

Role of Information and Communication Technology in Achieving Cashless Economy

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Abstract

This study review the trajectory in the role been played by the Information and Communication Technology (ICT) in achieving cashless economy. Cashless economy is an ecosystem where transactions are made with the use of credit card or debit card, internet banking, e-wallet, POS, and so on instead of physical movement of cash. The paper also exposed that the use of Information and Communication Technology gadgets and techniques in the banking sector has made fundamental Changes in the quality, mode and content of banking businesses across the globe. This paper further reviewed the importance of digital competence in cashless economy, and established framework between them. "Digital competence refers to the set of knowledge, skills, attitudes (including abilities, strategies, values and awareness) that are required when using ICT and digital media to perform tasks, solve problems and communicate"[1]. Digital competence is a significant prerequisite to cashless economy.

Keywords: Digital Competence, ICT and Cashless Economy.

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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 society, thus every other purchases and transactions will be made by electronic channels, examples of which are e-cheque, 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 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.

Information and Communication Technology (ICT) is the automation of processes, controls, and information production using computers, telecommunications, software and other gadgets that ensure smooth and efficient running of activities [3]. It is a term that largely covers the coupling of electronic technologies for the information needs of a business at all levels. ICT has surpassed the role of support services or only electronic data processing; its areas of applications are global and unlimited. Its devices especially the Internet and modern computer with 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 [4].

[5] Opined that ICT adoption will improve three critical domains which are efficiency, quality, and transparency in any organization. [6] 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.

Another important area to look at when discussing ICT and its applications is digital competence. Digital competence is the most recent concept describing technology related skills. The dream of digital world will only come true when people are digitally competent. A cashless society is a society where currency notes or cash money are not used in monetary transactions [7]. The European Commission has defined digital

competence as involving the confident and critical use of information technology for work, leisure and communication. Digital competence incorporates a more complex and holistic proficiency in the use of ICT. The ITU (International Telecommunications Union) defines digital competence as “skills, knowledge, creativity and attitudes required using digital media for learning and comprehension and daily activities in a knowledge based society”. Digital competence consists of:

- i) Technical skills to use digital technologies.
- ii) Abilities to use digital technologies in a meaningful way for working, studying and for everyday activities.
- iii) Abilities to critically evaluate the digital technologies.

II. Literature Review

Digital competence is the set of knowledge, skills and attitudes necessary to play an active role in using ICT. It's difficult to perform cashless transactions unless one is having the relevant knowledge of various means to perform cashless transactions. In spite of relevant knowledge of various means to perform cashless transactions one may fail to do so if there is lack of skill [7]. Skill refers to the ability to do something. Hence skill is indispensable to cashless transactions. Last but not the least; attitude plays a very crucial role in any economy in making it cashless. Mere literacy of individual is not sufficient for cashless transactions. This is the attitude which breaks the resistance and helps to adopt new ways of transactions called cashless transactions.



Figure 1
Source: [7]

Digital competence means the knowledge or the understanding of the functioning of the main computer applications, skills or ability to manage information and the attitude or the recommendation gauges as essential that citizens are critical and reflective towards information [8]. A digitally competent person has effective ICT skills, an ability to critically evaluate information and social awareness. A citizen is digitally competent if he or she is able to make use of digital means to reach personal goals.

2.1 Digital Competence and Cashless Economy

Digital Literacy is the key to more effective e-payments and cashless transaction. A cashless economy is one in which all the transactions are done using cards or digital means. The circulation of physical currency is minimal. Complete cashless economy is neither feasible nor desirable from economic point of view, especially underdeveloped countries where majority of population is unable to use ICT and digital media [9]. Hence, it's better to use the term less cash instead of cashless. In this paper cashless means less cash and vice versa. There are various modes to go for cashless payments, such as:

- i. E-wallets: Paytm, Free charge etc.
- ii. Plastic money: Debit cards, Credit cards
- iii. Net banking, Mobile banking (mobile payment system), Online banking, etc
- iv. Other e-channels: ATM, POS, etc

On the other hand, digital competence comprises the related knowledge and skills you need to have to exploit ICT efficiently for your own needs, be it for your personal or professional life [10]. In this era of technology, most of us opt for cashless transactions as it is an easy way out for making payments. To make cashless transactions, a person has to be digitally competent. A person needs to have the knowledge, the skills and the attitude to make use of the ICT. In some countries like Nigeria and India, many literate people don't know how to operate cards. Many have the fear of being cheated by fraudsters. Most of us lack the right attitude for using digital means leading to cashless transaction. Mobile payment system is a popular system of payment and allows commercial transactions to be carried out anywhere, any time and by anyone and such type of transactions support cashless economy [11]. [11] Observed that some payments are now being automated and absolute volume of cash transactions have declined under the impact of electronic transaction brought about by

the adoption of ICT to the payment system especially in the developed countries. Digital competence focuses on developing digital skills which can be applied to a wide range of subjects and scenarios. Financial literacy and awareness about digital transactions which leads to digital competence is paramount to make cashless economy a reality. For carrying out different kinds of digital transactions appropriately, safely, confidently and with a definite purpose, an individual must be digitally competent and financially literate and aware about digital transactions.

2.2 Relationship between Digital Competence and Cashless Economy

Digital Competence is the set of knowledge, skills, attitudes, abilities, strategies, and awareness that are required when using ICT and digital media to perform tasks; solve problems; communicate; manage information; collaborate; create and share content; and build knowledge effectively, efficiently, appropriately, critically, creatively, autonomously, flexibly, ethically, reflectively for work, leisure, participation, learning, and socializing [7]. This definition has been categorized into various segments as shown in figure 2.

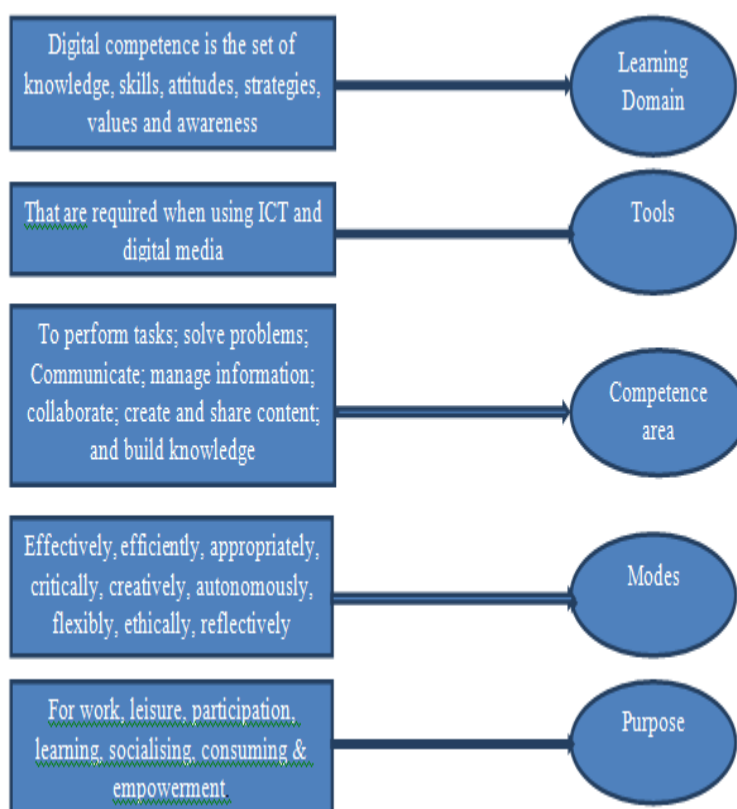


Figure 2
Source: [3]

Online shopping is the fruit of information Technology sector [7]. ICT user skill represents the capabilities required for the effective application of ICT system and devices by the individual, apply system as a tool in support of their own work [8]. Media literacy refers to skill, knowledge and understanding that allow consumer to use media effectively and safely [9]. Cashless economy depends on ICT, [11] suggested that ICT ensures success of cashless policy

Digital competence is combination of knowledge, skills and attitudes related with ICT and digital media that are required for cashless transactions. Figure 3 tried to explain how digital competence is related to cashless transactions or how digital competence leads to cashless economy.

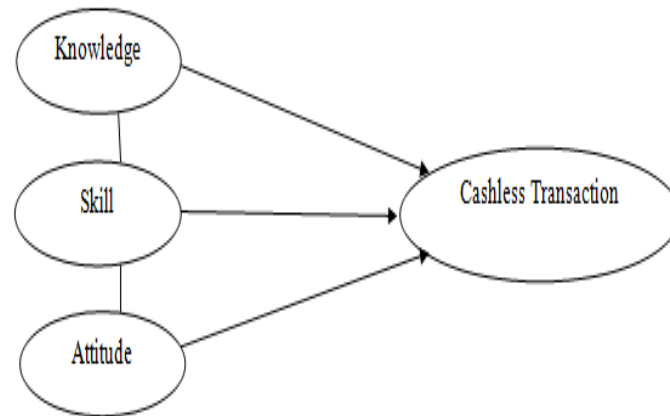


Figure 3
Source: [7]

From figure 3, it's clear that knowledge, skills and attitudes are the learning domain which can be learnt to perform cashless transactions which lead to cashless economy. Cashless economy is not possible without cashless transactions. Therefore it's clear that digital competence leads to cashless transactions and subsequently to cashless economy. Norway became the first country in the world with a national curriculum where digital competence was one of the five basic core competencies. [10] Observed that computer literacy, media literacy, digital literacy and digital competence are all concepts which highlight the need to handle technology in the digital age. Digital competence has broader and holistic meaning. Digital competence helps to manage ICT and other digital media. Hence it's worth mentioning that digital competence is the road to cashless transactions / less cash transactions and there is a direct link between digital competence and cashless transaction.

2.3 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 most developing countries, it represents a middle phase in the development of payment system as illustrated in figure 4.

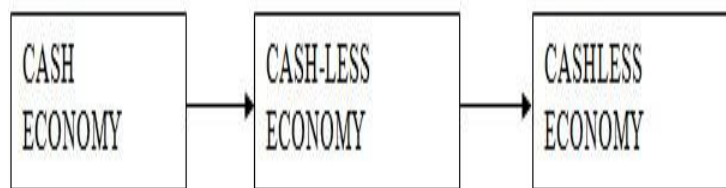


Figure 4
Source: [10]

The first cash-less' policy in Nigeria was introduced on 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 with Nigeria'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 improve the effectiveness of monetary policy in managing inflation and driving economic growth.
- iv. To curb the negative consequences associated with high cash usage, which 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 high volumes 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 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 spreading 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 summarized in Table 1.

Table 1: Cashless Banking Policies in Nigeria

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
	Source: [12]	

III. Research Questions

Questions were asked using a questionnaire tagged “Role of ICT in Cashless economy”.

3.1 Study Population and Sampling Technique:

This study covers the South-eastern region of Nigeria. There are five states in the South-eastern region of Nigeria of which only three (3) states were selected and questionnaires distributed. The three states are Abia, Enugu and Ebonyi. The questionnaires were given majorly to Account Holders (Bank Customers) of different banks.

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 through the use of ICT by designing a Google form which was distributed to the respondents. The questionnaire titled “**Role of ICT in Cashless Economy**”. 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 two weeks while, total of three hundred and sixty questionnaires were submitted.

3.2 Data collection Instrument

The instrument that was used for data collection for this study was: a Questionnaire titled “**Role of ICT in Cashless Economy**” as administered to respondents to evaluate their level of awareness, level of digital competence, types of e-channels they use, personal preventive measures adopted regarding the use of ICT in achieving a cashless economy.

3.3 Validation and Reliability of the Instrument

The face-validity and content-validity of the instrument were verified, by the researchers by ensuring that good, simple and straight forward questions were formulated.

3.4 Data Presentation and Analysis

The data collected showed that 219 Males and 141 Females use one form of ICT means to perform cashless transactions which represent 60.83% and 39.17% respectively. Based on age group; 15-25, 26-35, 36-45, and 46- above has 8.33%, 45.28%, 36.94% and 9.44% respectively. Occupation has the following distribution; Student-17.5%, Civil servants-20.28%, Business-16.11%, Senior citizen-0%, Other professionals (Engineers, Pharmacists, Scientists, e t c) -28.33% and others– 17.78%.

The various means of achieving e-payments has the following distributions ATM-30%, POS-24.44%, Mobile banking-19.44%, e-wallet-5.56%, Online banking-18.61% and direct debit has 1.94%. 23.89% respondents agreed that ICT has changed the face of banking operations globally while 73.33% strongly agreed and 2.78% strongly disagreed.

All the respondents agreed that ICT has made transactions easier and convenient through electronic means of payment. Though 21.94% said they have been defrauded before through e-payment, 95.8% still advocate for its continuous use in driving home a cashless economy across the globe

3.5 Results

The results from the data analysis are shown below;

- i. Figure 5 shows the age distribution of respondents.

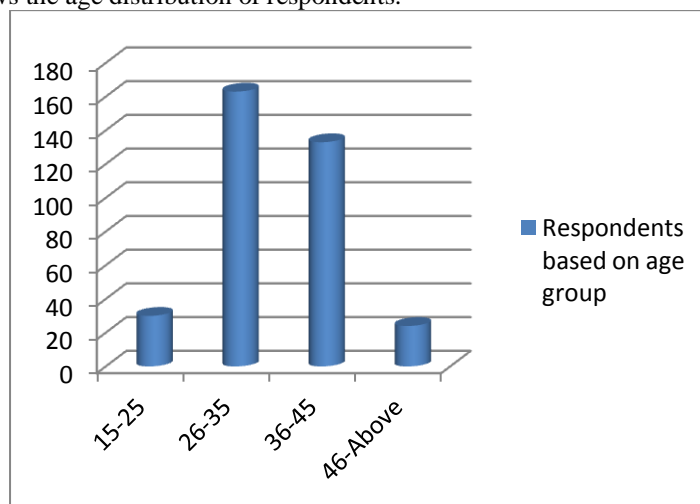


Figure 5: Field Work (2021)

- ii. Figure 6 shows the distribution of the occupations of the respondents.

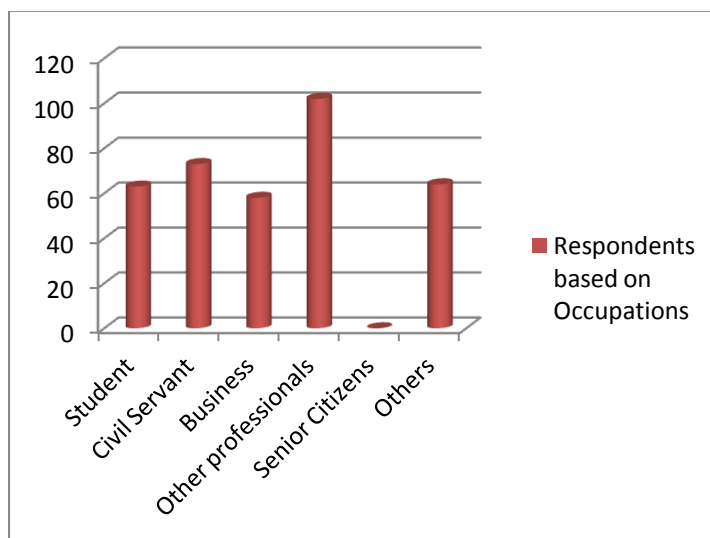


Figure 6: Field Work (2021)

iii. Figure 7 shows the distribution of the gender of the respondents.

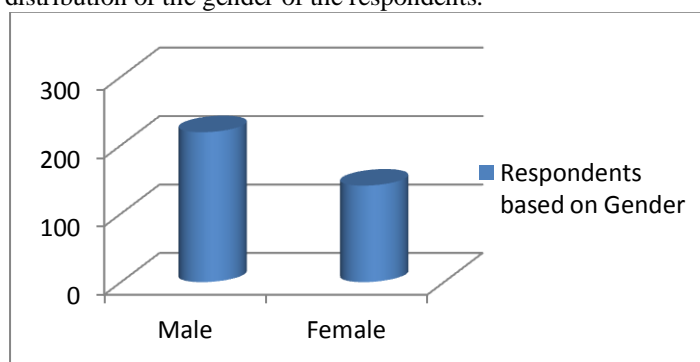


Figure 7: Field Work (2021)

iv. Figure 8 shows the distribution of the level of awareness of respondents on the use of ICT in achieving Cashless Economy.

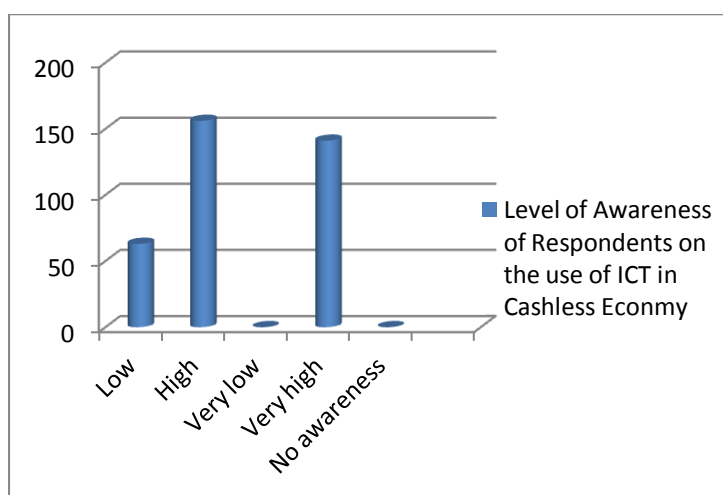


Figure 8: Field Work (2021)

v. Figure 9 shows the distribution of the usage of e-channels by the respondents.

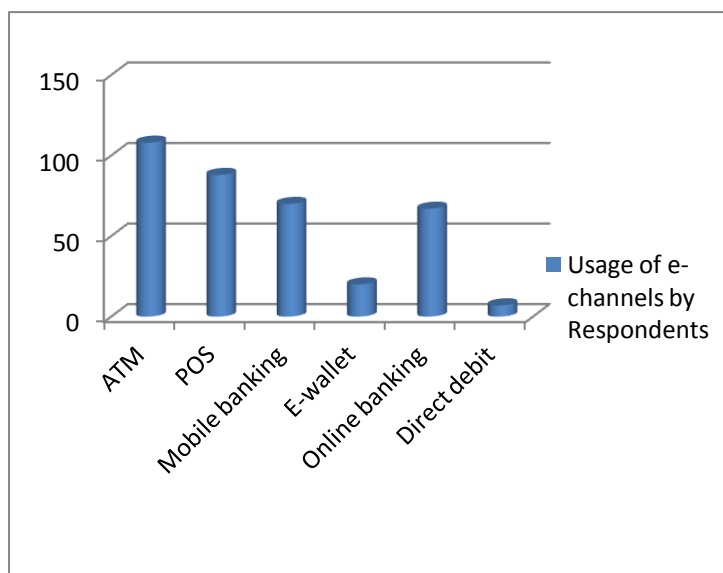


Figure 9: Field Work (2021)

vi. Figure 10 shows the level of fraud in the usage of e-channels in cashless economy by the respondents.

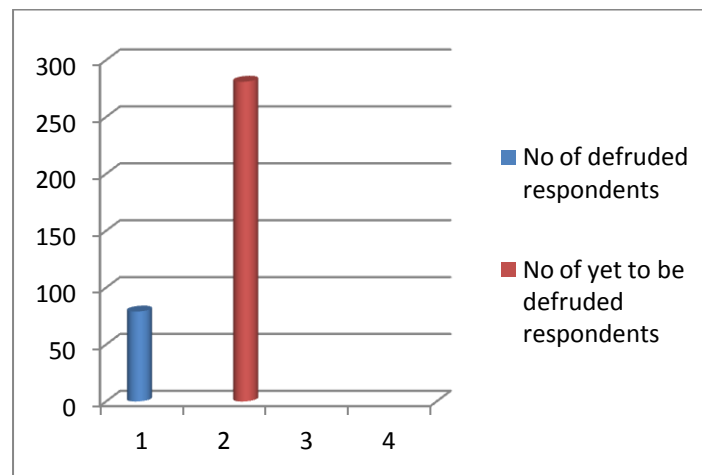


Figure 10: Field Work (2021)

vii. Figure 11 shows the number of respondents who advocate for continuous use of ICT to achieve Cashless economy against those who advocate for discontinuing its usage.

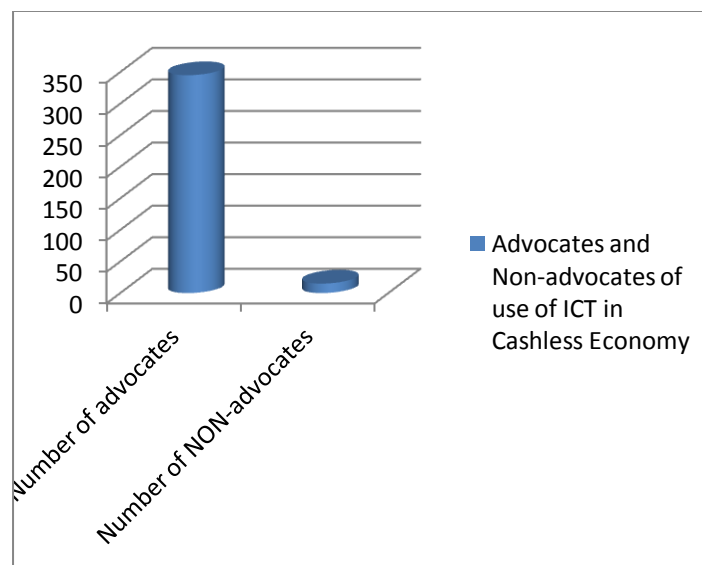


Figure 11: Field Work (2021)

3.6 Discussion

From the findings of this study, the following observations were made;

- i. There is a continuous acceptability of the use of ICT in achieving cashless economy.
 - ii. More males use e-channels for payments than females.
 - iii. The use of ICT in cashless transactions is more pronounced in people within the age of forty-five and below while age forty-six and above are less interested.
 - iv. Professionals and people in business use ICT channels in making payments more than other categories of people like students, civil servants and so on.
 - v. ATM and POS channels enjoy more confidence from people while direct debit and e-wallet enjoy less.
- In order to sustain cashless banking policy especially in the underdeveloped and developing countries, the following measures will be helpful:
- a. Adequate and well-functioning infrastructural facilities must be in place like ATM, POS machine and so on.
 - b. Comprehensive awareness campaign to enlighten both existing and potential customers of its benefits.
 - c. Ensuring that the beneficiary of cashless banking policy enjoys affordable charges and security.
 - d. It must be channeled or targeted at economic growth and development of the society
 - e. Fair competition should be maintained in order to prevent monopoly like behaviour by the licensed point of sales terminal machine manufacturers

- f. Proper monetary and effective evaluation of cashless banking operations should be observed.
- g. Harmonization of monetary and fiscal policy between the Governments and their Central Banks should be maintained.

IV. Conclusion

This study shows that the introduction of cashless economy across the globe can be seen as a step in the right direction. It is expected that its impact will be felt in modernization of 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 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.

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. There is issue of lack of anonymity on the net when making use of online payment. Also the issues of hackers, crackers, spamming and so on are on the rise. These shortcomings are 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 and some associated dangerous issues about cash based economy which have been enumerated in the introduction of this paper.

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]. Salihu, S. A. and et al (2013), Impacts of ICT in Cashless Economy in Nigeria, international Journal of Engineering and Science, Vol. 2, issue 10. PP 80-86.
- [4]. 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.
- [5]. Brücher, H., L. Scherngell, (2003). "Change management in e-government." *Fachzeitschrift des CC e-Gov der Berner FH*: 11-1.
- [6]. 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.
- [7]. Mohammed Salman and Imran Saleem (2017), Role of Digital Competence in Cashless Economy in *Journal of Business and Management*, Vol. 19, Issue 11. PP 49-53.
- [8]. Ala- Mutka, K. (2011). Mapping digital competence: Toward a conceptual understanding. European Commission Joint Research Centre
- [9]. Catelli, A. (2012). Current trend and future practices for digital literacy and competence.
- [10]. Krumsvik, R.J. (2008). Situated learning and teachers' digital Competence *Education Info Techno* ((2008) 13:279–290
- [11]. Rao, S. (2005). Bridging digital divide, Efforts in India, *Telemetric and informatics*, Volume 22, Issue 4, PP 361–375.
- [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.608-60

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