

# **INFORMATION AND COMMUNICATION TECHNOLOGY - AN INDISPENSABLE TOOL FOR THE IMPLEMENTATION OF CASH-LESS POLICY IN NIGERIA**

**Ejoh, Ndifon Ojong** 

Department of Accountancy, Cross River University of Technology, Calabar, Nigeria  
ndifon.ejoh@yahoo.com

**Adebisi, Adesola, Wasiu**

Department of Computer Science, Cross River University of Technology, Calabar, Nigeria

**Okpa, Inah Bassey**

Department of Accountancy, Cross River University of Technology, Calabar, Nigeria  
inahokpa@yahoo.co.uk

## **Abstract**

*This study examines the cash-less economic system so as to assess the relationship between Information and Communication Technology (ICT) and the implementation of cash-less policy. Nigeria has continued to evolve in different realms of transactions from the commodity money (trade by barter) to the cash-less realm. The economy is being reformed, institutions are being reshaped and legislations are being re-examined so as to reposition the nation to take its rightful position in the international community. In order to achieve the primary objective of the study, the study used structured questionnaire as a means of data collection from 120 respondents randomly selected. The data was analyzed using simple percentage procedure, and the collated data tested using chi-square technique. Study revealed that there exist a significant relationship between ICT and cash-less policy implementation in the Nigerian financial environment. Based on the findings it was recommended that the federal government of Nigeria should collaborate with all the states ICT centers and other private institutions to provide mass ICT education for the computer illiterates and banks should invest more in e-banking technology in order to enhance public awareness which would in turn encourage cash-less economy in Nigeria.*

*Keywords: Cash-less policy. ICT, e-banking technology, e-government, delivery channels*

## INTRODUCTION

Electronic cash is a system which allows individuals to purchase goods or services in today's society without the exchange of anything tangible. The term money still exists, but it is more in an electronic form than previously. Electronic cash is a term becoming more acceptable as the world makes a shift towards a cashless society. Since the 1960's governments and financial institutions globally have made steady; slow, but steady steps towards the goal of a society without cash. The cashless society is being sold as a more convenient method of payment, and a method of preventing crimes all the way from the robbery of cash from an individual to the extent of money laundering among crime syndicates and cash stockpiling at home by corrupt government officials.

The move to use electronic cash in an ironically termed society dubbed "cash-less"; there are many issues that include security, privacy, crime and computerization. We as a society must as a whole be comfortable with this new shift or the tendency to rebel becomes prominent. As the financial institutions have implemented such things as debit cards, credit cards, internet banking, etc, it has slowly brought society into the acceptance zone whereby another step could be taken. Without society being able to understand the pros and cons of electronic cash, the full benefit of the cashless society may never be realized. Information Technology plays an important role in bringing about sustainable development in every nation. Without an optimal use of Information Technology, no country can attain a speedy socio-economic growth and development. It is against this background that the Central Bank of Nigeria introduced the cashless policy in order to ensure that banking services get to everybody and offers all platforms for empowerment that will change the way people transact businesses and living generally.

A cashless economy is an environment in which money is spent without being physically carried from one person to the other. The first issue in the cashless economy is the issue of electronic purse. This is electronic information that is transmitted to a device which reveals the information about how much a person has stored in the bank and how much he can spend. The advantages of a cashless economy are enormous; Cost of transportation and the danger of carrying large sum of money about will possibly reduce. The policy will enhance the integration of our economy as presently 78.8 percent of the country's rural populations are largely unbanked. Nigerian's huge informal economy which is driven by small scale farmers, traders, craftsmen and other types of small and medium sized businesses would be integrated into the formal economy. This will potentially result in an extensive application of computer technology in the financial system, as technologies are developing rapidly on the transfer of funds from one place to another. This place the Computer Professional Registration Council at the centre of

control and regulation of the emerging technology in our economy. The transition to a cashless economy will raise a lot of security issues in our financial institution. IT professionals should be ready to provide a robust IT support. Therefore, the indigenous professionals should rise up to this challenge and support the banks on making the policy a huge success.

The rapid advancements in the field of Information and Communication Technology (ICT) and the resultant explosive growth of the information services sector have radically changed the world's economic and social landscape. These changes have given rise to new policies in various sectors of nation's economy, based on information and knowledge. This has further resulted in new avenues of development, employment; productivity, efficiency, and enhanced economic growth. ICT as powerful tool, with an enormous potential for social impact, human development and potential to improve the lives of the people; has a major role to play in monetary policy of government of any nation. Recently, the Central Bank of Nigeria, lead by its Governor Sanusi Lamido Sanusi, put forward a cashless monetary policy requiring that all cash withdrawals and deposits be set at a daily limit of a maximum of N150, 000 while pegging that of corporate entities at N1, 000,000, with penalty fees of N100 per extra N1, 000 and N200 per N1, 000 imposed on individual and corporate defaulters respectively. This cashless monetary policy is all about cashless economy, which is an economy where all means of payments are carried out without the use of physical cash. Payments will range from a list of options such as cheques, wire transfers, debit and credit cards, online transactions, and mobile banking.

The above policy implementation requires the services of ICT technology. The question therefore, is what are the effects of information communication technology in a cashless economy? A simple explanation of ICT is to think of it as how Computers affect storage, transmission, reception and interpretation of information from one location to the other, and basically a cashless economy is an environment in which money is spent without being physically carried from one person or the other. The first issue is the issue of an electronic purse. This is electronic information transmitted to a device which reveals the information about how much a person has stored in the bank, and how much he can spend. Essentially, the information is accessed through a storage medium (smart-card) which contains a unique electronic blueprint that is associated with the individual, and can therefore be delegated to identify him whenever it is presented.

As transactions are carried out, the amounts spent are also electronically transmitted back to the bank, so that the balances are adjusted. This takes the forms of spending and depositing funds in the bank. The availability of ICT means that less of human interventions are required to identify access and transmit the value of a person's bank balance, as well as to update it. ICT means that other technologies can converge to make cashless transactions

possible. Online shopping, for example is possible in which neither the buyer or seller need to see each other to even transact business. It is against this background that this study sets to investigate the role of ICT in cashless policy implementation in Nigeria. To achieve the thrust of this study, five sections were developed including this introduction which is section one. Section two reviews literature, section three x-rays the research methodology; section four contains presentation and analysis of data while section five concludes this research and makes policy recommendations necessary for the smooth advancement of cashless economy.

### **Objectives of the Study**

- i) To highlight the impact of information technology on the cash-less policy adoption
- ii) To investigate the extent of the relationship between e-banking technology and cash-less economy
- iii) To analyze global payment systems available
- iv) To make objectives recommendation for improving delivery channels.

### **Research Hypothesis**

Ho: There is no significant relationship between ICT and the cashless policy implementation in Nigeria

H<sub>1</sub>: There is a significant relationship between ICT and the cashless policy implementation in Nigeria

## **LITERATURE REVIEW AND THEORETICAL FRAMEWORK**

### **Theoretical framework**

This paper is anchored on two theories. These are advanced below:

#### *Theory of information production and contemporary banking theory*

Diamond (1984) suggested that economic agents may find it worthwhile to produce information about possible investment opportunities if this information is not free; for instance surplus units could incur substantial search costs if they were to seek out borrowers directly. There would be duplication of information production costs if there were no banks as surplus units would incur considerable expenses in seeking out the relevant information before they commit funds to a borrower. Banks enjoy economies of scale and have expertise in processing information related to deficit units (borrowers). They may obtain information upon first contact with borrowers but in real sense it's more likely to be learned over time through repeated dealings with the borrower. As they develop this information they develop a credit rating and become experts in processing information. As a result they have an information advantage and depositors are willing to place

funds with a bank knowing that this will be directed to the appropriate borrowers without the former having to incur information costs.

Bhattacharya and Thakor (1993) contemporary banking theory suggests that banks, together with other financial intermediaries are essential in the allocation of capital in the economy. This theory is centered on information asymmetry, an assumption that “different economic agents possess different pieces of information on relevant economic variables, in that agents will use this information for their own profit” (Freixas and Rochet 1988). Asymmetric information leads to adverse selection and moral hazard problems. Asymmetric information problem that occurs before the transaction occurs and is related to the lack of information about the lenders characteristics, is known as adverse selection. Moral hazard takes place after the transaction occurs and is related with incentives by the lenders to behave opportunistically.

### *Innovation diffusion theory*

Mahajan and Peterson (1985) defined an innovation as any idea, object or practice that is perceived as new by members of the social system and defined the diffusion of innovation as the process by which the innovation is communicated through certain channels over time among members of social systems. Diffusion of innovation theory attempts to explain and describe the mechanisms of how new inventions in this case internet and mobile banking is adopted and becomes successful Clarke (1995). Sevcik (2004) stated that not all innovations are adopted even if they are good it may take a long time for an innovation to be adopted. He further stated that resistance to change may be a hindrance to diffusion of innovation although it might not stop the innovation it will slow it down.

Rogers (1995) identified five critical attributes that greatly influence the rate of adoption. These include relative advantage, compatibility, complexity, triability and observability. According to Rogers, the rate of adoption of new innovations will depend on how an organization perceives its relative advantage, compatibility, triability, observability and complexity. If an organization in Kenya observes the benefits of mobile and internet banking they will adopt these innovations given other factors such as the availability of the required tools. Adoption of such innovations will be faster in organizations that have internet access and information technology departments than in organizations without.

### **Review of Current Literature**

Like any other social sciences problem, findings from preceding studies on the impact of ICT on the banking sector in both developed and Less Developed Countries (LDCs) produces divergence results. For instance, Dos Santos and Peffers (1993) empirically studied the effects

of early adoption of ATM device by banks on employee efficiency using a sample of 3,838 banks covering the period 1970 to 1979 by applying multiple regression model. The finding revealed that the introduction of ATM device improve the banks performance. By extension, Beccalli (2005) investigated whether investment in Information Technology (IT) influences the performance of banking, using a sample of 737 European banks over the period 1994 – 2000. Using simple correlation coefficients, the findings revealed a negative and statistically significant correlation between profit efficiency and IT.

Following post-democracy banking reforms in Nigeria which triggered unprecedented application of ICT in banking sub-sector, Evans, (2008) investigates the role of ICT on enhancing the operations of Nigerian banks using primary data which was analyzed with cross-tabulations and regression technique to reveals a significant positive impacts of ICT on banking operations. Lin (2007) studied the impact of ICT on U. S. banking industry using a cross-sectional data of 155 banking firms for the period 1995 to 1999 by employing multiple linear regression models. Results of the study indicated that ICT contribute to the overall value-creation performance of banking firms. Moreover, Alawneh and Hattab (2009) assessed the value of e-business at the bank level in Jordan using a survey data collected from 140 employees in seven pioneered banks. The study utilised multiple linear regressions analysis, the empirical findings showed that e-banking was found to have a significant positive influence on bank performance.

In Michael (2010), Muhammad and Muhammad (2010) examined the impact of ICT on organizational performance using primary data collected through in-depth interviews and fields surveys of 48 manufacturing and 24 banking industry in Pakistan over the period 1994 to 2005. The data was tested using multiple linear regression model and ratio analysis. The conclusion of the research shows that ICT has positive impact on organizational performance of all sampled organisations. In a study by Akram and Hamdan (2010) examined the effects of ICT on Jordanian banking industry for the period of 2003 – 2007. The data was analyse by multiple regression model and results of the study indicated that there is a significant impact in the use of ICT in Jordanian banks on the Market Value Added (MVA), Earning Per Share (EPS), Return on Assets (ROA) and Net Profit Margin (NPM). Similarly, Ombati, Magutu, Nyamwange and Nyaoga (2010) studied the relationship between technology and service quality in banking industry in Kenya using primary data drawn from a sample of 120 customers utilising e-banking services within the Central Business District, Nairobi. The authors used both descriptive and inferential statistics such as correlation analysis, percentages and means to analyse the data. The findings of the study indicated a direct relationship between ICT and service quality in the banking industry.

ICT led bank performance hypothesis was tested in the study by Agbolade (2011). The study used primary data sourced through a structured questionnaire administered to selected banks in south-west Nigeria and the Ordinary Least Square approach econometric techniques was applied to detect the relationship that exist between banks profitability and the adoption of ICT. The results showed that a positive correlation exists between ICT and banks profitability in Nigeria. Similarly, Uppal (2011) examined the growth of ICT in various bank groups in India using data collected over the period 2008 – 2009. The findings revealed that the growth of ICT led to high bank performance. Conversely, Abubakar *et al.*,(2013) study the impact of ICT on banks performance in Nigeria for 2001- 2011 period. The study employed fixed and random effects to reveals the negative impact of ICT on banks performance.

### **Cash – Based Nigeria Versus “Cashless” Nigeria: The Rationale for Policy Shift in Payment System and Cashless Policy**

In spite of the recent introduction of cashless policy in Lagos, Abia, Anambra, Kano, Ogun, Rivers and Abuja, Nigeria is best described as a cash-based economy. This is true considering the size of retail and commercial activities transacted primarily in cash as well as the value of these transactions as a share of income per capita (CBN 2012). In 2011, it was estimated that 99% of over 215 million customer transactions in Nigerian banks were cash-related (i.e; through ATM and over-the-counter) and this was valued at about N2.1 trillion or 5% of GDP. It is estimated that an average Nigerian transacts about N65 in cash out of every N100 income earned.

This cash-based system has come at significant cost to the Nigerian economy. It is estimated that cash distribution costs account for 60% cost over-heads in the banking industry while cash management operations require up to 80% of the industry’s infrastructure base and staff strength (CBN 2012). According to CBN, the direct costs of transporting, processing and storing (vault) huge volumes of cash, borne by the financial system was valued at N115 billion in 2009; and it was estimated to rise to N192 billion by the end of 2012. Further, with heavy cash users (i.e. those with transaction volumes above N150000) accounting for only 10% of transaction volumes but 71% of the transaction value (N1.5 trillion). It appears that implicit cash handling costs for this class of cash users are being subsidized by all other classes of consumers (Nweke, 2012).

Based on the foregoing backdrop, CBN by its wisdom and legal mandate initiated the policy drift from cash-based system to a cash less one. In 2005 CBN initiated the National payment systems (NPS) specifically to achieve the objectives of promoting efficiency and

effectiveness of payment systems; promoting safety and protection of systemic risks. It also set the objective of migrating to cashless modes of payment, such as electronic debit/credit instruments, credit/debit cards, ATM – sharing and Electronic Fund Transfer at point of sales and real – Time Gross settlement system (RTGs). Other objectives of NPS included to ensure payment systems audit transparency and full transaction reporting; and to achieve public acceptance and confidence via information dissemination, customer convenience and total quality delivery.

According to CBN, the cash-less policy aims at reducing (not eliminating) the amount of physical cash in circulation in the economy, and encouraging more electronic – based transactions (payments for goods, services, transfers, etc). The policy is initiated to achieve the following objectives: To drive development and modernization of Nigeria payment system in line with Nigeria's vision 2020 goal of being among the top 20 economies by the year 2020; to reduce the cost of banking services (including cost of credit\_ and drive financial inclusion by providing more efficient transaction options and greater reach; to limit high cash usage outside the formal sector and thereby improve the effectiveness of monetary policy in managing inflation and encouraging economic growth; and to curb some of the negative consequences associated with the high usage of physical cash, including high cost of cash; robberies, corruption and leakages through money laundering, fraud and other cash – related crimes (CBN 2011).

### **Global Trends in Non-cash Payment Systems**

An analysis of global cashless (or non-cash) payment landscape is presented showing its competitive, social and policy developments as well as the behavioural patterns among users of non-cash payment systems in sub-Sahara Africa. The World payments Report 2011 sponsored by the Royal Bank of Scotland (RBS) and the European Financial Markets Association (EFMA) explored the trends in payment volumes and instruments usage among other issues. Capgemini & Royal Bank of Scotland (2011) descriptively summarized the key findings of the Report thus:

- (a) The global volume of non-cash payments has continued to grow, driven by emerging markets:** Global volume of non-cash payment transaction has grown by 7% annually to an estimated 280 billion transactions in 2010 from 154 billion since 2001. This trend has been largely driven by the surge in transaction volumes in the emerging market regions of Central Europe, Middle East and Africa (CEMEA), Asia(ex-China and India) – all three regions have grown by an average 25% in the past year compared to an estimated 3% growth in North America and Europe.

**(b) Electronic payments and mobile payments collectively accounted for an estimated 22.5 billion transactions in 2010:** This figure is expected to rise to 48.2 billion in 2013. Also by 2013, significant advancements in mobile technology are expected to cause m-payments to rise to 34% share of transactions (from 20%) versus e-payments which would reduce to 66% (from 80%).

**(c) Card usage has continued to grow while cheque usage declined:** Cards remain the preferred non-cash payment instrument globally, with an average market share of more than 40% and a high of 68% in Canada. On the other hand, cheque usage continued to decline across the globe and accounted for 16% of all non-cash global transactions down from 22%. This is a clear indicator of the global shift toward electronic payments.

**(d) E-Government initiatives are emerging as a key enabler of non-cash payments.** E-Government payments could spur overall non-cash payments usage in countries where an e-governance system combines with developed non-cash payment infrastructure and behaviour. This could also have a knock-on effect in area of the market still relying on dated technologies.

Having reviewed trends in global cashless payment, it is also imperative to briefly explore payments and money transfer behaviour in sub-Saharan Africa. Such brief expose will perhaps indicate key reason while Nigerian government adopted the cash-less-based payment system.

In 2012, Bill and Melinda Gates Foundation supported a Gallup polls that undertook an indepth study of the payment behaviour of sub-Saharan Africans. Eleven African countries were surveyed, namely South Africa, Zambia, Nigeria, Kenya, Tanzania, Uganda, the Democratic Republic of the Congo (DRC), Sierra Leone, Botswana, Mali and Rwanda. Godoy et al (2012) as replicated in Nweke (2012) statistically by summarized the report findings as follows:

First, it noted that the market for financial services in sub-Saharan Africa is significant and remains largely untapped. Out of 134 million adult respondents surveyed, 79 million (or 59%) still use only informal cash payments. This represents a major opportunity for providers of mobile money or similar services. Another significant finding shows that the rate of domestic remittances dwarfs that of international remittances, sometimes by a high multiple. Approximately 80 million people (or 60%) received at least one domestic remittance in the 30 days prior to the survey. This compares to the 10 million people (70%) who said they received international remittances in the same time frame.

It was also found out that East African countries exceeded Southern African and Nigeria in mobile money transfers. Reportedly, 90%, 68% and 60% of senders of remittance in Kenya, Uganda, and Tanzania respectively use mobile money services. In contrast, mobile money transactions were negligible in South Africa, Botswana, and Nigeria where 50%, 47% and 44% of senders of domestic remittances, respectively, used bank transfers. Finally, Nigeria alone accounted for 34.8 million consumers who are using only informal cash payment options. This offers exciting investment opportunities for providers of financial services (Nweke, 2012).

### **ICT in the Nigerian Banking Sector**

It is needless to say that, banking system is able to play the positive role of enhancing globalization only if it has robust Information and Communication Technology (ICT) as a backstop. Otherwise, it would constitute bad omen to the development of global economy. This is based academics unanimity of impossibility of globalisation without global agents of payments. The increased demand for ICT in banking sector became imminent and unavoidable in the world at large and Nigeria in particular. Invariably, the future lies in the ICT driven banking systems and services. Banks have embarked on unprecedented deployment of ICT based banking products and services such as Automated Teller Machine (ATM), internet banking, mobile banking solutions, point of sale terminals, computerised financial accounting and reporting, human resources solution among others, of which plays salient roles in enhancing the performance of banks over the world (Ovia, 2005)

Eventually, the ICT became the lifeblood of any corporate organisation for growth and development thereby making the entire world moving away from traditional banking to computerised banking applications. Consequently, there has been huge investment in ICT facilities and personnel with requisite skills necessary for the operation of ICT born devices. Banks have been facing the stiff challenges of required hefty fund for investments in human capital, capacity building, deployment of equipments, designing applications, etc due to the ever rapid changing in ICT devices as a result of breakthrough on the one hand and the dynamism of the global ICT industry on the other hand (Abubakar, Gatawa and Birnin-kebbi, 2013).

Over the years, banks have invested huge capital in deployment of ICT solutions for front office and back office automation alike. However the ever increasing challenges of ICT deployment in conformity with the banking best-practice had remained a burning issue in the banking industry and so need to investigate its relevance on banks performance becomes imperative.

## ICTs, Digital Divides and Cashless Nigeria Economy

The term 'digital divide' was first used in the 1990s and it originally referred to the differences in access to technology, between those who had access to technology and those who did not. Then the existence of a gap separating individuals who were able to access computers, the Internet and new forms of Information Technology, from those who had no opportunity to do so, was recognized. As such, the first research on the matter focused on the factors determining the differentiated physical access to ICTs, such as computers and the availability of a network. When there is a digital divide, part of the population is excluded from accessing information and networks that could be used to expand their capabilities and economic freedoms, therefore providing access to information for those at the end of the gap.

This is thought to be a good process, to alleviate poverty. In the context of analyzing information as a source of exclusion and inequality,(van Dijk,2006) synthesized that, in the literature regarding the existence of a 'divide' between people or organizations, with differentiated access to information, difficulties in accessing information can be a basis of inequality. Also information can be a primary good or input, a positional good or a source of skills. Information is a crucial resource for good decision-making and can determine the extent to which a person can have access to different types of services, goods and markets. It is a source of opportunities and therefore the difficulty in accessing information or the lack of possibilities to access it is a source of inequality in different spheres of human development. Information is now considered a primary good that is essential for the survival and self-respect of individuals.

Information is a positional good when some opportunities in society "create better opportunities than others, in gathering, processing and using valuable information". This occurs in particular in the context of a network society, in which lack of a position in a digital network constitutes a form of social exclusion. In this context, those who have access to information may be considered information elites, with more power, capital and resources, amplifying even further the inequalities already initiated by differences in physical access to ICTs.

The inequality in terms of skills, resulting from differences in access to information, comes mainly from the conclusion reached by Nathius and de Groot in 2003 who found empirical evidence of the existence of skills premium, in having ICT skills that explains increasing income inequality between countries with differences in the appropriation of ICTs. Although ICTs have the potential to reduce the digital divide within and between countries and regions, ICTs and their benefits are not yet reaching poor countries at the same scale as they

have reached developed countries, particularly poor rural areas within various countries. The digital divide mainly differentiates the rich from the poor.

### **Nigeria's Economy and e-Payments System**

Nigeria compared to the rest of the world, as it relates to payments, is still in the era of the wild-west. To fully understand the situation one has to study the history and analyze factors such as; the Nigerian culture, the role of its government, the state of infrastructure, the level of general education, the availability of real data, the amount of investments made and needed, security as it relates to laws (enforcements and it judiciary) confidence in the system (internal and external) and insurance and privacy issues to mention a few.

The journey of a thousand miles begins with the first step. I commend the CBN for its courageous attempts to effect change, and also worry that the system may not be ready for such a drastic approach. The problem is that in an already weak economy such as Nigeria implementing this policy now will only result in the opposite effect of what the CBN wants to achieve. The CBN would be in the best position to understand what the economy really needs to prosper, and its policy on withdrawals and deposits give reason for pause. What's the real reason driving this policy? You could say the Nigerian factor, which really means anything ranging from scams and corruption to the fix it now approaches. Nowhere in the world, do they have fixed withdrawals and deposits. For the record, a cashless society should be now and the future for Nigeria and there is no one solution to every economical challenge. There is one thing that's certain, in the next five to six years, if this policy is aggressively carried out; the growth of the Nigerian economy is going to contract significantly before it eventually picks up. There are a couple of concerns, the greatest of them being that it is most likely going to lead to the next real recession in Nigeria. For example 70 to 75 percent of the people of Nigeria do not have bank accounts.

Therefore saying that the CBN does not have 70 to 75 percent of the nation's financial statistics is a safe call. Money circulation works its way down and around from the top 10 percent of bank accounts which accounts for 75 percent of the total value of cash. The Majority of this 10 percent service directly or indirectly affects 70 to 75 percent of the Nigerians who are without bank accounts. Cutting this lifeline quickly, will force a significant number of Nigerian employers to require their employees to start operating bank accounts to save them cost of doing business in Nigeria; so that concrete laborer or that student, driver, security-man, teacher, trader and so on will not get his or her money in cash, but be required to have a bank account.

This will put pressure greatly on the infrastructure of the banking industry as they in turn are not ready to handle the amount of new accounts. Even if the mobile phone payment systems picks up steam, the majority of banking would still be done on physical banking locations in the near future, such as opening and signing accounts, and future transactions, the ratio of bank locations to potential clients is estimated to be 1:20000 people.

The difficulty of opening a bank account and the cost of operating one will slowdown cash flow into mainstream. The hoarding in the black market will explode by simply selling for 10 to 20 percent lesser than what it will cost to get the same amount of money from the banks. This will cause wide speculations, and as a result affect everything from prices, production, availability, supply and demand and even the stock market. Judging from Nigeria's past history of implementation of policies, this policies may not be effectively administered or will gradually fade and become a thing of the past after a while, you could say an addition by subtraction.

In recent time, e-payment system has become a medium through which monetary substance circulates conveniently, especially in developing economy like Nigeria where the carrying cash around is habitual. In Nigeria, epayment system formed fundamental starting point of her modern market economy; a well-functioning e-payment system has been recognised to have much relevance on financial stability, monetary policy and overall economic activity (CBN, 2011). Historically, Central Bank of Nigeria (CBN) introduced payment system which facilitated epayment in 2002. During this period, Nigeria Automated Clearing System (NACS) was introduced as a veritable platform for development of electronic payment and to reduce clearing of cheques period. In addition, Automated Teller Machine (ATMs) was introduced by Interswitch in 2003 followed by the implementation of Real Time Gross Settlement in 2006, migration to new uniform accounting system (NUBAN) in 2010. Subsequently, in the early of 2011, Nigerian Inter-bank Settlement System announced instant payment services and the first set of cash deposit ATMs were launched (KPMG, 2012). Consequently, transition to cashless economy was proposed in December, 2011 and first implemented at Lagos in January, 2012. At the end of 2013, cashless policy is envisaged to have been effectively implemented in Abuja, Port-Harcourt, Abia, Kano and Ogun State.

Several studies have been carried out on e-payment system in Nigeria (Asaolu, Ayoola & Akinkoye, 2011, Echekoba & Ezu, 2011; Adeoti & Osotimehin, 2012; Odior & Banuso, 2012; Siyanbola, 2013; Eze, 2013; Nkwanko & Eze, 2013; Odemuru, 2013). Such studies revealed that e-payment system is increasingly gaining users' acceptance and there is gradual increase in the percentage of non-cash transactions in the last few years, despites several challenges identified with e-payment system or non-cash payment system (Nkwanko et al, 2013). Interestingly, approximately N80 billion of (CBN, July 2013). Hence, present transition to

Nigerian cashless economy by CBN has been reinforced by perceived prosperity of electronic payment system - citizenry continuous use of ATMs, POS, ETF, Smart cards, e-cheques, etc. (Echekoba et al, 2011).

## RESEARCH METHODOLOGY

This study was carried out, using random sampling method, in Calabar, Cross River State, Nigeria. A total of 120 questionnaires were administered. Students and civil servants were sampled randomly for the data. Questionnaire was used as data collection instrument, with questions on demographics and the relationship between ICT and the cashless policy implementation in Nigeria. The statistical technique used was the chi- square statistical test of independence.

### Data Treatment Technique

The data obtained from the research instrument were analyzed using Chi-Square Test. The researcher choice of Chi-Square ( $\chi^2$ ) technique was informed by the nature of data obtained. Besides, the suitability and ease of manipulation of data using the Chi-Square, buttressed the use of this test. The formula for Chi-Square ( $\chi^2$ ) is given by:

$$\chi^2 = \frac{\sum(f_o - f_e)^2}{f_e}$$

Where:

$\Sigma$	=	summation
$f_o$	=	frequency observed
$f_e$	=	frequency expected
$\chi^2$	=	chi-square
Also $f_e$	=	$\frac{\text{Row total} \times \text{column total}}{\text{Grand total}}$

### Decision Rule

The null hypothesis would be accepted if the calculated value of the Chi-square is less than the critical or tabulated value (i.e accept  $H_0$  if  $\chi^2_{\text{cal}} < \chi^2_{\text{crit}}$ ). Otherwise reject.

## ANALYSIS AND FINDINGS

Table 1: The development of e-banking technology reduces the necessity of cash transactions

Responses	Frequency (observed)	Percentage (%)
SA	38	32
A	48	40
D	23	19
SD	11	9
	120	100

As can be seen from table 1, 32% strongly agreed, 40% agreed, 19% disagreed and 9% strongly disagreed that the development of e-banking technology reduces the necessity of cash transactions.

Table 2: Sufficiency of banks in rural areas for take-off of cash-less policy nation-wide

Responses	Frequency (observed)	Percentage (%)
SA	29	24
A	50	42
D	34	28
SD	7	6
	120	100

In table 2, 24% strongly agreed, 42% agreed, 28% disagreed and 6% strongly disagreed that the number of banks in rural areas of Nigeria are sufficient for cash-less policy to take-off nation-wide.

Table 3: Adequacy of Payment infrastructure (ATM, POS Terminals, etc) for the proposed take-off of the cash-less policy nation-wide

Responses	Frequency (observed)	Percentage (%)
SA	42	35
A	51	43
D	16	13
SD	11	9
	120	100

In table 3, 35% strongly agreed, 43% agreed, 13% disagreed and 9% strongly disagreed that payment infrastructure (like: ATM, POS Terminals, etc are adequate for the proposed nation-wide take-off of the cash-less policy.

### Test of Hypotheses

Ho: There is no significant relationship between ICT and the cashless policy implementation in Nigeria

H<sub>1</sub>: There is a significant relationship between ICT and the cashless policy implementation in Nigeria

Table 4 Analysis of the relationship between ICT and the cashless policy implementation in Nigeria

Responses	Frequency (observed)	Frequency (Expected)
SA	52	30
A	37	30
D	15	30
SD	16	30
	120	120

Table 5: calculated chi- squared value of the relationship between ICT and the cashless policy implementation in Nigeria

Responses	O	E	O-E	(O-E) <sup>2</sup>	(O-E) <sup>2</sup> /E
SA	52	30	22	484	16.13
A	37	30	7	49	1.63
D	15	30	-15	225	7.50
SD	16	30	-14	196	6.53
					X <sup>2</sup> = 31.79

### Researcher's computation from table 4

Tabulated / critical chi- squared value = (n-1) df @ 0.05 level of significance. X<sup>2</sup> = (4-1) @ 0.05 = 7.81473

### Decision/ Inference

The null hypothesis (Ho) which state that, "Cash-less policy implementation has no workability in the Nigerian economy" is therefore rejected in favour of the alternative hypothesis (H1) which

states that there is a significant relationship between ICT and the cashless policy implementation in Nigeria.

Nigerian desire for cash-less society needs to be strengthened. ICT is an indispensable key to enhancing the capacity of Nigerian banking industry to provide quality services to customers and strengthen the efficiency of financial intermediation.

Electronic banking technology such as electronic data cards (debit and credit cards), automated delivery channels, telephone and PC banking, automated clearing system, Automated Teller Machine (ATM) among others have been significant to the adoption and smooth implementation of the cash-less economy in advanced nations. Thus an increase in these technologies, would inevitably lead to successful cash-less policy.

## RECOMMENDATIONS

Having critically analyzed the findings of this work, the following recommendations are made:

- The Federal Government of Nigeria (FGN) should collaborate with all the states ICT centers and other private institutions to provide mass ICT education for the computer illiterates, without which mass participation in the policy would result in more casualties, arising from e-fraud.
- The FGN should overhaul and re-vitalize the current reforms in the power and telecommunication industry to position it as a vehicle of change needed to drive the cash-less policy.
- Banks should invest more in e-banking technology in order to enhance public awareness which would in turn encourage cash-less economy in Nigeria.

Having made the above recommendations, this study is limited to accessing the impact of ICT on the adoption and implementation of the cash-less policy in Nigeria. A further research should be conducted on to improving ICT in Nigeria as a panacea to the plethora of challenges facing the full implementation of cash-less policy in Nigeria.

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