

An Assessment of the Relationship Between the Volume and Value of Ict Transactions in the Nigerian Deposit Money Banks: 2007-2017

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Abstract

This paper summarizes the arguments and counterarguments within the scientific discussion on the benefit of using Information and Communication Technology for banking operations. The main purpose of the research is to examine the effect of Information and Communication Technology (ICT) on profit performance of Deposit Money Banks in Nigeria. A systematization literary approach for solving the problem is Regression Analysis. In the Regression Equation, Value of transactions is the dependent variable and Volume of transaction is independent variable. Secondary data was sourced from Central Bank of Nigeria Financial Stability Report and Central Bank of Nigeria Draft Annual Report and Financial Statement. The results of findings within the years of analysis (2007-2017) indicated that there was no significant relationship between the value of ICT transactions and the volume of ICT transactions from January to June. It was discovered that there was no significant relationship between the value of ICT transactions and the volume of ICT transactions from July to December. It was also revealed there was an overall significant relationship between the value of ICT transactions and the volume of ICT transactions from January to December. The study therefore recommends that Banks should create a bi-annual or annual workshop on educating their customers on how to use the available banking ICTs successfully in order to increase bank patronage, volume of ICTs transactions and profitability, Banks should improve their ICTs service delivery in order to enhance efficiencies in the banking operation in Nigeria, Banks should discover more of new banking ICTs on a yearly basis in order to meet up with their foreign counterparts which will further strengthen the Banking industry in Nigeria.

Keywords: Information and Communication Technology (ICT), Deposit Money Banks, value of ICT transactions, volume of ICT transactions, ICT Bank Products.

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1.1 Introduction

Information and communication technologies (ICTs) are now an integral part of organizational life in recent times. These technologies are being utilized in communications, decision making support, production or manufacturing and operation, and in administration or office work (Keramati, 2007). In general, such technologies have an undeniable impact on the various processes and dynamics in organizations. The impact of ICTs can be seen on both workers and organizations along the four dimensions: working time, working place(s), type of contract and work content (applied skills) (Gareis & Korte, 2002).

Recently, there has been a growing awareness on the significance of ICTs (Oladejo & Agbeja, 2012). This is, particularly, reflected in the growing investments in the information systems, and such investments, constitute

a large part of firms' discretionary expenditures (Gu & Jung, 2013; Mithas et al. 2012). Apparently, as Mithas et al. (2012) put it, "managers need to understand the likely impacts and mechanisms to justify and realize the value of their Information technology (IT) and related resource allocation processes". In this context, the impact of ICTs on profitability is of a particular importance. This is because; profitability is one of the most important factors for any successful business enterprise (Yang & El-Haik, 2003). It is a basic requirement and a necessary condition for developing and sustaining a business (Isaac, 2012; Pesonen, 2000; Bi & Zhang, 2008).

The information systems research has made a significant progress in relating information technology to firm performance and in demonstrating a relationship between IT and some aspect of firm value (Kohli & Grover, 2008; Mithas et al. 2012). However, on one hand, the current literature on the effects of information technology on profitability offers mixed and contradictory results, as some studies reported non-significant or negative IT contributions to business value, whereas, some other research found IT contributions very positive. This phenomenon has been referred to as "IT productivity paradox" or the "Solow computer paradox" (C.F. Shu & Strassmann, 2005; Mithas et al. 2012). On the other hand, the literature also shows that, the effects of information technology on profitability may differ between industry sectors (for example, C.F. Mithas et al. 2012).

This class of literature suggests that, in order to advance and broaden our understanding of this difference as well as of the indicated paradox; it is important for researchers to continue investigating and exploring information-technology profitability relation, in the different sectors and in developed and developing economies. Hence, in this context, the present study is an effort to contribute to the literature in this area. It focuses on the banking sector and explores the impact of information technology on profitability in commercial banks in Jordan. ICTs have direct effects on how managers decide, plan and what products and services are offered in the banking industry. Such technologies have continued to change the way banks and their corporate relationships are organized worldwide and the variety of innovative devices available to enhance the speed and quality of service delivery (Agbolade, 2011).

Information and communication technology have become global tool for banking industry to reach global markets. The use of ICT in banks has become a global phenomenon and every bank must be ICT compliance in order to survive in global competitive environment. The introduction of ICT has changed manual and traditional forms of doing business and is being replaced by the sophisticated technology that is based on automation and interconnection of computers and other electronic devices. For instance, ledger books, paper invoice, printed materials and business trips are being replaced with online billing and payments, elaborate website with product information and real-time teleconferencing across continents and time zones (Ojokuku and Sajuyigbe, 2012). Ovia (2001) said that the banking industry has moved into an era of menu-driven ultra-robust specialized software programmes called banking applications and these applications can carry out virtually all banking functions relying heavily on information collection, storage, and transfer and processing. Woherem and Adeogri (2000) claimed that only banks that overhaul the whole of their payment and delivery systems and apply Information communication technology (ICT) to their operations are likely to survive and prosper in the new millennium. He advises banks to re-examine their service and delivery systems in order to properly position them within the framework of the dictates of the dynamism of information and communication technology. Abubakar and Rasmainsi (2012) observed that Information and communication technology has become the heart of the banking sector, which is the heart of every robust economy. The advancement in Technology has played an important role in improving service delivery standards in the Banking industry. In its simplest form, Automated Teller Machines (ATMs) and deposit machines now allow consumers carry out banking transactions beyond banking hours. With online banking, individuals can check their account balances and make payments without having to go to the bank hall. This is gradually creating a cashless society where consumers no longer have to pay for all their purchases with hard cash (Josiah and Nancy, 2012).

The Internet is globally widespread in use, becoming an integral of IT within businesses as well as many homes. A vast market has developed on the Internet, online purchasing and banking have been by-products of this growth. Many businesses have been quick to recognize and exploit the niche. The range product on-line is virtually inexhaustible and puts the Internet at the top of the list of convenience good, alongside ready-made meals. In this rapidly evolving modern society of which we are all a part, convenience has become crucial to survive the ever-increasing pace of life.

In particular, e-business, one of the IT applications with the highest impact upon the global economy, is creating a new business environment. As a growing number of companies launch new Internet-based business lines, many of the new technology advances occur as a result of their using the Internet to improve business processes. This often involves using the Internet to carry out business transactions. E-business has revolutionized the business sector in a way unprecedented in past centuries. It has fostered a new set of economic and social relationships. A critical use of the Internet is to develop and experiment with new business models. It is not technology by itself that makes or breaks an Internet venture, but the underlying innovation and adequacy of the adopted business approach. IT and e-banking have now become the key elements for strengthening the competitiveness of the national economy and improving the productivity and efficiency of both private and government banks. However, access to and use of these technologies remains extremely uneven.

1.2 Statement of problem

The advent of information technology in the operations of the commercial banks in Nigeria among other sectors has brought about several noticeable developments. With the digitalization process that has been occurring in society, consumer behaviour is changing and consumers are starting to expect bank services at anytime and anywhere (Becket et al., 2000). As the customers in deposit money banks are natural persons, the changes in consumer behaviour is especially noticeable in the banking sector as deposit money banks now have to keep up with the fast-changing preferences of the consumers to keep them satisfied in order to enhance the customer relationship and efficiencies. If deposit money banks fail to keep up with the new preferences, then customers will start to become unsatisfied and start looking elsewhere (Storbacka & Lehtinen, 2012).

Studies reveals that almost a quarter of customers are planning on changing banks in the near future, which is an indication that banks are not keeping up with the changing preferences (Accenture, 2015b). The paradox behind the information technology productively makes many managers to believe that the huge investment does not commensurate with increase in productivity. Given the high level of financial stakes involved, the investigation of the impact of information technology on organizational and employee performance has been and continues to be a major research concern for both academicians and practitioners.

1.2 Objectives of the study

The broad objective of this study is to examine the impact of Information Technology (ICT) on the profit performance of Deposit Money Banks in Nigeria. The specific objectives within the period of analysis (2007-2017) are to:

- (i) Examine the relationship between the value of ICT transactions and the volume of ICT transactions from January to June.
- (ii) Examine the relationship between the value of ICT transactions and the volume of ICT transactions from July to December.
- (iii) Examine the relationship between the value of ICT transactions and the volume of ICT transactions from January to December.

1.3 Statement of hypothesis

Ho: There is no significant relationship between the value of ICT transactions and the volume of ICT transactions from January to June.

Ho: There is no significant relationship between the value of ICT transactions and the volume of ICT transactions from July to December.

Ho: There is no significant relationship between the value of ICT transactions and the volume of ICT transactions from January to December.

1.4 Justification of the study

The dominant role that the banking industry plays in Nigerian economy cannot be over-emphasized. Government, statutory corporations, corporate bodies, businessmen, civil servants depend on the banks for the transaction of one business or the other. However, this research will enable banks to identify ways of remaining competitive in the global and domestic financial industry. It helps prepare banks repositioning towards meeting the challenges imposed by global banking. It is expected that the work will contribute to the bank's future projections on strategies to be used in attracting depositors' funds, reduce queues in the banking

hall, the bank's management policies. Also, this research work intends to contribute to knowledge in academic field and serve as a source of reference to researchers who would carry out research on similar study in the future.

2. Literature Review

2.1. Conceptual Review

2.1.1. Banking Products. Information and Communication Technology (ICT) banking products are stated below:

Point of Sale terminals. POS terminals handle cheque verifications, credit authorization, cash deposit and withdrawal, and cash payment. This enhances electronic fund transfer at the point of sale (EFTPOS). EFTPOS enables a customer's account to be debited immediately with the cost of purchase in an outlet such as a supermarket or petrol station. It consists of the accumulation of electronic payment messages by the retailer, which are subsequently passed on to appropriate institutions for processing. The purchase price is debited on the buyer's account and credited on the seller's account.

The Card System. The card system is a unique electronic payment type. The smart cards are plastic devices with embedded integrated circuit being used for settlement of financial obligations. The power of cards lies in their sophistication and acceptability to store and manipulate data, and handle multiple applications on one card securely. Depending on the sophistication, it can be used as a Credit Card, Debit Card and ATM (Automated Teller Machine) card.

A credit cards. This is a payment card issued to users as a system of payment. It allows the cardholder to pay for goods and services based on the holder's promise to pay for them. The issuer of the card creates a revolving account and grants a line of credit to the consumer (or the user) from which the user can borrow money for payment to a merchant or as a cash advance to the user.

A debit cards. This is also known as a bank card or check card is a plastic payment card that provides the cardholder electronic access to his or her bank account(s) at a financial institution. Some cards have a stored value with which a payment is made, while most relay a message to the cardholder's bank to withdraw funds from a payee's designated bank account. Online debit cards require electronic authorization of every transaction and the debits are reflected in the user's account immediately. The transaction may be additionally secured with the personal identification number (PIN) authentication system; some online cards require such authentication for every transaction, essentially becoming enhanced automatic teller machine (ATM) cards.

Automated Teller Machine (ATM). An ATM device allows a bank customer to withdraw cash from his account via a cash dispenser (Machine), and the account is debited immediately. A fundamental advantage is that it needs not to be located within the banking premises. It is usually in stores, shopping malls, fuel stations etc. It saves customers time in service delivery as alternative to queuing in bank halls, customers can invest such time saved into other productive activities. ATMs are a cost-efficient way of yielding higher productivity as they achieve higher productivity per period of time than human tellers.

Mobile Banking. Mobile Banking refers to provision of banking- and financial services with the help of mobile telecommunication devices. The scope of offered services may include facilities to conduct bank and stock market transactions, to administer accounts and to access customized information.

2.1.2. Concept of ICT and a Perspective of Nigerian Banks. The revolution in ICT has made the banking sector changed from the traditional mode of operation to presumably better ways with technological innovation that improves efficiency. According to Mejabi (2008), information and communication technology is a general term that describes any technology that helps to produce, manipulate, store, communicate and/or disseminate information. Microsoft Encarta 2009 defined information and communication technology as the processing of data via computer: the use of technologies from computing, electronics, and telecommunications to process and distribute information in digital and other forms. Information technology combines the technology of computers and communications to provide information processing services throughout the office or around the world. Sajuyigbe and Alabi, (2012) posited that ICTs encompass technologies that can process different kinds of information (audio, video, text, and data), and facilitate different forms of communications among human agents, and among information systems.

Information and communication technology is a term which generally covers the harnessing of electronic technology for the information needs of businesses at all levels, (Anderson, 1990). In addition, Longley and

Shain (1992), defined information and communication technology as the acquisition, processing, storage and dissemination of vocal, pictorial, textual and numerical information by a micro-electronic based combination for computing and telecommunication. While an information system (IS) is a group of formal process that together collects, retrieve, process, store and disseminate information for the purpose of facilitating planning, control, coordination and decision making in organizations. Information and communication technology on the other hand provides the technical solutions identified in the (IS) information system; including the networks, hardware and software (Accad, 2009). Ovia, (2001) conceived of information and communication technology to broadly encompass the information that business creates and use as well as a wide spectrum of increasingly convergent and linked technologies that process the information. In addition to computers, the data recognition equipment, communication technologies, factory automation and other hardware services are involved. Traditionally, telephone, radio and television were referred to as media technology.

The use of information and communication technology in banking operations is called electronic banking. Ovia, (2001) argued that Electronic banking is a product of e-commerce in the field of banking and financial services. In what can be describe as Business-to-consumer (B2C) domain for balance enquiry, request for cheque books, recording stop payment instruction, balance transfer instruction, account opening and other forms of traditional banking services. Banks are also offering payment services on behalf of their customer who shop in different e-shops. The use of ICT has delivered a wide range of value added products and services to bank customers (Ojokuku and Sajuyigbe, 2012). The use of information technology in banking operations is called electronic banking. Josiah and Nancy, (2012) observed that there are positive impacts of e-banking on bank turnover and profitability and to a lesser extent on employment, most notably when e-commerce is part of larger business strategies of bank. The use of e-banking can contribute to improved bank performance, in terms of increased market share, expanded product range, customized products and better response to client demand.

Only banks that use their technology resources effectively have the opportunity to secure real competitive advantage in this fast changing industry through real product or service differentiation. Information and Communication Technologies (ICTs) may be viewed in different ways. The World Bank defines ICTs as “the set of activities which facilitate by electronic means the processing, transmission and display of information” (Alu, 2002). ICTs “refer to technologies people use to share, distribute, gather information and to communicate through computers and computer networks” (Laudon and Laudon, 2001). ICTs can be described as a complex varied set of goods, applications and services used for producing, distributing, processing, transforming information (including) telecoms, TV and radio broadcasting, hardware and software, computer services and electronic media” (Laudon and Laudon; 2010). ICTs represent a cluster of associated technologies defined by their functional usage in information access and communication, of which one embodiment is the Internet.

2.2. Empirical Review

Gupta & Collins (1997) reported the results of an empirical study that evaluated the contribution of information systems to various productivity and efficiency measures in a bank. It presented three main findings: First, there is a lack of rigorous analysis and theoretical framework that explores the link between investments and a bank’s efficiency. Second, top professionals strongly feel the need to develop more rigorous cost-benefit methodologies that will help them sell the technology to top managements. Third, traditional measures of productivity, such as decrease in operating costs and increase in profits, continue to be the most popular measures of efficiency and return on investments, although these measures may not be suitable for information systems and technologies.

Prasad & Harker (1997) examined the effect of IT investment on both productivity and profitability in the US retail banking sector. The paper concluded that additional investment in IT capital may have no real benefits and may be more of a strategic necessity to stay even with competitors. However, the results indicated that there are substantially high returns on increase in investment in IT labor, and that retail banks need to shift their emphasis on IT investment from capital to labor.

In their study on the contribution of information technology to banks' profit, the authors, Shu & Strassmann (2005) revealed that the data gathered in 1980 might not have pointed to a strong IT productivity in the banking industry, but their research using data from 12 US banks covering the period between 1989 to 1997 showed that IT is the only variable with positive marginal gain and its productivity is far better than labor. Holland, Lockett & Blackman (1997) argued that the broad competitive forces of information technology, globalization

and deregulation destabilizes the banking industry, this leads to irrevocable changes and allow new entrants, disintermediation, innovation and customer changes on a much greater scale than has occurred in the past.

The research of Ho & Mallick (2006) analyzed how IT-related spending affect (both theoretically and empirically) bank profits via competition in financial services that are offered by the banks. The paper utilized a Hotelling model to examine the differential effects of the information technology (IT) on moderating the relationship between costs and revenue. The impact of IT on profitability was estimated using a panel of banks over 20 years. The paper found that bank profits declined due to the adoption and diffusion of IT investment, reflecting negative network effects in the banking industry.

Casolaro & Gobbi (2007) analyzed the effects of investment in information technologies (IT) on the financial sector using micro-data from a panel of 600 Italian banks from the period of 1989–2000. Stochastic cost and profit functions were estimated allowing for individual banks' displacements from the best practice frontier and for non-neutral technological change. The results showed that both cost and profit frontier shifts were strongly correlated with IT capital accumulation.

As for studies on the topic concerned with the developing world, Mittal & Dhingra, (2007) used the method of Data Envelopment Analysis (DEA) to study the impact of computerization on Indian banks' profitability and productivity. Private sector banks, which took more IT initiative, were found to be more efficient in productivity and profitability parameters than public sector banks. The empirical study of Stella (2010) assessed the impact of ICT on the productivity of the Nigerian banking sector. The Transcendental Logarithmic Production function and the CAMEL rating were used for the study. The Results showed that bank output such as loans and other assets increased significantly with changes in expenditure on information communication technology. Information communication technology labor expenses impacted more on bank output than capital expenditure on ICT gadgets.

In Nigeria, Agbolade (2011) used a primary data sourced through a structured questionnaire administered to selected banks in the south-west region of the country and the Ordinary Least Square approach of econometric techniques was used to examine the nature of the relationship that exists between Banks Profitability and the Adoption of Information and Communication Technology. The data analysis showed that a positive correlation exists between ICT and banks' profitability in Nigeria. On the contrary, in their analysis of four Nigerian banks, using data generated from annual financial reports of the sampled banks for a seven-year period (2005 to 2011), and by applying ordinary least squares (OLS) statistics stated in a multiple form to data generated, (Ugwuanyi & Ugwuanyi (2013) suggested that a negative relationship existed between information technology expenditure and bank profitability, indicating that IT expenditures of all the studied banks do not increase bank profitability, but rather, decreases it insignificantly.

Mashal (2006) examined the effect of IT investment in productivity and profitability by analyzing data from the Arab Bank, one of the leading banks in Jordan, during the period between 1985 to 2004. The results indicated that there are substantial returns due to an increase in investment in IT capital, a fact which incentivizes the bank's management to shift its emphasis on IT investment from labor to capital.

Siam (2006) examined the effects of electronic banking on bank's profitability. The author concluded that the impact of electronic banking on bank's profitability will be a feature of the short run due to the capital investment by the banks on infrastructure and training, but, it will be positive in the long run. In the same regard, Khrawish & Al-Sa'di (2011) tested the effect of e-banking services provided by banks on the internet on the profitability of these banks. The regression analysis showed that, there is no significant impact of e-banking services on the profitability of recent adopter's banks in terms of ROA, and ROE. For early adopters, the results were much better than those for the early adopters, but still not significant with the profitability of these banks.

3.1. Methods for achieving the stated objectives. The strategies used for achieving the stated objectives were simple regressions of which three equations were formulated in order to achieve the three specific objectives stated within the period of analysis. In the equations, the hypotheses stated were tested. The equations are Effect of ICT equation 1 (Jan-Jun), Effect of ICT equation 2 (July-Dec), Effect of ICT equation 3 (Jan-Dec). Several authors have also used this approach in their works (Reinhart & Tokatlidis, 2000; Olukotun, Adewole & James, 2015; Popoola M.A, Adewole J.A & Idih O.E, 2018) and they were able to arrive at unbiased and accurate results. As a result of this, the approach of regression analysis cannot create a weakness in terms of the results presentation. The data used for this study were source from Central Bank of

Nigeria Statistical Bulletin which is Volume and Value of ICT transactions (from Jan-Jun), Volume and Value of ICT transactions (from July-Dec), Volume and Value of ICT transactions (from Jan-Dec).

The data were choosing to examine the relationship between the volume and value of ICT transactions in the Nigerian deposit money banks.

3.2. Discussion on Findings. The data collected for analysing the relationship between the volume and value of ICT transactions in the Nigerian deposit money banks (2007-2017) was presented in Appendix (see appendix A).

EQUATION 1: From the results of **Effect of ICT equation 1 (Jan-Jun)**, the correlation coefficient (R) was 0.13. This means that there is a very weak correlation between dependent and independent variables. The coefficient of determination (R-Squared) was 1.6%. This means that 1.6% variation in the dependent variable is explained by the independent variable and 98.4% of the variation in the dependent variable is explained by the disturbance term or error term. In other words, 1.6% variation in value of ICT transactions was explained by variation in volume of ICT transactions. 98.4% variation in the dependent variable is explained by variation of the variables excluded from the model (see appendix B).

The confidence intervals result revealed that the level of confidence interval 95%. This means that the samples data of the model reflects the fraction of calculated confidence intervals that encompass the true population. The Collinearity Diagnostics result reveals that Variance Inflation Factors (VIF) is 1.00. The general rule is that VIFs exceeding 4 warrant further investigations while VIFs exceeding 10 are signs of serious multicollinearity requiring correction. Since VIFs result is 1.00 in this model, it does not require further investigations (see appendix B).

Testing for the statistically significant at 5% {Effect of ICT equation 1 (Jan-Jun)}

Ho: $b\beta$

Ho: There is no significant relationship between the value of ICT transactions and the volume of ICT transactions from January to June.

Decision

t0.05 at (11 – 2) 9 degrees of freedom was statistically significant because analysis of variance (Anova) P – value > 0.05; p - value = 0.713. Therefore, H_0 is accepted and H_1 is rejected, meaning that there is no significant relationship between the value of ICT transactions and the volume of ICT transactions from January to June within the period of analysis. This also means that ICT transactions did not increase the profitability of deposit money banks from Jan to June within the period of analysis (see appendix B).

EQUATION 2: From the results of **Effect of ICT equation 2 (Jul-Dec)**, the correlation coefficient (R) was 0.454. This means that there is a weak correlation between dependent and independent variable. The coefficient of determination (R-Squared) was 20.6%. This means that 20.6% variation in the dependent variable is explained by the independent variable and 79.4% of the variation in the dependent variable is explained by the disturbance term or error term. In other words, 20.6% variation in value of ICT transactions was explained by variation in volume of ICT transactions. 79.4% variation in the dependent variable was explained by variation of the variables excluded from the model (see appendix C).

The confidence intervals result revealed that the level of confidence interval 95%. This means that the samples data of the model reflects the fraction of calculated confidence intervals that encompass the true population. The Collinearity Diagnostics result reveals that Variance Inflation Factors (VIF) is 1.00. The general rule is that VIFs exceeding 4 warrant further investigations while VIFs exceeding 10 are signs of serious multicollinearity requiring correction. Since VIFs result is 1.00 in this model, it does not require further investigations (see appendix C).

Testing for the statistically significant at 5% {Effect of ICT equation 2 (Jul-Dec)}

Ho: $b\beta$

Ho: There is no significant relationship between the value of ICT transactions and the volume of ICT transactions from July to December.

Decision

$t_{0.05}$ at $(11 - 2) 9$ degrees of freedom was statistically significant because analysis of variance (Anova) P – value > 0.05 ; p - value = 0.160. Therefore, H_0 is accepted and H_1 is rejected, meaning that there is no significant relationship between the value of ICT transactions and the volume of ICT transactions from July to December within the period of analysis. This also means that ICT transactions did not increase the profitability of deposit money banks from July to December within the period of analysis (see appendix C).

EQUATION 3: From the results of **Effect of ICT equation 3 (Jan-Dec)**, the correlation coefficient (R) is 0.795. This means that there is a positive or strong correlation between dependent and independent variable. The coefficient of determination (R -Squared) is 63.2%. This means that 63.2% variation in the dependent variable is explained by the independent variable and 36.8% of the variation in the dependent variable is explained by the disturbance term or error term. In other words, 63.2% variation in value of ICT transactions was explained by variation in volume of ICT transactions. 36.8% variation in the dependent variable is explained by variation of the variables excluded from the model. The Adj R -Square is 59.1% (see appendix D).

The confidence intervals result revealed that the level of confidence interval 95%. This means that the samples data of the model reflects the fraction of calculated confidence intervals that encompass the true population. The Collinearity Diagnostics result reveals that Variance Inflation Factors (VIF) is 1.00. The general rule is that VIF s exceeding 4 warrant further investigations while VIF s exceeding 10 are signs of serious multicollinearity requiring correction. Since VIF s result is 1.00 in this model, it does not require further investigations (see appendix D).

Testing for statistically significant at 5% {Effect of ICT equation 3 (Jan-Dec)}.

Ho: $b\beta$

Ho: There was significant relationship between the value of ICT transactions and the volume of ICT transactions from January to December.

Decision

$t_{0.05}$ at $(11 - 2) 9$ degrees of freedom was statistically significant because analysis of variance (Anova) P – value < 0.05 ; p - value = 0.003. Therefore, H_1 is accepted and H_0 is rejected, meaning that there is significant relationship between the value of ICT transactions and the volume of ICT transactions from January to December within the period of analysis. It also means that ICT transactions increase deposit money banks profit from January to December within the period of analysis. This result is more reliable as it accounted for yearly an ICT transaction which is the overall result of the above equations (see appendix D).

3.3. Conclusion

It is evident from the study that the bank reform strategies adopted in Nigeria have been geared towards making information technology available to improve the banking Sector. As a result of this, banking industry in Nigeria has tremendously improved. Also, the use of ICT brings returns for Commercial Banks which increases the profitability of Commercial Banks.

3.4. Recommendations

Base on the objective and findings of this study, the study therefore recommends that:

1. Banks should create a bi-annual or annual workshop on educating their customers on how to use the available banking ICTs successfully in order to increase bank patronage, volume of ICTs transactions and profitability.
2. Banks should improve their ICTs service delivery in order to enhance efficiencies in the banking operation in Nigeria.
3. Discovery of new banking ICTs on a yearly basis should be of paramount to Nigerian Commercial Banks in order to meet up with their foreign counterparts which will further strengthen the Banking industry in Nigeria.

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Appendix A

Data Presentation

Table 1. Commercial bank’s Volume of ICT Transactions and Value of ICT Transactions

Years	Volume of Transactions (Jan-June)	Value of Transactions (Jan-June) in #’Billions	Volume of Transactions (Jul-Dec)	Value of Transactions (Jul-Dec) in #’Billions	Volume of Transactions (Jan-Dec) in %	Value of Transactions (Jan-Dec) in %
2007	8.85	74361.50	8.85	74361.50	50.0	50.0
2008	33.05	220.80	33.05	220.80	50.0	50.0
2009	144767.50	32175.12	144767.50	32175.12	31.3	(12.1)
2010	195335430	48567.12	(190138)	49640	70.6	66.3
2011	223959	53146.82	268994	64099.7	17.79	8.6
2012	273105	58.58	(213825)	(57.79)	(21.7)	2.20
2013	(197220)	-55005.31	200918	56610.69	1.88	2.92
2014	199284309	1,944.56	255,820,046	2,446.00	28.37	25.79
2015	243631218	2,333.12	275,592,061	2,619.57	27.41	23.143
2016	403648266	30,618.06	538,080,841	40,457.79	33.30	32.14
2017	646258116	44117.63	-	-	20.10	9.05

Source: CBN Financial Stability Report (2007-2017), CBN Annual Report and Financial Statement.

Appendix B

Effect of Ict Equation (Jan-Jun).....

$$VAT_{si} = \alpha_0 + \alpha_1 VOT_{si} + e_1 \tag{1}$$

Where:

VAT = Value of ICT Transactions; (VAT_{si})

X₁ = Volume of ICT Transactions; (VOT)

α₀ = Constant (A);

α_i = Regression Coefficients;

e_i = Error term

DATA WAS ANALYSED USING SPSS 16

Table 2. Variables Entered/Removed^b

Model	Variables Entered	Variables Removed	Method
1	VOT ^a	.	Enter
a. All requested variables entered.			
b. Dependent Variable: VAT			

Table 3. Model Summary^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.125 ^a	.016	-.094	37948.58839	.016	.144	1	9	.713	1.275
a. Predictors: (Constant), VOT										
b. Dependent Variable: VAT										

Table 4. ANOVA^b

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	2.070E8	1	2.070E8	.144	.713 ^a
	Residual	1.296E10	9	1.440E9		
	Total	1.317E10	10			
a. Predictors: (Constant), VOT						
b. Dependent Variable: VAT						

Table 5. Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.	95% Confidence Interval for B		Correlations			Collinearity Statistics		
		B	Std. Error				Lower Bound	Upper Bound	Zero-order	Partial	Part	Tolerance	VIF	
		1	(Constant)	14579.585	14522.138		1.004	.342	-18271.774	47430.943				
	VOT	.002	.006	.125	.379	.713	-.011	.015	.125	.125	.125	1.000	1.000	
a. Dependent Variable: VAT														

Table 6. Collinearity Diagnostics^a

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions	
				(Constant)	VOT
1	1	1.616	1.000	.19	.19
	2	.384	2.051	.81	.81
a. Dependent Variable: VAT					

Appendix C

Effect Of Ict Equation (Jul-Dec)

$$VAT_{si} = \alpha_0 + \alpha_1 VOT_{si} + e_1 \tag{2}$$

Where:

VAT = Value of ICT Transactions; (VAT_{si})

X₁ = Volume of ICT Transactions; (VOT)

α₀ = Constant (A);

α_i = Regression Coefficients;

e_i = Error term

Data was analysed using SPSS 16

Table 7. Variables Entered/Removed^b

Model	Variables Entered	Variables Removed	Method
1	VOT ^a	.	Enter
a. All requested variables entered.			
b. Dependent Variable: VAT			

Table 8. Model Summary^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					F	Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. Change		
1	.454 ^a	.206	.118	28731.06817	.206	2.342	1	9	.160	2.550	
a. Predictors: (Constant), VOT											
b. Dependent Variable: VAT											

Table 9. ANOVA^b

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1.933E9	1	1.933E9	2.342	.160a
	Residual	7.429E9	9	8.255E8		
	Total	9.362E9	10			
a. Predictors: (Constant), VOT						
b. Dependent Variable: VAT						

Table 10. Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients		t	Sig.	95% Confidence Interval for B		Correlations			Collinearity Statistics		
		B	Std. Error	Beta	t			Sig.	Lower Bound	Upper Bound	Zero-order	Partial	Part	Tolerance	VIF
1	(Constant)	32837.297	10000.588		3.284	.009	10214.396	55460.199							
	VOT	-.008	.005	-.454	-1.530	.160	-.019	.004	-.454	-.454	-.454	1.000	1.000		
a. Dependent Variable: VAT															

Table 11. Collinearity Diagnostics^a

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions	
				(Constant)	VOT
1	1	1.500	1.000	.25	.25
	2	.500	1.731	.75	.75
a. Dependent Variable: VAT					

Appendix D

Effect of Ict Equation (Jan-Dec)

$$VAT_{si} = \alpha_0 + \alpha_1 VOT_{si} + e_1 \tag{3}$$

Where: VAT = Value of ICT Transactions; (VAT_{si})

X₁ = Volume of ICT Transactions; (VOT)

α_0 = Constant (A);

α_i = Regression Coefficients;

e_i = Error term

DATA WAS ANALYSED USING SPSS 16

Table 12. Variables Entered/Removed^b

Model	Variables Entered	Variables Removed	Method
1	VOT ^a	.	Enter
a. All requested variables entered.			
b. Dependent Variable: VAT			

Table 13. Model Summary^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.795a	.632	.591	15.52565	.632	15.442	1	9	.003	2.727
a. Predictors: (Constant), VOT										
b. Dependent Variable: VAT										

Table 14. ANOVA^b

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	3722.328	1	3722.328	15.442	.003a
	Residual	2169.413	9	241.046		
	Total	5891.741	10			
a. Predictors: (Constant), VOT						
b. Dependent Variable: VAT						

Table 15. Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95% Confidence Interval for B		Correlations			Collinearity Statistics	
		B	Std. Error	Beta			Lower Bound	Upper Bound	Zero-order	Partial	Part	Tolerance	VIF
		1	(Constant)	1.585			7.273		.218	.832	-14.868	18.038	
	VOT	.779	.198	.795	3.930	.003	.330	1.227	.795	.795	.795	1.000	1.000

a. Dependent Variable: VAT

Table 16. Collinearity Diagnostics^a

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions	
				(Constant)	VOT
1	1	1.765	1.000	.12	.12
	2	.235	2.743	.88	.88

a. Dependent Variable: VAT