Effect of Electronic Payments System on the Economic Prosperity of Nigeria

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Abstract
This study examined the effect of electronic payments system on the economic prosperity of Nigeria, covering a period of 12 years (48 quarters: 2009 – 2019). This was in answer to quest in some quarters on the economic implications of the electronic payment system that have garnered high popularity and massive adoption in the financial service delivery over the traditional payment system in the recent times. The study made use of secondary data with four explanatory variables (mobile payment, web payment, point of sale and automated teller machine) and one explained variable (real gross domestic product), and the data for the study was sourced from Central Bank of Nigeria Statistical Bulletin of 2021. The Augmented Dickey-Fuller Unit Root and the Johansen Cointegration techniques were employed to test the presence of unit root and long-term cointegration in the series, while the Granger Causality technique was used to determine the presence of causal relationship among the variables. The Ordinary Least Square Regression was used to estimate the model. Findings of the study revealed that Mobile Payment and Point of Sale Service have significant relationship with economic growth of Nigeria. On the other hand, Mobile Payment has positive coefficient, Point of Sale Service and Web Pay are inversely related to the economic growth of Nigeria. In view of these findings, the study therefore recommends among others things, that the electronic payment systems should be further strengthened having shown relevance in advancing the fortunes of economic growth. The use of POS system has led to several failed and uncompleted transactions, incessantly debiting customers, hence the operational system should be strengthened for positive and efficient service delivery.
Keywords: *Mobile Payment, Web Payment, Point of Sale, Automated TellerMachine,Economic Growth*

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I. Introduction

Today's globalization is the product of technologically innovative efforts. Technological innovation has changed horizon of payment systems, drifting towards e-World (Oginni, 2013). Precisely, modern technology has changed conventional payment system into a more efficient and effective system, devoid of 'cash and carry' syndrome. In recent time, e-payment system has become a medium through which monetary substance circulates conveniently, especially in developing economy like Nigeria were carrying cash around is habitual. Interestingly, in Nigeria, e-payment system is gaining prominence to the extent that users now preferred to carry out monetary exchanges without visiting brick and mortal banks. Hence, era of cash-based payment system is gradually fading as the need to operate cashless preponderates modern Nigerian economy (Siyanbola, 2013; Omotunde, Tunmi and Dewole, 2013). In Nigeria, e-payment system formed fundamental starting point of her modern market economy; a well-functioning e-payment system has been recognised to have much relevance on financial stability, monetary policy and overall economic activity (CBN, 2011). Historically, Central Bank of Nigeria (CBN) introduced payment system which facilitated e-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. In addition, Automated Teller Machine (ATMs) was introduced by Interswitch in 2003 followed by the implementation of Real Time Gross Settlement in 2006, and migration to new uniform accounting system (NUBAN) in 2010. Subsequently, in the early of 2011, Nigerian Inter-bank Settlement System announced instant payment services and the first set of cash deposit ATMs were launched (KPMG, 2012). Consequently, transition to cashless economy was proposed in December,

2011 and first implemented at Lagos in January, 2012. At the end of 2013, cashless policy is envisaged to have been effectively implemented in Abuja, Port-Harcourt, Abia, Kano and Ogun State.

The advent of the various e-payment channels, many Nigerians have been included into the mainstream financial system thereby mobilizing idle funds for investment purpose. It has also eased and facilitated transactions especially in the emerging ecommerce businesses that is taking the centre stage. It has also seen the transfer of money from one point to another seamlessly and facilitated many online businesses. This e-payment channels, especially POS has created more direct and indirect jobs given that it is now seen in almost all the nooks and cranny of our society, bringing banking experience to the door step of the populace.

In view of the foregoing, Nigeria is yet to feel the full impact given the poor state of the economy. Up till date, credits for investors are still not available and where they are, the conditions to access them are very stringent, hence lowering the productivity of the country's economy. Furthermore, there is worry that despite the robustness of the banking sector in the country, Nigeria is still designated as the poverty capital of the world, with all the indices of growth and development almost on negative. We therefore seek in this study to investigate why the growth and advancement in the Nigerian banking sector caused by the e-payment systems have not transmitted to evident economic prosperity.

II. Literature Review

The Concept of Payments System

E-Payment systems refer to the automated processes of exchanging monetary value among parties in business transactions and transmitting this value over the ICT networks (Ayo and Ukpere, 2012). Its usage for different purposes presents increased imprecision of defining e-payment in the literature. E-payment could be viewed from its functions as m-payment, e-banking, e-money, online banking, internet banking, e-finance, e-broking, etc. ECB (2001) viewed e-payment as an electronic preservation of economic substance on an intelligent device generally employed to make payments of undertakings apart from the person who issues it without involving bank accounts in the transaction, though acting as a prepaid bearer instrument, elsewhere e-payment is viewed as the use of credit cards, automated teller machines, debit cards, stored value cards, mobile wallets and others of similar nature to make payments (Oginni, 2013).

Similarly, Snellman, Vesala and Humphrey (2001) defined e-payments as any payment service that makes use of information and communications technologies including Integrated Circuit (IC) cards, cryptography and telecommunications. However, in this study, e-payment refers to delivery multichannel that provides for electronic exchange of monetary substances without physical contact of the transacting parties. It includes all electronic transactions as well as e-cheque payment. E-payment provides means of transacting business and settling financial commitment electronically without necessarily touching cash in a cashless society.

The payments system plays a very crucial role in any economy, being the channel through which financial resources flow from one segment of the economy to the other. It, therefore, represents the major foundation of the modern market economy. Essentially, there are three pivotal roles for the payments system, namely: the Monetary Policy role, the financial stability role and the overall economic role.

The Nigerian Payments System witnessed remarkable achievements in the recent past, with the introduction of a number of initiatives under the Payments System Vision 2020 as listed below, amongst others (CBN, 2018):

- Implementation of Bank Verification Number (BVN) Scheme to addressissues associated with the absence of unique identifier of bank customers acrossthe industry
- Issuance of Guidelines on International Money Transfer services in Nigeria
- Issuance of revised Guidelines for card issuance and usage in Nigeria
- Implementation of industry e-reference portal
- Abolished fees on cash deposit above the cash-less policy threshold.
- Sensitization campaign on cash-less policy in preparation for take-off of the Cash-Less Policy initiative in the remaining 30 states of the Federation.
- Clearing House sanctions to instill discipline among the participating members.
- Conducted compliance monitoring of banks with Payment Card Industry Data and Security Standards (PCIDSS).
- Maximum Cap on Cheque
- Implementation of Nigeria Uniform Bank Account Number (NUBAN)
- Cheque Truncation
- Reduction of clearing cycle to T+1 from T+2
- Setting of N150,000 limit on encashment of 3rd party cheques
- Issuance of Guidelines for the regulations of Agent Banking in Nigeria,
- Help Desk on Card Related Complaints

- Card Fraud Prevention Strategies
- Introduction of second level authentication for card not present payment.
- Banks to have real-time online monitoring tools for PIN entry attempts.
- Automatic blocking of card after three unsuccessful PIN attempts.
- Set limit for card-to-card transfers, POS and web payments.
- Banks to segregate the process of PIN handling and card activation.
- Proper due diligence should be done on all merchants before POS is allocated.
- Enlightenment campaign on protection of PIN/card details for cardholders
- Establishment of Nigeria Electronic Fraud Forum (NEFF)
- Implementation of National Central Switch
- Implementation of Mobile Payment
- Standards and Guidelines on ATM and POS Operations in Nigeria
- Cash-less Nigeria

Given the important role that well-functioning payment systems have on monetary policy, financial stability and overall economic activity, the Central Bank of Nigeria has put in place a set of national payments system policy objectives as a broad guideline and framework for all payments system initiatives. In setting out the objectives of the National Payments System (NPS), the goal is to ensure that the system is available without interruption, meet as far as possible all users' needs, and operate at minimum risk and reasonable cost.

The role of Central Bank in the National Payment System
According to Heller (2021), there are six major responsibilities of the Bank that are derived from the Act establishing the CBN, as amended. They include:
- Act as Banker to banks and provide the smooth operation of payments, clearing and settlement systems.
- Act as Banker and adviser to, and as fiscal agent of Government.
- Issue currency notes and coins
- License and supervise authorized dealers (except stock brokers that are licensed by Securities and Exchange Commission and supervised by the Nigeria Stock Exchange).
- Formulate and implement foreign exchange reserves.
- Hold and manage its foreign exchange reserves.

Furthermore, the Bank is empowered by the CBN Act to formulate and implement monetary policy, to achieve and maintain stability in the general level of prices and make regulations for the proper functioning of a stable market. It is also charged with the responsibility to oversee the operations of deposit money banks and other financial institutions.

Origin of Electronic Banking
According to Anibueze (2006), electronic banking started in the mid-1980s with technology drive product which has influenced more technological advances. He further stated that what used to be termed electronic data process has been transformed into electronic banking through information technology. Anibueze emphasized that "this change in technology reflects on equivalent transformation to use of computer from the use of paper flow bringing about a reduction in the unit cost and replacement of the manual process of writing with computer processing today's focus on electronic product and service delivery". All these being in line with today's modern international banking climate.

Benefits of E-banking
According to Aleen, (2007), the expected benefit of e-banking consists of the following:
1. Improve customer service: Electronic banking enables banks provide new, faster and better service to its customers, thereby, bringing up the banks to international standards and enhancing competition amongst the banks. These can be in the form of file transfer, signature verification within minutes, etc.
2. Reliability of transaction: Electronic banking helps to ensure accurate and timely transactions unlike when done manually, which is prone to human errors that can cause setbacks.
3. Satisfy: Electronic banking technology ensures the safety of bank dealing with its customers. Unsafe banking practice can cause huge loses to the bank practice which can cause huge loses to the bank, especially in the cause of misrepresentation of account owners. This banking technology (electronic banking) prevents this through its signature verification preventing unauthorized access into the computer.
4. Redundancy of Storage Space: Electronic banking technology helps to reduce the use of files which are archaic, thereby, reducing use of storage space. The use of file could lead to loss of vital information about bank customers either by mutilation or easy and unauthorized access to file and also misplacement of important documents. This can be prevented through storage of information in hard drive, diskettes and compact disc.

Today, we cannot think about the success of the banking industry without information and communication technology as it has enlarged the role of banking sector in the economy. Financial transaction and payment can be processed quickly and easily. Banks with the latest technology and techniques are more successful in the competitive financial market since they are able to generate more and more business resulting in the greater profitability.

Problems of E-banking
The following problems can be seen to be faced by e-banking according to Ernest and Fadiya (2002). They include:
1.   Power: The situation of power must be improved to accommodate the smooth operation of financial activities.
2.   Literacy: As noted, the literate rate in Nigeria is still low especially in the Northern part of the country. Hence, business people prefer to keep this money in their own vault while banks are scattered all over the country.
3.   Prevalence: Another major concern would be the risk involved because if the process is rushed and the economy loses confidence in the system due to high level of fraudulent activities, it would be devastating to the economy of the country (Nigeria).
4.   Infrastructure deficit: The financial infrastructure in Nigeria is not adequate to carry the load of a cashless society, ATM points of load of sale system, mobile banking and other mediums have to be dramatically expanded to touch, at least, 40% of the whole economy before any meaningful effect can be felt.

Theoretical Reviews
Technological Acceptance Model (TAM)
The technological acceptance model was propounded by Fred Davis in 1993. The theory of technological acceptance explains how individuals accept new technology and it leads to growth in an economy. In essence, it shows how a user of a proposed technology welcomes and adapts to a new technology. He stated that two beliefs determine the complete acceptance of a technology. These beliefs are:
a.   Perceived usefulness, and
b.   Perceived ease of use.
Perceived usefulness is a factor that affects user's acceptance because it is based on how capable the new technology will help improve job performance. The technology must be capable of producing an advantageous result and must also be able to generate a positive performance. As for perceived Ease of Use, Fred Davis defined it as how easy it is for users to make use of new technology. It means that the ability to employ the new technology should be effortless. Prior to the implementation of the cashless policy, Nigeria was a huge cash-based economy. In order to increase the effect of the policy on citizens, the people have to believe that the policy will be easy to use and also result in positive performance thereby, leading to economic growth. E-Banking products must also be reengineered to make electronic payment effortless which will stir the country toward a cashless economy (Nwankwo and Eze, 2013).

Innovation Diffusion Theory
        The Innovation Diffusion Theory (IDT) explains individuals' intention to adopt a technology as a modality to perform a traditional activity. The theory is developed by Roger in 1983 and the critical factors that determine the adoption of an innovation at the general level are the following: relative advantage, compatibility, complexity, trial ability and observability, (Rogers, 2004). Researchers such as Gerrard and Cunningham (2003) had tested the theory on the e-banking adoption. The nominalized factors are complexity, triability and observability.

        The underpinning theory employed in this work is a theory arising from the decomposed theory of planned behaviour. This theory considers that the use of technology is influenced by attitude, subjective norm and perceived behavioural control. The theory argues that the lesser the ratio of currency outside banks to broad money supply, the higher the intermediation efficiency and vice-versa. This suffices that when the currency outside banks diminishes as a result of the increase in the use of electronic forms of payment, particularly ATM and other e-card products, as well as banking habits, the intermediation efficiency will be positive, otherwise it will be negative.

Financial Innovation Hypotheses
        For the purpose of this study, the Financial Innovation Hypothesis of Merton (1992), Allen and Gale (1994), and Grinblatt and Longstaff (1994) that led to the development of the hypothesis (2000). The hypothesis postulates two variations of the financial innovation hypothesis: financial innovation - growth hypothesis and financial innovation - fragility version.

According to the financial innovation - growth hypothesis, financial innovations play a critical role in the financial system by lowering agency costs, facilitating risk sharing, improving the quality and variety of banking services, and ultimately improving allocative efficiency (Allen and Gale, 1994; Grinblatt and Longstaff, 2000; Merton, 1992). As a result of this premise, financial innovation has the potential to increase the efficiency of the financial system by expanding the range of financial products and services available, resulting in better matching of individual depositors' needs with enterprises seeking funding (Chou, 2007). Financial innovation, according to the theoretical postulate of the financial innovation-growth hypothesis, results in the emergence of new financial technologies such as modern payment channels such as Automated Teller Machines (ATMs), Mobile Banking, Point of Sale (POS) banking transactions, and Internet banking transactions, which reduce transaction costs and promote efficiency. The financial innovation-fragility variant, on the other hand, looks at financial innovation from a pessimistic or gloomy perspective. According to this version, financial innovation is to blame for financial crises since the process of financial innovation results in an extraordinary increase in credit creation, which causes the initial boom and subsequent crash (Brunnermeier, 2009). Financial innovation, it is believed, allows financial institutions to design and create structured products that take advantage of investors' ignorance of financial markets (Henderson and Pearson, 2011). Furthermore, it is argued that financial innovation spurred by arbitrage regulation does not allow for efficient resource allocation, but rather encourages financial fragility, which hinders effective monetary policy implementation (Houston, Chen, Lin and Yue, 2010).This hypothesis is very relevant as it looks at both the merits and demerits of e-payment innovations in the financial systems.

Empirical Review

Electronic banking is taking the centre stage in the banking payment system globally, driven by the advent of developments in the technology sector. This have attracted serious attention among researchers on the need to find the relevance of this novel technology on the performance of the banking system as well the its implications in mobilizing funds for economic investment. There is still a mixed outcome on the relevance of electronic banking to the economy. While some studies have proved that electronic banking has became a veritable tool in the banking sector performance and economic growth, other studies discovered an inverse relationship. Some of these studies are reviewed here.

Abbas and Cross, (2019), examine the impact of Electronic Banking on the Development of Nigerian Banking Sector. After a careful analysis, it was ascertained that electronic banking has both negative and positive impact in the Nigerian banking sector. While on the positive angle e-banking has enhanced service delivery, on the negative side it is disposed to electronic fraud and illegal right to use information.

Ekechukwu & Mbah, (2019) assessed e-banking to ascertain its impact on Nigeria economic growth. The study covered a period of 2008-2018. Variables employed in the study include: Mobile Transfer, Point of Sale (POS) and Automated Teller Machine (ATM) (independent variables), while real GDP was adopted as proxy for Economic Growth. In relation to the statistical tools, Augmented Dickey-Fuller test statistic, error-correction mechanism, Heteroscedasticity Breusch-Pagan-Godfrey Test, and Durbin-watson tests were implemented. The result reveals that Mobile Transfer and Point of Sales (POS) have both inverse and direct effect on the Real Gross Domestic Product (RGDP) for different years; while the Automated Teller Machine (ATM) shows strong direct effect on the Real Gross Domestic Product (RGDP).

Afaha, (2019) statistically estimated the relationship between electronic (e-payment) systems and economic growth in Nigeria. Monthly available Data for Nigeria on values of various payments systems were analyzed using Autoregressive Distributed Lagged regression (ARDL) method covering the period of (2012-2017). The result indicates a significant positive relationship between the electronic payment system and economic growth in terms of real gross domestic product growth. Automated teller machines have a positive significant impact on economic growth, POS contributes 17 percent growth to the real GDP growth in Nigeria, web-based transactions, contributes 2.3 percent to the real GDP growth, but INTERBANK transactions, has an insignificant impact on GDP growth while Mobile Payment has a negative contribution to the impact on real GDP growth.

Laying emphasis in Nigeria, Saidi, (2018), appraises the impact of e-banking technology on bank performance in Emerging Economies. The review adopted the time dimensional and panel least square models. It finds that bank performance increased after the adoption of electronic payment technologies. This shows that bank performance disproves autoregressive and random walk processes thereby indicating that financiers (investors) should be unconcerned about earlier bank performances rather they should be worried about current bank resources.

Empirically, Ogbeide-Osaretin and Ishiuwu, (2018), examined the effect of electronic banking on Nigerian economic growth. With the aim of ascertaining the type of relationship as well as the direction of causality existing between e-banking and economic growth in Nigeria, the work adopted the Autoregressive Distributed Lag (ARDL) bond testing technique and the Pairwise Granger Causality test. To achieve this

objective, the variables analyzed include Real Gross Domestic Product (RGDP), Automated Teller Machine (ATM), Mobile Banking (MB), Web Banking (WB) and Point on Sales Terminal (POS) for the period 2009 to 2014 quarterly data. The study showed that e-banking impacts significantly on economic growth. Furthermore, the result shows that ATMs and MB have a positive impact on economic growth while POS and WB showed a negative impact. As the use of ATM and MB respectively increase by N1, RGDP will increase to 4.2489 and 19.8707. On the other hand, N1 increase in POS and WB leads to N15.262 and N53.757 decrease in RGDP. The result of the study further showed that there is a long-run relationship between e-banking and economic growth and that e-bankingGranger causes economic growth in Nigeria.

Ikpefan, Akpan, Godswill, Grace and Chisom, (2018), examined Electronic Banking stressing its impact on Cashless Policy in Nigeria. Secondary data gathered from Central Bank of Nigeria (CBN) annual report and the Nigerian Interbank Settlement System (NIBSS) website, were analyzed using the ordinary least square method. The result shows that electronic banking tools does not significantly impact on Currency in Circulation.

Oyelami, Adebiyi & Adekunle (2020) investigates the determinants of electronic payment adoption and the role of electronic payment on consumers' purchase decisions as well as its effects on consumers' spending growth in Nigeria. The instrument of data collection was administered on 420 respondents by using the multistage sampling technique to sample respondents across five divisions (locations) of Lagos. The results revealed that there is a positive and significant relationship between electronic payment systems determinants (convenience, security and safety, trust, social influence) and e-payment adoption in Nigeria. These variables accounted for more than half ($^3/_5$) of what influences consumers' adoption of e-payment mode of transaction in Nigeria. The results from the estimations show that factors such as educational attainment, financial inclusion, income level, internet service availability and other financial infrastructures such as point-of-sale machines and mobile banking services are critical determinants of e-payment adoption in Nigeria. The results also indicate that electronic payment influences consumers' purchase decisions and thus increasing consumers' spending growth in Nigeria.

III.   Methodology

The study adopts ex-post facto research design to examined the Effect of Electronic Payments System on Economic Growth of Nigeria following the study of Ogbeide-Osaretin and Ishiuwu, (2018) in their study to the effect of electronic banking on Nigerian economic growth. The work used secondary data sourced from Central Bank of Nigeria Statistical Bulletin. The data are sourced for a period of 12years on quarterly basis, which are aggregates for each variable obtained for the period 2006 – 2020 (48 Quarters) and multiple regression statistical techniques or method was employed to estimate the model.

Model Specification

However, the model employed in the research draws on the model of Ogbeide-Osaretin and Ishiuwu, (2018). In the current work, four explanatory variables shall be used. In the model real gross domestic product (RGDP) depends on, Mobile Pay (mPay), Web Pay (wPay), Point of Sale (POS) and Automated Teller Machine (ATM). The functional specification of the models is:

RGDP = f(mPay. wPay, POS, ATM)   3.1

The econometric specification of the models is:

$RGDP_t = \beta_0 + \beta_1 mPay_t + \beta_2 wPay_t + \beta_3 PoS_t + \beta_4 ATM_t + \mu_t$ 3.2

Where: RGDP = Real Gross Domestic Product proxy for Economic Prosperity.

mPay = Mobile Pay

wPay = Web Pay

POS = Point of Sale

ATM = Automated Teller Machine

β_1, β_2, β_3 and β_4, are the partial slope coefficients of the explanatory variables respectively. They also represent the rate of change in RGDP for each unit change in the respective independent variables.

β_0 is the constant term.

μ_t = error term.

IV.   Results of Data Analyses

Descriptive Statistics Analysis

The data used for analysis in the work are quarterly data of real GDP and e-payment system variables employed in the study.

Table 4.1 Result of Descriptive Analysis

	RGDP	ATM	POS	MPAY	WPAY
Mean	7.201351	5.846771	4.813139	4.679715	4.419452
Median	7.210644	5.994164	4.983774	4.981910	4.369909
Maximum	7.295637	6.269389	6.062501	6.355018	5.531973
Minimum	6.994378	4.796505	3.270765	1.778151	3.527630
Std. Dev.	0.067173	0.415251	0.919130	1.203983	0.510023
Skewness	-1.167196	-1.029060	-0.280713	-0.563788	0.258911
Kurtosis	4.355593	2.920717	1.702445	2.420641	2.172037
Jarque-Bera	14.57404	8.484284	3.997695	3.214172	1.907327
Probability	0.000684	0.014377	0.135491	0.200471	0.385327
Sum	345.6648	280.6450	231.0307	224.6263	212.1337
Sum Sq. Dev.	0.212072	8.104352	39.70562	68.13006	12.22580
Observations	48	48	48	48	48

Source: Computer Estimate

In Table 4.1, it could be observed that during the period under review, RGDP averaged at 7.2013% with highest value at 7.2956. The standard deviation is 0.0671, denoting that RGDP has no much significant variation from the mean. Equally, wPay averaged at 4.4194 with highest value at 5.5320 and the lowest value at 3.5276, while the standard deviation is 0.5100. MPay averaged at 4.6797 with highest value of 6.3550. The standard deviation is 1.2040, denoting that there is no much significant fluctuation from the mean. PoS averaged at 4.8131 with highest value at 6.0625. The standard deviation is 0.9191, denoting that there is no much significant variation from the mean. Finally, ATM averaged at 5.8468% with highest value at 6.2694. The standard deviation is 0.4153, denoting that there is no much significant variation from the mean. The model as shown by the Jarque-Bera statistics and probability values is normally distributed.

Stationarity Test

Most regression results are faced with the problems of spurious result that may be misleading, hence we estimate the possibility of unit root in our data set. Table 4.2 below presents the results of the Augmented Dickey-Fuller unit root test conducted for all the variables.

Table 4.2 Summary of Augmented Dickey-Fuller Unit Root Test

Variable	ADF Statistics	5% critical Value	Conclusion	Order of Integration
RGDP	-4.593214	-2.928142	Stationary at 1st Difference	I(0)
mPay	-8.373340	-2.926622	Stationary at 1st Difference	I(1)
wPay	-10.09302	-2.928142	Stationary at 1st Difference	I(1)
PoS	-8.779785	-2.926622	Stationary at 1st Difference	I(1)
ATM	-6.643757	-2.926622	Stationary at 1st Difference	I(1)

Source: Extract from Unit Root Test Result (Appendix 11)

The Augmented Dickey-Fuller Unit Root test result as summarized in Table 4.2 showed that all the variables are stationary at first difference and are therefore integrated in order one i.e I(1). However, RGDP is stationary at level and therefore not integrated at zero order.

Johansen Cointegration Test

To determine if long run relationship exist between the variables under consideration, a co-integration test using was conducted. Hypothesis to be tested is:

H_0: $\delta = 0$ (the variables are not co-integrated)

H_1: $\delta \neq 0$ (the variables are co-integrated)

Table 4.3: Results of Cointegration Test

Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.810166	180.4793	69.81889	0.0000
At most 1 *	0.685468	104.0453	47.85613	0.0000
At most 2 *	0.471751	50.83855	29.79707	0.0001
At most 3 *	0.342024	21.48192	15.49471	0.0055
At most 4	0.047259	2.226957	3.841466	0.1356

Trace test indicates 4 cointegrating eqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None *	0.810166	76.43394	33.87687	0.0000
At most 1 *	0.685468	53.20679	27.58434	0.0000
At most 2 *	0.471751	29.35663	21.13162	0.0028
At most 3 *	0.342024	19.25497	14.26460	0.0075
At most 4	0.047259	2.226957	3.841466	0.1356

Max-eigenvalue test indicates 4 cointegrating eqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Source: Eview Cointegration Test Output

Table 4.3 indicates four cointegrating equations in both the trace statistic and Max-Eigen statistic. Therefore, we reject H_0 and conclude that the variables are cointegrated. This means that long-run relationship exists in the exogenous series.

Results of Regression Analysis
Table 4.4 below present the estimated result of the least square regression analysis.

Table 4.4 Regression Results

Dependent Variable: RGDP
Method: Least Squares
Date: 09/20/21   Time: 21:36
Sample: 2009Q1 2020Q4
Included observations: 48

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	6.909147	0.130038	53.13175	0.0000
ATM	0.048857	0.028617	1.707247	0.0950
POS	-0.068772	0.022612	-3.041347	0.0040
MPAY	0.091839	0.015256	6.019874	0.0000
WPAY	-0.020867	0.015193	-1.373474	0.1767

R-squared	0.843850	Mean dependent var		7.201351
Adjusted R-squared	0.829324	S.D. dependent var		0.067173
S.E. of regression	0.027751	Akaike info criterion		-4.232759
Sum squared resid	0.033115	Schwarz criterion		-4.037842
Log likelihood	106.5862	Hannan-Quinn criter.		-4.159100
F-statistic	58.09398	Durbin-Watson stat		1.711631

Prob(F-statistic)	0.000000

Source: Eview 9.0 OLS Output

Estimated Econometric Model

RGDP = 6.9091 + 0.0488ATM − 0.0688POS + 0.0918mPay − 0.02087mPay   3.1

The result in Table 4.4 showed a positive constant value indicating that at zero performance of the independent variables, RGDP will increase by 6.9091, all things being equal. It was also discovered in the result that the probability of F-statistic for the model (0.000000) is less than 0.05; an indication that the model is significant and adequate to make any informed decision. The adjusted R^2 value shows that 82.93% of the variation in dependent variable is explained by the independent variables while the remaining 17.07% was explained by other variables not captured in the model.

Analyzing the results of the coefficients of the specific variables revealed that mobile pay (mPay) and point of sale service (POS) with their respective probability values of 0.0000 and 0.0040 less than 0.05 probability benchmark indicates that the two variables aresignificantly related to the economic growth of Nigeria. A close look at Table 4.4 showed that web pay (wPay) and point of sale service (POS) have negative coefficients, indicating inverse relationship with the dependent variable. It was also confirmed that there is near absence of autocorrelation in the data with DW statistic 0f 1.7116.

V. Discussion of Result

Indeed, the ePayment channels which was greeted massive adoption have become very popular among users and bank customers, which was evident in this study. In fact, the findings of this work indicated that epayment systems have significantly influenced the Nigerian economic growth. This result is supported by the separate works of Chukwunulu (2019), Sanya and Olatunji (2020) and Ibenta and Anyanwu (2017) where they found that epayment channels have positive and significant impact on the economic growth of Nigeria. In addition to easing payment systems, these channels have facilitated several businesses platforms like ecommerce, peer to peer lending, gaming, utility bill payments, government revenue collection, among many others, hence their influence on economic growth of Nigeria is not a surprise.

Analyzing the coefficients of each of the variables, it was discovered that automated teller machine has positive relationship on the economic growth of Nigeria in line with the *a priori* expectations of the study. This is a reflection of the studies of Okafor (2019) and Okoro (2014). It is obvious that transactions through the automated teller machine have become most popular among the epayment systems. It has automatically decongested the long queues in the banking halls and facilitated money withdrawals, transfers, payments of bills, etc. However, the variable is not significant, given the partial adoption so far because of some reservations some bank customers have using it like excessive charges, insecurity, poor service infrastructure among others.

Secondly, point of sale service according to the outcomes of our study indicated a significant but negative coefficient. This result is in contradiction with the *a priori* expectations of the study as well as the study of Ibekwe (2021), but conforms with the results of Jisike and Amalachukwu (2018) and Okafor, Ezeaku, and Anyalechi (2017). It is most interesting that POS have become massively popular and the most viable agent of financial inclusion in Nigeria. However, it has shown to be frustrating most customers that have subscribed to it. Evidence abounds where failed and incomplete transaction frustrate customers using POS where their accounts were debited without payments. Moreover, it has also became one of the easiest ways of financial frauds, thus it has failed to gain the confidence of users, especially of late.

Furthermore, it was also seen in the study that Mobile Pay has positively and significantly influenced the Nigeria economic growth. This is expected and relate with the findings of Ezeaku, and Anyalechi (2017) and Ibekwe (2021). Accordingly, mobile Pay have facilitated business transactions more than any of the other e-payment channels. Transactions can be initiated and completed from any part of the country or even the world without being physically executing them. It is also the easiest and most comfortable means of e-payment which the only requirement is to own a mobile phone.

Lastly, the coefficient of Web Pay indicated a negative but insignificant relationship with the Nigerian economic growth. This reality is in contradiction with Oseni (2018) and Okafor (2019) on their separate studies where they established that web pay has positive effect on the economic growth. However, the negative effect may not be unconnected with the incessant financial fraud perpetuated via the internet. In Nigeria, there are several e-fraudstars whose stock in trade is to dubiously hack subscribers account and make away with their monies. Stories abound where unsuspecting bank customers were made to trickly reveal their PIN CODES by the so-called *yahoo* boys and their accounts emptied. It is also evident that several people who made purchases via the internet could not have their goods delivered to them after payments. These and other issues have made subscribers to have deep reservations in using the web pay channel.

Given the above discussions, we wish to state that the place of e-payment in the modern-day business transactions cannot be overemphasized. Irrespective of some of its shortcomings, it can be best be described as a positive revolution in the banking system of today.

VI. Conclusion

Given the results from the analyses, it is very important to note that e-payment systems have influenced the banking sector significantly as well as the Nigerian economy. The e-payment systems have gained wide acceptance and adoption and is making banking far easier than ever. It has further advanced the financial inclusion strategy of the CBN where very many members of the populace have access to formal financial services, thereby mobilizing idle funds into the mainstream financial system. The import of this is that the intermediation function of the financial system will become more robust and making available more credits to the private sector, which the multiplier effect is seen in the economic production and consumptions.

VII. Recommendations

Based on the findings and conclusion of the study, we therefore recommend as follows:
1.   Efforts should be put in place by the designers of the e-payment channels to tightened the security outfits of the system to minimize the incidences of fraudulent transactions.
2.   Banks should embrace more campaign that will educate their customers to further adopt the e-payment systems in their day-to-day banking experience so as to make the system more robust.
3.   POS can be found even in the rural areas but the charges are too exorbitant. The regulatory authorities should as a matter of urgency reduce the charges on POS users so as to encourage more participation.
4.   With regards to ATM services, laws guiding the use of ATM should be reviewed especially in the incident of seizure of ATM cards by ATM centres. This will enhance the use of ATM for transactions.
5.   The CBN should review the several charges users go through in their day to day use of this system. This will also further enhance confidence and further adoptions.
6.   The issue of failed transactions, network failures, etc. have become prevalent in the day to day use of the e-payment systems. This is discouraging several people from adopting this payment systems, hence the minimization of this challenges will go a long way in boosting the confidence and trust of users and potential users in the system.

References

[1].   Abbas, U. I. and Cross, O. D. (2019), Impact of E-Banking on the Development of Banking Sector in Nigeria, International Journal of Managerial Studies and Research (IJMSR), 7(2), 19-27.
[2].   Afaha, J.S. (2019). Electronic Payment Systems (E-payments) and Nigeria Economic Growth. European Business & Management, 5(6), 77-87.
[3].   Ahmad, A. H. and Amran, R. (2016). A Review of Theories Relevant to E-banking Usage Continuance, International Review of Management and Marketing, 6(4) 277-283.
[4].   Allen, F. and Gale, D. (1994). Financial Innovation and Risk Sharing. MIT Press: Cambridge, MA.
[5].   Anibueze, (2006), Banking Practice in Nigeria. Lagos: Hiymark Educational Publisher.
[6].   Ayo, C.K. & Ukpere, W.I. (2012). Further Development of a Secured Unified E-Payment System in Nigeria: A Critical Viewpoint. Chapters, in: Princely Ifinedo (ed.), E-Business - Applications and Global Acceptance, IntechOpen.
[7].   Brunnermeier, M.K. (2009). Deciphering the Liquidity and Credit Crunch 2007-2008. Journal of Economic Perspectives, 23(1), 77-100.
[8].   CBN, (2018), Statistical Bulletin.
[9].   CBN, (2012): Annual Report and Statement of Account, December.
[10].   Chou, Y.K. (2007). Modelling Financial Innovation and Economic Growth. Why The Financial Sector Matters to The Real Economy? The Journal of Economic Education, 38(1), 78-91.
[11].   Chukwunulu, J.I. (2019). Effect of Financial Innovation on the Nigerian Economy. World Journal of Innovative Research, 6(5), 15-21.
[12].   Davids, F.D. (1993). User Acceptance of Information Technology: system Characteristics, user Perceptions and Behavioral Impacts: International Journal of Man- Machine Studies, 38, 475-487.
[13].   ECB (2004). E-Payment Without Frontiers. Issue Paper for the Conference.
[14].   Ekechukwu, C., & Mbah, P. C. (2019). An Assessment of the Impact of e-Banking on Nigeria's Economic Growth, 2008-2018. International Journal of Management, Accounting and Economics, 6(6), 454-466.
[15].   Ernest, S. and Fadiya, B. (2002), Cashless Banking in Nigeria: Challenges, Benefits and Policy implication", European Scientific Journal, June Edition, 8(12).
[16].   Gerrard, P. & Cunningham, J. (2003). The diffusion of Internet banking among Singapore consumers. International Journal of Bank Marketing. 21. 16-28.
[17].   Grinblatt, M. & Longstaff, F.A. (2000). Financial Innovation and The Role of Derivative Securities: An Empirical Analysis of The Treasury STRIPS Program. Journal of Finance, 55(3), 1415-36.
[18].   Heller, D. (2021). Payment Systems and the Role of Central Banks. Finality. https://www.fnality.org/news-views/payment-systems-central-banks
[19].   Henderson, B.J. & Pearson, N.D. (2011). The Dark Side of Financial Innovation: A Case Study of The Pricing of a Retail Financial Product. Journal of Financial Economics, 100(2), 227-47.

[20]. Houston, J., Chen, L., Lin, P. & Yue, M. (2010). Creditor Rights, Information Sharing, and Bank Risk Taking. Journal of Financial Economics,96(3), 485-512.

[21]. Ibekwe, A.O. (2021). Financial Innovation and Performance of Deposit Money Banks in Nigeria. International Journal of Business & Law Research 9(1), 162-173. www.seahipaj.org.

[22]. Ibenta, S. N & Anyanwu, F.A. (2017). Financial Innovation and Efficiency of The Banking Sub-Sector: The Case of Deposit Money Banks and Selected Instruments of Electronic Banking (2006-2014). Asian Journal Economics, Business and Accounting 2(1), 1-12.

[23]. Ikpefan, O. A., Akpan, E., Godswill, O. O., Grace, E. and Chisom, N., (2018). Electronic Banking and Cashless Policy in Nigeria, International Journal of CivilEngineering and Technology (IJCIET),9(10), 718–731.

[24]. KPMG (2012). Managing the Transition to a Cashless Economy in Nigeria: The Challenges and Strategies. Nigeria Computer Society 24th National Conference.

[25]. Merton, R.C. (1992). Financial Innovation and Economic Performance. Journal of Applied Corporate Finance, 4(4), 12-22.

[26]. Muoghalu, A.I., Okonkwo, J.D. and Ananwude, A. (2018). Effect of Electronic Banking Related Fraud and Deposit Money Banks Financial Performance in Nigeria. Discovery 54 (276), 496-503.

[27]. Nwankwo, O. And Eze, O.R. (2013), Electronic Payment in Cashless Economy of Nigeria: Problems and Prospect. Journal of Management Research, 5(1), 138-151.

[28]. Ogbeide-Osaretin, N. E. and Ishiuwu, V. N., (2018), An Empirical Investigation into the Impact of Electronic-Banking on Nigerian Economic Growth, The Journal of Economics and Social Studies, 8(1), 108-121.

[29]. Oginni, S. O. (2013). Impact of Electronic Banking on Commercial Banks' Performance. Lap Lambert Academic Publishing. Germany: Saarbucken.

[30]. Okafor, I.G. (2019). Analysis of Financial Innovation Development in Nigerian Banking Sector. International Journal of Research and Innovation in Social Science (IJRISS), III(XI), 559-570. http://www.rsisinternational.org/

[31]. Okafor, I.G., Ezeaku, H.C. & Anyalechi, K.C. (2017). Does Financial Innovation Drive Growth? Empirical Analysis of The Nigerian Case. British Journal of Economics, Management & Trade, 16(3), 1-10.

[32]. Okoro, A.S. (2014).Impact of Electronic Banking Instruments on the Intermediation Efficiency of the Nigerian Economy. International Journal of Accounting Research, 1(6),14-21.

[33]. Omotunde, M., Tunmibi, S. & Dewole, J. (2013), Impact of Cashless Economy in Nigeria. Greener Journal of Internet, Information and Communication Systems 1(2), 040-043.

[34]. Oseni, E. (2018). Risk Management in Financial Innovations and Sustainable Development in Nigeria. Business, Management and Economics Research, 4(3), 27-35. http://arpgweb.com/?ic=journal&journal=8&info=aims.

[35]. Rogers, E. M. (2004). A prospective and retrospective look at the diffusion model. Journal of Health Communication, 9(1), 13-19.

[36]. Sanya, O. and Olatunji, A.B. (2020). Financial Innovation and Economic Growth in Nigeria a Sectoral Analysis. Journal of Economics and Sustainable Development, 11(16), 116-127.

[37]. Saidi, A. M., (2018). E-Payment Technology Effect on Bank Performance in Emerging Economies–Evidence from Nigeria, Journal of Open Innovation, Technology, Market and Complexity, 4, (43), 1-14.

[38]. Siyanbola, T. T. (2013). The Effect of Cashless banking on Nigerian Economy. eCanadian Journal of Accounting and Finance, 1(2), 9-19.