

## ELECTRONIC PAYMENT CHANNEL AND THE ECONOMIC GROWTH OF NIGERIA

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### ABSTRACT

*The subject matter of this study is to examine the effect of electronic payment channel on the economic growth of Nigeria. The study covers a period of 2009-2019. The study made use of secondary data adopting the Ordinary Least Square. E-View 10.0 was used to analyze the hypotheses. Based on the findings, it was discovered that Automated Teller Machine Transactions had positive (0.388509) and insignificant (0.7078) effect on real gross domestic product of Nigeria while Point of Sales Transactions had positive (4.362460) and significant (0.0024) effect on real gross domestic product of Nigeria. The study concluded that ATM transactions and Point of Sale (POS) transactions significantly affects real gross domestic product in Nigeria. The study recommended that Banks should be mandated by regulatory authorities to reduce ATM charges and make available ATM boot in rural areas. Cost of obtaining POS terminal should be reduced so as to integrate more users which would help drive the cashless policy of CBN.*

**Keywords:** Automated Teller Machine, Electronic Payment, E-Payment, Product, Economic Growth, Point of Sales and Real Gross Domestic.

### 1.0 INTRODUCTION

Electronic payment channel are the operating procedures, information, and communication systems that is employed to initiate and transmit payments from a payer to a payee and for settling payments that is, transfer money (Imafidon, 2013). The electronic payments channels are the apparatus used to safely and efficiently transfer monetary value in exchange for goods and services as well as financial assets (Oloruntoyin & Olanloye, 2012). According to Ayo and Ukpere (2010), the common electronic payment channels include: the automated teller machines (ATM), point of sales (POS) terminals, online web portals, mobile money transfer, direct debit/deposit and real time gross settlement (RTGS) systems. The application of each of these platforms depends on the nature of transaction and value of order. Since the overcoming of barter system in the history of mankind, trade usually involves the exchange of goods and services and an equivalent abstract value such as money (Oginni, et al. 2013). Ever since money was invented as an abstract way of representing value, system for making payments have been in place (Isamade et al, 2022). In the course of time, new and increasingly abstract representations of value were introduced. A corresponding progression

of value transfer systems, starting from barter, through bank notes, payment orders, cheques and later credit cards, has finally culminated in electronic payment systems in the present day (Isamade et al, 2022). As the transition to electronic payment channel takes place, the stock of currency held outside the banking system which constitutes a potential source of unproductive economic resources because they are not available for credit expansion is integrated into it thereby expanding the deposit base of the monetary system. Nigeria payment channel has been predominantly cash-based for both positive and negative reasons (Tee & Hway-Boon, 2016).

Point-of-Sale (POS) devices and agent banking services. In many countries, these branchless channels have made an important contribution to enhancing financial inclusion by reaching people that traditionally, branch-based structures would have been unable to reach. One of the main obstacles to financial inclusion is cost: both the cost to banks involved in servicing low value accounts and extending physical infrastructure to remote rural areas, and the cost (in money and time) incurred by customers in remote areas to reach bank branches. Okafor (2008) posit that ATM as an electronic device that allows a financial institution's customers to use a secured method of communication to access their accounts, make cash withdrawals or cash advances using credit cards, and checking their account balances without need for human teller or cashier.

Electronic payments systems are becoming popular among banks and non-bank financial institutions in Nigeria, a survey conducted by Interwar consulting, reveals that, ATM, Point of sale (POS), is still evolving and that various banking services rendered by Nigerian banks are mostly limited to the traditional services. Tijani and Ilugbemi (2015), asserts that in the banking industry, customers are gradually coming to terms with the arrays of products vaunted by banks in their bid to offer convenient banking services to their customers. On a daily basis, depositors are inundated with an array of service options which they are encouraged to embrace as they canvass easy access to cash as well as deepen their relationship with the banks and of course the fad is paying off.

Electronic payment channel apart from their convenience and safety also have a significant number of economic benefits which include mobilizing savings, and ensuring most of the cash available in the country are with banks. This will make funds available to borrowers both businesses and individuals (Afaha & Sylvester, 2019). Although Nigerian electronic payment channel have continued to develop and advance, there has been limited impact on the economy and economic growth due to various inefficiencies on the side of the federal government. Ajisegiri (2014) stress that it is impossible to fully absorb the benefits of payment systems due to poor internet access and unreliable electricity supply, especially in rural areas as many modern payment platforms require access to the internet. Inadequate infrastructure such as roads and railways have also limited the benefits for payment channel as goods that have been paid for will need to be transported between states or borders, ignorance of the population has also played a part due to the average Nigerian's love for cash which had been the status quo for payments and transactions before the cash less policy by the Central Bank of Nigeria. Outdated financial policies coupled with a high rate of corruption have also hindered the role payment channel play in the economic growth of Nigeria.

Over the years, the use of electronic payment channel in Nigeria has been increasing considerably but its impact hasn't been adequately translated to the economy. One of the main reasons for this is the reluctance and ignorance of Nigerian's to use the internet for transactions due to the fear of fraud. The tech savvy nature of some payment systems also hinders the ability to capture a majority of the population. Another major issue hindering the possibilities of payment systems is the banking sectors is the ability to capture a majority of the population on these platforms. The facilities that will be used for efficient financial transactions by the available deposit money banks in Nigeria may not be able to carry the load of the electronic system as just as it happened during full implementation of the cashless policy by the CBN in 2023; ATM's, Point of Sales system, mobile banking and other mediums have to dramatically expand to touch at least 80% of the whole country before any efficient financial intermediation can be achieved (Rueben, 2019). Customers also complain of network failures alongside ATM failures. Implying that network and the ATM machines must be improved dramatically to accommodate for smooth operations of financial activities (Rueben, 2019). Acha et al., (2017) highlighted the unavailability of POS at purchase centers, poor internet access, lack of knowledge on how to use payment systems, transaction difficulties, limited ATM machines, ATM robbery and lack of access to funds as some of the challenges affecting the actualization of the cashless policy and shift toward electronic systems of payment.

It is also impossible to fully capture the population due to high rate of illiteracy in the country. For citizens to fully enjoy the benefits of electronic payment channel, they must know how to read and write and also possess basic ICT literacy (Joseph, 2015). Ajisegiri (2014) attributed the usage of mobile money and internet/web services or platforms to internet connectivity and cost of bandwidth, low internet connectivity and high cost of bandwidth as a major issue affecting the use of mobile money and internet/ web services in Nigeria. Electronic payment channel was adopted so as to improve service delivery, decongest queues during cash payment, reduce theft, enable customers withdraw cash at will, aid international payment and remittance, track personal cash transaction, request for online statement, or even transfer deposit to a third party account (Iluno, et al. 2018). Despite the effort of telecommunication sectors to ensure that customers reap the benefits of electronic payment channel, the sector is met with complaints from customers as regards, malfunctioning Automated Teller Machines (ATMs), network downtime, online theft and fraud, non-availability of financial service, payment of hidden cost of electronic payment channel like Short Message Services (SMS), for sending alerts, mandatory acquisition of ATM cards, non-acceptability of Nigerian cards for international transaction amongst others (Saidi, 2018). Since early 2000s, the telecommunication sector has been investing in payment cards for their customers as well as deployment of ATM cards and POS. Usage however, has been low due to lack of interconnectivity i.e. switching platform to interconnect the ATMs for card holders and POS. It is against this backdrop this study investigated the effect of electronic payment channels on economic growth of Nigeria.

This study provided answers to the following research questions

- iii. To what extent does automated teller machine transactions enhance real gross domestic product of Nigeria?

- iv. To what extent does point on sales transactions enhance real gross domestic product of Nigeria?

The main objective of this study is to access the effect of electronic payment channel on economic growth of Nigeria. While other specific objective includes;

- v. To investigate whether Automated Teller Machine Transactions have positive and significant effect on real gross domestic product of Nigeria.
- vi. To ascertain whether Point on Sales Transactions have positive and significant effect on real gross domestic product of Nigeria.

The hypotheses of this study is stated in null form;

**H<sub>01</sub>:** Automated teller machine transactions has no significant effect on real gross domestic product of Nigeria.

**H<sub>02</sub>:** Point on sales transactions has no significant effect on real gross domestic product of Nigeria.

## **2.0 LITERATURE REVIEW**

### **Conceptual Review**

#### **Concept of Electronic Payment Channel**

Electronic payment channel refers to the automated processes of exchanging monetary value among parties in business transactions and transmitting this value over the ICT networks (Amin, Onyeukwu & Osuagwu, 2018). In Nigeria, electronic payment is effecting payment from one end to another end through the medium of the computer without manual intervention beyond inputting payment data. It is the ability to pay the suppliers, vendors and staff salaries electronically at the touch of a computer button (Udeghe & Hanzace, 2018). In recent time, e-payment channel has become a medium through which monetary substance circulates conveniently, especially in developing economy like Nigeria where carrying cash around is habitual. In Nigeria, e-payment channel formed fundamental starting point of her modern market economy; a well-functioning e-payment system has been recognized to have much relevance on financial stability, monetary policy and overall economic activity (Aduda & Kingoo, 2018). Historically, Central Bank of Nigeria (CBN) introduced payment system which facilitated electronic payment in 2002. During this period, Nigeria Automated Clearing System (NACS) was introduced as a veritable platform for development of electronic payment and to reduce clearing of cheques period.

#### **Electronic Payment Tools/Channel**

According to Edet (2019), the tools/channels used in executing e-banking include plastic cards (debit cards, credit cards, prepaid cards), personal computers, telephone, mobile phones, internet, automatic teller machines (ATM's), point of sale or point of interaction machines. The description of the above mentioned tools/channels are as follows:

#### **Debit cards**

Debit card is a banking card enhanced with automated teller machine and point of sale (POS) features so that it can be used at merchant locations. Debit cards allow you to spend only what is in your bank account. It is a quick transaction between the merchant and your

personal bank account. A debit card is linked to an individual's checking account, allowing funds to be withdrawn at the ATM and point of sale without writing a cheque (Yusuf, 2016). When using a debit card to pay for goods and services, the purchase amount is deducted from the cardholder's checking account. The types of debit card include online debit card and offline debit card. With offline debit card, debit is not made immediately (Ravikumar, 2019).

### **Prepaid debit cards**

These are debit cards not usually linked to a customer's account. They must be funded before being used by cardholders. Prepaid debit cards are identified with such names like cash cards, value cards, and Naira cards etc. prepaid cards can be used as gift cards students ID cards, Government payment card, payroll card, Bursary card, insurance cards, travel cards etc (Mamudu & Udo, 2019).

### **Point of Sale (POS)**

Point of Sale is referred to as a retail shop, a checkout counter in a shop, or the location where a transaction occurs. POS machines are electronic devices deployed at retail outlets to facilitate the exchange of value between a cardholder and a merchant. They are used to perform a variety of basic banking and financial transactions like payment for purchases, balance enquires, mini statement printing etc. it eliminates the numerous issues related to regular cash transactions. The benefits of POS to all the parties involved are improving operational efficiency, ensuring transaction security and integrity, eliminating needs to carry large amounts of service beyond banking hours, increasing income from transaction fees and float, providing a simple, more efficient and convenient payment system etc.

### **Automated Teller Machine (ATM)**

This is a computerized telecommunications device that provides the customer of a financial institution with space to financial transaction in a public space without the need for a human clerk or bank teller (Edet, 2019). Using an ATM, customers can access their bank accounts in order to make cash withdrawals and check their account balance. ATM's rely on authorization of a financial transaction by the card issuer or other authorizing institution via the communications network. Many banks charge ATM usage fees for transactions. In Nigeria, ATMs are charged no fee (known as ON – US Transactions) while they are charged between ₦100 and ₦150 when they use other banks ATM's (Not-on-us transaction). Features of ATM service include cash withdrawals, balance inquiry, mini-statement request, funds transfer, and purchase. The benefits of ATM's to banks include avoiding robbery, attraction and retention of customers, increase of profit from customer charges, provides convenient service for customers, reducing the amount of bad cheques, saving branches lots of hidden costs and tellers are freed from small value transactions (Akinuli, 2018).

### **Mobile Banking Applications**

Mobile banking applications also known as M-banking or SMS banking is a term used for performing balance checks, account transactions, payments etc. through a mobile banking products such as a mobile phone (Clive, 2017). Mobile banking products provides basic banking services to customers from their mobile phones. It is an SMS driven platform which facilitates access to banking services using cell phones. The services available on the mobile banking product include mini statements and checking of account history, alerts on account activity or passing of set thresholds, monitoring of term deposits, domestic and international

fund transfers, micro-payment handling, bill payment processing, portfolio management services, status of requests for credit, including mortgage approval and insurance coverage, cheque book and card requests, ATM location, general information such as weather updates, news and location based services.

### **Internet Banking**

Anyanwaokoro (2017) stress that internet banking is an online platform through which customers of the bank can access their account and accomplish financial transactions using the internet. With internet banking customers can view account balance, transfer fund between sister accounts, transfer funds in favour of third parties.

### **Telephone banking**

Telephone banking is a service provided by a financial institution which allows its customers to perform transactions over the telephone. Mostly, telephone banking uses an automated phone answering system with phone keypad response or voice recognition capability (Woherem, 2019). To guarantee security, the customer must first authenticate through a numeric or verbal password or through security questions asked by alive representatives. Telephone banking offers cash withdrawal and deposit services as well as other services which include account balance information, electronic bill payments, funds transfer between a customer's accounts etc.

### **Concept Gross Domestic Product**

Gross domestic product (GDP) is the total monetary or market value of all the finished goods and services produced within a country's borders in a specific time period (Azeez, 2011). As a broad measure of overall domestic production, it functions as a comprehensive scorecard of a given country's economic health. Though GDP is typically calculated on an annual basis, it is sometimes calculated on a quarterly basis as well. Isibar (2018) is of the view that the calculation of a country's GDP encompasses all private and public consumption, government outlays, investments, additions to private inventories, paid-in construction costs, and the foreign balance of trade. Of all the components that make up a country's GDP, the foreign balance of trade is especially important. The GDP of a country tends to increase when the total value of goods and services that domestic producers sell to foreign countries exceeds the total value of foreign goods and services that domestic consumers buy. When this situation occurs, a country is said to have a trade surplus. If the opposite situation occurs, that is if the amount that domestic consumers spend on foreign products is greater than the total sum of what domestic producers are able to sell to foreign consumers, it is called a trade deficit (Edet, 2014). In this situation, the GDP of a country tends to decrease.

### **Concept of Economic Growth**

Economic growth is referred to as a positive change in the level of production of goods and services by a company over a certain period of time. Economic growth is usually brought about by technology innovation and positive external forces (Okoye, 2014). It is an increase in the capacity of an economy to produce goods and services compared form one period to another. Economic growth can be measured in nominal terms: which include inflation or in real terms which are adjusted for inflation. GDP or GNP per capita should be used as these take into account the population differences between countries (Smith, 2017).

## **Theoretical Review**

### **Technology Acceptance Model (TAM)**

The technology acceptance model (TAM) was developed by Davis (1989) to explain the underlying acceptance factor by their users and how it shapes the user's environment. The model assumes that individuals or organizations resolve decision regarding adoption of a novel technology. The key feature of this model is its emphasis on the perceptions of the potential user. That is, while the creator of a given technology product (i.e. electronic payment channel) may believe the product is useful and user-friendly, it will not be accepted by its potential users unless the users share those beliefs. TAM has been one of the most influential models of technology acceptance, with two primary factors influencing an individual's intention to use new technology: perceived ease of use and perceived usefulness. This model is applicable to this study because the model highlights the initial perceived usefulness and ease of use (Usability) of new technology as the key determinant of technology usage and adaptability.

### **New Growth Theory**

The new growth theory was postulated by Paul Romer in 1989 and it assumes that economic growth arises from the unlimited wants and desires of humans. The theory argues that every individual's personal pursuit of profits will eventually increase the real gross domestic product per person (GDP per capita) (Hodagho, 2016). The new growth theory argues against the exogenous source of growth for the economy by emphasizing on the important of entrepreneurship, innovation, knowledge and technology as the main drivers of economic growth. The new growth theory views knowledge as an asset for growth that is not subject to diminishing returns, and that innovation and new technologies are formed or adopted from the desire for increased knowledge or human capital to achieve higher profits. As economic growth from e-payments channel can be drawn from internal consumption through the use of e-payment platforms, it is therefore an endogenous source of growth in the economy (Saidi, 2018). As human capital in the form of technical know-how and education is required for the use of many modern sophisticated e-payment platforms which represent information technology, it can therefore serve as a basis for this study as the three when intertwined lay the foundation for effective adoption of e-payment channel in Nigeria which will lead to increased consumption and subsequently improved economic growth in the long run.

### **Adoption of Theory**

This study adopts new growth theory. This theory was adopted because the theory assumed that economic growth arises from the unlimited wants and desires of humans. The theory argues that every individual's personal pursuit of profits will eventually increase the real gross domestic product per person through the use of electronic payment channel.

### **Empirical Review**

Afaha (2019) studied the relationship between electronic payment systems and economic growth using monthly data covering the period of 2012 to 2017. The Autoregressive Distributed Lagged Regression (ADLR) method was used in the analysis. The results indicated a significant positive relationship between automated teller machine transactions and economic growth in terms of real gross domestic product (GDP) growth.

Ravikumar (2019) studied the impact of digital payments on economic growth in India from the period of 2011 to 2019. The study used Ordinary Least Square (OLS) regression, Auto-

Regressive Distributed Lag (ARDL) co-integration approach. The result indicated that digital payments impact economic growth significantly in the short run but have no effect on economic growth in the long run.

Saidi (2018) carried out a study on E-payment technology effect on bank performance in emerging economies. The study adopted ex post facto design while using random panel regression model as analytical technique. It was discovered that bank performance contradicts autoregressive and random walk processes and thus implies that investors should not be disturbed about previous bank performances but concerned about current bank resources.

Amin et al., (2018) carried out a study on E - banking, service quality and customer satisfaction in selected Nigerian Banks. Structured questionnaires and interview were used in collecting the data. Descriptive statistics was adopted in analyzing the data from the respondents. The results revealed that there is a significant relationship between point on sales transactions and customer satisfaction while it was concluded that E-banking has a positive impact on the quality of service in the Nigerian banking sector, but not on customer satisfaction.

Yusuf (2016) examined cash-less policy and economic growth in Nigeria over the period 2008 to 2015. Making use of the Ordinary Least Square (OLS) technique, the result showed that POS, web and mobile payments have a positive and significant impact on economic growth in Nigeria. The study concluded that the adoption of non-cash payment by customers will contribute to reduced inflation rate, increase in foreign direct investment, increase in government revenue and a fall in unemployment levels, all which contribute to the growth in Nigeria.

### **Gap in Literature**

From the empirical works reviewed above, it shows that studies have been conducted on electronic payment channel and economic growth. Studies such as Ravikumar (2019) were carried out in other climes were findings cannot be generalized due to environmental gap unlike this study that was carried out in Nigeria. Also, Afaha (2019) made use of monthly data of which this present study employ annualized data. Furthermore, studies such as Afaha (2019), Yusuf (2016) made use of old time series data which does not reflect or take into consideration the present happenings which this present study address. Lastly, the construct of the dependent and independent variables that was combined by this present study was absent from the above reviewed work. This study filled this gap.

### **3.0 METHODOLOGY**

The study made use of ex-post facto research design because the independent variables of this study has already occurred and is in existence. Time series data was considered as the most suitable for this study due to the fact that it allows for testing of relationships between many variables and making of predictions concerning these relationships. The study employed multiple regression technique to test the hypotheses of the study. The study also conducted various pre and post estimation test. There are mainly two major sources of data collection which includes primary and secondary sources of data collection. This study employed secondary source of data collection. The data for this study were obtained from CBN statistical bulletin for the period covered by this study (2009-2019).

**Measurement of Variables**

S/N	Variable Name	Description/Measure	Variable Type	Source	A-priori Expectation
1	RGDP	Measured as Real Gross Domestic Product	Dependent	Ravikumar (2019)	Nil
2	ATMT	Measured as Automated Teller Machine Transactions	Independent	Afaha, 2019	Positive
3	POST	Measured as Point of Sales Transactions	Independent	Amin et al. (2018)	Positive

**Source:** Researcher compilation from the Literature, 2023.

This study adopts an econometric model of time series to test effect of electronic payment channel on economic growth of Nigeria. The electronic payment channel variables were -, automated teller machine transactions and point on sales transaction were all regressed against Real Gross Domestic Product of Nigeria. Several tests were conducted ranging from Test of Robustness – logarithm transformation, Diagnostic Tests – multicollinearity, normality and serial correlation (autocorrelation) test. The study employed E-view 10.0.

This study employs time series data and adopts an econometric model of multiple regression to tests for an impact of the predictor variables on the dependent variable.

The structural form of the model is stated as equation below;

$$RGDP_t = \beta_0 + \beta_1 ATMT_t + \beta_2 POST_t + \varepsilon_t \dots \dots \dots 1$$

Where:

RGDP= Real Gross Domestic Product in Nigeria (Dependent Variable)

ATMT= Automated Teller Machine Transactions (Independent Variable)

POST = Point on Sales Transactions (Independent Variable)

B<sub>0</sub> = intercept

B<sub>1</sub> – B<sub>2</sub> = Coefficient of the explanatory variables

U<sub>1</sub> = error terms of the model.

**4.0 DATA ANALYSIS AND DISCUSSION OF FINDINGS****Data Presentation**

The data for this study were presented in two categories into raw data as were sourced from Central Bank of Nigeria and the transformed data (log of data) which also were interpolated showing a monthly form and were subjected to exponential smoothing and seasonal adjustment.

**Data Analyses****Descriptive Statistics**

Table 4.1 shows the descriptive statistics of the variables. The minimum, maximum, mean and standard deviation of the data collected in this study are described in Table 4.1 as follows;

**Table 4.1: Descriptive Statistics**

	RGDP	ATMT	POST
Mean	4.925475	3.416415	2.325933
Median	4.949603	3.565833	2.494254
Maximum	5.158997	3.813755	3.505795
Minimum	4.633595	2.601745	1.042576
Std. Dev.	0.159876	0.423084	0.887765
Skewness	-0.317630	-0.896511	-0.182065

Kurtosis	2.217563	2.520894	1.650606
Jarque-Bera	0.465558	1.578715	0.895333
Probability	0.792329	0.454137	0.639118
Sum	54.18022	37.58057	25.58526
Sum Sq. Dev.	0.255604	1.790004	7.881269
Observations	11	11	11

**Source: E-view 10.0**

Table 4.1 shows the outcome of descriptive statistic. The mean of RGDP is 4.925475, maximum and minimum values of 5.158997 and 4.633595 which implies that the Real Gross Domestic Product had higher levels of performance during the study period. The standard deviation of 0.159876 indicated that the RGDP indicator deviates from the mean by 0.159876.

Table 4.1 also shows that the mean value of ATMT is 3.416415, maximum and minimum values of 3.813755 and 2.601745 which shows that ATMT had higher performance levels during the study period. The standard deviation of 0.423084 indicates that ATMT indicator deviates from the mean by 0.423084.

Finally, table 4.1 shows that mean of POST is 2.325933, maximum and minimum values of 3.505795 and 1.042576 connote that POST had higher performance levels during the study period. The standard deviation of 0.887765 indicates that the performance indicator deviates from the mean by 0.887765.

### Correlation Matrix

Correlation matrix reveal whether they exist positive and significant relationship between the variables. It also shows the direction (positive) and magnitude (significance) between the variables. The outcome may be positive correlation, negative correlation or zero correlation. Decision rule: If the t-statistics is greater than 2.5 (rule of thumb) and the p-value less than 0.05, the correlation is significant.

### Correlation Matrix

Covariance Analysis: Ordinary

Date: 06/29/23 Time: 16:20

Sample: 2009 2019

Included observations: 11

Table 4.2

Correlation t-Statistic Probability	RGDP	ATMT	POST
RGDP	1.000000 ----- -----		
ATMT	0.942036 8.423299 0.0000	1.000000 ----- -----	
POST	0.982882 16.00455 0.0000	0.950519 9.178817 0.0000	1.000000 ----- -----

Source: E-VIEW Output, 2023

### Automated Teller Machine Transactions Vs Real Gross Domestic Product

As shown in the above table, the correlation “R” is (0.942) and the t-stat (8.423) which is higher than 2.5 and with an associate p-value of 0.00 it therefore concludes that Automated Teller Machine Transactions and Real Gross Domestic Product shows a positive and significant linear association. By this, we accept the null hypotheses and reject the alternate hypotheses.

### Point of Sales Transactions Vs Real Gross Domestic Product

Given that the correlation “R” has a positive value of (0.983) and the t-stat (16.004) which is higher than 2.5 and with an associate p-value of 0.00. It is therefore concluded that Point of Sales Transactions and Real Gross Domestic Product shows a positive and significant linear association. By this, we accept the null hypotheses and reject the alternate hypotheses.

### Multicollinearity Test

A multicollinearity test is conducted to ascertain presence or absence collinearity among the predictor variables it is shown in the table 4.3. The centered VIF is used in determining its presence, when it has a value greater than 10.

**Table 4.3: Summary of Multicollinearity Result**

Variable	Coefficient Variance	Centered VIF	Remarks
C	0.035225	NA	NA
ATMT	3.006161	6.36119	Absence of Multicollinearity
POST	0.001399	4.37129	Absence of Multicollinearity

Source: Survey; from E-view computation, 2023

Table 4.3 shows in summary the variables of the study, the coefficient variances, centered VIFs and remarks. The result shows VIF values for all the variables at less than 10, which indicates that there is absence of multicollinearity.

### Stationarity Test

A test of unit root is conducted and hereunder presented in summary. The unit root test is conducted to ascertain the stationarity level of the variables under study (dependent and independent variables). It is such that the t-statistics values in absolute terms must be greater than the critical values for the data to be stationary. Also the probability values must be less than the significant level in a particular order of integration.

**Table 4.4: Summary of Unit Root Results (ADF Test)**

Variables	t-statistics	Critical Values @5%	Order of Integration	Prob.	Remarks
RGDP	/4.397874/	/3.259808/	I(0)	0.0103	Stationary
ATMT	/10.12124/	/3.259808/	I(0)	0.0000	Stationary
POST	/3.901271/	/3.259808/	I(0)	0.0203	Stationary

Source: Survey; E-view computation, 2023

As shown in table 4.4 the first column contains all the variables, second column shows the t-statistics, the third column shows the test critical values at 5% level of significance, the fourth column shows the order of integration (first order), the fifth column shows the probability values of the test and last column showing the remarks. The result shows that the variables

under study stationary at levels. Based on this, the study would adopt Ordinary Least Square Regression (OLS) method to test the hypotheses of this study.

### Regression Output

#### Regression Output (OLS)

Dependent Variable: RGDP

Method: Least Squares

Date: 06/29/23 Time: 18:26

Sample: 2009 2019

Included observations: 11

**Table 4.5**

Variable	Coefficient	Std. Error	t-Statistic	Prob.
ATMT	0.030496	0.078494	0.388509	0.7078
POST	0.163191	0.037408	4.362460	0.0024
C	4.441717	0.187682	23.66616	0.0000
R-squared	0.966685	Mean dependent var	4.925475	
Adjusted R-squared	0.958356	S.D. dependent var	0.159876	
S.E. of regression	0.032626	Akaike info criterion	-3.780437	
Sum squared resid	0.008515	Schwarz criterion	-3.671920	
Log likelihood	23.79240	Hannan-Quinn criter.	-3.848841	
F-statistic	0.23059	Durbin-Watson stat	1.585163	
Prob(F-statistic)	0.000001			

Source: E-VIEW 10.0

### Interpretation of Estimated Results

The results of the least square estimate of the regression in table 4.5 shows the variables, their coefficients, standard errors, t-statistics and probability values. The model coefficient of determination ( $R^2$ ) has a value of 96.66% with adjusted  $R^2$  value of 95.84%. Thus, indicating that 96.66% of change in economic growth (outcome variable) can jointly be influenced by these explanatory variables (Automated Teller Machine Transactions and Point of Sales Transactions). The overall coefficient of determination  $R^2$  is 0.958356 which means that the predictor variables explained 95.84% of the variations in the outcome variable, the remaining 4.16% could not be cover by this study. The F-statistics value of 23.1% with a corresponding probability value of 0.000001 shows that the model is fit and good for purpose. It shows that the aggregate effect of the explanatory variables on the explained or predictor variable is statistically significant. With a Durbin Watson (DW) value of 1.585163, the estimated model is concluded not to suffer any auto co-relational problem.

Table 4.5 above shows that Automated Teller Machine Transactions (ATMT) has a positive relationship with Real Gross Domestic Product (RGDP) on Automated Teller Machine Transactions. This is based on coefficient value of 0.030496. This implies that a 1% increase in Automated Teller Machine Transactions (ATMT) would lead to an increase in Real Gross Domestic Product (RGDP) on the economy by 1.030496 and vice versa. The p-value of 0.7078 which is higher than the conventional alpha value of 0.05 shows that it is statistically insignificant.

Finally, Table 4.5 above shows that Point of Sales Transactions (POST) has positive relationship with Real Gross Domestic Product (RGDP) on Point of Sales Transactions. This is based on coefficient value of 0.163191. This implies that a 1% increase on Point of Sales Transactions (POST) would lead to an increase in Real Gross Domestic Product (RGDP) of the economy by 1.163191 and vice versa. The p-value of 0.0024 which is lower than the conventional alpha value of 0.05 shows that it is statistically significant.

Table 4.5 above further shows that market capitalization (MC) has a positive relationship with Gross Domestic Product (GDP) on market capitalization. This is based on coefficient value of 0.450413. This implies that a 1% increase on market capitalization (MC) will lead to an increase in Gross Domestic Product (GDP) of the economy by 1.450413 and vice versa. The p-value of 0.0339 which is lower than the conventional alpha value of 0.05 shows that it is significant.

Lastly, table 4.5 above shows that deposit money bank branch (DMBB) has a positive relationship with Gross Domestic Product (GDP) on deposit money bank branch. This is based on coefficient value of 2.812644. This implies that a 1% increase on deposit money bank branch (DMBB) will lead to an increase in Gross Domestic Product (GDP) of the economy by 3.812644 and vice versa. The p-value of 0.0000 which is lower than the conventional alpha value of 0.05 shows that it is significant.

### Test of Hypotheses

The study considered to test two hypotheses. The hypotheses which were earlier stated in null forms would be tested using the result obtained from E-view regression output as presented in Table 4.6 above.

**Table 4. 6 Summary of Hypothesis Testing**

Relationship	Expected sign	Reported sign	Prob	Observation	Decision
ATMT	Positive sign	Negative sign	0.7078	P-value<0.05	Accept null
POST	Positive sign	Positive sign	0.0024	P-value>0.05	Reject null

**Source:** Researcher's compilation from E-VIEW 10.0 output, 2023.

### Hypotheses Testing

**H<sub>01</sub>:** Automated Teller Machine Transactions have positive and significant effect on Real Gross Domestic Product of Nigeria.

The regression shows a coefficient value of Automated Teller Machine Transactions (ATMT) and Real Gross Domestic Product (RGDP) was positive and insignificant (t-statistics value =0.389, p-value=0.708). Thus, the null hypothesis was accepted while the alternate was rejected.

**H<sub>02</sub>:** Point of Sales Transactions have positive and significant effect on Real Gross Domestic Product of Nigeria.

The regression shows a coefficient value of Point of Sales Transactions (POST) and Real Gross Domestic Product (RGDP) was positive and significant (t-statistics value =4.362, p-value=0.00). Thus, the null hypothesis was rejected while the alternate was accepted.

### Discussion of Findings

The study found that automated teller machine transactions has positive and insignificant effect on real gross domestic product of Nigeria. This implies that a unit increase in automated teller machine transactions would inversely lead to decrease in real gross domestic product of Nigeria. ATMT transactions under the study period shows that there were not

enough ATMT within the study period which may likely be caused by limited availability of ATM terminals. Also, bank charges by different banks affect ATM usage. Also, bank charges by different banks affect ATM usage. The findings is not consistence with the findings of Afaha (2019).

Lastly, the study found that point of sales transactions has positive and significant effect on real gross domestic product of Nigeria. This implies that a unit increase in point of sales transactions would lead to increase in real gross domestic product of Nigeria. Point of Sales transactions reduces the risk of carrying cash. Also the positive and significant result of POST shows people embrace the use of POS because it has a widely spread outlets in Nigeria. This findings corresponds with the findings of Amin et al., (2018).

## 5.0 CONCLUSION AND RECOMMENDATIONS

The increasing use of electronic payment channel has caused the integration of various economic units in a way that has made banking operations to be highly ICT inclined and to benefit immensely from the gains in technological revolution. The study concluded that ATM transactions and Point of Sale (POS) transactions significantly affects real gross domestic product in Nigeria.

Based on the findings, the following recommendations were made the study:

- i. Banks should be mandated by regulatory authorities to reduce ATM charges and make available ATM boot in rural areas.
- ii. Cost of obtaining POS terminal should be reduced so as to integrate more users which would help drive the cashless policy of CBN.

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