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Financial Innovation And Economic Development In Nigeria

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Abstract: ***The process and objective of attracting new customers to the financial markets and replacing existing financial products with new and more relevant financial products usually affects the economic development in Nigeria. In view of this, this study examined the impact of financial innovation on economic development in Nigeria using quarterly data for the period 2009 to 2020 and the Autoregressive Distributed Lag (ARDL) bounds testing approach. The study made use of Gross National Income per capita (GNIPC) as the dependent variable, gross fix capita formation (GFCF), Government Expenditure (GEXP), Inflation (INF), Domestic Credit to Private Sector (DCPS), value of payment channels transaction of Automated Teller Machine (ATM), Point of Sale (POS), mobile banking (MOB), and internet banking (WEB) as measures of financial innovation as the independent variables. The results indicated that economic development as a result of financial innovation is stable. It also shows that the coefficient of the intercept is positively signed and statistically significant and a unit increase in financial innovation variables would lead to an increase in economic development. Furthermore, all the variables are also statistically significant except WEB, with ATM and MOB having a positive relationship with economic development, while POS and WEB have negative relationship with economic development. Based on the results obtained, the study recommended that financial innovation should be sustained while measures and policies that will cause the improvement in the technological advancement of financial innovation should be encouraged and improved. In conclusion, from the result of the analysis keen on the relationship between financial innovation and economic development, implies that financial innovation has a positive effect on economic development. Thus as the use of financial innovation increases, it will cause an increase in economic development.***

Keywords: ***Financial innovation, economic development, ARDL, Granger causality***

I. INTRODUCTION

The financial system in any economy is dynamic. It involves changes in its payment systems, instruments etc. A great portion of these changes is attributed to financial innovations. Financial innovation can be defined as the method or ways of promoting new financial instruments and also new financial technologies, institutions and markets. "Financial technologies or instruments consist of institutional innovation, product innovation and process innovation. Institutional innovation include discount broking firms, specialize credit card, internet banking to mention but a few. Product innovation includes securitized assets as well as mortgaging of foreign currency etc. Process innovation can be defined as the new ways of doing financial business which includes the use of Automated Teller Machine (ATM), Point of Sale (POS), Web Banking (WEB), (MOB) Mobile Banking etc. Demand for money has been defined as the ability to hold financial instrument in form of cash.

Before the introduction of the Structural Adjustment Program (SAP) in 1986, the financial system was regulated and further characterized by rigid interest and exchange rate controls. There was mandatory allocation of bank credit and measureable bench mark bank credits to be issued to the private sector. All these features caused inefficiencies that brought about little or no direct investment in the Nigerian economy. Funds were rather not available, the Nigerian currency was overvalued making the economy to be docile with recurring negative indices in all macroeconomic indicators. The payment system and its accompanying instruments, institutions were not left out of the underdevelopment that occurred in the financial system. For example, payments were majorly done with cash and cheques (which most times were unacceptable by people). Most

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financial institutions operated manually with little or no technological inputs which led to financial repression.

Financial innovation expands economic activities through promoting financial inclusion, facilitating a financial transaction in international trade, enabling remittance and uplifting financial efficiency, which eventually play a fundamental role in economic development. For sustainable economic development; Capital investment, financial productivity, an effective financial intermediation and financial services expansion, financial inclusion, foreign trade flows, remittances and increase in financial performance are all essential and help to accelerate economic development. Development especially that comes as a result of financial innovation in the financial institution have an important role to play on economic development both in terms of volume and value (Blach; 2011).

The dynamic economic environment is immensely influenced by rapid innovation, especially financial innovation in the financial system, both in terms of number and value (Błach 2011). Financial innovation has changed and modernized banking services worldwide, and its impact on economies of the world is gradually becoming significant.

Of all the payment channel transfer, the Automated Teller Machine (ATM) happens to be the most widely and dominated use, recording the highest volume and value of transaction (CBN,2020). For instance, at the inception of this payment channel in 2009, the volume and value of transaction of ATM stood at 109 million and 548 billion Naira respectively (NBS, 2016), (CBN,2016) reflecting an increase of 39 percent to 876 million valued at 6.48 trillion Naira as at 2018 against the value and volume of transaction as stated above. Thus as at 2009, ATM accounted for 97.8 percent followed by WEB (Web Banking) by one percent while POS and MOB (Mobile Banking) accounts for 0.6 percent (CBN, 2020).

Given the growth in the use of these technologies, there is the need to empirically examine the relationship between financial innovation and economic development. The focus on the economic development is that it tends to show the level of human development in terms of poverty reduction, unemployment reduction, eradication of inequality etc.

Despite being an essential part of financial development, and the efforts being put in place by the Federal Government especially in terms of policies as regards cashless society the impact of financial innovation on economic development in developing countries especially Nigeria has not been researched comprehensively and has not reflected in the economic development as the Gross National Income per capita continues to decline. For example, at inception of financial innovation in 2009, the Gross National Income per capita (GNIPC) was ₦311,491.12 which stood at 4.7 percent. This reduced to 2.65 percent in 2011 and later increase to 5.23 percent in 2014. As at 2015 it was 0.85 percent and it has continually decrease recording a negative figure to -4.66 percent in 2020.

Research studies on financial innovation in developing countries have, so far focused mainly on welfare issues, particularly on its impact on financial inclusion (Chibba, 2009). Most studies especially in Nigeria such as Ozurumba and Charles (2019), Ndako (2010), Mbadike and Emeka (2009) are narrowed to financial innovation and economic growth. Thus to the best of our knowledge, there are no studies available that has attempted to investigate the relationship between financial innovation and economic development in Nigeria. Only a handful of study has been on financial innovation and economic development like Maudos and Guevara (2006), Ajide (2016) and Levine and Ross (1997). Despite this, the present study is a shift from the previous mentioned research in that Maudos and Guevara study was done usng 21 countries Ajide (2016) investigated the effect of financial innovation augmented with bank competition on sustainable development in eight West African countries from years 2000-2013, using panel data estimations, while Levine and Ross (1997) study was not in Nigeria. This study bridges a knowledge gap regarding the relationship between financial innovation and economic development in Nigeria as it uses a macroeconomic approach that tends to bring in a broader understandings of the impact of financial innovation on economic development by using real values of various methods of payments (financial innovation) instead of proxies as used by other scholars. The objectives of this study are to: i) assess the impact of financial innovation on economic development; ii) empirically investigate the causality between financial innovation and economic development in Nigeria. The study uses the Autoregressive Distributed Lag (ARDL) bounds test and Granger causality test on financial time series quarterly data of Nigeria for the period 2009-2021.

II. LITERATURE REVIEW

Bayraktar and Wang (2006) perceived that banking sector openness may directly affect growth by improving the access to financial services and indirectly by improving the efficiency of financial intermediaries, both of which reduce the cost of financing, and in turn, stimulate capital accumulation and economic growth. These direct and indirect links were confirmed using a more advanced econometric technique (GMM dynamic panel estimators) which linked financial market development with investment and provided support for countries planning to open their banking sector for international competition.

Qamruzzaman and Jianguo (2017) in their study provides evidence for the financial innovation in the financial system that resulted in the economic growth of Bangladesh from 1980- 2016. The authors applied the Autoregressive Distributed Lag (ARDL) bound testing and Granger causality-based Error Correction Model (ECM). The result of the study showed that the coefficients of the financial innovation proxy variables were positive and statistically significant both in the short run and long run. As recommendation, the authors recommended that the government of Bangladesh should encourage financial innovation in the financial system, especially at financial institutions, so that access to financial services can easily provide for equitable development. They also added that government should also encourage financial innovation in the capital market, which will assist in raising longterm capital for investment and expedite overall economic growth.

Asante, Agyapong and Adam (2011) empirically investigate the relationship between bank competition, stock market and economic growth in Ghana using time series data for the period 1992 to 2009, and the number of registered banks and trend as a proxy for bank competition. The short and long run relationships were established within the frameworks of Granger causality and the Autoregressive Distributed Lag (ARDL)/ Dynamic Ordinary Least Square (OLS) approach respectively. It was found that bank competition and stock market development granger caused economic growth in Ghana. Also, in the long run, banking competition is good for economic growth. However, there is a disproportionate response of economic growth to stock market development.

Antony and Antony (2012) looked at the relationship and Granger causality between financial innovations and economic growth in Ghana, for the period 1963 to 2009. They adopted a simple endogenous growth and the ARDL co integration models to aid in establishing both the long run and short run relationships between financial innovations and economic growth in Ghana. The results showed that financial innovation has short run positive effect on economic growth. The study recommends regulations toward improving financial innovations through long term savings.

The work of Maudos and Guevara (2006) examined the effect of financial development and banking competition on economic growth using both structural measures of competition (that is, market concentration) and measures based on the new empirical industrial organization perspective (Panzar and Rosse`s test and the Lerner index). The study used the period 1993-2003 for a sample of 53 sectors in 21 countries and indicated that financial development and the exercise of bank market power promoted economic growth. This result is consistent with the literature on relationship lending which argues that banking competition can have a negative effect on the availability of finance for companies that are informationally more opaque. The results cast doubt on the use of market concentration measures as indicators of competition.

The study by Mishra (2021) examine the economic growth implications of financial innovations that emerge in more sophisticated and complete financial markets. The study concludes that financial innovations in the form of new financial instruments, services, institutions, technologies, and markets mobilise financial surpluses from ultimate savers and channelizes them into most productive investment avenues thereby raising the rate of capital accumulation, and hence, the rate of economic growth.

Mbadike and Emeka (2009) did a study to examine the financial deepening and economic development in Nigeria between 1986 and 2007. The central focus was the high level of financial deepening and growth in an economy. This was due to the central role of the financial system in mobilizing savings and allocating same for the development process. The study made use of secondary data, sourced for a period of 22 years. The two stages least squares analytical framework was used in the analysis. The authors found that financial deepening index is low in Nigeria over the years. They also found that the nine explanatory variables, as a whole were useful and had a statistical relationship with financial deepening. But four of the variables; lending rates, financial savings ratio, cheques/GDP ratio and the deposit money banks/GDP ratio had a significant relationship with financial deepening. They concluded that the financial system has not sustained an effective financial intermediation, especially credit allocation and a high level of monetization of the economy. Thus the regulatory framework should be restructured to ensure good risk management, corporate governance and stemming systemic crisis in the system.

Bara and Mudzingiri (2016) in their study title financial innovation and economic growth evidence from Zimbabwe suggested that financial innovation has a relationship with growth which could either be positive or negative. In carrying out the study, the authors used the Autoregressive Distributed Lag (ARDL) bounds tests and the Granger causality between the period of 1980 to 2013. Their result shows that there is indeed a relationship between financial innovation and economic growth depending on the type of variables used as a measure of financial innovation. They recommended that policies that enhance economic growth are critical if countries like Zimbabwe were to develop. The above result corroborates with the study done by Ozurumba and Charles (2019) in Nigeria

The study by Tufano (2003) provides an excellent survey of the literature on financial innovation. The standard explanation for financial innovation according to the author is that it helps correct some kind of market inefficiency or imperfection. For example, if markets are incomplete then financial innovation can improve opportunities for risk sharing. If there are agency conflicts, then new types of security can improve the alignment of interests. Other important motivations for financial innovation are to lower taxes or to avoid the effects of regulations. Since both issuers and buyers must benefit from an innovation for it to be successfully introduced, the traditional view of financial innovation has been that it is desirable.

Soedarmono (2010) investigates the link between bank competition and economic development from a sample of Asian countries over the period 1999-2007. He states that, in general, although banking market power has a U-shaped relationship with economic growth, banking market power tends to improve economic growth. However, the positive impact of banking market power on economic growth only occurs in the agricultural sector, but not in the industrial sector. It is also shown that higher banking market power in countries with greater economic freedom erodes overall economic growth and industrial growth. On the contrary, there is no significant relationship between banking market power and agricultural growth in countries with greater economic freedom. He, therefore, concludes that when economic freedom increases and financial service investments come into a country, any policy to boost banking competition becomes necessary. In this case, the industrial sector is more important than the agricultural sector.

Ajide (2016) investigated the effect of financial innovation augmented with bank competition on sustainable development in eight West African countries from years 2000-2013. Using panel data estimations, the results confirmed that an increase in banking efficiency driven by competition and financial innovation would improve economic growth and

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development. While the two proxies of competition were significant, the financial innovations were not significant; one displayed a negative, while the other exhibited a positive relationship with development. These results revealed the differential effects of different financial innovations adopted in the financial system. That is, the growth effect of financial innovation is sensitive to the choice of proxy. In addition, the author found that a reduction in demand for money caused by financial innovations could deter economic growth and development. This is because individuals would move away from more liquid assets to less liquid assets. On the other hand, financial innovations could potentially lead to an increase in money demand if payment systems improve and individual's demand for more liquid assets is channeled to productive sectors. The study recommended that policies which would drive competition and efficiency in the banking industry as well as financial innovation should be introduced to ensure effective functioning of the financial system.

Hsu and Lin (2000) investigated the relationship between long-run economic growth and financial development to see whether stock market and financial institutions promote economic growth using Taiwan's data from 1964 through 1996. The empirical method utilized is the vector autoregressive error-correction model proposed by Johansen and Juselius (1992). They found that both banking and stock market development are positively related with short-run and long-term economic growth. In particular, the financial depth measured by the ratio of the broad monetary aggregate (M2) and GDP had strong effect on the output growth. In addition, they also found that Granger causality exists between financial development measures and economic development in both directions occurred during the study period (i.e. from 1964 through 1996).

Mwinzi (2014) examined the link between financial innovations and economic growth by assessing the effect of increasing financial innovations in Kenya on financial sector development. The study used secondary data from Central bank of Kenya, Kenya Bureau of Statistics and other institution. The data collected was analysed using regression method with the help of SPSS. The result showed that financial innovation has an insignificant positive impact on economic growth with mobile transactions with greater impact. The study recommended that for financial innovation in Kenya to be enhanced, there is need for policy makers to relook at the approach of mobile money penetration in impacting use of formal financial services as this is seen to have an insignificant impact on economic growth.

Anthony and Aboagye (2014) examined the relationship between bank competition, financial innovations and economic growth in Ghana using quarterly data from 1990 to 2009. They employed the ARDL co-integration procedures. The results showed that, in the long run, bank competition is positively related to economic growth whilst financial innovation is negatively related to economic growth. In the short run, bank competition is negatively related to economic growth. By the same token, financial innovation is positively related to economic growth in the short run. In terms of causality, the results showed that, there is unidirectional Granger causality from bank competition to economic growth. However, there is bidirectional Granger causality between financial innovation and economic growth. More regulations toward a more competitive banking system with more innovative products tailored toward mobilization of savings and investment to growth induced sectors of the economy were encouraged.

Loayza & Rancière (2004) have also found evidence of a negative relationship between short-term (temporary) changes in bank credit and growth in those countries that present high levels of financial fragility (proxied by credit volatility and frequency of banking crises). Periods of financial fragility in turn have coincided in many countries with financial liberalization. They claim that these temporary effects are compatible with the positive impact that permanent increases in bank credit have on economic growth over the long term, however.

Oruo (2013) looked at the relationship between financial inclusion and GDP growth in Kenya. The main objective of this paper was to examine the factors determining the relationship financial inclusion and GDP growth in Kenya. The study adopted a descriptive research design, used secondary data collected from various sources for the 2002/2003-2011/2012 financial periods collected annually. The study used a survey drawn from the Kenya economy. The study findings established that there was a strong positive relationship between GDP growth and branch networks which is one of the proxies of financial deepening. The study established that GDP growth over the study period was increasing as well as number of automated teller machines, number of mobile money users/accounts and branch networks.

Levine and Ross (1997) in their study highlighted the relationship between financial innovation and economic developments as the level of financial development is an omen of economic growth, of capital accumulation and of technological change. The authors stated that financial innovation centres mainly on financial development. Levine explained the way in which the financial system acts upon economic growth and believes in a functional approach for the understanding of the role that the financial system plays in economic growth. This approach focuses on the frictions between the functions' development and their quality that originate from the financial system, especially from innovation.

FINANCIAL INNOVATION MEASUREMENT

It should be noted that there is no generally acceptable measure of financial innovation. Hence some studies like Fischer (2007) and Attanasio (2002) used the number of ATM concentration in developing countries and Switzerland respectively as proxy for financial innovation, Nagayasu (2012) considered bank concentration data taking the ratio of the number of banks to the total population. Michalopoulos, Laeven and Levine (2009) measure financial innovation as growth rate of private credit to the sector and as a percentage of GDP. Hye and Adnan (2009) in their work titled financial innovation and demand for money in Pakistan usedM2/M1 as a proxy for financial innovation. Similarly, Mannah-Blankson and Belyne (2004) conducted a study for Ghana and use the volumes of cash transfer through ATM in addition to M2/M1 as a proxy for financial innovation. Moreso, Ireland (1995)

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used the cash in advance, theoretical model and the Baumol-Tobin model as a measure to capture financial innovation. This study uses the value of transaction of Automated Teller machine (ATM), Point of Sale (POS), Web Banking (WEB) and Mobile Banking (MOB). The reason for these choices is because it would significantly reduce the level of instability and also represent a direct measure of financial innovation (Abang, 2018).

ECONOMIC DEVELOPMENT MEASUREMENT

The study of economic development is one of the most important research fields in economics, political economy, and other social sciences (Nafziger 2005). The schools of classical and neoclassical economics analyze the development in terms of the efficient allocation of scarce productive resources to support optimal growth, produce and expand the range of goods and services. Instead, new economic approaches explain the development with socioeconomic, political, and institutional factors that accelerate economic growth, improve the levels of living, and reduce poverty of population, income inequality between people, and violent crime in society (Todaro and Smith 2003; Coccia 2017). A traditional economic measure of development is given by gross domestic product (GDP): the sum of gross value added by all resident producers in the economy plus any product taxes and minus any subsidies not included in the value of the products. Contemporary studies and theories have added noneconomic indicators for measuring development in society, such as Human Development Index (HDI): a summary measure of average achievement in key dimensions of human development: a long and healthy life, being knowledgeable and have a decent standard of living. The health dimension is assessed by life expectancy at birth, the education dimension is measured by mean of years of schooling for adults aged 25 years and more and expected years of schooling for children of school entering age. The standard of living dimension is measured by gross national income per capita (Human Development Reports 2018). For this study, the Gross National Income Per Capita is used as a measure of economic development. This is shifting away from the traditional economic measurement of development because this study tends to look at the level of the standard of living as a result of financial innovation.

THEORETICAL REVIEW

Economic development can be theoretically articulated and evaluated within the general framework of development theories. Though, the focus is specifically and narrowly on the effect of financial innovation on economic development, the Schumpeterian growth theory, technology acceptance model, task theory fit theory have importance and are of relevance to this study. These theories are briefly revised here.

The Schumpeterian growth theory was propounded by Joseph Schumpeter in the year 1990. The theory was birthed out of the Schumpeterian theory of creative destruction. The theory is a modification of the endogenous growth theory. According to Aghion and Howitt (1998), they viewed economic development in response to the departure from national growth rates, the United States and Japan technological dominance encounter, and as well as the failure of the neoclassical theory account for the long run causes of technical progress. Despites its importance to development the theory has been faulted in that the theory did not clarify state the foundation of innovation but stated the importance and the role played in the effectiveness of the economic cycles.

Technology acceptance model, was propounded by Davis F.D in the year 1993. The model shows the relationship between the use of Information and communication Technology (ICT) of an individual and that of his original purpose and aim. Thus the genuine performance is a determinant on the purpose of ICT usage and attitude towards the usefulness of the technology in question. However, it should be noted that the apparent worth and the purpose of the technology would determine the ease of use and acceptability. The level of understanding by the user in terms of user friendliness and usefulness is needed while implementing the TAM theory. In applying this theory to financial innovation, it is required that the theory should understand the needs and condition of the users. Thus this is to say that if the innovation to be used or approved would cause economic development with regards user friendliness and usefulness. It is on this premise that Wang, Wang, Lin and Tang (2003) in their study titled determinants of user acceptance of internet banking: an empirical study showed that the model (TAM) is very important in ascertaining the intention of the users to accept innovation. With citizen well educated and informed, the clients and the users would embrace the different payment channels that comes as a result of financial innovation. Furthermore, agents and other business and firms ca stay at the comfort of their zones and homes and do transactions that the values run into millions daily.

The task technology fit theory was propounded by Goodhue D.L and Thompson R.L in the year 1995. This theory contends that the use of information technology (IT) influences an individual performance. It can also be used if the proficiencies associated with the information communication and technology (ICT) is similar to the responsibility that needs be carried out by a user. They emphasize that the features that measures task-technology fit are synonymous to the quality, consent in terms of security, compatibility, its simplicity in use reliability and the relationship it builds with consu”mers. The importance of the theory is found in the study of various background of information systems which includes models and theory relating to IT and electronic commerce.

III. DATA AND METHODOLOGY

A. DATA

The relevant data for this study was sourced from secondary sources. The data set is quarterly which covers the period from 2009 2021.. The data was sourced from Central Bank of Nigeria statistical bulletin (Various years), National Bureau of Statistics (NBS), the World Bank Data sheet and other relevant journals and publications.

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B. METHODOLOGY

Following the theories and the empirical literature reviewed, which is to examine the relationship between financial innovation and economic development in Nigeria between the period 2009 and 2021, the study specify two (2) equations. This study used an extended Aghion, Howitt, and Mayer-Foulkes (AHM) model which was developed by Laeven, Levine and Michalopoulos (2015) and was used afterwards by Bara and Mudxingiri (2016). These studies tested models to find the impact of financial innovation on endogenous growth; based on the assumption that "the economy without financial innovation will stagnate, regardless of the initial level of financial development". The AHM model was developed based on the Schumpeterian growth model, where entrepreneurs earn a profit by introducing better products and services.

$$g - g_1 = b_0 + b_1F + b_2(y - y_1) + b_3F(y - y_i) + b_4X + U_t \quad ..1$$

To test the model, Laeven et al. (2015), Bara and Mudxingiri (2016), and Bara, Mugano, and Le Roux (2016) extended the AHM model to include financial innovation and financial development. All of the scholars stressed on financial innovation. In their models, they assumed that the financial development that occurs in any period is the impact of previous financial innovations. Bara et al. (2016) derived the following model from the AHM framework:

$$g - g_1 = b_0 + b_1F_t + b_2(y_t - y_{t1}) + b_3F_t(y_t - y_{it}) + b_4X_t + b_5f_t + b_6f_t(y_t - y_{1t}) + u_t \quad ....2$$

The dynamic regression model to be estimated in this study is as follows:

$$\underbrace{GNIPC}_{Y} = \underbrace{GEXP_t, GFCF_t +}_{X} \underbrace{GNIPC_{t-1}}_{y_{t-1}} + \underbrace{DCPSt}_{F} + \underbrace{ATM_t, POS_t, MOB_t, WEB_t}_{fi}$$

Where Y is economic development variable, X are control variables, F is the financial development variables and fi are financial innovation variables. The augmented and modified Aghion, Howitt, and Mayer – Foulkes (AHM) model and the financial innovation-economic development model is stated thus: For equation 1

GNIPC = *f* (GEXP, GFCF, GNIPC, DCPS, ATM, POS, MOB, WEB) 4

Where

GNIPC = Gross National Income Per Capita measured in billion naira

UEMP = unemployment rate measured in percentage

GEXP = Government Expenditure measured in billion naira

GFCF = Gross Fix Capital formation

DCPS = Domestic Credit to Private Sector

ATM = value of transaction of Automated Teller Machine measured in billion naira

POS = value of Point of Sale transaction measured in billion naira

MOB = value of Mobile banking transaction measured in billion naira

WEB = value of internet banking measured in billion naira

In a more explicit and log linear or econometric form, the above equation can be expressed as:

$$ln(GNIPC)t = \beta_0 + \beta_1 ln(GEXP)_t + \beta_2 INF_t + \beta_3 ln(GFCF)_t + \beta_4 ln(GNIPC_{t-1})_t + \beta_5 ln(DCPS)t + \beta_6 ln(ATM)_t + \beta_7 ln(POS)_t + \beta_8 ln(MOB)_t + \beta_9 ln(WEB)_t + \varepsilon_t \quad ...5$$

where

ln = natural logarithm

ε = Stochastic error term.

Equation 2

UEMP = (ATM, POS, MOB, WEB) ...6

In a more explicit and log linear or econometric form can be expressed as:

$$ln(UEMP)t = \beta_0 + \beta_1 ln(ATM)_t + \beta_2 ln(POS)_t + \beta_3 ln(MOB)_t + \beta_4 ln(WEB)_t + \varepsilon_t \quad ...7$$

THE AUTOREGRESSIVE DISTRIBUTED LAG (ARDL) MODEL

This method is an improvement on the classical Ordinary Least Squares technique. The technique was developed in 1997 by Pesaran and Pesaran. It is a standard least squares or linear least squares which is a method for estimating the unknown parameters in a linear regression model, with the goal of minimizing the sum of the squares of the differences between the observed responses in the given dataset and those predicted by a linear function of a set. Though there are several other cointegration methods which are available for use. This include the residual basis Engle and Granger (1987) test and the maximum-likelihood-based Johansen (1991) and Johansen-Juselius (1990) tests.

There are limitations to these models, which made researchers turn to the Ordinary-Least-Square- (OLS) based Autoregressive Distribution Lag (ARDL) approach. Its advantage over other cointegration methods are its flexibility for using a set of variables that are integrated in a different order (Pesaran, Shin and Smith; 2001a, 2001b). Moreover, a dynamic Error Correction Model (ECM) can be derived from the ARDL through using the linear transformation (Banerjee et al., 1993). This study used the ARDL model due to its advantages over other cointegration models and because both the short run and the long run parameters can be estimated concurrently irrespective of the order of the integration and provide an unbiased estimation (Pesaran et al. 2001a, 2001b).

Another reason is that, the Autoregressive Distribution Lag Model is superior because it can be used regardless of sample size (which can be small or infinite) and consists of 30 to 80 observations (Ghatak and Siddiki 2001). In addition, this approach is more suitable when variables are integrated in a different order, such as when some variables are I (0) and some variables are I (1). Furthermore, modeling the ARDL with the appropriate lags corrects for both the serial correlation and indigeneity problem (Pesaran et al. 2001a, 2001b). Lastly, Another reason for the choice of this technique is that, first; it is generally argued that most economic series are non-stationary. By non-stationary, we mean that the variables do not have a mean which is constant over time or has a strong trend over time and as such direct application of least squares technique could give spurious results. This causes the results of most OLS regressions to be statistically invalid and difficult to interpret in a theoretical context. A simplified ARDL model for the variables X, Y, and Z can be expressed as:

$$\Delta y_t = \alpha_1 + \gamma_1 y_{t-1} + \gamma_2 x_{t-1} + \gamma_3 z_{t-1} + \theta_1 \sum_{i=1} \Delta y_{t-1} + \theta_2 \sum_{i=1} \Delta x_{t-1} + \theta_3 \sum_{i=1} \Delta z_{t-1} + \varepsilon \quad ...8$$

where $\gamma_1\gamma_2$ and γ_3 are the long run coefficients whose sum is equivalent to the error correction term at VECM and θ_1,θ_2 and θ_3 represents the short run coefficients. The generalized ARDL model for the impact of financial innovation on economic development of Nigeria is as follows:

$$\Delta ln(GNIPC)t = \beta_0 + \beta_1 \Delta ln(\text{GEXP})_{t-1} + \beta_2 \Delta \text{INF}_{t-1} + \beta_3 \Delta ln(\text{GFCF})_{t-1} + \beta_4 \Delta ln(\text{GNIPC})_{t-1} + \beta_5 \Delta ln(\text{DCPS})t_{-1} + \beta_6 \Delta ln(ATM)_{t-1} + \beta_7 \Delta ln(POS)_{t-1} + \beta_8 \Delta ln(MOB)_{t-1} + \beta_9 \Delta ln(WEB)_{t-1} + \lambda_0 log(\text{GNIPC})_{t-1} + \lambda_1 log(\text{GEXP})_t + \lambda_2 log(\text{GFCF})_t + \lambda_3 log(\text{DCPS})t + \lambda_4 log(ATM)_t + \lambda_5 log(POS)_t + \lambda_6 log(MOB)_t + \lambda_7 log(WEB)_t + \varepsilon_t \quad ...9$$

where Δ represents the differencing in the variables, $_{t-1}$ for lagged period, ε_t is the error term or the stochastic term, while λ_0 to λ_8 is the long run coefficient. Equation (9) as stated above is the ARDL model specification which shows both the short run and the long run components.

IV. RESULTS AND DISCUSSION

STATIONARITY TEST

The unit root test was conducted with the aim of establishing the stationarity conditions of the variables. The test was based on the Augmented Dickey-fuller (ADF) test as well as the Phillips-Perron test. The result of the stationary test below (table 1) shows that all the variables except gross fix capita formation (GFCF), domestic credit to private sector (DCPS), and point of sale (POS) were not stationary at level. The Phillips Perron test which is confirmatory test stated same result as ADF. However upon first differencing, all the variables which did not attain stationarity at level became stationary. Stationarity was achieved for both ADF and Phillips Perron at 5 percent level of significant. With a mixture of stationarity order, that is bot I(0) and I(1), the justification for the use of ARDL comes to play

Variables	ADF			Phillips-Perron		
	Level	1st Difference	Order of Integration	Level	1st Difference	Order of Integration
GNIPC	-1.847802	-6.680472	I(1)	-1.847441	-6.680472	I(1)
UEMP	-0.234180	-7.320728	I(1)	0.665813	-7.695633	I(1)
GEXP	-0.823836	-6.892445	I(1)	-0.813280	-6.895324	I(1)
GFCF	0.380977	-5.148643	I(1)	-1.484343	-9.132428	I(1)
DCPS	-3.014346	-	I(0)	-2.995787	-	I(0)
ATM	-0.724681	-8.291569	I(1)	-0.704375	-8.192798	I(1)
POS	4.482988	-	I(0)	5.358630	-	I(0)
MOB	2.760340	-7.494923	I(1)	3.352914	-	I(0)
WEB	0.780917	-10.25215	I(1)	-0.549378	-12.12443	I(1)

ADF test critical test values.
Phillip-Peron test critical values
Level: 1st Difference: Level: 1st Difference: At 5% = -2.925169 5% = -2.926622 At 5% = -2.925169 5% = -2.926622 10% = -2.600658 10% = -2.601424 10% = -2.600658 10% = -2.601424
Source: Author's computation using Eviews 10.

Table 1: Unit root test result using Augmented Dickey-Fuller (ADF) and Phillips-Perron tests

ARDL BOUNDS TESTS RESULT

From the result of the unit root test, the variables were stationary at both I(0) and I(1). The ARDL bound test was conducted so as to test if there is any existence of long run relationship among the variables. As seen from the result in table 2, the calculated F-statistics with the value of 8.037383 is greater than the upper and lower bound critical bound value of all level of significance. This however means that the null hypothesis of no cointegration is rejected while the alternative hypothesis of cointegration is accepted. Thus there is cointegration and long run relationship between the variables.

Test Statistic	Value	Signif.	I(0)	I(1)
F-statistic	8.037383	10%	1.92	2.89
K	7	5%	2.17	3.21
		2.5%	2.43	3.51
		1%	2.73	3.9

Decision: There is existence of long run cointegrating relationship

Source: Author's computation using E-views 10 (2021)

Table 2: Bounds test result

DESCRIPTIVE STATISTICS

In table 3 we present the descriptive statistics. The reason for this is to find the statistical properties of the various variables under study. As can be seen, on the average, gross national income per capita stood at 86770.58 billion naira over the period of study. Having a maximum and minimum values of 94183.58 and 77872.78 billion naira respectively. For financial innovation, statistics as presented in table 3 shows that the value of ATM recorded the highest mean value of 1025.11 billion Naira while the lowest mean value was that of internet banking (WEB). This clearly shows that financial innovation is been accepted and new ways are been developed.

	ATM	DCPS	GEXP	GFCF	GNIPC	MOB	POS	UEMP	WEB
Mean	958.4279	26.85542	197.0519	3772.087	86770.58	359.7015	271.4883	8.296042	47.64506
Median	1025.105	27.20000	200.1850	3623.405	87044.05	110.0800	100.0400	8.460000	24.28000
Maximum	1716.957	44.10000	291.5700	6276.464	94183.58	2402.115	1158.027	14.23000	221.5315
Minimum	62.59000	5.120000	89.04000	763.0500	77872.78	0.060000	1.870000	3.700000	3.370000
Std. Dev.	576.6318	9.448155	65.05649	1535.622	4632.117	631.6209	352.5225	3.531234	54.67913
Skewness	0.118787	-0.364261	0.053208	-0.163833	-0.130285	2.066831	-1.239084	0.054469	-1.590523
Kurtosis	1.567633	2.960470	1.773989	2.234615	2.356258	5.945239	3.168201	1.643128	4.500680
Jarque-Bera	4.216232	1.064613	3.028856	1.386358	0.964602	51.52318	12.33922	3.705939	24.74219
Probability	0.121467	0.587249	0.219934	0.499984	0.617361	0.000000	0.002092	0.156771	0.000004
Sum	46004.54	1289.060	9458.491	181060.2	4164988.	17265.67	13031.44	398.2100	2286.963
Sum Sq. Dev.	15627699	4195.579	198920.3	1.11E+08	1.01E+09	18750416	5849.078	586.0717	140520.9
Observations	48	48	48	48	48	48	48	48	48

Source: Author's computation using E-views (2021)

Table 3: Descriptive statistics

CORRELATION MATRIX

Table 4 shows the correlation matrix. The result shows that all the variables that enter the model are positive and are correlated.

	GNIPC	DCPS	GEXP	GFCF	ATM	POS	WEB	MOB
GNIPC	1.000000							
DCPS	0.512117	1.000000						
GEXP	-0.255906	0.016029	1.000000					
GFCF	0.400275	0.254628	-0.921444	1.000000				
INF	-0.191223	-0.076682	-0.537832	0.466515				
ATM	0.452664	0.295210	-0.868390	0.951598	1.000000			
POS	-0.023804	-0.000134	-0.848296	0.857401	0.812513	1.000000		
WEB	-0.074941	-0.039283	-0.761154	0.754018	0.728319	0.932558	1.000000	
MOB	-0.107948	-0.032144	-0.714822	0.714076	0.639721	0.925622	0.857197	1.000000

Table 4: Correlation matrix

GRANGER CAUSALITY ANALYSIS

Null Hypothesis:	Obs	F-Statistic	Prob.
ATM does not Granger Cause GNIPC	46	1.68719	0.1976
GNIPC does not Granger Cause ATM		1.87581	0.1661
POS does not Granger Cause GNIPC	46	2.44124	0.0996
GNIPC does not Granger Cause POS		0.32182	0.7266
MOB does not Granger Cause GNIPC	46	2.15324	0.1291
GNIPC does not Granger Cause MOB		0.05773	0.9440
WEB does not Granger Cause GNIPC	46	1.38432	0.2620
GNIPC does not Granger Cause WEB		0.13244	0.8763
POS does not Granger Cause ATM	46	1.08109	0.3487
ATM does not Granger Cause POS		3.82687	0.0299
MOB does not Granger Cause ATM	46	1.04174	0.3620
ATM does not Granger Cause MOB		4.57333	0.0161
WEB does not Granger Cause ATM	46	4.01120	0.0256
ATM does not Granger Cause WEB		1.98036	0.1510
MOB does not Granger Cause POS	46	1.89836	0.1628
POS does not Granger Cause MOB		8.47137	0.0008
WEB does not Granger Cause POS	46	21.6692	4.E-07
POS does not Granger Cause WEB		21.0180	5.E-07
WEB does not Granger Cause MOB	46	105.212	7.E-17
MOB does not Granger Cause WEB		3.87055	0.0289

Source: Author's computation using E-views 10 (2021)

Table 5: Granger causality result

The Granger causality test was carried out so as to examine if there was any causal relationship between financial innovation and economic development from 2009 to 2020. The analysis for granger causality is used to test the hypothesis of prediction of future values of certain economic variables while introducing or incorporating past/previous lags of other economic variables in the model. Also a time series known as X_t will be said of granger cause another time series variable Y_t if only the former contains important information that can affect or predict further values of the later. Therefore, in this work, if the F-test of the lagged values included in the model is statistically significant different from zero, it therefore means that there is causality which is said to be either uni-directional or bi-directional in a vicariate case. Also, the possibility of causality according to Enders and Granger (1998) is more likely when there is cointegration among variables. The Granger causality test for the series can be specified as:

For I(0) series

$$Y_t = \alpha_{10} + \sum_{j=1}^{k} \alpha_{1j} Y_{t-j} + \sum_{j=1}^{k} \beta_{1j} X_{t-j} + U_{1t}$$

$$X_t = \beta_{20} + \sum_{j=1}^{k} \alpha_{2j} X_{t-j} + \sum_{j=1}^{k} \beta_{2j} Y_{t-j} + U_{2t}$$

For I(1) series

$$\Delta Y_t = \eta_0 + \sum_{i=1} \alpha_i \Delta Y_{t-i} + \sum_{i=1} \Phi_i \Delta X_{t-i} + V_{1t}$$

$$\Delta X_t = \infty_0 + \sum_{i=1} \gamma_i \Delta X_{t-i} + \sum_{i=1} \Psi_i \Delta Y_{t-i} + V_{2t}$$

Where: Y_t is the dependent and X_t is the explanatory variables and U_{1t} is a zero mean white noise error term in the first granger causality equation, while X_t is the dependent variable and Y_t is the explanatory variables U_{2t} is a zero mean white noise error term in the second granger causality equation. Having confirmed that there is cointegration amongst the financial innovation and economic development variables of Nigeria then we can carry out Granger causality. The result obtained as presented in table 5, shows that there is a uni-directional causality between financial innovation and economic development. Thus the null hypothesis that financial innovation (ATM, POS, MOB, WEB) does not Granger cause economic development was rejected. While the null

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hypothesis that economic development does not granger cause financial innovation was accepted. This implies that financial innovation granger cause economic development in Nigeria to increase.

LONG RUN ARDL RESULT

From the result as shown in table 6, with emphasis on financial innovation variables. The result shows that a 10 percent increase in ATM would lead to a 5.5 percent increase in economic development. Similarly, a 10 percent increase in mobile banking (MOB) will cause a 6.4 percent in economic development. Meanwhile, the result shows that a 10 percent increase in POS will cause a 2.2 percent decrease in economic development. This is also seen in the case of WEB whose increase will cause a 0.3 percent reduction in economic development. From the result it can be seen that all the financial innovation variables are statistically significant except WEB which is not only insignificant but also negative. In addition all financial innovation variables are positively signed except point of sale (POS) and internet banking (WEB) that are negatively signed. We also noted that the coefficients of gross fix capita formation (GFCF) and Government expenditure (GEXP) are negative and are not statistically significant. This similar means that a 10 percent increase in gross fix capita formation (GFCF) and Government expenditure (GEXP) will cause a decrease in economic development by 1.49 and 1.74 percent respectively. The same was observed for DCPS as the coefficient was negative, but it was statistically significant.

Dependent variable: GNIPC

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LGFCF	-0.148978	0.330531	-0.450724	0.6680
LGEXP	-0.174114	0.167253	-1.041019	0.3380
LDCPS	-0.365983	0.070252	-5.209542	0.0020
LATM	0.555714	0.094058	5.908214	0.0010
LPOS	-0.220378	0.065792	-3.349624	0.0154
LMOB	0.064217	0.023692	2.710449	0.0351
LWEB	-0.039728	0.032490	-1.222801	0.2673
C	11.80381	3.051889	3.867705	0.0083

Source: Author's computation using E-views 10 (2021)

Table 6: ARDL Long run

SHORTRUN ARDL RESULTS

The short run or parsimonious result was arrived at by selecting the statistically significant variables and other concerned variables of the study and used in estimating the parsimonious error correction model. The results of the parsimonious error correction model for short run dynamics result is as presented in table 7 below shows that the Error Correcting term (ECM), in the model shows the speed of adjustment from short run equilibrium to the long run equilibrium. However it should be noted that the greater the coefficient of the parameter, the higher the speed of adjustment of the model from the short run to the long run. The error correction model(ECM) is negatively signed and is statistically significant as expected by theoretical expectation. This shows that there is a dynamic adjustment from short run to log run. The coefficient of the ECM of -0.747175 shows that about 75 percent of the deviation from equilibrium was corrected each year. This thus shows that there is a fast speed of adjustment from the short run to the long run equilibrium.

The R-squared and adjusted R-squared of 0.953009 and 0.855669 respectively shows that the variables in the model explained about 95 percent of the total variations in the dependent variable. This can be explained by the changes in the independent variable and also leaving 5 percent for factors which were not captured in the model. This means that the model has a good fit. The Durbin Watson statistics value of 1.959933 falls within the critical region of no auto-correlation. Meaning that there is no issue of serial correlation among the residual in the model. It is also noted that the Durbin-Watson statistics value is greater than the R squared. Indicating that the result is not spurious, it is well behaved and can be used for policy decision in Nigeria.

The F-statistic value of 714.2468 is statistically significant. This indicates that all the independent variables in the model have a combined impact on the dependent variable. Thus a high degree of linear association exists between the dependent and the independent variables.

"The result indicates that the coefficient of the intercept is positive and statistically significant. This means that in the absence of all the independent variables in the model, demand for money will still increase by 14.01 percent. With regards to financial innovation, the table reveals that the estimated coefficients were consistent with theoretical postulation.

The financial system is regarded as one of the most important creations of the modern society and it is described as an integrated part of the economic system. Financial innovation raises the efficiency of financial intermediation through an increased variety of financial products and services, resulting in improved matching of the needs of individual savers with those of firms raising funds for expanding future production. By this way, it systematically contributes to capital accumulation hence leading to economic growth (Chou, 2007). It has been documented that financial innovation helps to correct some kind of market inefficiency or imperfection. If markets are incomplete then financial innovation can improve opportunities for risk sharing. If there are agency conflicts, then new types of security can improve the alignment of interests. Financial innovation can lower taxes and it can avoid the effects of regulations in the financial market (Tufano, 2003).

From the analysis of the result, it can be seen that financial innovation has a positive and significant impact on economic development but negative impact on unemployment. This simply means that an increase in financial innovation will cause an increase in economic development and also increase unemployment rate. Base on the results as presented above, financial innovation is good for economic development based on the fact that such innovations will improve the gross fix capita formation, reduce government expenditure, and can to a certain extent reduce unemployment and increase national

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income. Financial innovation provides the mechanism to fund innovative technological projects when traditional sources of funds are unavailable due to high investment risk. Technological and economic progress resulting in a higher complexity of business processes and new types of risk, forces the financial system and financial markets to adapt to the changes and to be modernized according to the new requirements of the business entities and the challenges of the modern world.

This leads to the conclusion that without financial innovations, economic development would slow down and the wealth of nations would be lower. At the same time, the application of financial innovations would be limited without the demand arising from technical progress (Blash, 2011). Financial innovation can assist individuals and firms to smooth expenditures in the case of temporary shortfalls in income. It may also lead to too much spending if they become over-confident. New products such as ATMs/ debit cards, and quasi-money such as financial instruments, could potentially improve efficiency and reduce transaction costs, in as much as, cash that would have been carried in wallets is replaced by these innovations. This could lead to a decline in demand for cash. A reduction in demand for money for transaction motives could deter economic growth and output. Also, individuals move away from more liquid assets to less liquid assets. This results in a demand for less money.

On the other hand, financial innovations could potentially lead to an increase in money demand if payments systems improve but individuals demand more liquid assets. For example, where individuals demand electronic money and cash through the use of mobile phone technology but do not necessarily move away from more liquid assets to less liquid assets, this action may as well increase the transaction motives thereby increasing demand for goods and services in the economy, while at the same time improving economic growth.

Financial innovation is good for the economy if it enables an economically productive use of money that would not otherwise occur. It is very clear that financial innovations may not necessarily add value to an economy. This can be the case when information asymmetries are present. This can happen if information asymmetries present particular contingencies that are not contractible, having complete markets is infeasible. It may also occur when contingencies are not verifiable, and/or too costly to verify. Introducing a financial innovation might not generate a good outcome or much motivation. This can be seen in terms of unemployment rate as a good number of persons who work in the bank are been laid off almost everyday. This is so because the introduction of financial innovation has taken over the responsibilities that the staff ordinarily do".

Dependent variable: D(GNIPC)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LGNIPC(-1))	-1.374190	0.135489	-10.14248	0.0001
D(LGNIPC(-2))	-1.136289	0.123494	-9.201159	0.0001
D(LGNIPC(-3))	-0.981113	0.109350	-8.972211	0.0001
D(LGFCF)	0.089231	0.018288	4.879205	0.0028
D(LGFCF(-1))	-0.047220	0.019426	-2.430717	0.0511
D(LGFCF(-2))	-0.161363	0.019895	-8.110843	0.0002
D(LGFCF(-3))	-0.107333	0.014840	-7.232679	0.0004
D(LGEXP)	0.059882	0.019252	3.110382	0.0208
D(LGEXP(-1))	-0.087052	0.023363	-3.726068	0.0098
D(LGEXP(-2))	-0.193600	0.025485	-7.596620	0.0003
D(LGEXP(-3))	-0.161596	0.022667	-7.129086	0.0004
D(LDCPS)	0.085190	0.010184	8.365297	0.0002
D(LDCPS(-1))	-0.132796	0.014734	-9.012776	0.0001
D(LDCPS(-2))	-0.088797	0.011573	-7.672547	0.0003
D(LATM)	-0.131114	0.019927	-6.579852	0.0006
D(LATM(-1))	0.175307	0.019232	9.115376	0.0001
D(LATM(-2))	0.095281	0.013958	6.826047	0.0005
D(LATM(-3))	0.060486	0.014216	4.254865	0.0054
D(LPOS)	0.048997	0.007340	6.675654	0.0005
D(LPOS(-1))	-0.064345	0.008276	-7.775228	0.0002
D(LPOS(-2))	-0.024342	0.006490	-3.750543	0.0095
D(LMOB)	-0.018126	0.003931	-4.610745	0.0037
D(LMOB(-1))	0.006880	0.003478	1.978237	0.0953
D(LMOB(-2))	-0.011356	0.003609	-3.146758	0.0199
D(LMOB(-3))	-0.013583	0.002149	-6.321202	0.0007
D(LWEB)	-0.002417	0.005804	-0.416398	0.6916
D(LWEB(-1))	-0.038095	0.007730	-4.928051	0.0026
D(LWEB(-2))	-0.032331	0.006247	-5.175687	0.0021
D(LWEB(-3))	-0.033555	0.005711	-5.875654	0.0011
CointEq(-1)*	-0.747175	0.057512	-12.99173	0.0000

R-squared	0.953009	Mean dependent var	0.001543
Adjusted R-squared	0.855669	S.D. dependent var	0.016787
S.E. of regression	0.006378	Akaike info criterion	-7.053564
Sum squared resid	0.000569	Schwarz criterion	-5.837071
Log likelihood	185.1784	Hannan-Quinn criter.	-6.602430
Durbin-Watson stat	2.599338		

Source: Author's computation using E-views 10 (2021)

Table 7: ARDL short run result

EQUATION 2 (UNEMPLOYMENT EQUATION)

Dependent variable: Unemployment

Variable	Coefficient	Std. Error	t-Statistic	Prob.

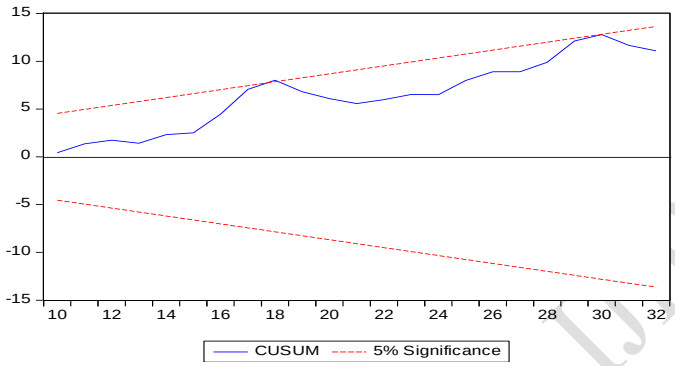
LATM	-0.928475	0.383570	-2.420616	0.0215
LPOS	1.553328	0.364778	4.258278	0.0002
LWEB	0.654630	0.290750	2.251522	0.0316
LMOB	0.212913	0.273498	0.778482	0.4422
C	5.267339	1.917745	2.746632	0.0099

Source: Author's computation using E-views 10 (2021)

Table 8

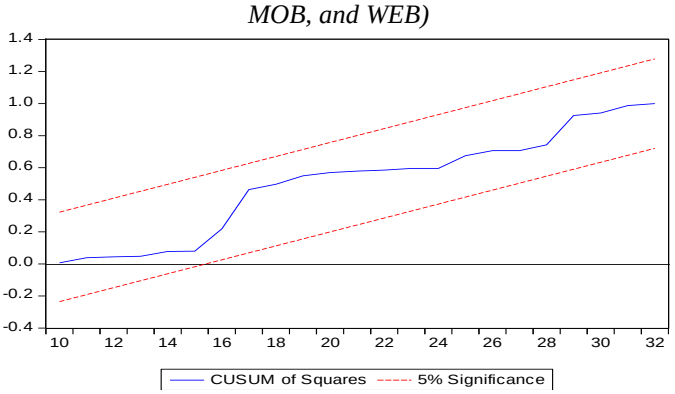
Table 8 above shows the result of impact of unemployment as a disaggregated variable from economic development and financial innovation. It can be seen that all the variables are statistically significant except mobile banking (MOB). Similarly, all the coefficients of the variables are positive except automated teller machine (ATM). The result shows that a 10 percent increase in the value of ATM will cause unemployment to reduce by 9.25 percent. An increase in point of sale (POS), internet banking (WEB), and mobile banking (MOB) by 10 percent will equally cause unemployment to increase by 15.53 percent, 6.55 percent and 2.14 percent respectively.

MODEL STABILITY ANALYSIS



Source: Author's computation using Eviews, 2017

Figure 1: CUSUM for Financial Innovation (ATM, POS, MOB, and WEB)



Source: Author's computation using Eviews, 2018

Figure 2: CUSUMSQ for Financial Innovation (ATM, POS, MOB, and WEB)

In addition, having structural economic changes in Nigeria, it might be macroeconomic series subject to one or more structural breaks. The Cumulative Sum (CUSUM) and Cumulative Sum of Squares (CUSUMSQ) tests was applied so as to examine the stability of the parameter after the ECM models were estimated. Thus, we go for estimating model stability to ensuring acceptability of both long run and short run coefficient of the study. For stability test of econometric models, significant number of researchers rely on cumulative sum and cumulative sum squares (for example, Omoniyi and Olawale 2015; Pesaran et al. 2001a, 2001b; Narayan and Smyth 2005) which is proposed by Borensztein et al. 1998). Figure1 and 2 above report cumulative sum of recursive residual (CUSUM) and the cumulative sum of the square of recursive residuals (CUSUMQ) of the two proposed equation of the study, it is revealed that test line falls within the 5% significant level critical boundary. This implies that the stability of estimated parameters of a proposed model of the period of 2009 to 2020, been estimated are stable in the long run. In addition, there exists a long run relationship between financial innovation and economic development in Nigeria indicating there are no systematic changes identified. This thus implies that the coefficients are changing gradually.

V. CONCLUSION AND POLICY RECOMMENDATION

The main objective of this study was to examine the impact of financial innovation on economic development. The study used quarterly data that spanned from 2009 to 2020 and adopted the ARDL bounds testing approach and several estimation tests. Some of the test that were used include the unit root test, cointegration test, Granger causality test, the ECM, CUSUM and the CUSUMSQ.

Previous literatures were reviewed and the result and conclusion of the study reviewed has a mixed result. Majority of the works reviewed were done on growth as only a few were concentrated on the impact of financial innovation on economic development. While some study stated that financial innovation actually impact economic growth. Other study however are of the opinion that financial innovation has no impact on growth. This study was able to fill the research gap by examining at the same time the various components of financial innovation and their impact on economic development while also testing its importance on unemployment and also using real data instead of proxies as been used by other studies.

Several findings were made in the conduct of this study. A summary of the findings is as stated. From the result of the analysis carried out, it shows that the coefficient of the intercept is positively signed and statistically significant and a unit increase in financial innovation variables would lead to an increase in economic development. Furthermore, all the variables are also statistically significant except WEB, with ATM and MOB having a positive relationship with economic development, while POS and WEB have negative relationship with economic development. This thus supports theoretical expectation. Though some studies exert that financial innovation (payment channels transaction) has a negative relationship with economic development but the result in this study proves otherwise. Economic development is stable with the inclusion of financial innovation even with the high value of the fitness of the model as shown in the CUSUM and CUSUMSQ test.

In the light of the above, this study recommends that financial innovation should be sustained while measures and policies that will cause the improvement in the technological advancement of financial innovation should be encouraged

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and improved. The study also recommends that government should make rules and laws that will protect those that work in banks so that the surge that comes with financial innovation will not hit the labour market while trying to develop the economy through the encouragement in the use of financial innovation.

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