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None *	0.850008	87.26983	33.87687	0.0000
At most 1 *	0.578372	39.72707	27.58434	0.0009
At most 2	0.230105	12.02908	21.13162	0.5448
At most 3	0.184897	9.404298	14.26460	0.2540
At most 4	0.000623	0.028675	3.841465	0.8655

Max-eigenvalue test indicates 2 cointegrating eqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Source: Researchers' computation using Eviews 12

The outcome of the Johansen cointegration test is presented in Table 3. The Johansen cointegration result as measured by the Trace statistic and Maximum Eigenvalue depicts the existence of a cointegrated equation at 5% level of significance. Thus, indicating that there exist a long-run equilibrium relationship between Financial innovation and Economic growth in Nigeria.

Table 4 Parsimonious Error Correction Model Result

Dependent Variable: D(LGDP)
Method: Least Squares
Date: 06/16/23 Time: 14:26
Sample (adjusted): 2010Q3 2021Q4
Included observations: 46 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.001259	0.013364	0.094192	0.9255
D(LATM)	0.009684	0.062983	0.153760	0.8786
D(LATM(-1))	0.028020	0.059431	0.471472	0.6401
D(LWB)	-0.012225	0.013301	-0.919074	0.3640
D(LWB(-1))	-0.012015	0.013742	-0.874301	0.3876
D(LMB)	0.080509	0.057046	1.411284	0.1665
D(LPOS)	-0.046427	0.060258	-0.770472	0.4459
D(LPOS(-1))	0.001086	0.026189	0.041470	0.9671
ECM(-1)	-0.965881	0.170561	-5.662962	0.0000

R-squared	0.529568	Mean dependent var	0.009829
Adjusted R-squared	0.427853	S.D. dependent var	0.085153
S.E. of regression	0.064410	Akaike info criterion	-2.473512
Sum squared resid	0.153500	Schwarz criterion	-2.115734
Log likelihood	65.89078	Hannan-Quinn criter.	-2.339486
F-statistic	5.206390	Durbin-Watson stat	1.893826
Prob(F-statistic)	0.000213		

Source: Researchers' computation using Eviews 12

In Table 4, the short-run parsimonious error correction model result is presented. Based on the result, the ATM at current level with a p-value of 0.8786 and coefficient of 0.009684 has a positive but no significant effect on the GDP. The coefficient indicated that a 1% rise in the value of ATM will increase the GDP by 0.97%. ATM lagged 1 quarter with a p-value of 0.6401 equally shows that it has a positive and insignificant relationship with the GDP while its coefficient of 0.028020 indicates that 1% increase in the value of the ATM necessitate a 2.80% rise in the value of the GDP. The current level Web banking (WB) transactions with a p-value of 0.3601 and a coefficient of -

0.012225 implies that WB has an inverse and insignificant relationship with GDP while the coefficient shows that a 1% rise in WB will lead to a 1.22% fall in the performance of the GDP. WB lagged 1 quarter, also had an insignificant and inverse relationship with the GDP. Mobile banking (MB) at current level has a p-value of 0.1665 and coefficient of 0.080509 indicating that it has a positive and insignificant relationship with the GDP. The coefficient value implies that a 1% increase in the value of MB will cause 8.05% increase in the value of the GDP. Furthermore, POS at current level with a p-value of 0.4459 and a coefficient of -046427 shows that POS negative influence the GDP while the coefficient value indicates that a 1% rise in the value of POS transactions with lead to a 4.64% fall in the value of the GDP. Finally, POS lagged 1 quarter gives a p-value of 0.9671 and a coefficient of 0.001086 indicating that POS has a positive but insignificant effect on the GDP when it is lagged by 1 quarter. The coefficient value indicates that a 1% increase in the performance of POS will lead to a 0.11% increase in the performance of the GDP. The error correction term confirms the result of the Johansen cointegration test as the coefficient of the ECM was negative and significant at 5% level of significant. The implication of this result is that there is a 96.59% speed of adjustment of any disequilibrium in this model from the short run back to the long run quarterly. That is, 96.59% of the deviations from short-run to the long-run are corrected quarterly.

Table 5: Fully Modified Least Squares Result

Dependent Variable: LGDP
Method: Fully Modified Least Squares (FMOLS)
Date: 06/16/23 Time: 14:31
Sample (adjusted): 2010Q2 2021Q4
Included observations: 47 after adjustments
Cointegrating equation deterministics: C
Long-run covariance estimate (Bartlett kernel, Newey-West fixed bandwidth
= 4.0000)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LATM	0.030103	0.013957	2.156794	0.0368
LWB	-0.018778	0.002851	-6.585310	0.0000
LMB	0.059935	0.017290	3.466533	0.0012
LPOS	-0.023588	0.018602	-1.268013	0.2118
C	15.98661	0.138020	115.8283	0.0000

R-squared	0.682499	Mean dependent var	16.61793
Adjusted R-squared	0.652261	S.D. dependent var	0.104420
S.E. of regression	0.061576	Sum squared resid	0.159248
Long-run variance	0.000790		

Source: Researchers' computation using Eviews 12

In explaining the long-run effect of the variables, the Fully modified least square was adopted using the results in Table 5. The outcome of the analysis shows that the Automated teller machine with a p-value of 0.0368 has a positive and significant effect on the GDP. Its coefficient of 0.030103 indicated that a 1% rise in the performance of ATM will lead to a 3.01% rise in the GDP. WB has a significant and inverse effect on the GDP while its coefficient of -0.018778 indicated that a 1% increase in the value of WB will decrease the value of the GDP by 1.88%. The result for MB transactions indicated that it has a positive and significant impact on the GDP. The coefficient of 0.059935 shows that a 1% rise in the value of the MB will cause a 5.99% rise in the value of the GDP. Finally, POS has an inverse and insignificant influence on the GDP. The coefficient of -0.023588 reveals that 1% increase in the value POS transactions will decrease the value of GDP by 2.36%. The outcome of the Adjusted R-squared of 0.652261 suggests that 65.23% of the variations in economic growth as measured by the GDP can be explained by the variations in the value of financial innovation products that were adopted for this study at 5% level of significance.

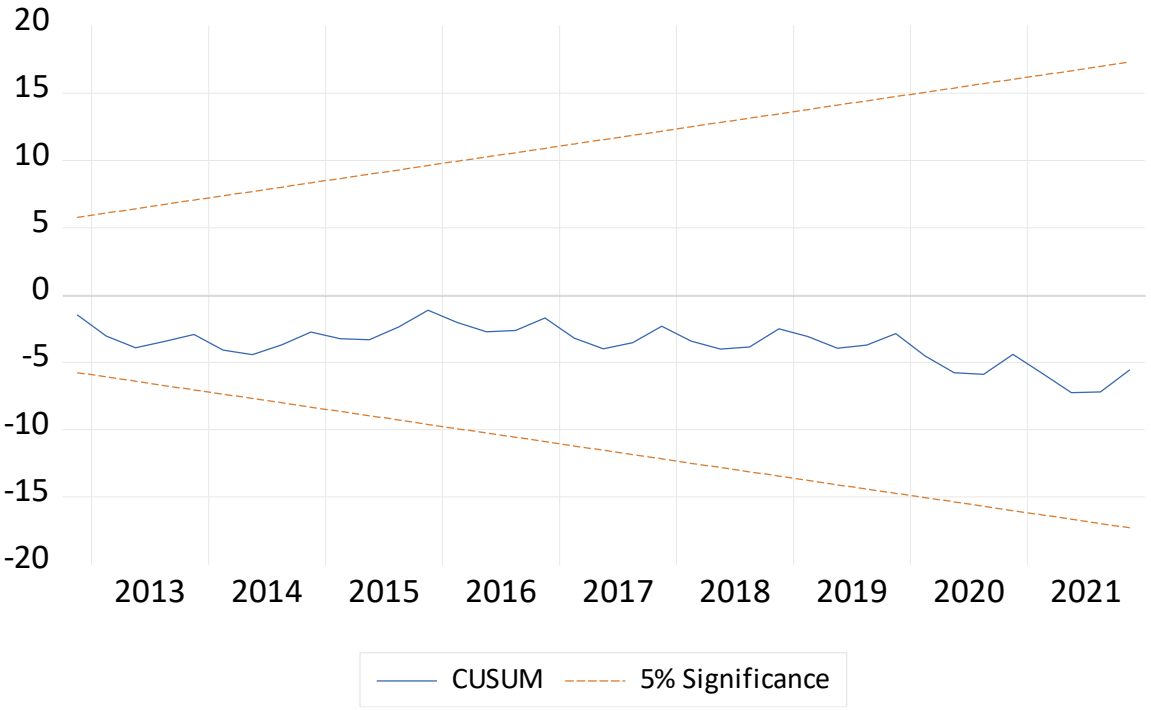
Table 6: Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	1.581492	Prob. F(8,37)	0.1639
Obs*R-squared	11.72138	Prob. Chi-Square(8)	0.1641
Scaled explained SS	3.027910	Prob. Chi-Square(8)	0.9326

Source: Researchers' computation using Eviews 12

The Breusch-Pagan-Godfrey test of heteroskedasticity was conducted and the outcome based on the F-statistic and the Observed R-Squared shows that the model is Homoskedastic as their values are both greater than the P-value of 0.05. This implies that there is no problem of heteroskedasticity in our model.

Table 7: CUSUM Test



The outcome of the CUSUM test employed to test the stability of the model revealed that the model is well specified.

5. Conclusion and Recommendations

The essence of the study was to investigate the effect of financial innovation on economic growth in Nigeria. The short-run outcome of the parsimonious error correction model indicated that financial innovation does not significantly influence economic growth in Nigeria. However, there are long-run indications of the influence of financial innovation on economic growth as the Automated teller machine (ATM) and Mobile banking (MB) transactions positively and significantly influence economic growth in Nigeria. Meanwhile, Web banking (WB) has an inverse and significant effect on economic growth while the impact of Point of sale (POS) transaction is negatively insignificant. The outcome of the Johansen Cointegration and the fully modified least squares indicates evidence of long-run relationship between financial innovation and economic growth in Nigeria. From the foregoing, the study concludes that the adoption of financial innovation by banks is capable of enhancing economic growth in Nigeria.

Based on the findings, the study therefore suggests as follows:

(i) Deposit Money Banks should educate their clients on the need to utilize financial innovation products.

(ii) The cost of acquiring point of sale (POS) terminal should be affordable to merchants.

(iii)Appropriate policies should be formulated to build customers' confidence regarding the safety of their transactions via the various financial innovation platforms.

References

Abor, J. (2005), Technological Innovations and Banking in Ghana: An Evaluation of Customers' Perceptions. IFE Psychologia: *An International Journal*, 13(1), 170-187.

Adesete, A., Auwal, A.M. & Risikat, O.D. (2020). Financial Innovation and Economic Growth: Empirical Evidence from Nigeria. *EuroEconomica*, 3(39), 7-32.

Bara, A. & Mudzingiri, C. (2016). Financial innovation and economic growth: evidence from Zimbabwe. *Investment Management and Financial Innovations, 13*(2), 65-75.

Chukwunulu, J. I. (2019). Effect of Financial Innovation on the Nigerian Economy. *World Journal of Innovative Research*, 6(5), pp. 15-21.

Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly, 13*(3), 319-340.

Gbanador, M.A. (2021). *Fundamentals of banking: Theory and practice*. Port Harcourt: Akanistic Ventures.

Gbanador, M.A. (2023a). Electronic banking systems and the performance of deposit money banks in Nigeria. Nigerian Journal of Management Sciences, 24(1a), 360-371.

Gbanador, M.A. (2023b). The Effect of Cashless Policy on Economic Growth in Nigeria: An Autoregressive Distributed Lag Approach. *Asian Journal of Economics, Business and Accounting*, 23(6), 22-31.

Gbanador, M. A., Makwe, E. U., & Olushola, O. A. (2022). Financial innovation and the performance of deposit money banks in Nigeria. *IIARD International Journal of Banking and Finance*

Ignazio, V. (2007). Financial deepening and monetary policy transmission mechanism. BIS Review 124/2007.

Kamau, D.M. & Oluoch, J. (2016). Relationship between financial innovation and commercial banks performance in Kenya. *International Journal of Social Sciences and Information Technology*, 2(4), 34-47.

Kapoor, S. (2014). *Succeeding in UK with Bank-focused model of mobile banking*. Finacle Whiteboard. Accessed September 9, 2014.

Levine, R. (1997). Financial development and economic growth: views and agenda, *Journal of Economic Literature*, 35, 688-726.

Mishra, P.K. (2008). Financial Innovation and Economic Growth-A Theoretical Approach. Available at:http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1262658.

Motsatsi, J. M. (2016). Financial sector innovation and economic growth in the context of Botswana. *International Journal of Economics and Finance*, 8(6), 291 – 301.

Okoye, V., Nwisienyi, K.J. & Obi, O.A. (2019). Emerging financial technological Innovation and economic growth in Nigeria. *EPRA International Journal of Research and Development (IJRD)*, 4(9), 153-162.

Osuigwe, O.C. (2022). Financial innovation and economic growth in Nigeria. *International Journal of Innovative Social Sciences & Humanities Research*, 10(2), 36-51.

Ozurumba, C.O & Onyeiwu, C. (2019). The impact of financial innovation on economic growth in Nigeria. International Journal of Economics, Commerce and Management, VII (8), 1-14.

Tahir, S.F., Shah, S., Arif, F., Ahmad, G., Aziz, Q., & Ullah, M.R. (2018). Does financial innovation improve performance? An analysis of process innovation used in Pakistan. *Journal of innovation Economics and management*, 3(27), 195-214.

Victor, O. I., Obinozie, H. E., Echekoba, F. N. (2015). The Effect of Information Communication Technology and Financial Innovation on Performance on Nigerian Commercial Banks 2001-2013, *International Journal of Accounting Research*, 42(2437), 1-16.