ICT Perspectives on the Feasibility Analysis of the Cashless Economy in Nigeria

Dahunsi F.M. and Akinyede R.O
Computer Science Department,
Federal University of Technology, Akure
P.M.B. 704, Ondo state, Nigeria.
fdahunsi@futa.edu.ng, roakinyede@futa.edu.ng

ABSTRACT

Nigeria has continued to evolve in different areas and the economy is being reformed and transformed in amazing ways. Recently, the cash-less policy was introduced as a means of fast-tracking the Nigerian economy to be among the first 20 world economies by the year 2020. This paper presents a feasibility analysis carried out to investigate the country’s preparedness and adequacy in adopting the cash-less policy from the Information and Communication Technology (ICT) perspective; ICT infrastructure and ICT knowledge needed by the Nigerian populace. Review of related works, structured questionnaire and interviews were used to collect relevant data. From the analysis carried out, results indicate that majority of Nigerians are already aware of the policy and majority agree that the policy will help fight against corruption/money laundering and reduce the risk of carrying cash. Major problems envisaged to hamper the implementation of the policy from the findings includes: lack of adequate ICT infrastructure, cyber fraud and illiteracy. Based on the findings some recommendations made are: the government should adopt strategies to educate the non-literate Nigerians about the cash-less economy; ICT campaign and teaching should be encouraged and a framework should be worked out to provide cyber security in Nigeria. Infrastructure development should also be a major investment priority for financial institutions and the government to ensure the optimal gains of the cash-less economy.

Keywords - Cash-less policy, Nigeria; ICT; Infrastructure; economy

1. INTRODUCTION

There are three phases in modern forms of economy, cash-based, cash-less and the cashless phases. Countries (particularly developing countries) would normally transit from a ‘cash-based’ economic model to ‘cash-less’ economic model before achieving the pure state of a ‘cashless’ economic model [1] as shown in Figure 1. A cash-based economy is the one in which day-to-day payments and business activities are predominantly transacted in physical notes and coins. Cash-less economy, on the other hand, is an economy where the physical cash circulating in the economy is minimized while other forms of payment, especially electronic based payments, are used. A cash-less economy is a combination of the cash-based payment system and electronic payment systems [2, 1]. Usually at the commencement of cash-less economy, the cash-based payment exceeds the e-payment system, with time; the former then exceeds the latter which evolves to a cashless economy. The Central Bank of Nigeria (CBN) released a circular on the introduction of ‘cash-less’ policy which sets cash deposit and withdrawal limits. The cash-less policy was introduced in April 2011 by the Central Bank of Nigeria to join the committee of nations that embrace the electronic means of payment and limit the use of cash to the very barest.
Physical paper cash is easy to hide and lose, easy to steal and destroy without traces, also easy to counterfeit and non-traceable when spent. These are some of the reasons why an introduction and acceptance of lesser cash (cashless) transactions and more electronic transactions is important in Nigeria. Increase in electronic transaction can be used to reduce the amount of physical paper cash and violent crimes related to physical cash such as bank robberies, kidnap for ransom etc will be greatly reduced. A cashless economy will also reduce diseases and contaminations transferred through this medium [6, 7].

Despite the usefulness of the cash-less economy, there are still some disadvantages, this includes unstable electronic value of money which will become even more volatile especially, given that people will be conducting business with imaginary money. The government would be able to monitor purchases, spending habits and businesses patronized, thereby putting them totally in control thus exposing the privacy of individuals. The ability of children to understand the value of money and appreciate it will be more challenging and commencing e-transactions by children will be a more daunting task [6].

2. BACKGROUND AND METHODOLOGY

2.1 Background
The Nigerian Banking industry of the 21st century operates in a complex and competitive environment characterized by highly unpredictable economic climate and conditions. Information and Communication Technology (ICT) is at the centre of this global evolutionary change taking place in Electronic Banking System in Nigeria today. The application of ICT concepts, techniques, policies and implementation strategies is of fundamental importance to all Banks and a needed prerequisite for local and global competitiveness.

The advancement in Technology is a major player in improved service provision in the banking industry. Automated Teller Machines (ATMs) is the simplest form of providing basic banking services. With online banking, individuals can check their account balances and make payments without having to go to the bank hall. This has created the much anticipated cash-less society where consumers no longer have to pay for all their purchases with hard cash. As most people now own smart phones, banks have also introduced mobile banking to cater for customers who are always on the move.

Mobile banking allows individuals to check their account balances and make fund transfers using their mobile phones. This was popularized by First Atlantic Bank, Nigeria (now First Inland Bank) through its “Flash me cash” product Customers can also recharge their mobile phones via SMS. E-Banking has made banking transactions easier around the World and it is fast gaining acceptance in Nigeria [1, 6]. Cash-less delivery channels in the present day Nigerian bank includes; Automatic Teller Machine (ATM), Point of Sales (POS), Telephone Banking, Smart Cards, Internet Banking etc. Virtually all Banks in Nigeria have a web presence to enhance internet banking.

2.2 Methodology
This research work is presented in two forms; the first is using a reference framework to analyse the basic components required for the effective implementation of the cash-less policy in Nigeria. The model was further narrowed down to ICT required for the cash-less economy which is the focus of this research. Figure 2 presents the cash-less policy frameworks while Figure 5 presents the ICT infrastructural framework. Secondly, a survey was carried out in the form of questionnaires and interviews, to ascertain the readiness of bank customers and also to analyze the responses of customers to services already provided in cash-less transactions. Interviews were also carried out with stakeholders of banks to ensure the smooth and effective take-off of the cash-less policy in Nigeria. Lastly, a comparison was made between the survey result and statistics accessed from the Central Bank of Nigeria for validity of survey.

3. REFERENCE FRAMEWORK
For the purpose of this research, a reference framework was designed to analyze the major requirements of the cash-less economy. The reference framework consist of 7 basic components as presented in this research, these includes infrastructure, user awareness, bank readiness, religious believes, government policies, user literacy level and ICT status and the internet which is the backbone of a cash-less economy. These are interrelated and a seamless interoperation between all is essential for the adoption and success of a cashless economy. Emphasis given to ICT infrastructure since it is the major focus of this work.

3.1 Government Policies
Trust is lacking in Nigerian business environment. Businesses are carried out on cash basis as cheques are not reliable and there is presently low penetration of point of sale (POS) terminals, hence people place less trust on the use of cheque but prefer cash instead [8]. High level of fraudulent activities through e-banking is a challenge, which the entire banking industry must resolve before cashless policy can be effective. Central Bank of Nigeria must collaborate with National Assembly to enact proper legislation that would make the policy effective. Enforcement of the proposed legislation should be carried out by CBN and all other executive arms so empowered by the government such as Economic and Financial Crime Commission (EFCC), Independent Corrupt Practices Commission (ICPC), Nigeria Police etc. They must commit to training of personnel and the judiciary must be prudent and up to the task.
With the introduction of cash-less policy with an intended gradual evolution to the cashless economy, the government has to consider investing more into ICT manufacturing, ICT services, ICT research institutions and increase in ICT literacy level. The government should enact legislations and policies which will make ICT related equipment and component manufacturing feasible and practicable in the country for private investors. Millions of Automated Teller Machines (ATM), Point of Sale machines (POS), Automated Cash Registers (ACR), computers, mobile phones; servers will be acquired to run the cashless policy. Backbone network will have to be improved to increase penetration of broadband access and last mile connections ensured. This is a tall order for a country where most existing industries in most sectors are moribund therefore most goods and commodities are imported into the country.

Electricity in Nigeria is plagued by multiple and unpredictable power cuts which often results to equipment malfunctioning in all sector of the economy, making it challenging to operate companies and industries, hence inability to produce basic goods and services efficiently and effectively [9]. Human capital development (HCD) in relation to ICT is very essential for the economic growth of the sector and country, HCD is recognized globally as being the wealth of any nation [10]. There is therefore a need to have well funded ICT research institutions that ensures the much needed human development for the industry and these institutes will also act as the drivers and enactors of ICT in the country. ICT services and products also have to be encouraged in form of software development, development of innovative, indigenous and affordable products and services.

3.2 Literacy level and ICT Status of Users

National Commission for Mass Literacy in their investigations in 2010 discovered that close to 3 million children aged 6 – 14 years had never attended any school and about a million children aged 6 – 14 years dropped out of school. National youth literacy rate in English Language stood at 76.3% while the national adult literacy rate in English Language stood at 57.9% and for other languages stood at 71.6%. The South Eastern part of Nigeria had the highest literacy rate in English while the North West had the least. South West had the highest literacy rate in any language, whereas the North Central had the least literacy rate in any language [11].

The Minister of State for Education, Chief Nyesom Wike also emphasized the high level of illiteracy in the country stating that the number of illiterate adults has increased by 10 million over the past two decade and presently about 35 million Nigerian adults are illiterates [12]. Nigeria’s Telecom Tele-density and Internet penetration is also a very important factor when ICT literacy is brought into question. A graphical representation of this is shown in Figure 2. This penetration rate indeed rose very rapidly but when compared to the population of the country, it is relatively low (Internet penetration is quoted at 33% and broadband penetration is at 6%). The telecom teledensity is relatively higher; more than 80% of Nigerians have mobile phones, the major means of modern communication available to majority of Nigerians.

Presently Small and Medium Scale Enterprises (SME) are plagged with various factors for non-adoption of e-banking services such as cost, trust, availability of ICT infrastructure, government encouragement amongst others [14]. With SME being the major driving force required for job and wealth creation [15], every one of these factors must be adequately addressed. Another challenge the cashless policy have is that business men in SME in Nigeria prefer to keep their money in their private vault rather than patronizing banks.

3.3 Religious beliefs

Nigeria is presently grappling with a lot of in-house conflict and most of these are religious oriented [16]
The risk involved in rushing the programme without policy is to be effective. And maintenance will be on routine bases and should be a changing at a very fast pace. Investment in billions of economy possible. Technology is not cheap and is ever must collaborate with other government and private agencies responsible for collection of identification of individuals in Nigeria for reconciliation of any identification [17].

CBN and other banks must be ready to invest heavily in e-banking infrastructure to make an optimal cash-less economy possible. Technology is not cheap and is ever changing at a very fast pace. Investment in billions of dollars, made in infrastructure, training, marketing, security and maintenance will be on routine bases and should be a collaboration of efforts by all parties concerned, if the policy is to be effective.

3.4 Bank Readiness
Availability of data for proper and accurate identification of account holders must be maintained and shared when necessary by all financial institutions; also CBN must collaborate with other government and private agencies responsible for collection of identification of individuals in Nigeria for reconciliation of any identification [17].

The Cash-less Nigeria Project require both physical and equipment infrastructural facilities before it can be effectively implemented, it is a well-known fact that infrastructural facilities in Nigeria, have forever been in a permanent state of disrepair, inadequate and the limited ones existing are not maintained; the banking system, a crucial part of the economy also suffer infrastructural inadequacies both structurally and in needed equipment to function effectively [18]. If the Automated Teller Machines (ATMs) could not deliver, a rated performance level of 30% effectiveness after about a decade of being launched out, an effective cash-less project in a country cannot be guaranteed [17]. Figure 4 presents the relationship between the three model layer of ICT and digital economy.

3.5 Start out
The risk involved in rushing the programme without having all the infrastructures in place could be devastating as any failure recorded would make people to lose confidence in the systems. This was why the cash-less policy was implemented in phases the first phase started in Lagos State from January 2012. It was implemented in 6 other states: Rivers, Anambra, Abia, Ogun, and the Federal Capital Territory (FCT) on the 1st of July, 2013. The implementation of the cash-less policy became nationwide July 1st, 2014 [3].

3.6 Infrastructure
Infrastructural decay has been a major factor in economic and development setbacks in Nigeria. Industries, business enterprises, commercial ventures, artisans other small and medium scale industries have collapsed and folded up as a result of infrastructural failures or lack of it specially telecommunication infrastructure [15]. Infrastructural facilities such as electricity and other sources of power; portable water, for human and industrial use; good road network information and communication technology, computerization, internet network facility, effective transportation and most importantly security are required to the smooth operation of the cash-less economy. Figure 5 presents major infrastructural facilities required for the cash-less economy with emphasize on ICT infrastructure.

Demand for electricity in Nigeria continue to increase despite the slow growth in economic activities, unfortunately there is no commensurate growth in the power supply sector. This has plunged the country into expensive and unreliable power supply provision destroying equipments in tit wave of multiple and unpredictable power cuts [9]. For an optimal penetration and sustainable cash-less economy, the power supply provision has to be adequately addressed.

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3.7 ICT infrastructure
Figure 5 illustrates the basic infrastructural facilities required for the cash-less economy with emphasize on ICT infrastructure. The financial ICT infrastructure in Nigeria is insufficient to adequately carry the load of a cash-less society [18, 8]. Erratic power supply has been a major challenge facing every industry in Nigeria [9]. Power supply must be improved drastically to stimulate smooth operations of financial activities. Low broadband penetration affects optimal utilization of the available ICT infrastructure and internet usage in Nigeria [20]. This no doubt, affects the cash-less policy and users are plagued with the inability of carrying out their transactions at their convenient time. Some ICT infrastructure facilitating and driving the force of electronic society are internet dependent; automated cash registers (ACR), Automatic Teller Machines, Point of Sale (POS) terminals, servers, datacenters, computers, smart phones, broadband internet connectivity.

A POS terminal or machine manages the selling process by a salesperson accessible interface. The same system allows
the creation and printing of the receipt. Point of Sale (POS) Terminals are the preferred way of processing credit cards, debit cards, cheques, smart chip cards, electronic benefits transfer (EBT), and other electronically submitted transactions in a traditional retail environment. The terminals are used in "face-to-face" transactions. The merchant will swipe the customer’s card through the terminal or key-in payment information and the terminal does the rest [21]. An Automated Teller Machine (ATM) is a computerised device that provides the customers of a financial institution with access to financial transactions in a public place without a need for assistance from bank teller or any official. It is commonest form of electronic banking which has gain popularity among the people including unlettered customers [7, 23]

Figure 5. Basic infrastructural facilities required with emphasize on ICT infrastructure.

4. SURVEY ANALYSIS

A survey was carried out on the cash-less economy and the readiness of the ICT infrastructure and penetration to adequately ensure the smooth and effective take-off of the cash-less policy in Nigeria. The population study covers 300 banking customers and 20 credit officers in Nigeria. The population selected was designed to obtain adequate and diverse views pertaining to the level, impact and efficiency of electronic banking transactions on bank customers in Nigeria; e-banking being the backbone of cash-less economy. It also investigates the awareness of users to the cashless economy. Sampling Techniques used ensured that all the segment of the population were included in the sample. The sample is drawn from banking customers and credit officers in Nigeria. The sampling size to be used by the researcher in this study constitute (300) banking customers and 20 credit officers in Nigerian banks. Primary and secondary data were collected and used in the study.

4.1 Primary Data (Questionnaire Analysis)

The primary data are collected by the researcher through the use of questionnaire while the secondary data are data collected from interviews, CBN electronic banking guideline and other relevant literature. Data collected from the field through questionnaires were analysed using descriptive statistics.

Demographics of respondents

Figure 6 shows that 58% were male and the highest respondents were between the ages of 25-45 which makes up 54% of the respondents. 36% of the respondents were students while 38% were civil servants. Artisans and farmers makes up 3% of the respondents. The data collected indicated that 68% of respondents are graduates, 21% are graduate students while less than 10% have lesser or other qualifications. Therefore, it could be inferred that Majority of the customers are graduate.

Computer and internet usage

The result presented in Figure 7 shows a self-evaluation of respondent’s level of computer use, understanding / usage of the computer, how often respondents visit internet with their mode of connectivity.

Figure 6. Demographics of respondents

Responses represented in the figure shows that a greater number of the respondents (43%) were expert users of the internet, 38% were casual users, and 13% were beginners while 6% constitutes others. This implies that majority of the respondents are computer literate. Also responses represented in the table shows that a greater number of the respondents (67%) were excellent users of the internet, 23% were good users, 7.5% were average while 2.5 constitutes fair which implies that majority of the respondents have a good understanding of the internet. Majority of them (43%) always visit internet, 34% visit internet often, 21% rarely visit internet while 2% never visit internet at all. This implies that majority of the respondents do visit internet always. Also, it was noted in this study that 63% of the respondents connect to the internet via mobile phone, 17% connect to the internet via modem and 20% connect via cybercafé. This shows that majority of the respondents connects to the internet using mobile phone.
General electronic banking information of customers

Distribution of Respondents relating to period of banking, type of account and type of bank is presented in Figure 8. The respondent with less than 1 year period of banking make up 7.4% while above 8 years are 27.8% of the survey. Most of the respondents, about 64.8% belong have saving account while owners of current bank accounts are about 33%. Fixed deposit and others are about 1.7% and 0.6% respectively. Most respondents bank with new generation banks (70.8%) while Old generation bank have 29.2%.

Bank transactions carried out by customers

Responses represented in Figure 9 also shows that a greater number of the respondents use ATM (49%), while 24% of them use cheque and tellers, 8% make use of internet banking, 6% use money transfer and another 6% use point of sales (POS), also 4% fall into credit card category and 3% use mobile banking. This agrees with the analysis presented in [24] where ATM is the most used and mobile banking the least. This implies that majority of the respondents use ATM as their mode of payment system.

Usage pattern of some e-banking transactions

Most of the respondents of the questionnaires use the ATM for withdrawing money which is a cash-based transaction; their responses are shown in Figure 11. This is mainly because most ATMs in Nigeria have no capability of cash deposit. It also indicates that most users of ATM do not take advantage of the e-transaction available with the ATM such as buying airtime, paying utility bills and transfer to other accounts. Mobile and internet banking methods are majorly utilized for transfers.

General user’s complains

Major complaints of respondents includes non availability of internet, internet fraud and long queues associated with services carried out using the ATM. This can be attributed to the number of ATMs available compared to the population of people who utilize the services it offers. The analysis of major complains by respondents is shown in Figure 12. Cybercrime is a major challenge in the cash-less Nigeria which requires urgent attention [25].

4.2 Secondary Data (Interview Analysis)

Major points emanating from the interview carried out with 6 respondents who are stakeholders in major financial
institutions in the country are presented below. The introduction of electronic banking in Nigeria has a strong influence on the development of the payment system. However, the introduction of the system involves commitment of huge amount of financial resources on computer technology, telecommunication facilities and electricity.

![Figure 10. Effectiveness of Some banking transactions](image1)

Figure 10. Effectiveness of Some banking transactions

Cash-less economy increases the level of economic activities in the country by making it easy in terms of time, convenience and distance for monetary transactions. Unfortunately, some banks are still grappling with traditional banking habits with staff with low ICT literacy and customers with low ICT literacy and lack of adequate ICT banking encouragements and initiative by the banks. Cash-less economy is feasible in urban cities but almost impossible to operate in rural communities and microfinance banks that still interact in cash. Some banking operations even with banks in urban areas are still operated manually.

Cashless economy will turn out positive eventually if the government put in more effort into building the required ICT infrastructure to support the cash-less policy. Also the government must be willing to increase the aware and ICT literacy. The cash-less policy mainly states the withdrawal and deposit limits and method of cash transfer between points of interest. There is no legislations or policies regarding ICT awareness and ICT infrastructure. Infrastructural deficiencies such as erratic power supply, inadequate communication links, non-provision of fraud prevention scheme, corruptions, illiteracy level, cybercrime and inadequate skilled managers are some of the major problems facing the development of cashless banking in Nigeria.

![Figure 12. Major complains of users on some e-banking methods](image2)

Figure 12. Major complains of users on some e-banking methods

In spite of the fact that banks have invested heavily in computer technology to drive their operations only few small and medium scale businesses in Nigeria carry out their financial transactions through automated means, which creates gaps between supply and demand for bank products.

This, no doubt affects the development of cash-less banking in Nigeria; In examining the relationship between Nigerian economy and cash-less banking, it was established that there is indeed a connection between cash-less banking and the economy and this shows that the introduction of the policy would improve Nigerian economy as well as the profit level of Nigerian business men and women. Nevertheless, the policy will affect employment negatively as introduction of automation
would automatically reduce number of personnel’s needed to carry out different financial transactions in the bank.

5. PAYMENT SYSTEM STATISTICS

The payment statistics confirms the survey data with regards to user preference of using ATM transactions followed by Cheque transactions [26]. The payment statistics for 2009 January to 2014 June as provided by CBN, 2014 is presented in Figure 13 and Table 1. In Figure 13, Number is the percentage of transactions and Value is the percentage of the value of transactions in Billions of Naira.

There had been a steady increase in the use of ATM compared to cheque transactions from the year 2009 till June 2014. From the advent of cash-less banking in most States of the Federation in 2013 and latter in all States, there has been an increase in POS and mobile transactions, while web transactions have not recorded significant increase, instead, there had been a decrease. This might attest to the one of the major challenges expressed by users which is cybercrime. Though it should be noted that the data presented for 2014 is just half of the year, before the end of the year 2014, more transactions would have been recorded.

![Figure 13. Payment system statistics between years January 2009- June 2014 (Data from [24])](image)

### Table 1: Payment system statistics (Data from CBN, 2014)

<table>
<thead>
<tr>
<th>Year</th>
<th>Descriptor (Naira Billion)</th>
<th>Cheque</th>
<th>ATM</th>
<th>POS</th>
<th>Web</th>
<th>Mobile</th>
</tr>
</thead>
<tbody>
<tr>
<td>2009</td>
<td>Number of Transactions</td>
<td>29166780</td>
<td>109161646</td>
<td>918256</td>
<td>2703516</td>
<td>1809251</td>
</tr>
<tr>
<td></td>
<td>Value of Transactions</td>
<td>29436.03</td>
<td>548.6</td>
<td>11.03</td>
<td>84.15</td>
<td>1.27</td>
</tr>
<tr>
<td>2010</td>
<td>Number of Transactions</td>
<td>33973919</td>
<td>60133611</td>
<td>1072426</td>
<td>1601086</td>
<td>115633</td>
</tr>
<tr>
<td></td>
<td>Value of Transactions</td>
<td>19675.51</td>
<td>399.71</td>
<td>12.72</td>
<td>25.05</td>
<td>6.65</td>
</tr>
<tr>
<td>2011</td>
<td>Number of Transactions</td>
<td>37718585</td>
<td>347569999</td>
<td>2100673</td>
<td>1932355</td>
<td>3649374</td>
</tr>
<tr>
<td></td>
<td>Value of Transactions</td>
<td>374587756</td>
<td>48.01</td>
<td>31.56</td>
<td>59.61</td>
<td>18.98</td>
</tr>
<tr>
<td>2012</td>
<td>Number of Transactions</td>
<td>12045833</td>
<td>375487756</td>
<td>2555045</td>
<td>2276464</td>
<td>2297688</td>
</tr>
<tr>
<td></td>
<td>Value of Transactions</td>
<td>7461.63</td>
<td>1984.65</td>
<td>48.01</td>
<td>59.61</td>
<td>18.98</td>
</tr>
<tr>
<td>2013</td>
<td>Number of Transactions</td>
<td>14145839</td>
<td>295292940</td>
<td>9402255</td>
<td>2900473</td>
<td>15812435</td>
</tr>
<tr>
<td></td>
<td>Value of Transactions</td>
<td>7674.86</td>
<td>2828.93</td>
<td>48.01</td>
<td>47.3</td>
<td>142.8</td>
</tr>
<tr>
<td>2014</td>
<td>Number of Transactions</td>
<td>7144340</td>
<td>175506932</td>
<td>8971501</td>
<td>2230353</td>
<td>12575523</td>
</tr>
<tr>
<td></td>
<td>Value of Transactions</td>
<td>3710.69</td>
<td>1636.41</td>
<td>137.71</td>
<td>30.74</td>
<td>139.69</td>
</tr>
</tbody>
</table>
6. CONCLUSION

Nigerians are of the opinion that ATM is the best means of usage of cash-less banking and most of the services accessed with ATMs are cash withdrawals. This indicates that bank customers do not patronize other e-services ATMs have to offer such as payment of bills, purchasing recharge card, e-transfers etc. They are not conversant with the other means of operating cash-less banking using the ATM. Hence banks, CBN and Nigerian government have a lot to do in the area of education and enlightenment of the customers on the available products that facilitate cash-less banking amongst others if ATM is the preferred method of banking. ICT infrastructure, high penetration of ICT literacy and well-trained ICT professional are major requirements for the smooth operation of the nationwide launch of cash-less transactions.

REFERENCES


