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BANKS' CREDIT TO PRIVATE SECTOR AND ECONOMIC GROWTH IN AN EMERGING DIGITALIZED ECONOMY: EMPIRICAL EVIDENCE FROM NIGERIA

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Abstract

This study examined the mediating effect of Digitalization on the relationship between banks' credit to the private sector and economic growth in Nigeria. The Vector Error Correction Model (VECM) approach was applied due to the first order of integration results obtained from the Unit Roots Test, which also 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, therefore, show that banks' credit to private sector has a significant effect on Digitalization in Nigeria, and Digitalization does mediate the effect of banks' credit to private sector on economic growth in Nigeria. Given 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. This action, it is hoped, will spur economic growth in the long run through the mediating role of Digitalization in helping the banks to achieve their goals of financial intermediation.

Keywords: Banks' credit, Economic growth, Digitalization, VECM, Private Sector

INTRODUCTION

Most people and organizations require finance and economic entities for various reasons. Also, there are several options for accessing financial services. A wide range of entities provide financial services. These entities are referred to as financial institutions. Money and capital markets are two categories in which these entities fall. The money market has a variety of service providers, including commercial banks that mediate the provision of short-term financial services. In a variety of works of literature, financial institutions' contributions to economic progress have garnered considerable attention. Economists, such as Joseph Schumpeter in 1911, recognized banks' significant and strategic intermediating roles in promoting innovations.

Commercial banks are a veritable part of any economy and help advance credits to the needing sectors. The importance of credit in economic growth cannot be over-emphasized. Many economic actors acquire credit to pay their operational expenditures. 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 in the financial services sector because, in many developing nations throughout the world, it is the only financial method of attracting vast amounts of private deposits (Adeniyi, 2006).

The banking sector contributes to the availability of credit by mobilizing surplus funds from savers who have no immediate need for such funds and channeling the same in the form of a credit to investors who have brilliant ideas for generating additional wealth in the economy but lack the capital (Nwanyanwu, 2010). There is a plethora of research examining the role of banks as facilitators of economic growth. On the intermediation functions performed by the financial institution over the years, there seems to be broad consensus.

Credit is money given by a lender to a borrower (Nwanyanwu, 2010). According to Spencer (1977), credit is a promise made by one party to pay another for money borrowed or goods and services obtained. Thus, the concept of credit is inextricably linked to the banking sector; banks act as a conduit for cash to be received in the form of deposits from the economy's surplus spending units and transferred onto the deficit spending units that require funds for productive purposes (Chinweoke et al., 2014). Banks are therefore creditors to money borrowers and debtors to depositors. The borrowing power made available by the financial system through loans to individuals, governments, corporations, or organizations is known as bank credit. As a result, credit availability enables the banks' intermediation role to be fulfilled, which is critical for the economy's growth.

Effective credit provisioning has a significant and positive effect on output, as indicated by a number of empirical studies; hence, an ineffective private sector credit system impedes economic growth. Availability of investable capital, a stable and inclusive financial system are essential for financing economic projects and activities that support growth and development. This is because credit improves a company's productive capability and growth potential (Olowofeso et al., 2015). However, Soderbom (2000) and Loening et al., (2008) found that many small and medium African enterprises are credit-constrained due to the continent's underdeveloped financial system.

In recent years, the connection between the private sector lending and economic expansion has gained attention in financial circles around the globe, and empirical research on the subject has produced contradictory results. On the other hand, the overwhelming body of evidence seems to indicate a positive correlation between economic development and private-sector financing.

An essential part of financial intermediation is credit, which offers funding to the economic sectors that can use it most effectively. The link between financial intermediation and economic growth is established through empirical investigations. Prominent economists like Schumpeter (1934), Goldsmith (1969), and Shaw (1973) emphasised the importance of financial intermediation in the expansion of the economy. Greenwood & Jovanovich (1990) found that financial sector development can lead to fast expansion. Bencivenga & Smith (1991) showed in related research that the creation of banks and effective financial intermediation help to accelerate economic growth by diverting savings to high-value-added businesses and reducing liquidity concerns. As a result, they concluded that financial intermediation promotes growth.

One of the strong indicators of economic growth can be the depth, nature, and character of financial development of an economy. This fact, notwithstanding, the projected benefits of a higher financial system centralisation and excessive government rules and limitations have not, necessarily, materialised over time (Bertrand et al., 2007). As a result, the financial sector in many nations, the world over, underwent drastic reform initiatives. Because banking is such an essential part of the financial system, most of those changes were primarily focused on it. Since the early 1980s, more than 130 nations have faced banking and financial difficulties that limit growth, are costly to manage and are deemed detrimental to economic development (Barth et al., 2001). National governments, regulators, and international financial organisations, like the World Bank and the International Monetary Fund, for example, have all called for financial and banking sector changes due to this troubling scenario.

Despite the growing importance of financial development as a critical driver of economic growth, the relationship between financial development and digitalization in emerging economies,

particularly Nigeria, has not been the subject of many empirical studies. Some theoretical interrogations have shown that financial development and digitalization favour economic growth. These findings, notwithstanding recent empirical research on this topic, have yielded mixed results, particularly in African economies, where there has been no consensus on the evidence in favour of significant financial development-led growth and digitalization growth links.

Digitalization, in essence and character, is designed to reduce the key market frictions of information and transaction costs. Among the five tasks popularized by Levine, the development of digital infrastructure makes it easier to monitor managers and impose corporate control, both of which are crucial roles of financial intermediaries (Levine, 1997).

A robust and well-rooted digitalization also reduces information asymmetry and pricing volatility and improves fishing firms' responsiveness. Levine (1997) averred further that financial development boosts economic growth primarily through capital accumulation and technological innovation; thus, the rapid and total embrace of digitalization plays a crucial role in economic development through technological innovation channels, which contribute to innovation and growth.

Because of the strategic and vital role that credit plays in any economy and the increasingly crucial role that digitalization and its disruptive force play, it is essential to investigate the nature, character, and depth of digitalization's mediating role. While digitalization-facilitated credits have developed rapidly globally, the activity level (per capita) differs widely. We discover that, to the degree that they can be explained, these discrepancies reflect characteristics that impact more traditional kinds of credit. Fintech loan activities increase in direct proportion to a country's income level.

Digitalization is, undoubtedly, a major disruptive force globally. The way people socialise, study, work, and perform commercial operations has changed dramatically due to information and communication technology (ICT). As technology penetrates and supports essential changes in all areas and aspects of human existence, the impact of the attendant revolution propelled by it is already apparent in almost all economies, including Nigeria, and is sure to continue in the years ahead.

The digital landscape, or "digital economy," has evolved considerably since the mid-1990s and has undoubtedly impacted on how businesses work and how consumers participate in transactions with enterprises and vice versa. Computers and other ICT gadgets are today deemed ubiquitous. Global economies appear to be increasingly reliant on digital and internet technology in ways few could have predicted even a few years ago (Tebepah, 2020).

Credit serves two primary functions: it facilitates the movement of capital or money to where it will be most effectively and efficiently employed, and it economizes the use of currency or coin money by having a multiplier impact on the volume of currency or coin in circulation.

The major objective of this study is to assess the effect of banks' credit to private sector on economic growth in Nigeria from 2009 - 2021. And measure the mediating 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 private sector has no significant effect on Digitalization in Nigeria from 2009 - 2021.

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

LITERATURE REVIEW

Conceptual Review

Economic growth, Banks' Credit to Private Sector and Digitalization

The financial services sector has witnessed a significant revolution in the twenty-first century resulting from the quickening pace of technological change that has engulfed all financial markets and financial intermediation sectors, including e-money and all other forms of transactions leveraging on digitalization. As a result, information technology has an impact on the marketing and operational plans of banks. As a result of rapid advancement in information and communication technology coupled with intense competition in the banking industry, the adoption of e-banking is being increasingly used as a channel of distribution for financial services (Eze & Egoro, 2016).

The fundamental frictions that lead to the formation of financial intermediaries are either technological or incentive-based. In the former, people are unable to benefit from economies of scale, whereas the latter occurs as a result of information being expensive and asymmetrically dispersed.

By facilitating risk trading, hedging, diversification, and pooling; allocating resources effectively; managing employees and exercising corporate management, raising money, and promoting the exchange of products and services, financial intermediaries, like banks, lessen these frictions. As a result, the financial system makes it simpler to distribute resources to sectors that are in deficit or in need.

Fintechs have branched out into lending all across the world. In 2019, researchers estimated that these new kinds of credit flow reached USD 572 billion. The largest markets for fintech credit currently are China, the United States, and the United Kingdom. Big tech credit is

rapidly expanding in Japan, Korea, Southeast Asia, and a few African and Latin American countries. The cross-country panel regressions show that fintech lending as established in nations with bigger GDP per capita, higher banking sector markups, and less rigid banking regulation. With fewer bank branches per capita, fintech credit is higher (Cornelli et al., 2020). They further averred that credits advanced by Fintechs are more robust where the ease of doing business is well enhanced, transparency with investor protection is more advanced, the legal system is more efficient, bond and equity markets have grown in sophistication, and bank credit-to-deposit ratios are lower.

Theoretical Review

This study is anchored on Levine's Financial Development Theory and the Schumpeterian Theory of Innovation.

The Financial Development Theory

There are many empirical studies on the relationship between financial development and growth, most of which have been summarised in Levine (1997) and Levine (1999). King and Levine (1993), one of the most significant studies on the subject, found a strong positive correlation between financial development and growth. King and Levine (1993) show that financial development can predict future growth and interpret this as evidence for a causal relationship between financial development and growth. The study employs four metrics of financial progress to look at a cross-section of 80 nations during the years I960 to 1989. First, the proportion of banks' liquid liabilities and nonbank institutions to GDP, which gauges the size of the financial industry. The second indicator is the percentage of bank credit to the productive sector of the economy to the total amount of credit from banks and the central bank, which shows how much credit is distributed by banks versus the central bank. The ratio of private credit to domestic credit is the third, while private credit as a percentage of GDP is the fourth (Khan & Senhadji, 2000).

The Schumpeterian Theory of Innovation

Schumpeter, in his seminal work Theory of Economic Development (1934), defined development as a historical process of structural changes driven mainly by innovation, which he categorized into five types in his Theory of Economic Development and subsequent work thus:

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

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

iii. establishment of a new market (for which a branch of the industry was not previously represented);
iv. acquiring new raw material or semi-finished goods supply sources;
v. new industrial structure, such as forming or removing a monopolistic position.

Anyone desiring profit, according to Schumpeter, must innovate, and innovation will result in a different utilisation of the economic system's existing productive resources. He further stated that innovation is a critical engine of 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 latest banking technology is electronic banking which has created a financial supermarket where different financial services like investment, insurance, loans and so on could be provided (Asare & Sakoe, 2015). Access to credit facilitates productivity, innovation, and local economic growth.

Thus, the Theory of Innovation is the fulcrum upon which the entire research work leans. With economic growth rates (2016 – 2021) reported as -1.617, 0.806, 1.923, 2.208, -1.8, and 3.4, respectively, for Nigeria; implying an average growth rate of 0.83 per cent, and with Kenya's average economic growth rate at 4.42 for the same period (Statista, 2021), Nigeria needs to do a lot to bridge this chasm which is mainly attributable to the deliberate deepening of digitalization of the financial services sector in Kenya a concept and idea that is just gaining traction in Nigeria.

Empirical Review

Demand and supply factors affecting private sector lending are intertwined, even though previous research works tried to establish differences between them. Credit channel models identify bank lending and balance sheets as two 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 are 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), and (Rabab'ah, 2015). However, they reveal country-specific variances and empirical investigations on their impact show comparable conclusions compatible with economic theory.

In order to end the cycle of poverty, eliminate structural rigidities, and foster economic progress, capital is considered to be of utmost significance, according to a variety of theories. In Rostow's idea of stages of growth, the "take-off" is generally based on a significant capital

investment. According to the "big push" notion, a sizable minimum investment is also necessary to get growth in underdeveloped nations off the ground and moving in the right direction.

There is no question that capital is a requirement for Nigeria's economic and social progress as well as for the effective formulation of public policy, given the country's experience with poor credit availability and the issues of inadequate infrastructure, vast skill gaps, and a sizable informal sector.

In Nigeria, the volume of credit made available by the banking sector to the productive sector; for instance, total credit from the banking sector to the economy grew by N8,769 billion in 2009 from N2,535.4 billion in 2006, with a yearly average of N5,830.7 billion. Credit to real sector activities, such as agriculture, solid minerals, manufacturing, real estate, public utilities, and communication, accounted for 41.8 per cent of total credit on average, with the remaining 58.2 per cent going to general commerce, services, and government (Anyanwu, 2010). Credit to Private sector as at 2021 stood at N30.65 billion (CBN, 2021).

METHODOLOGY

Study and the Data

This study employed the causal research approach to examine the effect of banks' credit to private sector on economic growth in Nigeria and the emerging and critical role played by digitalization. Quarterly data for 13 years (2009 – 2021) were sourced from the Central Bank of Nigeria (CBN) statistical bulletin to aid the achievement of the research objectives. Since digitalization is a relatively new concept in Nigeria, even though it is increasingly gaining traction and acceptability, hence the choice of the period of study (2009 – 2021). Also, the earliest available, credible and reliable data for the varied digitalized banking offerings in Nigeria, which serve as proxies for Digitalization in the banking sector, are from 2009.

Theoretical framework

This study adopts the endogenous growth model to determine the effect of domestic credit on the private sector and Digitalization on economic growth. Makki and Somwaru (2004) specify a general production function to be estimated as:

$Y_t = AK^{\alpha}$ …(1)

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

$DIG_t = \beta_1 + \beta_2 CRP_t + \varepsilon_t$ … (2)

$GDP_t = \beta_1 + \beta_2 CRP_t + \beta_3 DIG_t + \varepsilon_t$ … (3)

GDP_t = Gross Domestic Product (GDP) at time *t*, the proxy for Economic growth in Nigeria. This is the dependent variable for this study.

CRP_t = Credit to Private sector at time *t.* This is the main independent variable for this study. The variable captures the total amount (in million naira) banks make available for investment to private individuals and/or organisations.

DIG_t = Digitalzation at time *t.* This variable is used to capture all the Electronic banking, which consists of mobile banking, internet banking, telephone banking, electronic card, BVN enrolment, etc.

β_1 = Constant terms

β_2 = Coefficients of Credit to Private sector

β_3 = coefficient of Digitization

ε_t, = Error terms

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. The unit roots test showed that the variable were all stationary at I(1) and with cointegration, thus the adoption of the Vector Error Correction Model (VECM).

Mediation test

In this study, digitization (DIG) was used as the mediator in the relationships between banks' credit to private sector and economic growth in Nigeria. This study adopted the Sobel test for testing the mediation effect (Falk, 2015, Sobel, 1982). In applying the Sobel test, a variable may be considered a mediator to the extent to which it carries the influence of a given independent variable (IV) to a given dependent variable (DV). Generally speaking, mediation can be said to occur when: the IV significantly affects the mediator, the IV significantly affects the DV in the absence of the mediator, the mediator has a significant unique effect on the DV, and the effect of the IV on the DV shrinks upon the addition of the mediator to the model. This study inserted the *a*, *b*, s_a, and s_b into Figure 1. This program will calculate the critical ratio as a test of whether the indirect effect of the IV on the DV via the mediator is significantly different from zero.

Where:

a = raw (unstandardized) regression coefficient for the association between IV and mediator.

s_a = standard error of *a*.

b = raw coefficient for the association between the mediator and the DV (when the IV is also a predictor of the DV).
s_b = standard error of *b*.

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, and co-integration tests. At the same time, the VECM 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 and DIG for the two models are 0.6044 and 0.2436 are greater than the 0.05 level of significance. It, therefore, indicated that the data is normally distributed.

Unit root

Table 1: Unit root result at first level and First Difference (E views 10.0 output)

	Augmented Dickey-Fuller			
Variable	Level	Date of break	1st Diff	Date of Break
GDP	I(0) -3.2434	2019Q4	I(1) -9.5338	2019Q3
	P-value 0.5394		P-value 0.0100	
DIG	I(0) -0.02114	2021Q3	I(1) -43.6898	2021Q2
	P-value 0.9900		P-value 0.01000	
CRP	I(0) -0.5548	2019Q1	I(1) -5.6245	2016Q3
	P-value 0.9900		P-value 0.0100	

Table 1 shows the result of the unit root for the variables used for this study. From Table 1, the ADF p-value result for GDP at level is (0.5394) greater than the significant level of 0.05. The result of the P-value for variable DIG under ADF is (0.9900) is equally greater than the significant level of 0.05. Accordingly, the variable CRP reveals that the p-value result of ADF (0.9900) is greater than the significant level of 0.05. The decision rule is when the P-value is higher than the significance level of 0.05, indicating that the variable is non-stationary, i.e. there is a unit root problem. Otherwise, it is stationary. From the result, the p-values of all the variables under ADF are greater than the significant level of 0.05. Hence, non-stationary data for all the variables. According to Gujarati (2004), the presence of unit root requires differencing, which is a corrective procedure, to avoid the spurious regression that may arise from regressing

a non-stationary time series on one or more non-stationary time series. The transformation method depends on whether the time series are difference stationary (DSP) or trend stationary (TSP). If a time series has a unit root, the first differences of such time series are stationary. Therefore, the solution here is to take the first differences of the time series.

Co-integration

Table 2 Bounds Co-integration Test (E views 10.0 output)

H0	H1	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
r = 0	r=1	0.362944	31.98523	29.79707	0.0275
r ≤ 1	r=2	0.102917	9.440378	15.49471	0.3262
r ≤ 2	r=3	0.077069	4.010046	3.841466	0.0452
H0	H1	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
r = 0	r=1	0.362944	22.54486	21.13162	0.0314
r ≤ 1	r=2	0.102917	5.430332	14.26460	0.6868
r ≤ 2	r=3	0.077069	4.010046	3.841466	0.0452

From the result in Table 2, the Trace statistics stated that from the first hypothesis, r=0 and r ≥ 0. The Trace result indicated that 31.985 is more than the critical value of 29.79. Also, for the second hypothesis of r ≤ 1 and r=2, the Trace statistics value of 9.44 is less than the critical value at 15.49. Finally, for the third hypothesis of r ≤ 2 and r=3, the Trace statistics value of 4.01 is greater than the critical value at 3.84 at 0.05 level of significance. Likewise, the Max-Eigen statistics conforms to the result of the Trace statistics. This implies that the variables (GDP, DIG and CRP) are co-integrating and that a long-run relationship exists. Consequently, a long-run relationship among the variables shows more than one cointegrating equation. Hence, the need for the estimation of the Vector Error Correction Model (VECM), which helps to explain the rate at which equilibrium is achieved between the long-run and short-run disequilibrium.

Table 3 Lag Length Estimation (E views 10.0 output)

	D(GDP)	D(CREDIT_TO_PRIVATE)	D(DIGITALIZATION)	Joint
DLag 1	2.652371 [0.4484]	12.76098 [0.0052]	2.594162 [0.4585]	17.51275 [0.0413]
DLag 2	5.945550 [0.1143]	0.563570 [0.9047]	4.683951 [0.1965]	9.720050 [0.3736]
Df	3	3	3	9

Table 3 shows the result of the lag length estimated for this study. The result revealed that the maximum lag length for the models is 1. This is seen from some p-values of the first lag, which are less than 0.05, compared to the send lag p-values, which are not significant. Hence the conclusion of a maximum lag length of 1.

Table 4 The Vector Error Correction Model (VECM) for Model One (E views 10.0 output)

	Coeff	**Std Err**	**T-test**
			Long-Run
CONST	-1.243		
CRP_t	-2.06E-08	(2.8E-09)	[-7.428]
			Short-Run
ECM(-1)	0.6886	(0.56604)	[1.216]
$D(CRP)_t$	4.30E-08	(3.4E-08)	[1.260]
CONST	0.1236	(0.1077)	[1.147]
N	50		
F-test	1.1052		
R^2	0.0672		

Dependent variable: DIG_t

Table 4 shows the value of the VECM in this study is 0.6886, which is positive, less than one and insignificant.

Interpretation of the Long-run regression result

The value of the intercept -1.243 is the value of Digitalization (DIG) when credit to private sector (CRP) is held constant. It means that without credit to private sector (CRP) in the economy, DIG is -1.243, which is negative. This shows that DIG without credit to private sector (CRP) is negative. The coefficient of credit to private sector (CRP) to DIG indicated that there is a negative and significant impact at 5% of credit to private sector (CRP) to Digitalization (DIG). The coefficient value of credit to private sector (CRP) also does not meet the *a priori* expectation which is expected to be positive. A unit increase in credit to private sector (CRP) will decrease the level of Digitalization (DIG) by -2.06E-08 units.

Interpretation of the Short-run regression result

From Table 4, the short-run intercept value is 1.236 is the value of DIG when CRP is held constant. The short-run coefficient of credit to private sector (CRP) is positive with value of β = 4.30E-08 and t-test = 1.260. The result indicates a positive and insignificant impact at 5% of credit to private sector (CRP) on Digitalization (DIG).

Table 5 The Vector Error Correction Model (VECM) for Model Two (E views 10.0 output)

	Coeff	Std Err	T-test
			Long-Run
CONST	-1055614		
CRP_t	-0.252	(0.099)	[-2.545]
DIG_t	-8334995	(3898511)	[-2.138]
			Short-Run
ECM(-1)	-0.732		[-5.008]
	(0.14625)		
$D(CRP)_t$	0.0368	(0.1413)	[0.260]
	-5184246		[-3.841]
$D(DIG)_t$	(1349764)		
CONST	123809		[3.289]
	(376372)		
N	50		
F-test	8.577		
R^2	0.4326		

Dependent variable: GDP_t

Table 5 shows the value of the Vector Error Correction Model testing in this study is -0.732, which is negative, less than one and significant. The VECM is an error correction term that restores equilibrium and validates a long-run equilibrium relationship among the variables. It means that the system corrects (or adjusts to) equilibrium the following year at a speed of 73.2%. This indicated that the speed at which equilibrium among the variables is returned is high.

Interpretation of the Long-run regression result

In the long run, both the CRP and DIG negatively and significantly impact economic growth in Nigeria.

Interpretation of the Short-run regression result

From Table 5, the short-run CRP positively but insignificantly affect economic growth. But, DIG impact on economic growth in Nigeria negatively but significantly.

Test of Hypotheses

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

Decision rule

Reject H_o if $t^* > t_c$ Accept H_o if $t^* < t_c$

Where: t^* = calculated t, t_c = critical t

The regression result in Table 8 indicated that CRP's t-test value negatively impacts DIG. Since the t* value (-7.428) is greater than the t_c (1.96) at a significance level of 0.05. Therefore, we reject the null hypothesis, while the alternate hypothesis is accepted, stating that Banks' credit to the private sector significantly affects Digitalization in Nigeria from 2007 - 2021.

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

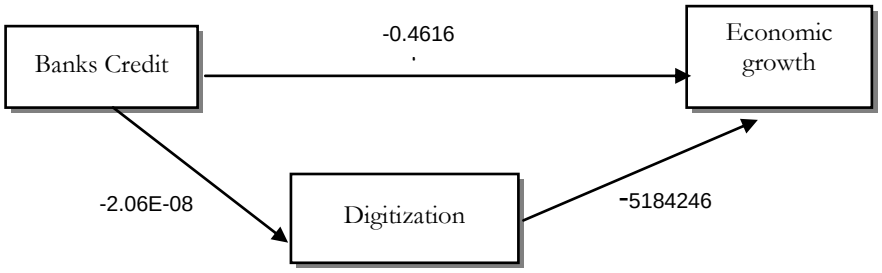

Figure 1: Banks Credit →Digitization →Economic Growth

a = -2.06E-08

s_a = 2.8E09

b = -5184246

s_b = 1349764

Sobel z-Test = -3.8356

P-value = 0.00012524

Since the p-value is below 0.05, it shows that Digitalization does mediate the effect of banks' credit to private sector on economic growth in Nigeria from 2007 – 2021.

DISCUSSION OF FINDINGS

In the case of hypothesis one, the outcome revealed that banks' credit to private sector has a significant effect on Digitalization in Nigeria. 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 main concept behind Digitalization is to satisfy clients with products and services via computer and telecommunications networks; and to deliver such services quicker and more efficiently. 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. Customers benefit from Digitalization; banks also profit from it as well.

The result is not consistent with the work of Schut (2020), who conducted a cross-country analysis of the effects of Digitalization on credit to private sector. The impacts of Digitalization in the lending industry (the banking sector) on credit provision were investigated in this study. Because of the increase in competing firms offering credit, there was no evidence of a negative relationship between competition and bank credit. Additionally, there is no indication of a negative relationship between Digitalization and banks' credit to private sector.

Furthermore, in the work of Alimi & Yinusa (2016), where Impulse Response Functions (IRFs) and Forecasted Error Variance Decompositions (FEVDs) were explored in a system that included output, commercial bank loans to SMEs, domestic bank credit to the private sector, money supply, lending rate, and investment. The findings imply that changes in commercial bank loans to SMEs significantly influence Nigeria's production changes, and financial development significantly impacts economic growth. The divergent outcome of Schut (2020) and the present study is based on the time difference in the research and the geographical differences.

Hypothesis two of this study showed that digitalization does mediate the effect of banks' credit to private sector on economic growth in Nigeria. The Nigerian banking sector has witnessed tremendous changes linked with developments in information technology over the years. The quest for survival, maintenance of existing market share, global relevance and sustainable development has made the industry's exploitation of many advantages of information technology through automated devices imperative. The implication of the result is in the mediating role of Digitalization. This is because, before the emergence of the modern banking system in Nigeria, banking operations were manually done, leading to a slowdown in transaction settlement. The manual banking system involves posting transactions from one ledger to another and is handled by human beings. These were not efficient as they resulted in human errors. In Nigeria, Electronic banking offers ease of operation for both customers and the financial institution in the banking industry. It has become popular due to its flexibility, convenience, efficiency, speed, and accessibility. Therefore, indicating that Digitalization is a good mediator between credit to private sector and economic growth in Nigeria. It is evidenced by the study of Chukwudi & Amah (2018), who theoretically investigated the development of e-banking and its benefits and challenges in the Nigerian banking industry. The study examined the significant effect of information communication technology in Nigeria and the benefits of electronic banking in Nigerian banks.

CONCLUSION AND RECOMMENDATIONS

From the study results, it is safe to conclude that Digitalization is a good mediator between credit to private sector and economic growth, especially in the long run. Also, the relative newness of some of the fintech products has made their positive impact not to be felt in the economy yet. Future research may likely yield different results in this respect. In conclusion, the analysis of the mediating role played by Digitalization in the age-long relationship between banks' credit to private sector and economic growth reveals a complex mix. In the short run, Digitalization appears not to be a good mediator, while in the long run, Digitalization proves to be a good mediator. This finding holds, notwithstanding that Digitalization as we know it is a relatively new concept globally. In Nigeria, people are just beginning to embrace the concept and its endless possibilities.

This study recommended that startup companies into one form of a hybrid activity (of finance and technology) must be encouraged by the government through incentives like tax holidays or rebates to optimize their inherent potential in the industry. This is because banks and mobile network carriers provide Fintech solutions as part of their product portfolios; Nigeria is now home to over 200 fintech standalone businesses. Nigeria's thriving fintech industry garnered more than $600 million in the capital between 2014 and 2019, accounting for 25% ($122 million) of the $491.6 million raised by African tech firms in 2019 alone, second only to Kenya's $149 million. The industry is still relatively new, though. Nigeria offers significant opportunities for fintechs across the consumer spectrum, particularly within small and medium-sized enterprises (SME), affluent segments, and increasingly in the mass-market segment. Nigeria is Africa's largest economy, with a population of 200 million—40% of whom are financially excluded.

Again, the government should implement laws and create a favourable business environment to ensure banks extend more credit to the private sector (loans for enterprises), which will invest that money for profitable endeavours and produce the desired or required return, improving GDP growth. The study discovered substantial evidence that private-sector bank loans increased GDP. This indicates that bank loans to the private sector were obtained by business people who then invested the money into the economy, having a positive effect.

LIMITATIONS AND FURTHER STUDIES

Despite the contributions of this study to the existing body of knowledge, it is still not without 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 by interested researchers are still needed to confirm or refute parts or all of the findings

herein. These recommended further studies will also help to deepen the current understanding of the subject matter and enhance its appeal to interested stakeholders.

Also, the decision to use PCA to arrive at a uniform measure for Digitalization may raise some questions; further studies are welcome with possible alternatives on how to approach this aspect of the study for its robustness to be ascertained or put to the test.

Furthermore, this study reported a negative mediating role for Digitalization in the relationship between banks' credit to private sector and economic growth in the short run, which appears counterintuitive. Hence, qualitative research is suggested to investigate this finding further.

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