

The Impacts of Information Technology in a Cashless Economy in Nigeria

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-----ABSTRACT-----

This paper presents the current trend in the impacts of Information Technology (IT) in the cashless economy in Nigeria and gives an insight into how quality banking has been enhanced through Information Technology (IT). The paper further reveals that the deployment of Information Technology (IT) facilities in the Nigerian banking industry has brought about fundamental changes in the content and quality of banking business in the country. This analysis and clarification of how Nigerian Banks have used Information Technology (IT) to reengineer their operations is detailed through research and observation. Three categories of variables that relate to the use and implementation of information technology devices were considered in this paper. These include the nature and degree of adoption of innovative technologies; degree of utilization of the identified technologies; and the impact of the adoption of Information Technology devices on the cashless economy in the banking sector.

Keywords: Cashless Economy, Central Bank of Nigeria and Information Technology.

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I. INTRODUCTION

A cashless economy or an e-payment system is a situation where there is little or very low cash flow in a given society, thus every other purchases and transactions will be made by electronic channels, examples of which are direct debit, electronic funds transfer, mobile payments, multi-functional ATMs, internet banking and a significant increase in point of sale (POS) penetration and usage. In other words, it simply refers to the widespread application of information technology in the financial system. Payments under this new system will range from a list of options such as cheques, wire transfers, debit and credit cards, online transactions, and mobile banking. The advantages of a cashless society are enormous; from regulating, controlling, and securing the financial system of any economy.

However, there has been drift towards electronic money, which is quite difficult to define because it blends technological and economic characteristics [1]. According to [2], electronic money is broadly defined as an electronic store of monetary value on a technical device that may be widely used for making payments to undertakings other than the issuer without necessarily involving bank accounts in the transactions, but acting as a prepaid bearer instrument.

Analogous to this definition is that of cashless economy wherein there exist no notes and coins issued by central banks but by private financial institutions [3].

Also, [4] present one of the earliest attempts to comprehensively estimate the private and social costs for nine separate payment instruments- cash, cheques, credit cards, money orders, point of sale (POS), Automated Clearing House Transfers (ACH), ATM bill payments, travellers' cheques and wire transfers. They find that from a social cost perspective, cash is the cheapest payment instrument, followed by ACH, POS and ATM bill payment. From a private perspective, cheques emerge as the cheapest payment method followed by cash, ACH and POS bill payments. However, the influence of government intervention was prematurely considered as there was no calculation of net benefits of such payments instruments [5]. In recent times, there is a consensus that central banks have the capacity to control the price level. One of the approaches is through controlling money supply (advocated by monetarists) and has led many central banks to implement money-supply-targeting procedures [6].

In examining the cost implications of cashless banking instruments, [7] studied how much it costs Norwegian banks to process various payment instruments. It finds that payment cards used for cash withdrawals at ATMs cost considerably more since the transactions involve cash replenishment, maintenance and security costs. In addition, the cost of using cheques for cash withdrawals was found to be three times more expensive than cash withdrawals at ATMs.

From a social perspective, it was concluded that a card-based system is considerably more efficient than a cash-based system for two reasons. First, diseconomies of scale in cash supply rises as cards displace cash, while economies of scale improve for cards. Secondly, the displacement relegates cash to smaller transactions because smaller transactions must cover the fixed costs of the cash system [7].

Information and Communication Technology (ICT) is the automation of processes, controls, and information production using computers, telecommunications, software's and other gadget that ensure smooth and efficient running of activities. It is a term that largely covers the coupling of electronic technology for the information needs of a business at all levels. ICT has surpassed the role of support services or only electronic data processing; its fields of applications are slightly global and unlimited. Its devices especially the Internet and modern computer email facilities have further strengthened early modernizations like the telephone and fax. Other ICT devices include data recognition equipment, factory automation hardware and services, telecommuting and teleconferences using real time and online system [8].

[9] Opined that ICT adoption will improve three critical domains which are efficiency, quality, and transparency in any organisation. [10] Discussed the dimensions in which automation in the banking industry manifest in Nigeria. They include: Bankers Automated Clearing Services: Automated Payment Systems, Automated Delivery Channels.

1.1 Analysis of Cash System

Nigeria can be regarded as a cash-based economy because majority of retail and commercial payments are made in cash. According to a recent CBN survey, cash-related transactions account for 99 percent of customer activity in Nigerian banks today. In addition, it discovered that cash transactions above N150, 000 was largest in terms of value (N1469 billion) and second smallest in terms of number or volume (10 percent).

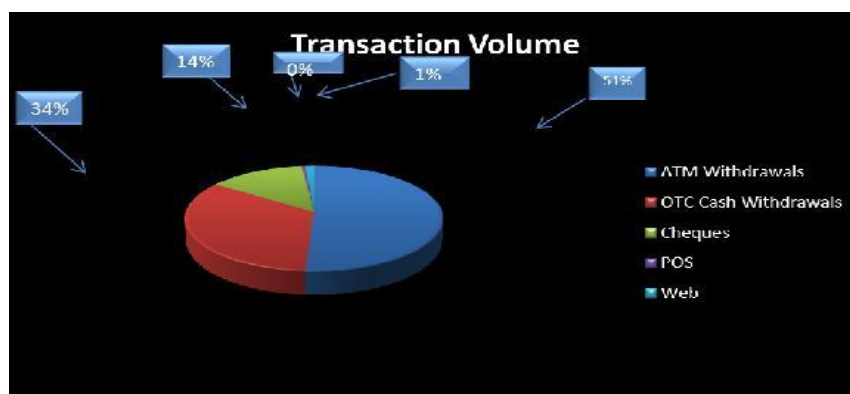
Withdrawal/Lodgement	Volume of Transaction (%)	Value of Transaction (Billions)
0-N100,000	86	491
N100,001-N150,000	4	115
Above N150,000	10	1469
TOTAL	100	2076

Figure 1: Cash Transactions

Source: [11]

10% of the numbers of cash transactions are above N150, 000 but account for 71% in the value of cash transactions.

Fig 1 above show that only 10 per cent of banks' cash transactions are above N150, 000, but they make up 71 per cent of the value of cash transactions. About 90 per cent of Nigerians carry out transactions below N150, 000. If there is reduced cash in the system, banks would be able to compete favourably. There are so many alternative payment systems in Nigeria which are even more convenient and safe, but people are not using them.



With the improvement in communication in the country, there have been a lot of improvements in the payment system.

However, the above cash withdrawal/ lodgement limit has been reviewed upwards (as noted in Fig 1). Thus, it can be deduced that new limit of N500,000 for individual customers would possibly account for the largest in terms of value and smallest in terms of transaction volume.

Another major finding of the survey can be simply illustrated in the table below:

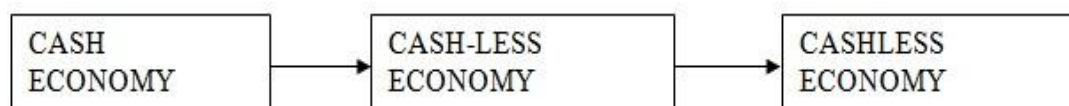
Payment channel	Transaction Volume (₦)	Percentage of Transaction (%)
ATM Withdrawal	109,592,646	50.97
Over the Counter Withdrawal	72,499,812	33.70
Cheque	29,159,960	13.56
POS	1,059,069	0.49
Web	2,703,516	1.26
Total	215,015,003	100

Figure 2: Cash Related Source:[11]

Nigeria is cash based economy with retail and commercial payments primarily made in cash. Cash related transactions represent over 99% of customer activity in Nigerian Banks today. A cursory look at Fig 2 and Fig 1 indicates that, withdrawals through ATM channels accounts for the largest percentage, followed by OTC cash withdrawals. This implies that cashless banking instruments, particularly ATMs, are attracting high level of patronage and acceptability among Nigerians [11]

RATIONAL FOR CASHLESS BANKING IN NIGERIA

Cash-less banking may be defined as that banking system which aims at reducing, not eliminating the amount of physical cash (study notes and coins) circulating in the economy, whilst encouraging more electronic based transactions (payment for goods, services, transfers etc.). In other words, it is a combination of two e-banking and cash-based systems. In mostdeveloping countries, it represents a middle phase in the development of payment system as illustrated below;



The new cash-less’ policy was introduced in April 2011 by the Central Bank of Nigeria. The justifications for this policy are briefly explained below;

- i. To drive the development and modernization of the payment system in line withNigeria’s vision 2020 goal of being amongst the top 20 economies by the year 2020. An efficient and modern payment system is positively correlated with economic development and is a key enabler of economic growth.
- ii. To reduces the cost of banking services (including cost of credit) and drive financial inclusion by providing more efficient transaction options and greater reach.
- iii. To improves the effectiveness of monetary policy in managing inflation and driving economic growth.
- iv. To curb the negative consequences associated with high cash usage, with has resulted to a number of challenges across the system. Example of challenges resulting from high-cash usage (not exhaustive) includes: corruption, robberies and cash-related crime, high cost of processing borne by every entity across the value chain (i.e. from CBN, to banks, to the operating entities as well (e.g. staff required to process cash transactions, manual operating systems, etc)), revenue leakage arising from significant handling of cash, inefficient treasury management due to nature of cash processing, limitations of monetary policy due to highvolumes of cash outside the formal economy and encourages money-laundering, terrorist funding, etc [12].

In addition, below are some detailed context and pertinent clarifications on the policy:The limits apply to the account so far as it involves cash, irrespective of the channel (e.g. over the counter (OTC), ATMs, 3rd party cheques en-cashed OTC etc) in which cash is withdrawn or deposited.

The service charge for daily cumulative deposits above the limits into an account shall be borne by the account holder. However, during the pilot run in Lagos with the intention of spread it across the nation, individuals paying money in Lagos into an account outside Lagos shall bear the charges for any single transaction above the limit. The limit also applies to cash brought through Cash-In-Transit (CIT) companies, as they are licensed to provide cash-pick up services as summary below.

Policy Elements	Initial policy (April 20,2011)	Revised Policy (March19,2012)
Daily cumulative cash withdrawals/lodgements (without fees)	*N150,000 by individuals *N1 million by corporate customers	*N500,000 by individuals *N3 million by corporate customers
Processing fee for withdrawals above limits	*10% by individual customers *20% for corporate customers	*3% by individual customers *5% for corporate customers
Processing fee for lodgements above limits	*10% by individual customers *20% for corporate customers	*2% by individual customers *3% for corporate customers
Exemptions	*None	*MDAs of the federal and state government on lodgements for account operated by them, for revenue collection purpose only
Kick off dates	*January 1,2012 for partial implementation (Pilot run without charges) in Lagos State *June 1,2012 for execution across Nigeria	*January 1,2012 for partial implementation in Lagos State *April 1,2012 for full execution in Lagos State(Charges collection to take effect from that day *June 1,2012 for execution across Nigeria

Figure 3: Central Bank Policy on Cashless Economy

Exclusion of Microfinance banks (MFBs) and Primary Mortgage Institutions (PMIs) from the policy for corporate bodies (direct withdrawal/deposit) to enable them meet the legitimate demands of their numerous customers, but such limits are applicable to the customers of MFBs and PMIs. Exemption of all embassies, diplomatic missions, and multilateral and aid donor agencies in Nigeria from such charges and penalties as it is against the international practice for sovereign states to impose penalties on other sovereign states.

RESEARCH QUESTIONS

What are the impacts of Information Technology on Cashless Economy in Nigeria?

Hypothesis

H₀: People will not embrace Cashless policy

H₁: People will embrace Cashless policy

3.1 Study Population and Sampling Technique:

There are six (6) states in the North-eastern region of Nigeria of which only three (3) states were selected and questionnaires distributed. The three states are Adamawa, Yobe and Gombe. The questionnaires were given majorly to Account Holders (Bank Customers) in five different banks in each state. The banks are GTbank, Zenith bank, First bank, UBA and Unity bank.

Three hundred and sixty respondents were used as sample for this study based on [13] recommendation that three hundred and fifty (350) and above is accepted for large population and that five percent (5%) of the selected population is alright. Also Questionnaire was used to gather information from respondents within the banking hall for the research. The questionnaire titled “**What are the impacts of Information Technology on Cashless Economy in Nigeria**”. Respondents were asked to specify their Sex, Gender, Age group and Occupation. A total number of Three hundred and sixty questionnaires were distributed in the course of the research for over a month while, total of three hundred and sixty questionnaires were returned.

Instrument for data collection

The instrument that was used for data collection for this study was:

a. Questionnaire titled “**What are the impacts of Information Technology on Cashless Economy in Nigeria**” was administered to respondents to evaluate personal preventive measures adopted regarding the research question.

3.2 Validation and Reliability of the Instrument

The face-validity and content-validity of the instrument were verified, first by the researchers by ensuring that good simple and straight forward questions are formulated then by experts in the subject area.

3.3 Data Presentation and Analysis

Table 1 show that Male uses Information Technologies direct debit devices: ATM, POS, GSM banking and Online banking has 94.20%, 65.67%, 84.51% respectively while Female are 97.92%, 57.14%, 75.51% and 96.00%. Based on this study, people patronise ATM machine more and POS machine as the least among the devices. The Research also get responses based on occupation, Table 2 shows the various occupation and the percentage of the people using each of the debit devices. For student that uses ATM, POS, GSM Banking and Online Banking has 95.65%, 47.82%, 69.57% and 63.04% respectively while Civil servant percentage for ATM, POS, GSM Banking and Online Banking has 97.44, 66.67, 87.18 and 92.31 respectively. Business has 96%, 72%, 84% and 88% for ATM, POS, GSM banking and Online Banking respectively whereas other occupation for each of the debit devices has 90%, 70%, 90% and 100% respectively.

Table 3 further explains the use of this debit devices based on the age group. 15-24, 25-34, 35-44 and 45 above has 92.31%, 93.55%, 100% and 100% of using ATM respectively while 76.92%, 50%, 62.5% and 62.5% represents those using POS. The GSM Banking based on the age group has 88.46%, 70.97%, 91.67% and 100% respectively while online banking has 80.77%, 77.42%, 95.83% and 100% respectively.

RECOMMENDATIONS

From the findings of the study, the following recommendations are proffered to sustained cashless banking policy in Nigeria at large:

1. Comprehensive awareness campaign to enlighten both existing and potential customers of its benefits
2. Adequate and well-functioning infrastructural facilities must be in place like ATM, POS machine and so on.
3. To ensure the beneficiary of cashless banking policy enjoys affordable charges and security.
4. It must be channel or targeting economic growth and development of the society
5. Fair competition should be maintained in order to prevent monopoly like behaviour by the licensed point of sales terminal machine manufacturers
6. Proper monitory and effective evaluation of cashless banking operations should be observed.
7. Harmonization of monetary and fiscal policy between the Federal Government and CBN should be maintained.

CONCLUSION

This study shows that the introduction of cashless economy in Nigeria can be seen as a step in the right direction. It is expected that its impact will be felt in modernization of Nigeria payment system, reduction in the cost of banking services as well as reduction in high security and safety risks. This should also include curbing banking related corruption and fostering transparency.

It is also assumed that the introduction of cashless policy in Nigeria will help to reduce the amount of bills and notes circulating in the economy. This should therefore reduce handling operation cost incurred on conventional money, as well as reduction in cash related crimes. It should also help to provide easy access to banking services for Nigeria.

However there may be little interruptions at times due to network failures, which may make customers unable to carry out transactions at a particular point in time. This little shortcoming is not in any way comparable to the days when banking halls were characterized by long queues mainly as a result of delays in the traditional banking operations.

REFERENCE

- [1] Basel Committee, (1998), Risk Management for Electronic Banking and Electronic Money Activities, Basel Committee Publications, No. 35
- [2] European Central Bank, (1998), *Report on Electronic Money*, Frankfurt, August.
- [3] Claudia, C. and P. De Grauwe (2001): Monetary Policy in a Cashless Society, Brussels, CEPR Discussion Study
- [4] Humphrey, D. B. and A. N. Berger (1990): Market Failure and Resource Use: Economic Incentives to Use Different Payment Instruments, New York, Monograph Series in Finance and Economics.
- [5] Humphrey, D. B. (2004): Replacement of cash by cards in U.S. Consumer Payments, *Journal of Economics and Business*, 56, 211–225.
- [6] Claudia, C. and P. De Grauwe (2001): Monetary Policy in a Cashless Society, Brussels, CEPR Discussion Study
- [7] Gresvik, O. and G. Owre (2002): Banks' Costs and Income in the Payment System in 2001, *Norges Bank Economic Bulletin*.
- [8] Adeoti, J.O (2005) "Information Technology Investment in Nigerian Manufacturing Industry: The Progress So Far", *Selected Papers for the 2004 Annual Conference*, Ibadan: Nigerian Economic Society, 213-244.
- [9] Brücher, H., L. Scherngell, (2003). "Change management in e-government." *Fachzeitschrift des CC e-Gov der Berner FH*: 11-1.
- [10] Agboola, A.A (2002): Information Technology, Bank Automation, and Attitude of Workers in Nigerian Banks" in *Journal of Social Sciences*, Kamla-Raj Enterprises, Gali Bari Paharwali, India.
- [11] Central Bank of Nigeria (2011), Money Market Indicators & Money and Credit Statistics, CBN Statistical Bulletin, CBN Publications.
- [12] Central Bank of Nigeria Website (2011), New Cash Policy, [Presentation for the Interactive Engagement Session with Stakeholders on Cash-Less Lagos](#), Stakeholder Session –Supermarket Operators
- [13] Krejcie, R.K and Morgan D.W (1970). Determining Sample Size for Research Activities, Education and psychological measurement. New York Academic Press PP.608-609.

Appendix Table 1: Respondent on Sex

Mode/Sex	ATM	POS	GSM Banking	Online Banking
Male	195	132	180	177
Female	141	84	111	114
Percentage of Male (%) using	94.20	65.67	84.51	84.29
Percentage of Female (%) using	97.92	57.14	75.51	96.00

Table 2: Respondent on Occupation

Mode / Occupation	ATM	POS	GSM Banking	Online Banking
Student	132	66	96	87
Civil servant	114	78	102	108
Business	27	21	27	30
Others	72	54	63	66
Percentage of Student	95.65	47.82	69.57	63.04
Percentage of Civil servant	97.44	66.67	87.18	92.31
Percentage of Business	96.00	72.00	84.00	88.00
Percentage of Others	90.00	70.00	90.00	100

Table 3: Respondent on Age group

Mode/Age group	ATM	POS	GSM Banking	Online Banking
15-24	72	60	69	63
25-34	174	93	132	144
35-44	72	45	66	69
45-Above	24	15	24	21
Percentage of 15-24 using	92.31	76.92	88.46	80.77
Percentage of 25-34	93.55	50	70.97	77.42
Percentage of 35-44	100	62.5	91.67	95.83
Percentage of 45-Above	100	62.5	100	100

Source: Field Survey 2013

Table 4: Summary on related Cashless policy overview

Responses	Yes	No	Total
1	321	36	357
2	342	18	360
3	291	69	360
4	297	63	360
5	216	144	360
6	315	45	360
7	350	8	358
Total	2132	383	2515

Source: Field Survey 2013

Table 5: Chi-square computational table

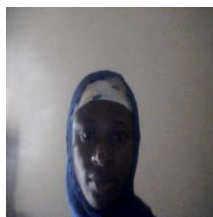
Observed (O)	Expected (E)	O-E	(O-E) ²	(O-E) ² /E= x ²
321	302.60	18.40	338.60	1.12
342	305.20	36.80	1354.00	4.44
291	305.20	-14.20	201.64	0.66
297	305.20	-8.20	67.24	0.22
216	305.20	-89.2	7956.64	26.1
315	305.20	9.80	96.04	0.31
350	303.50	46.50	2162.25	7.12
36	54.00	-18.00	324.00	6.00
18	54.80	-36.80	1354.24	24.70
69	54.80	14.20	201.64	3.70
63	54.80	8.20	67.24	1.22
144	54.80	89.20	7956.64	145.19
45	54.80	-9.80	96.04	1.75
8	54.50	-46.50	2162.25	39.67
Summation				262.2

Source: Field Survey 2013

$X^2 =$ chi-square DF=Degree of Freedom
 $X^2_{\text{tab}} = (R-1)(C-1)$, DF=(7-1)(2-1)=6, 5%=12.592;
Equation 1: $X^2_{\text{cal}} = \frac{\sum(O_{ij}-E_{ij})^2}{E_{ij}}$ $X^2_{\text{cal}}=262.2$

Decision Rule: $x^2_{\text{cal}} 262.2 > x^2_{\text{tab}}$ that is, $H_0 > H_1$ we reject H_0 and accept H_1

We reject the null hypothesis and accept the alternative hypothesis. Hence conclude that people are willing to embrace cashless policy in the North eastern region.



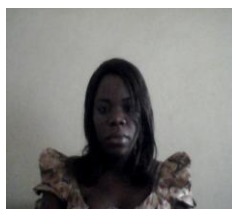
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