Journal of Global Economics and Business **April 2023, Volume 4, Number 13, 17-35**
ISSN: Print 2735-9344, Online 2735-9352

BANKS' CREDIT TO THE PRIVATE SECTOR AND ECONOMIC GROWTH IN NIGERIA: THE MODERATING ROLE OF DIGITALIZATION

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Abstract

Inspired by the desire to take a unique trajectory with the greater goal of new knowledge addition, this study examined the moderating effect of digitalization on the triangular relationship between digitalization, banks' credit to private sector and economic growth in Nigeria for 2009 – 2021. The highly debatable direction of the relationship between credit to the private sector and economic growth in Nigeria has remained unresolved; by throwing digitalization in the mix, this study seeks to ascertain if there is a substantial shift in the direction of the subsisting argument with refence to Nigeria. The *Autoregressive Distributed Lag (ARDL) approach was applied due to the mixed order of integration results obtained from the Unit Roots Test, which accounted for some structural breaks. For this study, the long-run results carry more prominence than the short-run since there is inherent room for adjustments. The empirical results show that private sector credit has a positive and significant impact on economic growth in Nigeria in the short run. However, in the long run, credit to private sector has a positive and insignificant impact on economic growth in Nigeria. The results also revealed that ddigitalization does not moderate the effect of banks' credit to the private sector on economic growth in Nigeria for the period reviewed. Because of the strategic role of financial intermediation played by deposit money banks, the paper supports the ongoing efforts of the Central Bank of Nigeria (CBN) in deepening the integration of digitalization into the financial services sector.*

Keywords: *Banks Credit, Economic Growth, Digitalization, Private Sector, ARDL.*

DOI: 10.58934/jgeb.v4i13.139

1. Introduction

Credit is a vital part of financial intermediation that funds those economic units that can best utilize them. The relationship between private-sector lending and economic growth has become a prominent topic of debate in economic circles worldwide, and empirical research on the subject has yielded mixed outcomes. Most people, organizations, and economic entities need finance for various reasons. Also, there are several options for accessing financial services. A wide range of entities provides financial services. These are referred to as financial institutions. These institutions are classified into money and capital markets. The money market has different service providers, including commercial banks that provide short-term financial services through intermediation. This entails transferring monies from one source to another from surplus to deficit units. The role of financial institutions in fostering economic growth has received much attention in various literature. Economists, such as Joseph Schumpeter (1911), recognized the significant intermediating roles of banks in fostering innovations.

Commercial banks are a veritable part of any economy and help advance credits to needy sectors. The importance of credit in economic growth cannot be over-emphasized. Businesses, for instance, obtain loans to purchase machinery and equipment; governments at various levels take loans from commercial banks to fund their recurrent and capital expenditures; farmers access loans to buy inputs like seeds, fertilizers, and different agricultural structures. The banking sector has emerged as the most important financial sector because, in many developing nations worldwide, it is the only credible avenue for attracting vast amounts of private deposits (Adeniyi, 2006).

The concept of credit is inextricably linked to the banking sector; banks act as conduits for cash to be received in the form of deposits from the economy's surplus spending units and transfer to the deficit spending units that require funds for productive purposes (Chinweoke *et al*., 2014). As a result, banks are debtors to depositors and creditors to borrowers of funds. Credit availability enables the job of intermediation to be fulfilled, which is critical for the growth of any economy. The way people socialize, study, work, and perform commercial operations has changed dramatically due to the growth and expansion of information and communication technology (ICT). As technology penetrates and supports essential changes in all areas and aspects of human existence, the influence of the ICT revolution becomes more evident in almost all nations, including Nigeria. It is certain to continue in the years ahead. The digital landscape, or "digital economy," has evolved considerably since the mid-1990s and has

undoubtedly impacted how businesses operate and how consumers participate in transactions with enterprises and vice versa.

At its most basic level, digitalization refers to the connectedness enabled by digital technology, such as machines, cars, and buildings, and is the driving force behind the present industrial revolution. Digitalization disrupts customer and corporate connections, necessitating new organizational and business model innovations. The banking industry is strongly affected by technological advancements in the economy. Client engagement with the bank and selling financial goods are changing dramatically. The digitalization of economic activities, including banking operations, is causing these shifts. The central concept behind digitalization is to satisfy clients with products and services via computer and telecommunications networks. The development of digitalization helps potential banking consumers in various ways, including reducing the time it takes to conduct financial transactions and expanding their availability and, ultimately, access to options. It broadens the range of services banks provide and offers many new features that make clients' interactions with the bank more flexible.

Credit to the private sector, a critical component of any economy's growth trajectory, has had a wobbled history in Nigeria. Thus, one of the many challenges plaguing the Nigerian economy on its path to attaining its full potential is the poor, uncoordinated and insufficient credit to the economy's main drivers. Banks need to take advantage of the progressive and positive force that accompanies digitalization and thus fully optimize the inherent potential for the ultimate objective of the country's economic growth.

In 2020, the value of domestic credit granted to the private sector in Nigeria amounted to 11.23 per cent of the country's GDP. This is far too low compared to the world average recorded in 2020 based on 145 countries which were 59.29 per cent (World Bank, 2022). Also, with a score of 4.48, Kenya leads in fintech in Africa and ranks 31st globally; Nigeria comes a distant third in Africa and 52nd globally. Nigeria's five-year economic growth rates (2017 – 2021) were -1.617, 0.806, 1.923, 2.208, -1.8 and 3.40 per cent, respectively; this implies an average growth rate of 1.3 per cent. This is dismal compared to Kenya's average economic growth rate of 4.42 in the same period (Statista, 2021). Many studies have attributed the performance of the Kenyan economy to its early and efficient embrace of digitalization.

The primary objective of this study is to assess the effect of banks' credit to the private sector on economic growth in Nigeria from 2009 - 2021. Furthermore, measure the moderating role of digitalization in the relationship between bank credit and economic growth in Nigeria from 2009 - 2021.

To achieve this objective, we construct the models thus:

H_{01}: Bank's credit to the private sector has had no significant effect on economic growth in Nigeria from 2009 - 2021.

H_{02}: Digitalization does not moderate the effect of banks' credit to the private sector on economic growth in Nigeria from 2009 – 2021.

Therefore, this study seeks to investigate the impact of digitalization in further smoothening the existing relationship between private sector credit from banks and Nigeria's economic growth from 2009 - 2021. Moreover, to establish the existence or otherwise of any moderating role of digitalization.

2. Literature Review

Conceptual Review

Economic growth, Banks' Credit to Private Sector and Digitalization

Although demand and supply factors affecting private sector lending are intertwined, previous research makes differences between them. Credit channel models identify bank lending and balance sheets as supply-side channels, which quantify the impact of changes in banks' financial situations and borrowers' credit availability (Goyal *et al*., 2011). The macroeconomy, monetary policy, credit to the public sector, and bank characteristics were identified as four supply-side drivers of bank credit in studies based on these two credit channels (Carey, 1998); (Gozgor, 2014); (Everaert et al., 2015); (Rabab'ah, 2015). However, they revealed country-specific variances, and empirical investigations on their impact show comparable conclusions compatible with economic theory.

Banks serve as a growth driver and are responsible for providing a lifeline to all sectors of the economy. No economic sector can thrive or grow without the financial sector's assistance and services. Banks are essential to the agricultural, industrial, mining, and service industries and

give the necessary capital for growth. To launch a new industry or engage in other development endeavours, the deficit spender unit obtains short-, medium- and long-term loans (and, sometimes, overdrafts) from banks. As a result, there is a link between banks and the country's economic growth (Ihenetu, 2021).

Digitalizing economic activities, including banking operations, has caused much shifting. The development of digitalization has helped potential banking consumers in various ways, including reducing the time it takes to conduct financial transactions and expanding their availability and, ultimately, access to options. Digitalization has become important to all banks and a significant driver for competitiveness, as it directly affects the banks' management decisions, plans, products, and services. Digitalization in banking (like electronic banking) refers to the adoption and application of Information and Communication Technology (ICT), its techniques, concepts, policies, and implementation strategies in the banking sector (Onodugo, 2015). Increasing digitalization makes the service industry like banks provide e-banking services or online banking to access the competitive advantage and dedicate much market share for themselves as it has a crucial role in increasing the organizational profitability and customers' satisfaction and loyalty, the quality of e-banking services is of great importance (Sathiyavany & Shivany, 2018).

Through electronic banking, made possible by digitalization, customers can receive bank services through safe intermediaries without visiting a physical location (Daniel *et al*., 2004). It enables users to conduct online financial transactions at any time and location (Polatoglu & Ekin, 2001). Electronic banking provides bank customers with convenient access to manage their financial affairs with the least amount of inconvenience possible, so a quick and convenient way to perform a variety of banking transactions was provided through the internet banking website from the comfort of their own home, office, or anywhere else that is accessible (Faziharrowdin, 2010). Thus, electronic banking is the optimal integration of a bank's activities using contemporary technology to provide all essential consumer services (Blunt *et al*., 2005). Digitalization has become an integral part of the new banking experience and a catalyst for economic development (Onodugo, 2015). This is because the share of adults in developing economies who make or receive digital payments grew from 35% in 2014 to 57% in 2021. However, in the study by Beccalli (2007) no evidence that investments in IT increase the demand for loans or the supply of deposits. Martín-Oliver and Salas-Fumás (2008) found that Investments in IT development in a bank can affect the amount of profit, both positively and

negatively, due to the effects of competition. Zhou et al. (2021) state that digitalization does not directly improve workforce performance. However, according to a study of Chinese banks, it can potentially improve productivity in companies with relatively small assets. In another study by Stefanovic et al. (2021), the relationship between digitalization and sustainable development in the Serbian banking sector showed that digitalization positively affects banks' return on equity and helps banks remain profitable even under the conditions of the global COVID-19 pandemic. Finally, Do et al. (2022) found that digital transformation has a positive effect on the work of Vietnamese commercial banks, and the strength of the positive influence is directly proportional to the scale of the bank. Based on these arguments, there is mixed evidence of the relationship between economic growth, Banks Credit to the Private Sector and digitalization; hence this study examines the moderating role of digitalization in the relationship between economic growth and bank credit to the private sector.

Theoretical Review

This study is anchored on Solow's growth theory and the Schumpeterian Theory of Innovation.

The Solow Growth Theory

The model of economic growth initially developed by Robert Solow in the 1950s is popularly referred to as Solow's Growth Theory. Solow's purpose in developing the model was to deliberately ignore some important aspects of macroeconomics, such as short-run fluctuations in employment and savings rates, to develop a model that attempted to describe the long-run evolution of the economy. The Solow model believes that a sustained rise in capital investment (credit to the private sector) increases the growth rate only temporarily: because the ratio of capital to labour goes up (Whelan, 2005).

However, the marginal product of additional units of capital may decline (there are diminishing returns). Thus an economy moves back to a long-term growth path, with real GDP growing at the same rate as the growth of the workforce plus a factor to reflect improving productivity. A 'steady-state growth path' is reached when output, capital, and labour grow simultaneously, so output per worker and capital per worker are constant. Neo-classical economists believe that raising the trend rate of growth requires an increase in the labour supply plus higher productivity of labour and capital. Differences in the pace of technological change between countries explain much of the variation in growth rates.

The Schumpeterian Theory of Innovation

The Schumpeterian Theory of Innovation was succinctly captured in two seminal works, *the Theory of Economic Development* (1934) and *Capitalism, Socialism and Democracy* (1942). According to Schumpeter, innovation is an "industrial mutation that incessantly revolutionizes the economic structure from within, destroying the old one, incessantly creating a new one". The Schumpeterian Theory of Innovation is made famous in his cerebral works. Schumpeter defined development as a historical process of structural changes, primarily driven by innovation, which he categorized into five types in his Theory of Economic Development and subsequent work thus:

1. introduction of a new product or a new species of an existing product;

2. implementation of new manufacturing or sales methods (not yet proven in the industry);

3. establishment of a new market (for which a branch of the industry was not previously represented);

4. acquiring new raw material or semi-finished goods supply sources;

5. new industrial structure, such as forming or removing a monopolistic position.

According to Schumpeter, anyone desiring profit must innovate, using the economic system's productive resources differently. He further stated that innovation is critical to competitiveness and economic dynamics. He also thought invention lies at the heart of economic development, creating "creative destruction" gales.

The advent of new technologies in banking services has led to dynamic market conditions that critically affect the behaviour of consumers. Among the new banking technology, electronic banking has created a financial supermarket where financial services like investment, insurance, and loans could be provided (Asare & Sakoe, 2015). Productivity, innovation, and local economic growth are mainly driven by access to credit.

Empirical Review

Okorie and Chikwendu (2019) examine how private-sector credit impacts private-sector investment in Nigeria. The ARDL model was engaged in data analysis. From the analysis, the following results established that private-sector credit positively and significantly impacts

private-sector investment in the short run. However, in the long run, private-sector credit has a positive and insignificant impact on private-sector investment in Nigeria. Empirically, a 1% increase in private-sector credit in the short run leads to a 0.77% increase in private-sector investment.

David & Kaulihowa (2018) examined the impact of e-banking on commercial banks' performance in Namibia using an error correction model and granger causality test from January 2012 to August 2015. The study showed that interbank settlement systems, electronic funds transfer and cheques significantly drive return on investment. The direction of the causality test reveals a unidirectional causality from return on investment to interbank settlement system and cheques indicating that an increase in the return on investment is likely to enhance innovations and development. A bi-directional causality was also found between the volume of electronic funds transfer and return on investment.

Amoo *et al*. (2017) examined the Impact of Private Sector Credit on Economic Growth in the Nigerian economy from 1993:Q1 to 2013:Q4 using fully modified least squares. Findings show that credit is growth-enhancing, even when trade openness, monetary policy, investment climate and infrastructure are low. Also, the composite local condition index analysis revealed that private sector credit increased economic growth when domestic or local conditions were favourable. The absorptive capacity of the domestic economy for credit was estimated at 29% of the GDP in 2013.

Oyewole *et al*. (2017) examined the link between e-payment systems and economic development to assess Nigeria's ongoing transition to a cashless economy. The data was analyzed using the OLS and TSLS techniques for seven years (2005–2012). The findings show that e-payments have a strong positive link with economic growth in terms of real GDP per capita and trade per capita.

Olowofeso *et al*. (2015) examined the impacts of private sector credit on economic growth in Nigeria using the Gregory and Hansen (1996) cointegration test that accounted for structural breaks and endogeneity problems. The method was applied to quarterly data spanning 2000:Q1 to 2014:Q4, while the fully modified ordinary least squares procedure was employed to estimate the model coefficients. It was found that there is a cointegrating relationship between output and its selected determinants, albeit with a structural break in 2012Q1. Amongst others,

findings from the error correction model confirmed a positive and statistically significant effect of private sector credit on output, while an increased prime lending rate was inhibiting growth.

Abubakar (2014) examined the effects of electronic banking on the growth of deposit money banks in Nigeria using data collected from annual reports and the statistical bulletin of the Central Bank of Nigeria, as well as time series data from 2006 - 2012. The study measured electronic banking using the total value of mobile and internet banking, while growth was measured using the total deposits and assets of deposit money banks in Nigeria. The study also used regression analysis fitting the internet and mobile banking relationship. The result of the study showed that a positive relationship exists between total deposits and mobile banking in Nigeria. A positive relationship was also found between total assets and internet banking. No significant relationship was found between total deposits, internet banking, total assets and mobile banking in Nigeria.

3. Methodology

This study adopted the causal research design to examine the effect of banks' credit to the private sector on economic growth in Nigeria. Secondary data was collected from the Central Bank of Nigeria (CBN) statistical bulletin to investigate the research objectives properly. The study setting is Nigeria, with quarterly data for 13 years (2009 – 2021). The choice of the study period, 2009 – 2021, is informed by the fact that digitalization is a new concept in Nigeria; and its adoption is recent. The earliest available data from credible sources for the different digitalized banking activities which serve as proxies for digitalization in the banking sector are from 2009.

Theoretical framework

To properly ascertain the effect of credit to private sector (CRP) and digitalization (DIG) on economic growth (GDP) in Nigeria, this study adopts the endogenous growth model. Makki & Somwaru (2004) specified a general production function to be estimated as:

$$Yt = Akt\alpha \quad \ldots (1)$$

where *Yt* and *Kt* are real GDP and capital (as represented by CRP), respectively, at year *t*. At represents the total factor productivity (TFP) and captures the growth in total output not due to CRP but determined by other factors.

Based on the central aim of this study and the endogenous growth literature, which allows other theoretically informed factors to affect real GDP, possibly through the Total Factor Productivity (TFP), the study assumes *At* to be some factors that have been identified by empirical literature to affect economic growth. The study also assumes *At* to be a function of the following: (i) the pre-existing economic conditions (captured by real GDP) and (ii) Digitalization (DIGt).

From the link between the theoretical and empirical model, the study specifies the empirical model through some steps. First, At can be stated in the following functional form:

$$A_t = \beta(GDPt\text{-}1)^{\beta} e\lambda DIGt \quad \ldots \quad (2)$$

Putting Equation (2) into Equation (1), the study obtains the following econometric equation:

$$GDPt = \sigma + \beta GDPt\text{-}1 + \delta CRPt + \varepsilon t \quad \ldots. \quad (3)$$

where the intercept, $\alpha = \ln B$, εt is the error term.

By deducting $\ln Y_{t-1}$ from both sides of Equation (3), the study arrives at the following linear growth equation:

$$\Delta GDP_t = \sigma + \pi Y_{t\text{-}1} + \delta CRP_t + \lambda DIG_t + \varepsilon_t \ldots.(4)$$

where ΔGDP_t denotes the log difference of real GDP per capita, measuring economic growth. The coefficient of $\Delta \ln GDP_{t-1}$ ($\pi = \beta$—1) denotes the speed of conditional convergence of real GDP per capita to its long-run or steady-state level. In the above econometric model, the coefficients needed to examine the impact of domestic credit on the private sector on economic growth in digitalization are δ and θ. Similarly, λ and ϕ are needed to examine the impact of DIG on economic growth in the presence of CRP.

It is important to note that the presence of the interaction term in Equation (4) could alter the interpretation of the estimated coefficients, δ and λ. This is so because Equation (4) is not just an additive equation but a mediation equation which makes (CRPt) and (DIGt) dependent on each other. Therefore, the effects of CRP on economic growth at any given period are conditional on reasonable values of DIG. Thus,

$$GDP_t = \sigma + \lambda_1 CRP_t + \lambda_2 DIG_t + \lambda_3 (CRP*DIG)_t + \varepsilon_t \quad \ldots.(5)$$

where GDP_t denotes real GDP per capita, measuring economic growth, CRP is credit to private sector, DIG is digitalization, and CRP*DIG is the interaction between credit to private sector and digitalization.

The endogenous growth model posits that economic growth is essentially the result of the interactions and interplay of internal forces rather than external ones. The model or theory is hinged on the fact that investments in innovations (the kinds that have birthed digitalization), knowledge, human capital, and the like are the key drivers of economic growth. To this end, this study seeks to explore this path of reasoning further to investigate if the postulation holds for the Nigerian economy for the nature and character of the expansion of the Nigerian economy and, if at all, the level of economic growth currently attained can be attributable to the credit interventions by deposit money banks (DMBs) as enhanced by digitalization.

Method of Data Analysis

A multiple linear model was developed to achieve this study's objectives. The model shows the linear relationship between the explained and the explanatory variables and interaction. Also, there is a mixture of I(0) and I(1), which led to the adoption of the Autoregressive Distributed Lag (ARDL).

4. Results

This study applied diagnostic tests to ensure that the estimation technique does not fail in its assumptions. The diagnostic tests include normality, unit root, co-integration, and stability tests. At the same time, the Auto-regressive Distributed Lag model (ARDL) was used to achieve this study's objectives and test the hypotheses.

Normality Test

A normality test was conducted for the dependent variable. Jarque-Bera's output revealed that the p-value for RGDP is 0.3636 is greater than the 0.05 level of significance. It, therefore, indicated that the data is normally distributed (See Appendix)

Unit root

Table 1 shows the unit root test result for the variables under study derived from the ADF method. It revealed that RGDP was stationary at the level with an integration order of I(0). At the same time, the other variables were stationary at first, which implies that they have an integration order of I(1). This result has a mixture of I(1) and I(0) integration. Thus, the justification for the application of the ARDL method of analysis.

Table 1

Variables	Stationarity at level		Stationarity at first difference	
RGDP	*I*(0)	0.0000**	*I*(1)	0.0000**
CPR	*I*(0)	0.9542	*I*(1)	0.0001**
DIG	*I*(0)	0.9900	*I*(1)	0.0000**
*CRP*DIG*	*I*(0)	0.9900	*I*(1)	0.0001**

Source: E views 10.0 output

Co-integration

Table 2

F-bound Test	Value	Significance	I(0)	I(1)
F-statistic	32.87	10%	2.37	3.2
k	3	5%	2.79	3.67
		2.5%	3.15	4.08
		1%	3.65	4.66

Source: E views 10.0 output

The bounds test was applied because Johansen co-integration is at a disadvantage in determining the long-run relationship between the determinants of credit to the private sector and economic growth with digitalization as a moderator. This is because the bounds test allows for a mixture of I (1) and I (0) variables as regressors, that is, the order of integration. Table 2 shows the results of the bounds co-integration test, demonstrating that the null hypothesis against its alternative is easily rejected at the 1% significance level. The computed *F*-statistic of 32.87 is greater than all the lower and upper critical bound values at 10%, 5%, 2.5% and 1%, respectively. Therefore, the null hypothesis is rejected while the alternate hypothesis is accepted. Hence, there exists a long-run equilibrium relationship.

ARDL Result RGDP, CRP DIG and CRP*DIG

Table 3

ARDL Analysis

	Coeff	P-value
	Long-Run	
CRP	1.0675	(0.0007)
DIG	-6.4033	(0.1008)
*CRP*DIG*	0.3571	(0.0854)
	Short-Run	
Constant	-1.8670	(0.6812)
ECM(-1)	-0.9222	(0.0000)
RGDP(-1)	-0.9222	(0.0000)
Δ CRP	0.328644	(0.1717)
Δ DIG	7.262658	(0.1668)
*Δ CRP*DIG*	-0.394806	(0.1660)
N	48	
R-squared	0.9837	
DW 1.73		
F-test	128.87	P-value = 0.0000
Hetero	0.5423	P-value = 0.8956

Table 3 shows the summary of results for RGDP, CRP, DIG and CRP*DIG. The result revealed that the model is free from auto-correlation and Heteroscedasticity problems. The R-squared indicated that the change in the economic growth as proxied by RGDP is from the changes in CRP DIG and CRP*DIG. Also, 98.37% change in the dependent variable is attributable to the changes in the independent variables.

Long-run Relationships

The effect of credit on the private sector and economic growth, in the long run, is positive and significant. This means that credit to the private sector over this period has contributed to the growth of the Nigerian economy, i.e. credit is the catalyst for growth in any economy.

The result revealed that the effect of digitalization on economic growth is negative, with a coefficient value of -6.4033 and a p-value of 0.1008. This means that the increase in digitalization will insignificantly decrease the economic growth of Nigeria. The implication is that digitalization in Nigeria still needs to be fully developed enough for a significant positive

effect on growth in Nigeria. This may be due to low financial literacy rates, financial exclusion, internet knowledge etc.

The effect of credit interaction to the private sector with digitalization (CPR*DIG) on Nigeria's economic growth is positive, with a coefficient of 0.3571 and a p-value of 0.0854. This result invariably indicated that the economic growth within the study period has not significantly been influenced due to the interaction of credit to the private sector with digitalization.

Short-run Relationships

The short-run results revealed that the ECM(-1) has a high speed of 92.2% for disequilibrium caused by the presence of unit roots to adjust to equilibrium in the following year. The relationship between the previous and current economic growth is negative and significant. Also, credit to the private sector and digitalization both have a positive and insignificant effect on economic growth in Nigeria.

The effect of the interaction of credit to the private sector and digitalization (CPR*DIG) on economic growth in Nigeria is negative, with a coefficient value of -0.3948 and a p-value of 0.1660. The relationship indicated that the interaction effect of credit to private and digitalization causes a decreasing effect on Nigeria's economic growth within the study period.

Test of Hypotheses

H_{01}: Banks' credit to the private sector has no significant effect on economic growth in Nigeria from 2009 - 2021.

From the regression result in Table 5, the coefficient of credit to the private sector (CRP) in both the long-run and short-run (1.0675 and 0.3286) positively affects economic growth in Nigeria. In this study, the long run is considered more than the short run because the long run has a more extended period of adjustments. Since the p-value for the long run indicated less than the significance level of 0.05 respectively, it is concluded that the null hypothesis is rejected. In contrast, the alternate hypothesis is accepted, indicating banks' credit to the private sector has a significant effect on economic growth in Nigeria from 2009 - 2021. This result is different from the study of Okorie and Chikwendu (2019) examined the extent to which private-sector credit impacts private-sector investment in Nigeria.

The ARDL model was engaged in data analysis. From the analysis, the following results established that private-sector credit has a positive and significant impact on economic growth in Nigeria in the short run. However, in the long run, private-sector credit has a positive and insignificant impact on economic growth in Nigeria. Similarly, it was found that the outcome of this study is in line with Amoo et al. (2017), which investigated the impact of Private Sector Credit on Economic Growth in the Nigerian economy from 1993:Q1 to 2013:Q4 using fully modified least squares. Findings show that credit is growth-enhancing. That is, private sector credit increased economic growth when domestic or local conditions were favourable, and the absorptive capacity of the domestic economy for credit was estimated at 29% of the GDP in 2013.

H_{02}: Digitalization does not moderate the effect of banks' credit to the private sector on economic growth in Nigeria from 2009 – 2021.

From the regression result in Table 5, the coefficient of the interaction term CRP*DIG in both the long-run and short-run are (0.3571 and -0.3948) positively and negatively affect Nigeria's economic growth, respectively. Since the p-value for the long-run interaction term is greater than the significance level of 0.05, it is concluded that the null hypothesis is not rejected while the alternate hypothesis is rejected. Thus, digitalization does not moderate the effect of banks' credit to the private sector on economic growth in Nigeria from 2009 – 2021. In contrast, Oyewole et al. (2017) examined the link between e-payment systems and economic development to assess Nigeria's ongoing transition to a cashless economy. The data was analyzed using the OLS and TSLS techniques for seven years (2005–2012). The findings show that e-payments have a strong positive link with economic growth in terms of real GDP per capita and trade per capita.

On the contrary, the result corroborated with the findings of Abubakar (2014) on the effects of electronic banking on the growth of deposit money banks in Nigeria using data that were collected from annual reports and statistical bulletin of the Central Bank of Nigeria as well as the time series data from 2006- 2012. The result of the study showed that a positive relationship exists between total deposits and mobile banking in Nigeria. No significant relationship was found between total deposits, internet banking, total assets and mobile banking in Nigeria.

5. Conclusion and Recommendation

Despite the growing preponderance of literature on the relationship between banks' credit to the private sector and economic growth, credible empirical research works that interrogate the moderating role of digitalization are scanty, with most of them failing to account for structural breaks in their modelling approaches. This study is anchored on the continuously expanding and critical role digitalization plays in enhancing the efficient delivery of financial services to deserving sectors.

The paper established empirical support for significant structural breaks [2016: Q3, 2019: (Q1, Q3 & Q4) and 2021: (Q2 & Q3)]. These identified breaks were accommodated in the estimation methodology adopted by the study.

Thus, the significance and implications of this study can be gleaned from the results of the regression analysis, which show that digitalization does not have a moderating effect on the relationship between banks' credit to the private sector and economic growth in Nigeria in the period 2009 – 2021 corroborating the findings of Abubakar (2014).

The result from the ARDL model employed also revealed that private sector credit has a positive and significant impact on economic growth in Nigeria in the short run. However, in the long run, private-sector credit has a positive and insignificant impact on economic growth in Nigeria.

For the moderating impact of digitalization on economic growth in Nigeria via the credit to private sector channel, the results showed a negative relationship, thus implying that digitalization (concerning credit to private sector) does not moderate economic growth in Nigeria. This is at variance with similar works of Oyewole et al. (2017). The glaring inconsistencies may, justifiably, be attributable to the fact that digitalization as a concept and vehicle is still in its infancy stage in most of Africa, particularly Nigeria.

The findings of this paper further strengthen existing works on the relationship between credit to the private sector and economic growth to the effect that the relationship is significant and positive. Thus, safe to conclude that the banking sector, a critical stakeholder in financial intermediation, remains a credible channel through which needed financial resources can be mobilized for productive activities.

With growing digitalization and its disruptive impact on the economy, including, but not limited to, the financial services sector, the findings that the expected moderating role of digitalization in the relationship between credit to the private sector and economic growth is absent calls for concern. Thus, further measures must be taken to enhance the relationship.

To this end, this paper recommends that more sensitization is needed for digitalization to be fully embraced by all stakeholders in the financial services sector. Also, deliberate and drastic steps need to be taken to make digitalization easily affordable, accessible and acceptable to explore its potential optimally fully.

Further Research

Despite the contributions of this study to the existing body of knowledge, it still has limitations, as is the case with other studies preceding it. First, the analysis is encumbered with the limitation of timeframe, considering that the research covers only the periods up to 2021; for a relatively new concept yet to fully gain ground, further comparative studies are still needed to confirm or refute parts or all of the findings herein.

In Nigeria, considering digitalization is a relatively new development, more expanded research is needed to ascertain the scope and depth of digitalization and how these contributions can further deepen the relationship between banks' credit to the private sector and the economic growth of Nigeria. This is necessary because, despite the current level of credit advancement to the productive sector in Nigeria, not much has been achieved in terms of economic growth.

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