

## Understanding the Technologies for Cashless Economy on Nigeria's GDP Growth: Post COVID – 19

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### ARTICLE HISTORY

**Paper Nomenclature:** Empirical Research Paper  
**Paper Code:** GJEISV12N2AJ2020ERP1  
**Submission Online at www.gjeis.com:** 20-April-2020  
**Manuscript Acknowledged:** 13-April-2020  
**Originality Check:** 14-April-2020  
**Originality Test (Plag) Ratio (Urkund):** 12%  
**Author Revert with Rectified Copy:** 22-May-2020  
**Peer Reviewers Comment (Open):** 24-May-2020  
**Single Blind Reviewers Remarks:** 27-May 2020  
**Doble Blind Reviewers Remarks:** 30-May 2020  
**Triple Blind Reviewers Remarks:** 31-May 2020  
**Author Update (w.r.t. correction, suggestion & observation):** 09-June 2020  
**Camera-Ready-Copy:** 13-June 2020  
**Editorial Board Excerpt & Citation:** 28-June 2020  
**Published Online First:** 30-June 2020

### ABSTRACT

**Purpose:** Nigerians faced some challenges regarding the conventional commercial practices of incompatible and nonconvertible currencies that restricted payments while trying to unlock the commercial potentials of the expanding market place during the lockdown of the COVID-19 pandemic. This raises great fear about the impending loss to the GDP as critics have maintained that electronic replicas of the conventional payment instruments received low patronage because they are not well suited for the average citizen as the speed required in e-commerce purchase processing are too slow for micropayments; and the high transaction costs involved in processing them also add greatly to the overhead. This has motivated this study to investigate the frequency of electronic payments made during the COVID 19 lockdown in Nigeria and its impact on the GDP.

**Design/Methodology/Approach:** To achieve this, we first synthesized papers from World Bank reports, Central Bank of Nigeria (CBN), and the European Central Bank, (ECB). The study then adopted a descriptive survey research design with sample size of 224. Purposive random sampling was used to select 12 electronic payment channels. Data was collected using a structured questionnaire as well as sources from the CBN bulletins and statistics. The Data collected through the questionnaire was analysed using mean whereas data collected through CBN bulletins and statistics was analysed using Gretl Econometric software and SPSS version 2.0. In testing the hypotheses T-Test for paired samples was employed. Estimation of GDP growth was done using the OLS multiple regression model. However, throughout the literature, we try to portray a constructive relationship between the use of the 12 electronic payment channels studied and their relationship to GDP growth.

**Findings:** The findings reveal that electronic payment system significantly positively contributed to economic growth in terms of real GDP per capita during the COVID – 19 lockdown more than other years. The findings also show that NIP contributed highest to GDP growth while M-CASH channel contributed the least.

**Originality/Value:** The paper contributes in investing the frequency of electronic payments in lockdown of Nigerian people and their impact on country's GDP. The results of the study are based on the quantitative analysis of primary data and robust statistical analysis is used to justify the relevance and framed objectives of the study

**Paper Type:** Empirical Research Paper

**KEYWORDS** Cashless Economy | Digital Technologies | Electronic Payment System | Gross Domestic Product

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- Present Volume & Issue (Cycle): Volume 12 | Issue 2 | Apr-Jun 2020
- International Standard Serial Number:  
Online ISSN: 0975-1432 | Print ISSN: 0975-153X
- DOI (Crossref, USA) <https://doi.org/10.18311/gjeis/2020>
- Bibliographic database: OCLC Number (WorldCat): 988732114
- Impact Factor: 2.69 (GIF, Citeseer, SIF), CiteFactor: 3.57 (2019-20)
- Editor-in-Chief: Dr. Subodh Kesharwani
- Frequency: Quarterly
- Published Since: 2009
- Research database: EBSCO <https://www.ebsco.com>
- Review Pedagogy: Single Blind Review/ Double Blind Review/ Triple Blind Review/ Open Review
- Copyright: ©2020 GJEIS and it's heirs
- Publisher: Scholastic Seed Inc. and KARAM Society
- Place: New Delhi, India.
- Repository (figshare): 704442/13





## Introduction:

There are four principal reasons why citizen oriented electronic replicas of conventional payment instrument's time has come. First, the cost of processing many types of financial and retail transactions has been rising so rapidly that it becomes necessary to develop new ways to handle those transactions, Kruger and Seiz (2014). Second, competition in banking and retailing has become so intense that only those organizations that can provide superior customer services, which in turn requires sophisticated transaction management, will continue to grow and prosper. Third, consumers themselves are on high demand of more services and greater convenience in their banking and other transaction activities, Kalakota, Winston (2005). Finally, the technology is at last in place to process electronic payments at faster speed more easily and at less cost than we can process paper transactions, Gangopadhyay (2009).

As our economy shifts from paper transactions to a paper-less transaction system, these electronic payment technologies — facilities that primarily contain electronic equipment used for data processing, data storage, and communications delivery multichannel that provides for electronic exchange of monetary substances without physical contact of the transacting parties, Humphrey, Willeson, Bergendahl & Lindblom 2006; ECB (2001); Oginni (2013) — have become common and essential to the functioning of financial services. Electronic payment systems are proliferating in nearly every sector of the economy: banking, retail, health care, online market and even government – in fact anywhere money needs to change hands. The Nigerian banking industry is in the midst of this major growth period stimulated by increasing demand from organizations to provide a higher quality of services to customers through the use of modern technologies for payments, Kalakota, Winston (2005).

This demand is driven by several factors, including but not limited to: • the increased use of electronic transactions in financial services, such as on-line banking and electronic trading, • the growth in global commerce and services, • the need for the convergence of money, commerce, computing, and networks, • the need to lay the foundation for a global electronic market place where goods and services are delivered online and • the need to eradicate shadow economy among others Cretu (2009); Kearney and Schneider (2011); Denecker, Istace, and Niederkorn (2013); Dybka et al. (2016).

During the past five years, this demand has led to significant growth in the number of automated teller machines (ATMs), Token, Electronic Fund Transfers, smart cards, etc along with an estimated doubling in their usage by customers that supports them. This growth in ATM and smart card use has a number of important implications, including: • reducing the cost of banking for business and

government, • lowering service charges for customers • increasing reliability and grid support for the entire banking and e-commerce utility system, • increasing capital costs for expansion of ATM centre capacity and construction of new centres. • reducing dependence on energy, save time, promote financial inclusion, and • keeping and monitoring record of all transactions, Gangopadhyay (2009).

It is widely believed that use of this payment method also has some indirect important implications, among which includes discouraging robbery, Arney et al (2014), corruption, Akhalumeh and Ohiokha (2012) fostering transparency, accountability and reduction of cash related frauds, etc, Mieseigha & Ogbodo (2013). As for vendors, it will increase their revenue and improve their operational efficiency.

However, one essential challenge of this payment method is risk management. Operation of electronic payment system incurs three major risks: fraud or mistake, privacy issues, and credit risk, Kim et al (1995). In Nigeria this risks has led only an infinitesimal fraction of business transactions to be currently handled on the I-way, Echekoba et al (2011). It has also led applications such as internet banking, on-line stores and electronic shopping malls to though are burgeoning yet access is still cumbersome and basic issues need to be resolved, Adewale (2013); Nkwanko (2013). To tackle these issues, preventing mistakes for example might require improvements in the legal framework. Dealing with privacy and fraud issues might require improvement in the security framework, while curtailing credit risks might require devising procedures to constrict or moderate credit and reduce float in the market.

For these reasons and to its credit, the Central bank of Nigeria (CBN) is actively investigating and developing solutions, such as • provision of more ATMs across remote areas for greater outreach of customers, • making smart cards compulsory to all banking customers, • placing more charges on conventional payment methods as a way to encourage electronic payments; and enforcing regulation on consumer protection and the cashless policy etc, Yusuf (2016). The cashless policy though is still in its early stages has come to stay. The question is no longer whether it will be observed but rather how fast and how widely it will spread given one of its vital roles as a gatekeeper for full civic participation and financial inclusion, Akhalumeh & Ohiokha (2012); Osazevhabru & Yomere (2015); Yeboah, (2017).

According to Yeboah, the move to implement cashless policy In Nigeria by introducing modern payment technologies for providing services to customers – has found its way into the mainstream of banking and consumer oriented electronic commerce. This has facilitated innovation where goods and services are paid for without the use of physical cash, Osazevhabru & Yomere, (2015). This method eliminates the usage of money as a medium of exchange of goods and services by allowing electronic transfer of payment

via smart cards, electronic fund transfers (EFT), mobile fund transfers, Automated Teller Machines (ATM's), e-banking, etc, Echekeba et al, (2011).

Interestingly, approximately N80 billion of electronic transactions are currently being recorded daily, CBN (2013). Meaning that present transition to Nigerian cashless policy by CBN has been reinforced by perceived prosperity of electronic payment system. The Central Bank of Nigeria, has also posited that an effective and modern use of these electronic payment systems is positively correlated with economic development and is a key enabler for economic growth. Yet, the wide range of electronic payment applications envisioned for consumer market place has been truncated by the outbreak of a pandemic known as Corona Virus Disease otherwise nicknamed COVID – 19. This has caused Nigeria to temporarily lockdown the economy including restricting access to major banks leaving online consumers and sellers to face a problem: how will buyers pay for goods and services when there is restriction of movements for the delivery of such goods? And fear of accepting online payments from customers for goods sold for some security reasons, etc

It is a well known fact that an important aspect of electronic payment is prompt and secure payment, clearing and settlement of credit or debit claims, etc, Richard Cheng (1994). So, using electronic payment system, consumers should be able to execute a transaction online by mere clicking on the 'BUY' button to authorise payment, and the online store's bank account would automatically receive it from the customers preferred payment mode (credit, debit or cheque); but security of online payment remains a major barrier to this feature, Peter (1994). Customer could pay by credit card, by transmitting the necessary data via modem, but intercepting messages on the internet is easy for a smart hacker, Gennady et al (1993). So sending a credit card number in an unscrambled message is inviting trouble. It would be relatively safe to send an encrypted credit card number, but that would require either adoption of encoding (or encryption) standards, Bruce (1996) or ad hoc arrangements between buyers and sellers.

Since these capabilities have not yet been worked out in Nigeria even in cases where product selections and delivery are quite sophisticated, certain aspect of business transactions – negotiations, order processing, payment and consumer services – were conducted through conventional means during the lockdown, losing much of the advantages of the electronic payment system. In many ways these has inspired this study as the ways in which common understanding of how customers can conventionally unlock the commercial potentials of the expanding market place during the lockdown occasioned by COVID-19 pandemic and the associated economic loss might always reflect reality leaving a big gap in our understanding of electronic payment system as a key enabler of economic growth.

Our contribution in developing this piece shall however, wherever possible be based on prior research because in many cases, published research on estimating the extent to which customers make electronic payments for example does not exist for Nigeria as though such analysis at a multivariate level has not been done at country level. The focus of literature has always been on either estimating cashless payments or its microeconomic effects, Amire & Omoare (2015), or instruments and regulations that can promote cashless payments and financial inclusion, Mukhopadhyay, (2016). What is missing from this body of literature is evidence about whether there are available empirical studies on the relationship between electronic payment system usage and GDP growth during the COVID – 19 pandemic lockdown in Nigeria.

Our findings will therefore be valuable towards developing a roadmap for promoting more policies on cashless payments. To the best of our knowledge, the findings of this study will add greatly to the existing body of literature as the statistics derived from this study can always measure the status anytime it is called up. However, further investigation will be necessary to determine if the findings are applicable in other countries.

## Review of Literature:

Research findings on the potential values of electronic payment systems are mixed, but a few studies among economics learners and policy makers suggest some benefits worth exploring, as it can lead to GDP growth among other benefits, Hasan et al (2012); Moody (2013); Zandi et al (2013); Madzharova (2014). For example, a study of 56 countries over 2008 - 2012 highlighted a multiplier effect of an electronic payment channel - the smart card - on GDP growth where over \$983 billion were added to a nations cumulative real GDP as a result of increased card usage amounting to 0.3% of their GDP per year, Zandi et al (2013). Also in analysing retail payments data from all 27 EU member states over the period 1995-2009, Hasan et al (2012) discovered that a shift to an effective electronic retail payment would stimulate the overall economic growth, consumption and trade. The study estimates that if the card penetration ratio increases by say 1.2% in the EU, then GDP growth would increase by 0.07% or about 6million Euro. Further study on the impact of card usage on gross domestic product (GDP) of 51 countries also revealed that electronic smart card usage add \$1.1 trillion in real dollar to private consumption and GDP from 2003 to 2008, Moody (2013). The study conducted by Newstead (2012) to examine a possible linkage between cashless payment and the pace of economic growth reveals that the volume of cashless payments doubles in growth more in developing economies. The World Payments Reports (2012) also revealed that people and businesses find it more convenient to use non-cash payments (electronic payment) to



order for goods and services; and this pumps money into the system faster and contributes to GDP.

The bulk of the question at this juncture is how the non-cash payment can fuel Nigeria's GDP? The literature reports two prominent direct benefits Nigeria stands to gain if they enforce non-cash payments of using electronic payment system like smart cards, token, electronic fund transfer, etc; 1) it will reduce the cost of storing and processing paper currency, Kruger and Seiz (2014); and 2) it will increase the rate at which tax is collected, Bolt et al (2008); Gangopadhyay (2009); Madzharova 2014).

The Central Bank of Nigeria (provisional estimates), revealed that the amount of currency in circulation (as of April 2011) stands at Naira 974 trillion out of which only 5% of the currency is with the bank, CBN (2013). What this implies is that almost the entire volume of currency is transacted by customers on a daily basis – meaning also that there is a huge cost in printing and maintaining of paper currency as is observed from 2009-2010, where the same Central bank of Nigeria, (CBN) is reported to have incurred an annual cost of Naira 2.8 billion to only print the currency notes. This cost is outside of the cost of storing, transportation, security, detection of counterfeit currencies etc. For the printing cost this alone constitutes 0.4% of the currency in circulation and if we were to add the cost of storage and maintaining these currencies through ATM alone, the cost of printing and distributing cash will constitute about 0.2% of Nigeria's GDP, Oyewole et al (2013). In the face of this, a moderate growth of electronic transactions by 5% a year will save more than Naira 1.4 billion annually for Nigeria. In fact, Kruger & Seiz (2014) in his word specifically maintained that for Nigeria, on a discounted basis over time, shifting from 90% paper based instrument and cash to 90% electronic and card instrument could save about Naira 138,000 per person.

On taxation, Nigeria has a low tax burden caused due to poor tax compliance as well as complicated tax structure which has led to its shadow economy, Agbi (2014a); Schneider (2012a). For example, the direct tax rate in Nigeria is 30.9% as opposed to a global average of 35.6%, meaning that only 1% of the total population of Nigeria pays income tax through direct payment method. The solution left is to increase indirect tax collection through non-cash payments that will encourage and incentivize the 'buyer' to pay through smart cards or other electronic instruments leaving a digital footprint with higher financial transparency and GDP growth in Nigeria, Bhattacharya & Singh (2015). However, researchers have also revealed some indirect benefits of electronic payments system for Nigeria. For example, it can help fight against corruption/money laundering, reduce the risk of carrying cash, increase employment, reduce cash related robbery, and attract foreign investors to the country, Omotunde et al (2012); Akhalumeh and Ohiokha (2013).

Not wanting to miss these benefits, digital electronic payment system is perhaps best suited in Nigeria to solve the problems of connecting more users to the bank and other online transactions; but the questions are; how well can Nigerians make electronic payment especially during emergency situations like the COVID – 19 lockdown where there is restriction of movements? And to what extent will the use of electronic payment system impact Nigeria's economy?

## State of the Art

### Overview of Electronic Payment Systems in Nigeria and their Growth Trends

Research into electronic payment system for consumers' in Nigeria dates back to 2007 with the launching of the Payments System Vision 2020 (PSV2020) by the Central bank of Nigeria, CBN (2013); and the first applications – NIBSS Instant Payments (NIP) appearing soon after in 2011. NIP enables real-time inter-bank account-to-account electronic fund transfers (EFT),

In the early 2011, this emerging electronic payment technology was labelled Electronic Fund Transfer (EFT). EFT is defined as any transfer of funds initiated through an electronic terminal, telephonic instruments or computer or magnetic tape so as to order, instruct, or authorise a financial institution to debit or credit an account, European Central bank (2001), CBN (2013). This facility utilises computer and telecommunication components both to supply and to transfer money or financial assets which is information-based and intangible, Snellman, Vesala and Humphrey (2001). EFT stands in marked contrast to conventional money and payment modes that rely on physical delivery of cash or checks (or other paper orders to pay) by truck, train or airplane, Ayo (2010); Oginni (2013).

According to Wind Y (1978), works on EFT is segmented into three broad categories namely

#### Banking and financial payments

- Large – scale or wholesale payments (e.g., bank-to-bank-transfer)
- Small-scale or retail payments (e.g., automatic teller machines and cash dispensers)
- Home banking (e.g., bill payment)

#### Retailing payments

- Credit card (e.g., VISA or MasterCard)
- Private label credit / debit cards (e.g., J. C Penny Card)
- Charge cards (e.g., American Express)

#### On-line electronic commerce payments

- Token-based payment systems, Electronic cash (e.g., DigiCash) Electronic cheques (e.g., NetCheque), Smart cards or debit cards (e.g., Mondex Electronic Currency Cards)

- Credit card – based payment systems, Encrypted credit cards (e.g., World Wide Web form – based encryption), Third party authorization numbers (e.g., First Virtual).

In Nigerian banking system, none of the above banking or retailing payment methods is completely in their present form for the consumer-oriented e-commerce environment. Their deficiency is their assumption that the parties will at some time or the other be in each other's physical presence as a result of issues surrounding network, power failure, etc or that there will be a sufficient delay in the payment process for frauds, overdrafts and other undesirables to be identified and corrected, Adewale (2013); Nkwanko (2013). These assumptions may not hold well for electronic payment in Nigeria leading to several researches into the implementation, prospects, challenges and policy implications of electronic payment systems EPS in Nigeria Asaolu, Ayoola & Akinkoye (2011); Echekoba & Ezu (2011); Adeoti & Osotimehin (2012); Odior et al (2012); Omotunde et al (2012); Nweke (2012); Siyanbola (2013); Okeye (2013).

For example study conducted on user acceptability and problems of electronic retail payment systems in Nigeria revealed that lack of power supply, shortage of critical technological infrastructures, lack of socio-cultural support and absence of regulatory framework are identified hindrances to the seamless and effective operation of electronic payment system. This has led to a very high usage of cash in spite of CBN's effort in driving the shift from a cash-based economy to one where electronic payments are at the centre of commercial activities, Echekoba et al (2011).

While some authors maintain that electronic payment system may pose security and management of cost savings issues Odior et al (2012), others based their arguments on the fact that electronic payment system will lead to significant decrease in deposit mobilization and credit extension by Nigerian deposit money banks, Nwankwo (2013). Research have also revealed that electronic payment system will retard in success unless these identified enabling infrastructure, as power, security, human capital, the minimum technical/equipment infrastructure required and other structural enablement to successfully drive its implementation are sufficiently addressed, Adewale (2013). To this end, the Central bank of Nigeria (CBN) has made significant improvements on Infrastructure enhancements to address the challenges.

Among these game-changing Infrastructure enhancements are;

**EMV Cards** - The Nigeria cards infrastructure successfully migrated to EMV Cards (Chip and PIN) to significantly improve the security of plastic cards

**Nigeria Central Switch** - NCS has become operational enabling interconnectivity and interoperability among

deposit-taking institutions and licensed payment service providers. The NCS also facilitates interscheme card and mobile payments.

**Payments Terminal Service Aggregation** – this model has been put in place to facilitate seamless and interoperable card payments, clear regulatory visibility for the retail payment infrastructure, and reliable industry retail payment system statistics for analysis and planning purposes.

**Cheque Truncation** - Cheque truncation has been introduced to dematerialise the physical cheque and hence processing purely on the basis of secure electronic images

**Cheque amount cap** - A cheque cap of N10 million was introduced to encourage higher value payments to be made electronically.

**Mandate Processing for Direct Debits** - A centralised Direct Debit Mandate Processing infrastructure has been created to streamline the administration of the mandate process, and banks have been required to improve the validation of payment requests against the lodged mandates.

**Credit Bureaux** - Three separate but interlinked credit bureaux have been launched, providing the first steps in creating a database of credit history which is essential as the financial community offer new banking products

**ATM and POS Deployment** – Under direction from CBN, banks and other financial service providers have been required and encouraged to increase the deployment of ATM and POS devices. Agency banking has been a major contributor to financial inclusion in the country. A form of branchless banking that is cost-effective and easy in terms of providing financial services mostly with the use of POS terminals and now expanded to mobile transfers and more.

**USSD banking** - The Unstructured Supplementary Service Data (USSD) pioneered by eTranzact and popularized by the Guarantee Trust Bank (GTB) is one of many payment innovations that have transformed the way many Nigerians transact. In 2018, people using interbank instant payments on USSD platforms grew by 35% to N261.7m. The USSD technology is perfect for a country like Nigeria seeing how it offers a simple browsing experience through a menu system on any mobile device. It is technology for anyone and everyone.

**Instant Transfers** - A platform that allows for immediate transfer of value or funds to the beneficiary. In 2019, bank's instant transfers' value was at N442tn with over 90million transactions nationwide. The rise in preference for instant transfers has resulted in a steady decline in the use of bank cheques, and cash withdrawals.



**Utility Payment Platforms:** The digitization of utility payments has been a breakthrough for the tech space and many people have come to enjoy the benefits of paying their utility bills in the touch of a few buttons.

So far so good, the above mentioned infrastructure enhancement may have nothing to do with the operational management and usage pattern of customers towards the transition to cashless economy and improvement of Nigeria's GDP if the Central Bank of Nigeria did not address some fundamental issues before these consumer oriented electronic payment enhancements can become widespread in Nigeria to enable financial inclusion. First, the Central Bank of Nigeria, CBN must establish standard business processes for buying and selling products and services in electronic market. Second, develop widespread and easy-to-use implementations of mercantile protocols for order taking, online payments, and service delivery similar to those found in retail/credit card based transactions. Third, develop transport and privacy mechanisms that will allow parties that have no reason to thrust one another to carry on secure commercial exchanges. Forth implement initiatives to reduce the cash intensity in the economy by placing limit on cash deposits, limit on cheque encashment, restriction on cash lodgement, and conducting regular public enlightenment campaign, etc. When these happens there will be potential usage of the electronic payment systems of more than 68 percent relative to current trends, representing low-cost of producing paper money and increased GDP.

**Objectives:**

The general objective of this study was to investigate the extent of the volume and value of electronic payment transactions made by consumers and its impact on Nigeria's GDP during the COVID – 19 lockdown in Nigeria.

Specifically, the study sought to:

1. Determine the mean score of respondent's ratings on the extent consumers utilize electronic payment channels for payments in Nigeria during the COVID – 19 lockdown.
2. Determine the mean score of respondent's ratings on the challenges faced in the use of electronic payment systems for payments in Nigeria during the COVID – 19 lockdown.
3. Determine the value of electronic payments made by customers in relation to GDP growth during the COVID – 19 lockdown in Nigeria.

**Theoretical Framework and Hypotheses Development:**

The hypothesis is developed based on the theory of crime and punishment propounded by Becker in 1968. The theory

of states that people (*government*) would usually compare the cost of using/ doing something (*using electronic payment*) against the gains to determine whether or not to use/do it Becker (1968). In a situation where the gains from using/ doing something (*using electronic payment*) outweigh the cost, it will prompt the people (*government*) to use/ do it (*use electronic payment*). From the above theory for example, if the cost of using electronic payments outweighs the gain, then this will encourage the use of cash and thus increase shadow economic activities, Agbi (2015). However, based on the literature so far reviewed, we have seen that the gains of using electronic payments (which is improved GDP) outweighs the cost. We therefore propose the following hypothesis that;

Ho1: There is no significant gain on the use of electronic payment system on Nigeria's GDP during the 2020 COVID – 19 lockdown when compared to period before the COVID – 19 lockdown.

**Scope of the Study:**

The study was focused on investigating the extent of the volume and value of electronic payment transactions made by consumers in relations to GDP growth in Nigeria. The study restricted its investigation to the period of COVID – 19 pandemic lockdown in Nigeria though data from 2017 to 2020 was also gathered. The rationale for extracting those data was considered appropriate because the information generated before the 2020 lockdown could be used to make inference to actually determine if there in improvement on the GDP or not. Finally, 12 electronic payment channels: Cheques, NEFT, ATM, POS, WEB, Mobile Money, NIP, EBILLSPAY, REMITA, NAPS, MCASH, and CENTRALPAY were used to generate these data.

**Research Methodology:**

This study adopted a descriptive survey research design. The sample size for the study is 224. Data was collected using a structured questionnaire as well as sources from the CBN bulletins and statistics. Data collected through the questionnaire was analysed using mean whereas data collected from CBN bulletins and statistics was analysed using Gretl Econometric software and SPSS version 2.0. In testing the hypotheses T-Test for paired samples was employed. Estimation of GDP growth was done using the OLS multiple regression model as presented in equation (1) below.

$$y_t = \alpha y_{t-1} + \gamma'X_t + \varepsilon \dots\dots\dots (1)$$

From the above equation, we declare as follows;

- $y_t$  = logarithm of real per capita GDP in Nigeria at time  $t$ ,
- $X$  = matrix of macroeconomic indicators and payment channels, and
- $\varepsilon$  = the error term.

However, For responses from the questionnaire, any item with mean score equal to or greater than 2.5 will be regarded as high extent/agree/utilised while any item with mean score of less than 2.5 will be regarded as low extent/disagree/not utilised. For the hypotheses, if the calculated t-value for a given degree of freedom is equal to or greater than the t-table the null hypotheses is rejected but if the calculated t-value is less than the table t-value, then the null hypotheses is not rejected.

### Data Analysis:

The results of data analysis are done with reference to both the research questions, the research hypotheses formulated to direct the study, and the estimate of GDP growth. The order of presentation is organized under the following sub-heading:

- Responses from Research objectives,
- Data on Value of Electronic payment channels from 2017 to 2020 with particular reference to 2020, and
- Hypotheses testing.
- Presentation of GDP Growth Estimate

### Objective 1:

Mean score of respondents ratings on the extent consumers utilize electronic payment channels for payments in Nigeria during the COVID – 19 lockdown.

### Interpretation:

Table 1 shows the results on extent consumers utilise electronic payment channels for payments in Nigeria during the COVID – 19 lockdown. From the cumulative mean of (X=2.82), it shows that respondent agreed that customers utilized most of these electronic payment channels during the lockdown period to a very high extent. The analysis shows that, NEFT transfer, ATMs, POS, NIP, REMITA were utilized to a very high extent. Other non-cash payment channels such as, Cheques, Web, Mobile Money, Ebillspay, Naps, Mcash and Centralpay were reported to receive low patronage and as such not utilised. The assessment is based on the criterion of more than 2.5 considered to be “utilized ” while those with less than 2.5 considered to be “not utilized”

### Objective 2:

Mean score of Respondents ratings on the challenges faced in the use of electronic payment systems for payments in Nigeria during the COVID – 19 lockdown.

#### FREQUENCY

SN	ITEMS	VHU	HU	LU	NU	MEAN	REMARK
1	Cheques	76	62	106	44	2.48	Not Agreed
2	NEFT	71	127	26	20	4.21	Agreed
3	ATM	181	21	39	3	3.96	Agreed
4	POS	167	34	17	26	3.24	Agreed
5	WEB	13	12	48	171	2.38	Not Agreed
6	Mobile Money	38	29	40	137	2.41	Not Agreed
7	NIP	183	26	31	4	4.37	Agreed
8	EBILLSPAY	17	13	75	139	2.39	Not Agreed
9	REMITA	125	59	60	13	2.85	Agreed
10	NAPS	71	67	97	9	2.38	Not Agreed
11	MCASH	0	21	129	94	1.63	Not Agreed
12	CENTRALPAY	28	11	171	34	1.56	Not Agreed
CUMMULATIVE						2.82	

Table 1: Mean Score of Respondents Rating on extent of utilization

(N=244): Source: Questionnaire Administered

Key: VHU= Very Highly Utilized, HU= Highly Utilized, LU= Less Utilized, NU= Not Utilized.



## FREQUENCY

SN	ITEMS	SA	A	D	SD	MEAN	REMARK
13	Lack of trust transacting electronically	103	59	11	71	4.37	Agreed
14	Fear of transaction charges	110	14	29	91	3.81	Agreed
15	Lack of capacity/competence to use e-payment system especially the illiterate customers	179	27	41	8	3.46	Agreed
16	Customers are too comfortable with cash transactions	186	21	19	18	4.58	Agreed
17	High tariff in telecommunication	176	48	14	16	2.42	Not Agreed
18	inadequate number of effective internet service provider in remote areas	33	29	45	137	2.33	Not Agreed
19	inadequate policy framework on consumer protection on e payment use	104	26	31	83	2.41	Not Agreed
20	inadequate spread of e-payment centers like ATMs and POS terminals across rural areas to foster financial inclusion	139	75	17	13	4.36	Agreed
21	Electronic payment system is more convenient in making transactions	71	79	63	31	3.31	Agreed
22	I use electronic payment channels for wholesale payment, wire transfers, recurring bill payments, the automated clearing house, electronic draft cheques, and food during the lockdown period in Nigeria	119	78	21	26	4.85	Agreed
	CUMMULATIVE					3.59	

Table 2: Mean Score of Respondents Rating on challenges in the use of electronic payment system (N= 244) Source: Questionnaire Administered

Key: SA= Strongly Agreed, A= Agreed, D= Disagreed, SD= Strongly Disagreed.

### Interpretation:

Table 2 reveals respondents' views on possible challenges of use or lack of use of electronic payment system by consumers in Nigeria during the lockdown. Their responses show the mean values ranging from 2.33 to 4.85. The respondents strongly agreed with items 13, 14, 15, 16, and 20 as the greatest challenges to effective use of electronic payment system. They strongly agreed on items 21 and 22 also that electronic payment system helped them carry out their transactions comfortable during the lockdown. Meanwhile they disagreed on items 17, 18 and 19 with mean scores of 2.42, 2.33, and 2.41 respectively. The rationale for this decision is based on the criterion of more than 2.5

considered to be "agreed" while those with less than 2.5 considered to be "not agreed". However, with a cumulative mean score of ( $X=3.59$ ), it shows that the respondents agrees on almost all the items listed.

### Value of Electronic payments made from 2017 to 2020 in relation to GDP growth.

The data of payment indices on table 3 shows a steady graduation towards cashless payments between the period 2017-2020 as a result of increased access and use of electronic payment instruments and terminals.



### Objective 3:

Value of Electronic Payments made by consumers in relation to GDP growth during the COVID – 19 lockdown in Nigeria

Instruments	2020	2019	2018	2017
Cheques	4,481,668,348,494	5,035,334,949,690.47	5,381,909,711,667.16	5,829,549,268,629.00
NEFT	25,131,998,130,797	11,030,961,545,925.40	14,946,463,879,672.40	14,584,802,657,086.00
ATM	6,512,612,259,811	6,480,085,899,670.37	6,437,592,402,748.64	4,988,133,401,544.00
POS	3,204,749,863,644	2,383,108,901,148.12	1,409,813,091,608.35	758,996,505,702.00
WEB	478,140,101,693	404,600,990,712.52	184,596,629,926.57	132,360,333,369.00
Mobile Money	5,080,961,536,595	1,830,701,111,107.85	1,101,998,974,555.00	756,897,483,653.00
NIP	105,222,562,871,372	80,423,025,698,377.30	56,165,666,312,858.10	38,109,061,203,852.00
EBILLSPAY	652,586,389,583	500,214,507,607.64	550,750,791,543.15	339,407,748,303.63
REMITA	20,724,633,755,093	18,495,987,427,570.80	13,529,495,515,408.40	10,652,493,933,099.30
NAPS	16,405,957,714,981.00	12,078,905,639,559.80	4,960,349,089,466.59	753,689,705,802.99
M-CASH	600,921,460	1,198,731,322.12	616,936,468.57	-
CENTRALPAY	5,476,055,244	8,101,555,613.41	4,996,845,611.06	1,442,064,836.87

Table 3: Value of Electronic payment channels from 2017 to 2020 (source: CBN matrix July 2020)

### Interpretation

From the table, observe that the value of Electronic Payment Systems used in Nigeria for both banking and consumer-based electronic commerce for the period (2017 to 2020) is significant. There is a significant decrease in Cheque lodgement as Automatic Teller Machine (ATM) withdrawals and other electronic payment channels increased implying an increasing substitution of cash by cashless payment instruments; which also highlights a multiplier effect of cashless payments on GDP growth. Among the electronic payment channels, M-CASH seems to be the least commonly employed electronic payment channel.

However, payment activities through a combination of these electronic channels are valued at a whopping N187.9 trillion in 2020, Omobayo Azeez (2020). This figure represents a 26.2% increase in transaction value compared to N138.6 trillion recorded in 2019 but a marginal decline of 4.1 per cent from N10.74 trillion electronic payment deals facilitated by banks in December, 2019. The volume of deals during the lockdown also rose to 160.18 million, showing 58% increase from 2019's figure of 101.38 million transactions and 27% higher than 126.57 million deals recorded in December 2019. This aggregate electronic payments figure is a summation of transactions carried out on Point of Sale (PoS), terminals, mobile inter-bank transfers, NIBSS' Instant Payments (NIP), electronic bill payment and Central Pay across the country.

However, also based on the statistics, NIP topped the chart of electronic payment in 2020 just as in previous years as Nigerian banks facilitated deals worth N10.3 trillion in 2020, representing 27% GDP growth from N8.11tn in the corresponding period of 2019. From this record, observe that, at least, Nigerian executed payment transaction via the channel in no fewer than 111.35 million times in 2020, as against 72.29 million in 2019, amounting to 49.1 billion in unit value of electronic payments made in the first quarter of 2020. This value is more than the value of electronic payments made for the same purpose in the first quarter of 2019. This increase was attributed to the lockdown which impacted NIT transactions from banks. (see figure 1).

On point of sale, the table show that the value of PoS transactions stood at N3.3 trillion in 2020, recording a 41% increase against N222.92 billion recorded in the corresponding period in 2019 thus appreciating by 47% compared with 28.16 million in the same period in 2019. Inter-bank transfers made in Nigeria during the COVID – 19 lockdown amounted to N133.22 billion, posting a 397% growth from N26.83 billion in the comparative month of 2019. The report further shows that the volume of mobile inter-bank transfers also climbed by 914% to 7.35 million in 2020, from 0.723 million in 2019.



Electronic bill payments worth N652.76 billion were carried out by banks in 2020, representing 86% growth from N500.76 billion in 2019. The volume of electronic bills, according to the data, however indicated a decline of transaction as 122,685 bills were paid in 2020 as against 134,656 in 2019, representing 9% reduction in volume. Central Pay, an application that allows customers to make payment to e-commerce businesses, recorded transactions valued at N5.4 billion in 2020. This was 20% reduction in payments made by customers in 2019, which was N8.1 billion. The volume of central pay deals also declined by 23% from 67,718 in 2019 to 52,241 in 2020.

### Interpretation

Tables 4 and 5 show that there is a significant gain in the usage of electronic payment system during the COVID – 19 lockdown in Nigeria ( $M=0.512283$ ,  $SD=0.1414827$ ); than before ( $M=0.464934$   $SD=0.1493405$ );  $t(5) = -0.431$   $p = 0.689$ . This indicates that customers perceived that the gains of using electronic payment channels for transaction are higher than the loss and so the null hypothesis is rejected. It also indicates that consumers used electronic payment technologies because of restriction of movement imposed by government based on defined law and regulations.

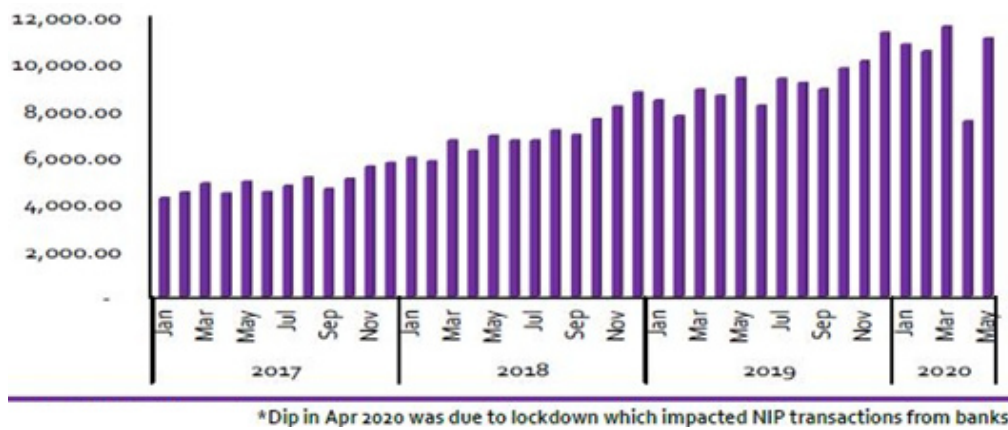


Figure 1: Sum of electronic payment transactions via POS, Nobile and NIP (Jan 2017 – May 2020)

### Hypotheses Testing:

Ho1: There is no significant difference on the use of electronic payment system before when compared to the usage during the 2020 COVID – 19 lockdown.

	Mean	N	Std. Dev	Std. Error Mean
SEbf	0.464934	12	0.1493405	0.0604281
SEaf	0.512283	12	0.1414827	0.0577432

Pair 1

Table 4: Paired Samples Statistics

### Presentation of GDP Growth Estimate

The implication of electronic payment usage is estimated using the Ordinary Least Square Regression (OLSR) method with logarithm of real *GDP per capita* as proxy for economic growth to ascertain if they have improved the GDP or not. The variables used for which interpretations are based on include the value of NIP, cheque transactions etc as presented in table 1. The variables listed above and other non card payment channels served as proxy for physical *cash usage*, while the values of ATMs, POS transactions over real GDP served as proxy for non-cash (*card*) usage. Mobile and web payment over real GDP served as proxy for other e-payment channels and interest rate was the control variable.

	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference		t	df	Sig. (2 tailed)
				Minimum	Maximum			
Pair 1 (SEBf - SEaf)	0.044598	0.2590983	0.105776	-0.3254045	0.22739	-0.431	5	0.689

Table 5: Paired Samples Test

## Regression Analysis on GDP Growth Estimate:

### LGPD Per Capita

Instruments	Coefficient	Std. Error	t-statistic	p-value
Cheques	-0.0127954	0.0014506	-8.8732	<0.00001***
NEFT	3.24318	0.0396927	32.8604	<0.00001***
ATM	0.0357432	0.00464283	7.831	<0.00001***
POS	-0.0157626	0.0064427	-1.8635	<0.00001***
WEB	-0.0256727	0.0040553	8.1054	<0.00001***
Mobile Money	-1.17775	0.161553	-7.3263	<0.00001***
NIP	4.32176	0.047263	37.6801	<0.00001***
EBILLSPAY	-0.0031268	0.0052374	-1.52841	<0.00001***
REMITA	0.984632	0.906876	10.8295	<0.00001***
NAPS	-0.486055	0.0372508	-1.3278	<0.00001***
M-CASH	-30.2743	1.94756	7.5538	<0.00001***
CENTRALPAY	1.08769	.924386	-11.7668	<0.00001***
Unadjusted R2		0.928323		
Adjusted R2		0.917834		
F-Statistics		72.17 (p-value < 0.00001)		
Durbin-Watson statistic		3.44		
Regression Method		OLS / Two - Stage Least Square		

Table 2: Regression Results using 12 observations (2019 - 2020)

### Interpretation

From the analysis, it appears that there exists a growth in the real GDP per capita as a result of increase in usage of electronic payment systems during the COVID – 19 lockdown in Nigeria. For example the computed F-Statistics shows an increase of 72% in real GDP Per Capita, other factors being constant. This value is more than thrice value of the GDP per capita change for the same purpose in the first quarter of 2019. Meaning that e-payment usage per capita is on the average of 20units per person. The result is in line with that of Siyanbola (2012), Newstead (2012) and World Bank (2012) who in their separate studies maintained that electronic payment usage has a positive effect on GDP growth.

However, among electronic payment channels studies, NIP transfer appears to contribute the highest to GDP growth while MCASH, Central pay EBILLSPAY and cheque payments contribute the least to *real GDP per capita*.

### Findings, Suggestions and Conclusion:

From one angle, electronic payment system sounds like a great opportunity – low overhead, no physical location needed, faster payment method and few employees etc. But several important questions need to be addressed that revolves around the issue of payment: Can currency remain

immune to this trend forever? May be. May be not. If May be, can it always impact the GDP? How will businesses be paid for in cases of movement restrictions? Or will consumers pay for what they buy?

In an attempt to answer these questions this study sought for and obtained the following findings:

- More than 80% of the respondents use one form of electronic payment to another to pay for businesses ranging from wholesale payment, wire transfers, recurring bill payments, the automated clearing house, electronic draft cheques, and food commodities etc during the no movement period in Nigeria.
- Respondents agree that electronic payment system is more convenient in making transactions. However only respondents who are learned affirmed that they had no difficulty using the technology. The novice reported that using the technology was difficult for them.
- The most popular electronic payment channels which help customers to make transactions during the lockdown are NIP, ATMs and POS terminals.
- There is a whopping 72% increase to real GDP per capita as a result of increased e-payment activities during the lockdown



Based on the above findings and for improvement in future studies, the study makes the following suggestions:

- Government should create more awareness for the unbanked people on electronic payment for better appreciation and use by Nigerians.
- There should be more government regulations on consumer protection for electronic payment approval processes to reduce fear from users of the payment method. In other words there should be transparency in conducting payments online.
- The major banks in Nigeria should provide for more spread of electronic payment technologies like ATMs and POS as well as educate the novice across the rural areas on how to use them. This will improve their level of literacy and also facilitate more financial inclusion.
- Customers should remove fear of electronic payment charges and increase the trust of transacting electronically.
- Customers should not also be too comfortable with cash transactions.

With these suggestions observed, one may project that in the next five years, Nigeria may have forgotten the use of cash as a means of transaction and successful shift to a cashless economy, Oginni (2013). Figure 2 below clearly illustrates the concept.

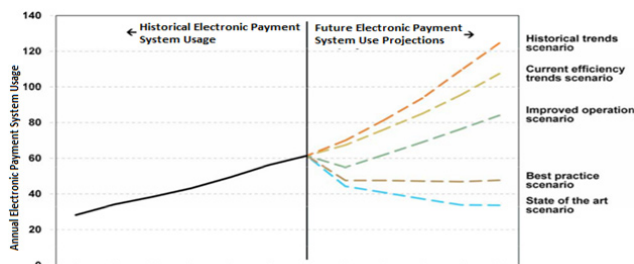


Figure 2: Comparison of Projected Future Electronic Payment System Usage

- This concept shows that there will be improvements on the current usage trends of electronic payment systems in future if the above suggestions are adhered to. For example, our projected future usage pattern will correspond to improvement in nationwide enforcement of use of ATM's and POS and other electronic payment systems. The best practice scenario from the graph shows that electronic payment system usage can be reduced below its current level (i.e. state of the art scenario) in the future year rather than almost doubling, which would be the result if the suggestions from this study are not implemented.
- In sum, the improved GDP benefits as revealed in this study have been a better understanding of the financial behaviour of the customers. The challenge for the future is to come to the right vision of how electronic payment systems will augment or replace paper-based payment

methods. The next step is to figure out how to make a profit on that vision by integrating income taxes with the payment system.

**Acknowledgement** I would like to thank all respondents who have participated in this study.

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## Annexure 1

Submission Date	Submission Id	Word Count	Character Count
18-Aug-2020	D77894472 (Urkund )	8066	52943



### Document Information

Analyzed document	Article for consideration for (GJEIS).docx (D77894472)
Submitted	8/18/2020 12:33:00 PM
Submitted by	Dr. Subodh Kesharwani
Submitter email	skesharwani@ignou.ac.in
Similarity	12%
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**Reviewers  
Comment** **Reviewer Comment 1:**

The sample size taken in the manuscript is 224. This is quite a sufficient sample size. Also the literature review portion is well explained by giving proper citation wherever required.

**Reviewer's Comment 2:**

The title of the paper is quite new and is the need of the hour as the world is dealing with COVID-19. The objective of the paper is to investigate the frequency of electronic payments made during the COVID-19 lockdown in Nigeria and its impact on the GDP. The paper is very well written and well structured.

**Reviewer Comment 3:**

The authors have used a well appropriate and a robust research methodology to justify the relevance and framed objectives of the study. And the author has provided a number of references for readers to have an in-depth knowledge of the subject matter



Eze Nicholas Ude

“Understanding the Technologies for  
Cashless Economy on Nigeria’s GDP Growth:  
Post COVID – 19”

Volume-12, Issue-2, Apr-Jun, 2020. (www.gjeis.com)

<https://doi.org/10.18311/gjeis/2020>

Volume-12, Issue-2, Apr-Jun 2020

Online iSSN : 0975-1432, Print iSSN : 0975-153X

Frequency : Quarterly, Published Since : 2009

Google Citations: Since 2009

H-Index = 96

i10-Index: 964

Source: <https://scholar.google.co.in/citations?user=S47TtNkA AAAJ&hl=en>



**Conflict of Interest:** Author of a Paper  
had no conflict neither financially nor academically.

**Editorial  
Excerpt**

The article has 12% of plagiarism which is the accepted percentage as per the norms and standards of the journal for the publication. As per the editorial board’s observations and blind reviewers’ remarks the paper had some minor revisions which were communicated on timely basis to the author (Eze) and accordingly all the corrections had been incorporated as and when directed and required to do so. The comments related to this manuscript are noticeable related to “**Cashless Economy on Nigeria’s GDP Growth: Post COVID – 19**” both subject-wise and research-wise. The study has made a modest attempt to investigate the frequency of electronics made during the COVID 19 lockdown in Nigeria and its impact on the GDP. Empirical research has been conducted by collecting data through a structured questionnaire with sample size of 224. In testing the hypothesis T-Test for paired samples was employed. The findings reveal that the electronic payment system significantly positively contributed to economic growth in terms of real GDP per capita during the COVID – 19 lockdown more than other years. The paper is well written and some important considerations are highlighted. Overall, the paper promises to provide a strong base for the further studies in the area. After comprehensive reviews and editorial board’s remarks the manuscript has been categorised and decided to publish under “**Empirical Research Paper**” category.

**Acknowledgement**

I am grateful for the insightful comments offered by the anonymous peer reviewers and the editorial team of GJEIS. The generosity and expertise of one and all have improved this study in innumerable ways.

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