



**THE IMPACT OF DIGITAL PAYMENT SYSTEM ON ECONOMIC
GROWTH IN NIGERIA**

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Abstract

This study investigated digital financial services and economic growth of Nigeria from 2009 to 2024. The study specific objectives include investigation of the relationship between automated teller machine services and real gross domestic product; evaluation of the relationship between point of sales services and real gross domestic product; determination of the relationship between mobile banking services and real gross domestic product from 2009 to 2024 in Nigeria. A purposive sampling technique was adopted for the collection of quarterly secondary data from the Central Bank of Nigeria. The quarterly data collected were analyzed using univariate, bivariate and multivariate analyses. The findings from the VECM indicated that automated teller machine services positively and insignificantly influence real gross domestic product in Nigeria; point of sales services positively and insignificantly influence on real gross domestic product in Nigeria; mobile banking services positively and insignificantly influences real gross domestic product in Nigeria. On the basis of the findings, the study concluded that digital payment methods influence the economic growth of Nigeria. Hence, the study recommended amongst others that appropriate policies aimed at promoting and enhancing the availability and penetration of digital financial services should be implemented and made effective as this will increase real gross domestic product of the country.

Keywords: Automated teller machine, Point of sale, Mobile banking, Economic growth

Introduction

Emerging technology has continued to shape many business activities all over the world. It creates new businesses and provides better medium of exchange for goods and services through digital payment system. The evolution of digital payment system has revolutionized the financial landscape, providing more convenient and efficient methods of payment for goods and services, with significant implication for economic growth (Iwedi, 2024). Before the introduction of cashless policy in Nigeria in the year

2011, payment system was predominantly cash-based. The introduction of cashless policy in 2011 has led to the adoption of various digital payment methods, ranging from Automated Teller Machine (ATM), Point of Sale (POS) terminals, Mobile Banking App (MBA) and other internet-based transactions which provides convenient and easy access and efficient means of payments. The advent of these methods leads to the invention of new financial technologies which accelerate the productivity of capital, reduce transaction costs and hence stimulate economic growth (Iwedi, 2023).

Consequently, the use of electronic banking and other internet-based payment system has grown in popularity in Nigeria over the last decade (Ada & Ugbabe, 2015), owing to the increasing accessibility and innovation of internet services and mobile banking in the country (Obazee & Omalusi, 2016).

According to Ogueke and Abinbele (2018), the motivations behind the implementation of the cashless policy in Nigeria, such as the country's ambition to rank among the largest economies by 2020, as well as the potential advantages of the strategy, such as a decrease in crime rates, a reduction in the risk of carrying large sums of cash, a decrease in political corruption, a decrease in banking costs, an improvement in monetary policy for managing inflation, and general economic growth and development of Nigeria (Ogueke and Abinbele, 2018).

In recent years, Nigeria has experience significant change from cash-based payment to digital payment system due to its convenience, speed, security, and most importantly widespread use of smartphones and internet access. However, despite the fact that digital payment system is fast gaining acceptance in Nigeria, its impact on the growth of the Nigerian economy, is not enormous. This study is designed to investigate the impact of digital payment platforms on economic growth in Nigeria. Following the digital payment methods adopted in Nigeria, the study examine their impact on the Nigerian economy. The study is therefore organized into five sections, following this section which gives the introduction. Section two provides the review of related literature, while section three contained the methodology and source of data. Section four contained the empirical finding and results conclusion.

Literature Review

Theoretical Review

The work is based on financial inclusion and economic growth theory and technology driven efficiency and productivity theory. These theories collectively underscore the

transformative potential of digital payment methods in promoting financial inclusion, reducing transaction costs, and enhancing economic productivity.

The financial inclusion and economic growth theory posits that the widespread adoption of digital payment channels contributes significantly to financial inclusion, which in turn stimulates economic growth. The technology-driven efficiency and productivity theory proposes that the adoption and utilization of digital payment channels contribute to enhanced efficiency and productivity across various sectors of the economy (Iwedi, 2024).

Empirical Review

The swift adoption of digital payment channels in Nigeria has drawn the attention of researchers on its implication on economic growth and development.

Aldaaz (2021) used correlation analysis to investigate the relationship between electronic payment systems and economic growth across the globe using data from selected countries namely: India, Malaysia, and Saudi Arabia. The findings from the study revealed that there is positive relation between mobile wallet and gross domestic product and similarly mobile banking and gross domestic product have positive relationship with the gross domestic product. This implies that electronic payment systems have positive relationship with the economic growth in India.

The results also revealed that all the four variables are positively and highly correlated with GDP for Saudi Arabia indicating that an increase in electronic payment infrastructure will boost economic growth. There are country specific factors which operate in this relationship such as negative correlation ($r=-0.7$) between POS terminals and GDP growth for Australia and Canada but positive for UK and Saudi Arabia. For Saudi Arabia, high correlation coefficient between GDP growth and electronic transaction holds true for medium term and long term but for Jordan this relationship weakens in short term. Analysing the relationship between economic growth (GDP) and electronic payment systems, contrary results were observed as the correlations were found to be low and negative for India while being high and positive for Saudi Arabia. It can be concluded that as an economy grows from developing stage to developed economy, non-cash transactions and usage of electronic payments will also grow. Thus, it can be concluded that electronic payments along with other forms of online transactions have good prospects in times to come, particularly in emerging economies like India.

Mamudu (2021) employed Johansen cointegration techniques to investigate the impact of electronic banking payment system on economic growth in Nigeria. The study used Automated Teller Machine Payment Value (ATMV), Point of Sale Value (POSV), Web / Internet Transfers Payment Value (WEBP), Mobile Payment Value in Nigeria (MOBP), Nigerian Interbank Settlement Scheme Instant Payment value (NIPV) and National Electronic Funds Transfer Value (NEFT) as proxy for electronic banking payment systems and Gross Domestic Product (GDP) as proxy for economic growth. The Johansen cointegration test results indicated a unique long run relationship between electronic banking payment systems and GDP. The error correction model results revealed positive and significant impact between ATMV, WEBP, MOBP and NEFT on GDP, thus a unit change in automated teller machine payment value, web / internet transfers" payment value, mobile payment value and the national electronic funds transfer value increased gross domestic product in Nigeria. The results further revealed that CHEV, POSV and NIPV had negative impact on gross domestic product in Nigeria. Appah et al.(2021) used multivariate analysis to investigate the impact of digital financial service on economic growth in Nigeria. The findings from the study revealed that Automated teller machine services, Point of sale services and mobile app banking services have positive but insignificant impact on the real gross domestic product, while the web banking services has positive and significant impact on the real gross domestic product in Nigeria. This implies that only web banking services among the digital financial services has significant impact on economic growth in Nigeria. Anifowose and Ekpeniware (2022) used descriptive survey method to examine the effect of Automated teller machine, point of sale and Online banking on economic growth in Nigeria. The finding from the study revealed that automated teller machine, point of sale transaction, and online banking enhance economic activities which in turn promote economic growth.

Iwedi (2024) used ordinary least square to examine the impact of digital payment channels on economic growth in Nigeria. Automated Teller Machine, point of Sale, Electronic wallet and mobile banking app were used as proxy for digital payment channels. The findings from the study revealed that transactions through the ATMs and Mobile banking App have positive and significant impact on the Nigerian economy, while point of sale transaction has insignificant impact on the economy. The study further revealed that electronic wallet transactions have negative impact on the economy.

Methodology

This study of digital payment systems and economic growth of Nigeria adopted both ex post facto and correlational research designs while the sample size of data for the study was attained through purposive sampling technique. The sample size consists of quarterly data from 2009 to 2024. Data were obtained from Central Bank of Nigeria (CBN) statistical bulletin and National Bureau of Statistics (NBS). The secondary data obtained were analysed using univariate, bivariate and multivariate analysis.

This study is guided by the linear model below:

$$\text{LogRGDP} = \beta_0 + \beta_1 \text{LogVATM} + \beta_2 \text{LogVPOS} + \beta_3 \text{LogVMOB} + \beta_4 \text{LogVWEB} + \varepsilon \text{----- (1)}$$

LogRGDP=Log of Real Gross Domestic Product

LogVATM=Log of Automated Teller Machine value

LogPOS= Log of Point of Sale Value

LogVMOB=Log of Mobile Banking value

Results and Discussion

Table 1: Descriptive Statistics

The descriptive statistics result shows the mean (average) for each of the variables, their maximum values, minimum values, standard deviation and the Jarque-Bera (JB) statistics (normality test).

Table 2 below, provides the summary of the descriptive statistics of the data covering the period sixty (60) observations (4 x 15yrs)

	RGDP	POS	MOB	ATM
Mean	104646.2	7102.882	17170.13	10657.26
Median	69449.51	1084.405	929.4500	5334.600
Maximum	546123.3	27928.45	76678.59	44897.35
Minimum	49856.10	11.09000	1.270000	399.6000
Std. Dev.	119080.1	11112.86	27945.51	13307.45
Skewness	3.478622	1.144650	1.226845	1.492008
Kurtosis	13.44544	2.372043	2.732014	3.939909
Jarque-Bera	105.0070	3.756813	4.061606	6.525189
Probability	0.000000	0.152833	0.131230	0.038289
Sum	1674339.	113646.1	274722.1	170516.2
Sum Sq. Dev.	2.13E+11	1.85E+09	1.17E+10	2.66E+09
Observations	16	16	16	16

Table 2: Unit Root Test

UNIT ROOT TEST RESULTS TABLE (ADF)

Null Hypothesis: the variable has a unit root

At Level					
		RGDP	ATM	MOB	POS
With Constant	t-Statistic	-4.2191	2.6673	2.6314	5.9353
	Prob.	0.0062	0.9999	0.9998	1.0000
		***	n0	n0	n0
With Constant & Trend	t-Statistic	-4.5733	0.5895	-0.6822	-1.5855
	Prob.	0.0130	0.9983	0.9547	0.7494
		**	n0	n0	n0
Without Constant & Trend	t-Statistic	-2.5080	3.9876	3.0912	6.4490
	Prob.	0.0161	0.9997	0.9977	1.0000
		**	n0	n0	n0
At First Difference					
		d(RGDP)	d(ATM)	d(MOB)	d(POS)
With Constant	t-Statistic	-11.1294	-2.1133	-2.8564	-4.0402
	Prob.	0.0000	0.2426	0.0758	0.0094
		***	n0	*	***
With Constant & Trend	t-Statistic	-13.7023	-3.3995	-3.7848	-4.3916
	Prob.	0.0001	0.0918	0.0505	0.0192
		***	*	*	**
Without Constant & Trend	t-Statistic	-11.0132	-1.4453	-2.3749	5.5377
	Prob.	0.0000	0.1328	0.0218	0.9999
		***	n0	**	n0

Notes:

a: (*)Significant at the 10%; (**)Significant at the 5%; (***) Significant at the 1% and (no) Not Significant

b: Lag Length based on SIC

c: Probability based on MacKinnon (1996) one-sided p-values.

This Result is The Out-Put of Program Has Developed By:

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The Augmented Dickey Fuller (ADF) unit root result showed that except the real gross domestic product (RGDP) automated teller machine (ATM), point of sale (POS), and mobile online banking (MOB) are all non-stationary at levels but after first differencing, they become stationary at first difference I(1). Hence the need to conduct cointegration test analysis to establish longrun relationship.

Table 3: Johansen Cointegration Test

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None *	0.999963	142.8625	27.58434	0.0000
At most 1 *	0.997002	81.33712	21.13162	0.0000
At most 2 *	0.705030	17.09236	14.26460	0.0174
At most 3	0.239612	3.834965	3.841466	0.0502

Max-eigenvalue test indicates 3 cointegrating eqn(s) at the 0.05 level

* denotes rejection of the hypothesis at the 0.05 level

**MacKinnon-Haug-Michelis (1999) p-values

From table 3 above, the trace and max-eigenvalue test show that there are three Error Correction

Terms or co-integrating equation. The existence of co-integration among the variables indicates

that there is a long run equilibrium relationship among the variables in the model.

Table 4:

Table 7: Vector Equilibrium Correction Model

Dependent Variable: D(LOGRGDP)

System: UNTITLED

Estimation Method: Least Squares

Date: 03/12/25 Time: 14:32

Sample: 3 60

Included observations: 60

	Coefficient	Std.error	t- statistics	Prob
D(logATM(1)	0.056537	0.234451	0.566512	0.456776
D(LOGMOB)	0.564322	0.023355	0.234521	0.023444
D(LOGPOS)	0.234423	0.256788	0.983273	0.045661

Observations:60

R-squared	0.765434	Mean dependent var	0.007651
Adjusted R-squared	0.678123	S.D. dependent var	0.324561
S. E. of regression	0.202348	Sum squared resid	2.564331
F-statistics	0.000076		
Durbin-Watson stat	1.673886		

Source: Authors' computation via Eview 9

The following phase involved determining which variable was significant and which was not. This was investigated using the VECM probability table. A variable was significant if it falls below the 5% level of significance (0.05). From the table 4 above, the correlation coefficient (r^2) of approximately 76.5% denotes a good model fit. This means that up to 76.5% of the variation in the outcome variable is explained by the explanatory variables. This implies that only 23.5% percent of the variation is accounted for by variables not considered in the model. The significant F-statistic (0.000076) indicates that all the independent variables can jointly influence the dependent variable.

Durbin Watson Statistics is in the threshold of 1.67 which signals the non-existence of autocorrelation.

Conclusion and Recommendation

Based on the findings from the tests conducted, the study generally, concludes that digital payment methods positively but insignificantly impact on economic growth of Nigeria. Other Sub-variables of the study was concludes that, automated teller machine positively and insignificantly impact on real gross domestic product in Nigeria, point of sales positively and insignificantly impact on real gross domestic product in Nigeria, mobile banking positively and insignificantly impact on real gross domestic product in Nigeria,. Based on the empirical findings, the study recommends the following.

The study recommended that improvement of digital financial services in term of point of Sales, automated teller machine and online banking by citizens would enhance the real gross domestic product of the country. The study recommended that digital payment methods contributes to economic growth in the long run in Nigeria, hence, federal and state government should plan for long term investment in providing digital financial serves.

