British International Journal of Applied Economics, Finance and Accounting
B. J. Int. J. A. Econ. Fin. & Acc.
Volume: 6; Issue: 03
May-June, 2022
ISSN 2234-2418
Impact Factor: 4.97
Advance Scholars Publication
Published by International Institute of Advance Scholars Development
https://aspjournals.org/Journals/index.php/bijaefa

EFFECT OF E-PAYMENT SYSTEMS ON GROSS DOMESTIC PRODUCT OF NIGERIA

[1]Isamade Burabari Andrea, [2]Sergius Nwannebuike Udeh, Ph.D and [3]Patricia Ukachi Allison

[1]School of Postgraduate Studies, Godfrey Okoye University, Enugu, Nigeria
[2]Department of Accounting and Finance, Godfrey Okoye University, Enugu, Nigeria
[3]Department of Business Management, Godfrey Okoye University, Enugu, Nigeria

ABSTRACT*: The aim of this study was to investigate the effect of e-payment systems on gross domestic product of Nigeria. Specifically, the study was set to determine the effect of Automated Teller Machine (ATM) payment system, Point of Sale (POS) payment system and mobile applications payment system on gross domestic product in Nigeria. The study adopted ex –post facto research design. The population comprised of all the quoted telecommunication companies listed on Nigeria Stock Market as at 2020 while the sample size comprised of MTN Nigeria, eTranzact, Chams Plc, Courteville Business Solutions Plc and Omatek Plc. Judgmental sampling technique was used in selection of the sample. Auto Regressive Distributed Lag Model (ARDL) was used as the analytical technique. The study revealed that ATM payment system, Point of Sales (POS) payment system and mobile applications payment system have significant effect on economic growth in Nigeria. The study recommended that banks should constantly upgrade hardware and software whenever a new feature of enhancing security becomes available.*

INTRODUCTION

1.1 Background to the Study

Since the overcoming of barter in the history of mankind, trade usually involves the exchange of goods and services and an equivalent abstract value such as money (Oginni, El-Maude, Mohammed & Michael, 2013). Ever since money was invented as an abstract way of representing value, system for making payments have been in place. 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. As the transition to electronic payment systems 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 system has been predominantly cash-based for both positive and negative reasons (Tee & Hway-Boon, 2016): positive because of its instant convertibility to other forms of

British International Journal of Applied Economics, Finance and Accounting
B. J. Int. J. A. Econ. Fin. & Acc.
Volume: 6; Issue: 03
May-June, 2022
ISSN 2234-2418
Impact Factor: 4.97
Advance Scholars Publication
Published by International Institute of Advance Scholars Development
https://aspjournals.org/Journals/index.php/bijaefa

value without intermediation of any financial institution and negative because of its anonymity and un-traceability in unethical transactions. Electronic payment was introduced because government was inundated with allegations of corruption in the Federal Civil Service (Udeghi & Hanzace, 2018).

Business organizations, especially the telecommunication industry of the 21st century, operate in a complex and competitive environment characterized by changing factors and highly unpredictable climate, thus, information and communication technology is at the centre of this global curve as an absorber and to provide a cooling effect.

Muyiwa, Sunday and John-Dewole (2013) contend that the telecommunication sector cannot ignore information system because it plays a critical role in their competitive edge both locally and globally. They point out that most fortune firms' cash flow is linked to their adoption of information system. The adoption of Information and Communication Technology in telecommunication sector is generally referred to as electronic transactions and application of its concepts, techniques, policies, and implementation strategies to telecommunication services has become a subject of fundamental importance and concerns to all telecommunication firms and indeed a pre-requisite for local and global competitiveness because, it directly affects the management decisions, plans, products and services to be offered by these firms (Zandi, 2016). It entails the adoption of various electronic payment (E-Payment) systems which has continued to change the way telecommunication firms and the corporate relationships are organized worldwide and the variety of innovation of service delivery.Electronic payment (E-Payment) systems involve the automation of process, controls and information production using computers, telecommunication, software and ancillary equipment such Automated Teller Machine (ATM) and Debit Cards (Ravikumar, 2019). It is a term that generally covers the harnessing of electronic technology for the information needs of the telecommunication sector. Mamudu and Udo (2019) assert that electronic payment (E-Payment) systems deal with the physical devices and software that link various computer hardware components and transfer data from one physical location to another. Afaha (2019) contends that financial service providers should modify their traditional operating practices to remain viable in the 21st century. They claimed that most significant shortcomings in the telecommunication industry today is a wide spread failure on the part of senior management in telecommunication firms to grasp the improvement of technology and incorporate it into their strategic plans. This necessitated this study on effect of e-payment systems on gross domestic product of Nigeria.

1.2 Statement of the Problem

Electronic payment (E-Payment) systems was adopted so as to improve service delivery, decongest queues during cash payment, 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, Frank & Saheed, 2018). Despite the effort of telecommunication sectors to ensure that customers reap the benefits of e-payment systems, 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 (E-Payment) systems like Short Message Services (SMS), for sending alerts, mandatory acquisition of ATM cards, non-

British International Journal of Applied Economics, Finance and Accounting
B. J. Int. J. A. Econ. Fin. & Acc.
Volume: 6; Issue: 03
May-June, 2022
ISSN 2234-2418
Impact Factor: 4.97
Advance Scholars Publication
Published by International Institute of Advance Scholars Development
https://aspjournals.org/Journals/index.php/bijaefa

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. Usage however, has been low due to lack of interconnectivity i.e. switching platform to interconnect the ATMs for card holders. Therefore, this study on effect of e-payment systems on gross domestic product of Nigeria is designed to address these highlighted issues.

1.3 Objectives of the Study

The broad objective of this study is to appraise the effect of e-payment systems on gross domestic product of Nigeria. The specific objectives include the following:

1. To determine the effect of ATM payment system on gross domestic product in Nigeria.
2. To ascertain the effect of Point of Sale (POS) payment system on the gross domestic product in Nigeria.
3. To examine the effect of mobile applications payment system on gross domestic product in Nigeria.

1.4 Statement of Hypotheses

The following null hypotheses are formulated for this study:

H_{OI}: ATM payment system does not have significant effect on gross domestic product in Nigeria.

H_{O2}: Point of Sale (POS) payment system has no significant effect on gross domestic product in Nigeria.

H_{O3}: Mobile applications payment system does not significantly affect gross domestic product in Nigeria.

1.5 Scope of the Study

This study on telecommunication sector covered time span from 2011 to 2020. The proxies for the study are ATM, Point of Sale (POS), mobile applications (mobile apps) and gross domestic product. The companies studied included:

1. MTN, Nigeria
2. eTranzact
3. Chams Plc
4. Courteville Business Solutions Plc
5. Omatek Plc

2.0 REVIEW OF RELATED LITERATURE

2.1 Conceptual Review

2.1.1 Electronic Payment System (E-Payment)

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 (Amin, Onyeukwu & Osuagwu, 2018). In Nigeria, e-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 (Udeghi & Hanzace, 2018).

In recent time, e-payment system 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 system 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 e-payment in 2002. During this period, Nigeria Automated Clearing System (NACS) was introduced

British International Journal of Applied Economics, Finance and Accounting
B. J. Int. J. A. Econ. Fin. & Acc.
Volume: 6; Issue: 03
May-June, 2022
ISSN 2234-2418
Impact Factor: 4.97
Advance Scholars Publication
Published by International Institute of Advance Scholars Development
https://aspjournals.org/Journals/index.php/bijaefa

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, 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 (Azeez, 2011). 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 was effectively implemented in Abuja, Port-Harcourt, Abia, Kano and Ogun State.

Electronic payment systems come in different forms, some of the e-payment systems related to this study are: Internet/Web is type of e-payment system involves transactions carried out over the Internet. It is a simple way of paying for online purchases directly from the customer's bank. It also offers the possibility of enjoying banking services from their homes or offices (Jun & Cai, 2011). Mobile Banking is one of the latest ways of making payments through mobile phones. This involves sending a payment request through a text message (USSD) or banks mobile application. Mobile banking reduces the time and stress of using the credit card or cash as account details are already linked with the banks software (Hodagho, 2016). Automated Teller Machines (ATM) is an electronic banking outlet which allows members to complete transactions without the assistance of a member service representative or teller. Anyone with a credit card or debit card can access an ATM as long as they are all on the same network. An ATM communicates through the ATM network so members can access their account information. Point of Sales (POS) Terminals is a terminal that enables buyers make payments using payment cards such as (Visa, MasterCard, verve, etc) issued to them by any bank in or outside Nigeria directly into other accounts (Isibar, 2018).

2.1.2 E–Payment Tools/Channels

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). The benefits of using a debit card include making the payment process at the checkout counter quicker and more convenient, eliminating the need to carry a cheque book and a lot of cash, using it at locations where personal cheques are not accepted, and reducing the possibility of loss or theft of cash.

Prepaid debit cards: - These are debit cards not usually linked to a customers' account. They must be funded before being used by cardholders. Prepaid debit cards are indentified with such names like cash cards, value cards, and Naira cards etc. prepaid cards can be

British International Journal of Applied Economics, Finance and Accounting
B. J. Int. J. A. Econ. Fin. & Acc.
Volume: 6; Issue: 03
May-June, 2022
ISSN 2234-2418
Impact Factor: 4.97
Advance Scholars Publication
Published by International Institute of Advance Scholars Development
https://aspjournals.org/Journals/index.php/bijaefa

used as gift cards students ID cards, Government payment card, payroll card, Bursary card, insurance cards, travel cards etc (Mamudu & Udo, 2019).

Credit Cards: - A credit card is different from a debit card in that it does not remove money from the user's account after every transaction. In the case of credit cards, the issuer lends money to the consumer (or the user) to be paid to the merchant. A credit card allows the consumer to revolve their balance at the cost of having interest charged. The parties involved in a credit card transaction include cardholder, card issuing bank, merchant, acquiring bank, independent sales organization, merchant account, credit card association, transaction network, and affinity partner (Afaha, 2019).

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 (know 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).

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.

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

British International Journal of Applied Economics, Finance and Accounting
B. J. Int. J. A. Econ. Fin. & Acc.
Volume: 6; Issue: 03
May-June, 2022
ISSN 2234-2418
Impact Factor: 4.97
Advance Scholars Publication
Published by International Institute of Advance Scholars Development
https://aspjournals.org/Journals/index.php/bijaefa

information such as weather updates, news and location based services.

Internet Banking: Anyanwaokoro (2017) asserts 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 a live 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.

2.1.3 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.

2.2 Theoretical Framework

2.2.1 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 systems 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

British International Journal of Applied Economics, Finance and Accounting
B. J. Int. J. A. Econ. Fin. & Acc.
Volume: 6; Issue: 03
May-June, 2022
ISSN 2234-2418
Impact Factor: 4.97
Advance Scholars Publication
Published by International Institute of Advance Scholars Development
https://aspjournals.org/Journals/index.php/bijaefa

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 systems in Nigeria which will lead to increased consumption and subsequently improved economic growth in the long run.

2.3 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 electronic payment system and economic growth in terms of real gross domestic product (GDP) growth.

Oyewole, El-Maude, Abba and Onuh (2013) examined e-payment systems and economic growth in Nigeria over the period 2005 to 2012. They used the Ordinary Least Square (OLS) technique and Two-stage Least Squares (2SLS) regression analysis technique. The result showed a significant positive relationship between e-payment system and economic growth in terms of real GDP per capita.

Tee and Ong (2016) examined the impact of cashless payment on economic growth in five European Union (EU) countries namely Austria, Belgium, France, Germany and Portugal for the period of 2000 to 2012. They used the Pedroni residual cointegration and Panel vector error correction model (VECM). The results showed that in the long run there is significant effect of adopting cashless payment on the economy of the five European countries. It was concluded that the impact of adopting cashless payment on economic growth can only be significantly observed in the long run. Therefore, inferring that policy that promotes cashless payment will not have an immediate effect on the economy.

Mamudu and Udo (2019) studied cashless policy and its impact on the Nigerian economy using quarterly time-series data over the period 2011(Q1-Q4) to 2017(Q1- Q4). The variables used are Automated Teller Machine Payment Value (ATMV), Web/Internet Tranfers Payment Value, Mobile Payment value (MPV), National Electronic Funds Transfer Value (NEFTV), Point Of Sale Value (POSV) and Cheques Cleared Value (CHEV). They used the Ordinary Least Square (OLS) regression technique, Johansen Co-integration test and Error correction model. The results showed the use of cashless policy instruments have a positive and significant impact on Gross Domestic Product in Nigeria. The Johansen cointegration test showed that a long run relationship exists between the variables while in the short run regression results also show the use of these non cash instruments have a significant and positive effect on Gross Domestic Product in Nigeria.

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 contributes 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.

Amin, Onyeukwu and Osuagwu (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

British International Journal of Applied Economics, Finance and Accounting
B. J. Int. J. A. Econ. Fin. & Acc.
Volume: 6; Issue: 03
May-June, 2022
ISSN 2234-2418
Impact Factor: 4.97
Advance Scholars Publication
Published by International Institute of Advance Scholars Development
https://aspjournals.org/Journals/index.php/bijaefa

analyzing the data from the respondents. The results revealed that there is a significant relationship between quality of service 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.

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.

Iluno, Farouk and Saheed (2018) studied impact of the electronic banking products and services on the customers' satisfaction. Frequency distribution table and multiple regression analysis were used as the analytical techniques. The result showed that electronic banking services (EBS), and electronic banking products (EBP) have significant positive impact on customers' satisfaction (CS) in Kaduna State, Nigeria. Based on these findings, it was therefore recommended that the Central Bank of Nigeria (CBN) should develop a policy framework that will enhance E-banking operation focusing on customers' satisfaction through customers' oriented policies. Additionally, information technology providers in conjunction with banks should develop more friendly, risk free, effortless and efficient service delivery technology that will enhance customer's satisfaction.

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.

Hasan, Tania and Heiko (2012) examined the relationship between retail payments and economic growth using data from across 27 different European markets over the period 1995 to 2009. The results reveal that migration from paper to electronic retail payments stimulates overall economic growth and has a positive effect on the real economy. They support the adoption of policies geared towards a swift migration to efficient and harmonized electronic payment instruments.

Zandi (2016) examined the impact of electronic payment on economic growth using macroeconomic data for 70 countries between 2011 and 2015. The study adopted regression analysis while the findings revealed that electronic payment have a positive impact on economic growth, through an increase in per capita consumption from the use of card for payments.

Muyiwa, Sunday and John-Dewole (2013) evaluated the impact of cashless economy in Nigeria. The study was carried out using accidental sampling method. A total of 500 students, traders and civil servants were sample. Questionnaire was used as the data collection instrument using descriptive statistical technique. The findings reveal that 33.3% believed that cashless policy will attract more foreign investors into the country and reduce cash related corruption, while 11.1% believe that it will increase employment and 22%, reduce cash related robbery, which all have an effect on consumption and consequently economic growth. The study concluded that the transition towards a cashless economy was a step in the right direction with the expectation that its impact will be felt in modernization of Nigerian payment systems,

British International Journal of Applied Economics, Finance and Accounting
B. J. Int. J. A. Econ. Fin. & Acc.
Volume: 6; Issue: 03
May-June, 2022
ISSN 2234-2418
Impact Factor: 4.97
Advance Scholars Publication
Published by International Institute of Advance Scholars Development
https://aspjournals.org/Journals/index.php/bijaefa

reduction in the cost of banking services as well as reduction in high security and safety risk.

Oyelami, Adebiyi and Adekunle (2020) investigated electronic payment adoption and consumers' spending growth with empirical evidence from Nigeria. The questionnaire was designed in line with Likert scale and validated. Fifty copies of the questionnaire were piloted. The copies retrieved were subjected to Cronbach alpha test of reliability. All the six variables were found to be reliable ranging between 0.725 and 0.828 Cronbach Alpha values, which are within the acceptable limit. The sample size for this study, as determined through Cochran formulae is 384. In like manner, 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 data retrieved were analysed using descriptive (frequency and percentage) and inferential statistics (Pearson correlation, hierarchical regression analysis and analysis of variance). The results revealed that there is a positive significant relationship between electronic payment systems determinants (convenience, security and safety, trust, social influence) and e-payment adoption in Nigeria.

Nedozi and Omoregie (2019) investigated an empirical evaluation of different electronic payment channels in Nigeria. The data were analyzed using percentages. From the study, it was found that ATM dominated the penetration of E-payment in terms of volume in Nigeria from 2011 to first quarter of 2019. In terms of value NEFT dominated in 2012 and 2013 while NIP dominated from 2014 to first quarter of 2019.

3.0 MATERIALS AND METHOD

3.1 The study adopted *ex –post facto* research design. **S**econdary data obtained from selected telecommunication firms in Nigeria and Central Bank of Nigeria Statistical Bulletins for the relevant years were used. The population of study comprised of all the quoted telecommunication companies listed on Nigeria Stock Market as at 2020. They are: MTN Nigeria, eTranzact, Tripple Gee & Company Plc, Computer Warehouse Group (CWG) Plc, Chams Plc, NCR Plc, Courteville Business Solutions Plc and Omatek Plc (Fact Book, 2020).

From the population, a sample size of five (5) telecommunication companies were selected using judgmental sampling technique based on the fact that only these companies have complete and required data in their financial statements for the period under investigation. The sampled companies are: MTN, Nigeria, eTranzact, Chams Plc, Courteville Business Solutions Plc and Omatek Plc. The model of the study was adapted from model of Brooks (2014) as follows:

GDP = f (ATM, POS, MAP) …… (1)

Where:

GDP = Gross Domestic Product
ATM = Automated Teller Machine
POS = Point of Sale
MAP = Mobile Applications

In a linear regression form, it will become:

$GDP = \beta o + \beta_1 ATM + \beta_2 POS + \beta_3 MAP + \mu$ …… (2)

Where

βo = Constant Term
β_1 = Coefficient of Automated Teller Machine
β_2 = Coefficient of Point of Sale
β_3 = Coefficient of Mobile Applications
μ = Error Term

Historical data covering a period of 10 years (2011 – 2020) were estimated using Auto Regressive

British International Journal of Applied Economics, Finance and Accounting
B. J. Int. J. A. Econ. Fin. & Acc.
Volume: 6; Issue: 03
May-June, 2022
ISSN 2234-2418
Impact Factor: 4.97
Advance Scholars Publication
Published by International Institute of Advance Scholars Development
https://aspjournals.org/Journals/index.php/bijaefa

Distributed Lag Model (ARDL). This was used to measure the effect of the independent variables on the dependent variable. On the other hand, descriptive statistics and unit root test were used as the preliminary tests. Descriptive statistics was used to measure the individual characteristics of the variables while unit root test was used to measure the stationarity properties of the variables.

4.0 PRESENTATION, ANALYSIS OF DATA AND DISCUSSION

4.1 Data Presentation

Data relating to Automated Teller Machine, Point of Sale, Mobile Applications and gross domestic products are presented below.

Table 1: Data for ATM, POS, MAP and GDP for 2011 to 2020.

YR	ATM (N' M)	POS (N' M)	MAP (N' M)	GDP (N' M)
2011	1,183,382,493,119	28,301,118,493	9,453,826,182,342	11411.07
2012	1,984,990,636,830	48,461,883,431	13,753,178,360,585	14610.88
2013	2,830,533,105,570	161,212,840,665	14,367,950,496,617	18564.59
2014	3,681,980,955,458	312,071,736,903	14,563,804,544,654	20657.32
2015	3,971,651,486,420	448,512,548,727	13,087,085,484,769	24296.33
2016	4,988,133,401,544	758,996,505,702	14,584,802,657,086	24794.34
2017	6,437,592,402,748	1,409,813,091,608	14,946,463,879,672	54612.26
2018	6,480,085,899,670	2,383,108,901,148	11,030,961,545,925	62980.4
2019	6,512,612,259,811	3,204,749,863,644	5,080,961,536,595	71713.94
2020	12,004,067,823,108	2,806,304,086,834	19,377,841,240,553	80092.56

Source: CBN Statistical Bulletins for 2011 to 2020

Table 2: Logs of ATM, POS, MAP and GDP

YR	LATM	LPOS	LMAP	LGDP
2011	16.86749	15.92545	12.49086	11.86461
2012	17.17133	16.32327	13.51232	13.77192
2013	17.07615	16.35091	12.50557	13.56639
2014	16.10849	16.64850	14.18601	12.69806
2015	16.89121	16.57954	15.79803	11.04203
2016	16.89542	16.67701	15.45412	11.41467
2017	17.55943	16.64205	14.93565	12.00075
2018	17.28589	16.50929	15.61929	12.09576
2019	17.40063	16.33763	15.18927	12.09253
2020	17.48327	16.41057	15.25106	12.17357

Source: E-views Output, 2021

British International Journal of Applied Economics, Finance and Accounting
B. J. Int. J. A. Econ. Fin. & Acc.
Volume: 6; Issue: 03
May-June, 2022
ISSN 2234-2418
Impact Factor: 4.97
Advance Scholars Publication
Published by International Institute of Advance Scholars Development
https://aspjournals.org/Journals/index.php/bijaefa

4.4 Test of Hypotheses

Hypothesis one

H_{O1}: ATM payment system does not have significant effect on gross domestic product in Nigeria.

Table 3: Hypothesis One

Dependent Variable: GDP
Method: ARDL
Date: 11/29/21 Time: 15:58
Sample (adjusted): 2012 2020
Included observations: 9 after adjustments
Maximum dependent lags: 1 (Automatic selection)
Model selection method: Akaike info criterion (AIC)
Dynamic regressors (1 lag, automatic): ATM MAP POS
Fixed regressors: C
Number of models evalulated: 8
Selected Model: ARDL(1, 1, 1, 1)

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
GDP(-1)	-2.229456	0.411744	-5.414669	0.1163
ATM	3.61E-08	8.40E-09	4.299150	0.0455
ATM(-1)	2.44E-08	6.66E-09	3.663889	0.1696
MAP	1.28E-08	2.53E-09	5.052350	0.0244
MAP(-1)	2.24E-09	6.70E-10	3.342461	0.1851
POS	3.60E-08	4.00E-09	8.994663	0.0105
POS(-1)	8.52E-08	1.87E-08	4.553031	0.1376
C	-118816.0	24097.28	-4.930679	0.1274

R-squared	0.999502	Mean dependent var	41369.18
Adjusted R-squared	0.996017	S.D. dependent var	25724.44
S.E. of regression	1623.474	Akaike info criterion	17.20308

British International Journal of Applied Economics, Finance and Accounting
B. J. Int. J. A. Econ. Fin. & Acc.
Volume: 6; Issue: 03
May-June, 2022
ISSN 2234-2418
Impact Factor: 4.97
Advance Scholars Publication
Published by International Institute of Advance Scholars Development
https://aspjournals.org/Journals/index.php/bijaefa

Sum squared resid	2635667.	Schwarz criterion	17.37839
		Hannan-Quinn	
Log likelihood	-69.41385	criter.	16.82476
F-statistic	286.7985	Durbin-Watson stat	3.101817
Prob(F-statistic)	0.045436		

*Note: p-values and any subsequent tests do not account for model selection.

Source: Researcher's Computation from Eviews 9.0, 2021.

Given the decision criteria to reject H_O if the t-statistics is >2.0 and the probability value is < 0.05, table 3 shows the t-statistics as 4.299150 while the probability is 0.0455<0.05. We reject the null hypothesis (H_O) and conclude that ATM payment system has significant effect on gross domestic product in Nigeria.

It was discovered that ATM payment system has significant effect on gross domestic product in Nigeria due to the fact that its t-statistics of 4.299150 was greater than 2.0 and its probability value of 0.0455 was less than 0.05. This discovery is in agreement with the findings of Afaha (2019) in his study, the relationship between electronic payment systems and economic growth using monthly data covering the period of 2012 to 2017. He also found that a significant positive relationship exists between electronic payment system and economic growth in terms of real gross domestic product (GDP) growth. Our result also supported the findings of Zandi (2016) on the impact of electronic payment on economic growth using macroeconomic data for 70 countries between 2011 and 2015. The findings revealed that electronic payment have a positive impact on economic growth, through an increase in per capita consumption from the use of card for payments.

This finding contrasts that of Iluno, Farouk and Saheed (2018) in their study on impact of the electronic banking products and services on the customers' satisfaction in which it was shown that electronic banking services (EBS), and electronic banking products (EBP) have non-significant impact on customers' satisfaction (CS) in Kaduna State, Nigeria.

Test of Hypothesis Two

H_{O2}: Point of Sale (POS) payment system has no significant effect on gross domestic product in Nigeria.

Table 4: Hypothesis Two

Dependent Variable: GDP
Method: ARDL
Date: 11/29/21 Time: 15:58
Sample (adjusted): 2012 2020
Included observations: 9 after adjustments
Maximum dependent lags: 1 (Automatic selection)
Model selection method: Akaike info criterion (AIC)
Dynamic regressors (1 lag, automatic): ATM MAP POS
Fixed regressors: C
Number of models evalulated: 8

British International Journal of Applied Economics, Finance and Accounting
B. J. Int. J. A. Econ. Fin. & Acc.
Volume: 6; Issue: 03
May-June, 2022
ISSN 2234-2418
Impact Factor: 4.97
Advance Scholars Publication
Published by International Institute of Advance Scholars Development
https://aspjournals.org/Journals/index.php/bijaefa

Selected Model: ARDL(1, 1, 1, 1)

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
GDP(-1)	-2.229456	0.411744	-5.414669	0.1163
ATM	3.61E-08	8.40E-09	4.299150	0.0455
ATM(-1)	2.44E-08	6.66E-09	3.663889	0.1696
MAP	1.28E-08	2.53E-09	5.052350	0.0244
MAP(-1)	2.24E-09	6.70E-10	3.342461	0.1851
POS	3.60E-08	4.00E-09	8.994663	0.0105
POS(-1)	8.52E-08	1.87E-08	4.553031	0.1376
C	-118816.0	24097.28	-4.930679	0.1274

R-squared	0.999502	Mean dependent var	41369.18
Adjusted R-squared	0.996017	S.D. dependent var	25724.44
S.E. of regression	1623.474	Akaike info criterion	17.20308
Sum squared resid	2635667.	Schwarz criterion	17.37839
Log likelihood	-69.41385	Hannan-Quinn criter.	16.82476
F-statistic	286.7985	Durbin-Watson stat	3.101817
Prob(F-statistic)	0.045436		

*Note: p-values and any subsequent tests do not account for model selection

Source: Author's Computation from Eviews 9.0, 2021

Point of Sale (POS) payment system has significant effect on gross domestic product in Nigeria because its t-statistics, of 8.994663 was greater than 2.0 and its probability value of 0.0105 was less than 0.05. The finding of Oyewole, El-Maude, Abba and Onuh (2013) is in consonance with this finding. The authors examined e-payment systems and economic growth in Nigeria over the period 2005 to 2012 and found a significant positive relationship between e-payment system and economic growth in terms of real GDP per capita. The findings of Yusuf (2016) disagreed with the discovery. The author studied cash-less policy and economic growth in Nigeria over the period 2008 to 2015 and discovered that POS, web and mobile payments does not have a significant impact on economic growth in Nigeria.

Test of Hypothesis Three

H_{O3}: Mobile applications payment system does not significantly affect gross domestic product in Nigeria.

British International Journal of Applied Economics, Finance and Accounting
B. J. Int. J. A. Econ. Fin. & Acc.
Volume: 6; Issue: 03
May-June, 2022
ISSN 2234-2418
Impact Factor: 4.97
Advance Scholars Publication
Published by International Institute of Advance Scholars Development
https://aspjournals.org/Journals/index.php/bijaefa

Table 5: Hypothesis Three
Dependent Variable: GDP
Method: ARDL
Date: 11/29/21 Time: 15:58
Sample (adjusted): 2012 2020
Included observations: 9 after adjustments
Maximum dependent lags: 1 (Automatic selection)
Model selection method: Akaike info criterion (AIC)
Dynamic regressors (1 lag, automatic): ATM MAP POS
Fixed regressors: C
Number of models evalulated: 8
Selected Model: ARDL(1, 1, 1, 1)

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
GDP(-1)	-2.229456	0.411744	-5.414669	0.1163
ATM	3.61E-08	8.40E-09	4.299150	0.0455
ATM(-1)	2.44E-08	6.66E-09	3.663889	0.1696
MAP	1.28E-08	2.53E-09	5.052350	0.0244
MAP(-1)	2.24E-09	6.70E-10	3.342461	0.1851
POS	3.60E-08	4.00E-09	8.994663	0.0105
POS(-1)	8.52E-08	1.87E-08	4.553031	0.1376
C	-118816.0	24097.28	-4.930679	0.1274

R-squared	0.999502	Mean dependent var	41369.18
Adjusted R-squared	0.996017	S.D. dependent var	25724.44
S.E. of regression	1623.474	Akaike info criterion	17.20308
Sum squared resid	2635667.	Schwarz criterion	17.37839
Log likelihood	-69.41385	Hannan-Quinn criter.	16.82476
F-statistic	286.7985	Durbin-Watson stat	3.101817
Prob(F-statistic)	0.045436		

*Note: p-values and any subsequent tests do not account for model selection.
Source: Author's Computation from Eviews 9.0, 2021

British International Journal of Applied Economics, Finance and Accounting
B. J. Int. J. A. Econ. Fin. & Acc.
Volume: 6; Issue: 03
May-June, 2022
ISSN 2234-2418
Impact Factor: 4.97
Advance Scholars Publication
Published by International Institute of Advance Scholars Development
https://aspjournals.org/Journals/index.php/bijaefa

The study equally discovered that mobile applications payment system significantly affects gross domestic product in Nigeria because its t-statistics, 5.052350 was greater than 2.0 and its probability value of 0.0244 was less than 0.05. Ravikumar (2019) buttressed this finding in his study on the impact of digital payments on economic growth in India from the period of 2011 to 2019. 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 that disagreed with this discovery. The author studied E-payment technology effect on bank performance in emerging economies and found out 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.

5.0 CONCLUSION AND RECOMMENDATIONS

5.1 Conclusion

The increasing use of ICT 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. An empirical analysis was carried out to find out the roles ICT plays in enhancing the mode of operations of some selected banks in Nigeria. It therefore depicted that ATM payment system, Point of Sale (POS) payment system and mobile applications payment system significantly affect gross domestic product in Nigeria.

5.3 Recommendations

The following recommendations are made for this study:

1. It is recommended that operators of Automated Teller Machine in Nigeria should constantly upgrade both the hardware and software especially whenever a new feature for enhancing security becomes available. This will further improve ATM transactions with consequent improvement in profitability and growth of the economy.
2. Merchants of POS businesses should increase internet bandwidths and always make available a dedicated data service network as this will facilitate and improve POS transactions.
3. More effort should be put into educating the masses on the usefulness of mobile applications. Furthermore, application developers should put more effort in ensuring quality and useful content in the applications as this will add to transactions security thereby promoting economic growth.

REFERENCES

Aduda, J. & Kingoo, F. (2012). A contingency model of leadership effectiveness, *Advances in experimental social psychology,* 1 (12), 149-190.

Afaha, J. S. (2019). Electronic payment systems (e-payments) and Nigeria economic growth, *European Business & Management*, 5 (6), 77-87.

Akinuli, A. (2018). Effect of accounting information system on financial performance: A study of selected real estate companies in Jordan, *India Technical Research Organization*, 5(1), 41-50.

Amin, E., Onyeukwu, S., & Osuagwu, J. (2018). Effects of financing on performance of small and medium enterprises (SMEs), *International Journal of Management*, 2(10), 1-9.

British International Journal of Applied Economics, Finance and Accounting
B. J. Int. J. A. Econ. Fin. & Acc.
Volume: 6; Issue: 03
May-June, 2022
ISSN 2234-2418
Impact Factor: 4.97
Advance Scholars Publication
Published by International Institute of Advance Scholars Development
https://aspjournals.org/Journals/index.php/bijaefa

Anyanwaokoro, P. (2017). Resource-Based Theory: Creating and Sustaining Competitive Advantage. Oxford: Oxford University Press.

Azeez, V. (2011). IS integration & business performance: The mediation effect of organizational absorptive capacity in SMEs, *Journal of Information Technology*, 23 (9), 297-312.

Brooks, C. (2014). Introductory econometrics for finance. 3rd Edition, Cambridge University Press, Cambridge

Clive, O. (2017). Investigating the impact of accounting information system on the profitability of Jordanian banks, *Research Journal of Finance and Accounting*, 9(18), 110-118.

Edet, A. (2019). Information technology and accounting information system in the Nigerian banking industry, *Asian Economic and Financial Review*, 4(5), 655-670.

Hassan, I. Tania, A. & Heiko, C.(2012) *Do internet activities add value? The Italian bank experience*, working paper, Berkley Research Centre, New York University.

Hodagho, J. (2016). The three fundamental roles of information systems in business. Retrieved from Hearst Newspapers, LLC: Retrieved April 9, 2019, from https://smallbusiness.chron.com/three-fundamental-roles-information-systems-business-23681.html.

Iluno, B., Frank, S. & Saheed, W. (2018). Impact of accounting information system on the financial performance of selected FMCG companies, *Asian Journal of Applied Science and Technology*, 2(3), 8-17.

Isibar, T. (2018). The role of accounting information systems in accounting firm, *International Journal of Advanced Computer Research*, 1 (9), 21-31.

Jun, N. & Cai, N. (2011). Financial performance of firms: Evidence from Pakistan cement industry, *Journal of Teaching and Education*, 5(1), 81–94.

Mamudu, Z. & Udo, G. G. (2019). Cashless policy and its impact on the Nigerian economy,*International Journal of Education and Research*, 7 (3), 111-132.

Muyiwa, O., Sunday, T. & John-Dewole A.T. (2013). Impact of cashless economy in Nigeria, *Greener Journal of Internet, Information and Communication Systems*, 12 (8), 34 – 44.

Nedozi, F. O. &Omoregie, C. I. (2019). An empirical evaluation of different electronic payment channels in Nigeria, *Journal of Finance and Accounting*, 7 (5), 146 – 152.

Oginni, S. O., El-Maude, J. G., Mohammed, A. & Michael, E. O. (2013). Electronic payment system and economic growth: A review of transition to cashless economy in Nigeria, *International Journal of Scientific Engineering and Technology*, 2 (9), 13 – 18

Oyelami, L. O., Adebiyi, S. O. & Adekunle, B. S. (2020). Electronic payment adoption and consumers' spending growth: empirical evidence from Nigeria, *Future Business Journal*, 6 (14), 12 – 16.

British International Journal of Applied Economics, Finance and Accounting
B. J. Int. J. A. Econ. Fin. & Acc.
Volume: 6; Issue: 03
May-June, 2022
ISSN 2234-2418
Impact Factor: 4.97
Advance Scholars Publication
Published by International Institute of Advance Scholars Development
https://aspjournals.org/Journals/index.php/bijaefa

Oyewole, A., El-Maude, E. A., Abba, I. & Onuh, J. (2013). The Impact of Internet Banking on Performance and Risk Profile: Evidence from Australian Credit Unions, *The journal of international banking regulation, 6(20), 23 - 45*

Ravikumar T, S. B. (2019). Impact of Digital Payments on Economic Growth: Evidence from India,*International Journal of Innovative Technology and Exploring Engineering*, 8 (12), 70 – 75.

Saidi, W. (2018). Theory of the Firm: Managerial Behavior, Agency Costs and Ownership Structure, *Journal of Financial Economics,* 3 (9), 305-360.

Tee, H. & Hway-Boon, O. (2016). Cashless payment and economic growth**.**

Udeghi, M. & Hanzace, K. (2018). Accounting information and managerial work, *Accounting, Organizations and Society,* 35(3), 301-315.

Woherem, A. I. (2019). Effect of accounting information system on financial performance of firms: A Review of Literature, *Journal of Business and Management*, 21 (5), 39-49.

Yusuf, I. (2016). Cash-less policy and economic growth: evidence from Nigeria. *International Journal Electronic Finance*, 9 (1), 63 – 71.

Zandi, M. (2016). The Impact of Electronic Payments on Economic Growth, *The journal of international banking regulation, 6(20), 23 – 45*

APPENDIX

Data for ATM, POS, MAP and GDP

YR	ATM (N' M)	POS (N' M)	MAP (N' M)	GDP (N' M)
2011	1,183,382,493,119	28,301,118,493	9,453,826,182,342	11411.07
2012	1,984,990,636,830	48,461,883,431	13,753,178,360,585	14610.88
2013	2,830,533,105,570	161,212,840,665	14,367,950,496,617	18564.59
2014	3,681,980,955,458	312,071,736,903	14,563,804,544,654	20657.32
2015	3,971,651,486,420	448,512,548,727	13,087,085,484,769	24296.33
2016	4,988,133,401,544	758,996,505,702	14,584,802,657,086	24794.34
2017	6,437,592,402,748	1,409,813,091,608	14,946,463,879,672	54612.26
2018	6,480,085,899,670	2,383,108,901,148	11,030,961,545,925	62980.4
2019	6,512,612,259,811	3,204,749,863,644	5,080,961,536,595	71713.94
2020	12,004,067,823,108	2,806,304,086,834	19,377,841,240,553	80092.56

Source: CBN Statistical Bulletins for 2011 to 2020