

# Information and Communication Technology (ICT) and Operational Efficiency of Quoted Deposit Money Banks In Nigeria

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**Abstract:** In light of the global ICT industry's vitality and the ever-rapid changes in the business environment it brought about, financial institutions in Nigeria have been confronted with substantial challenges regarding the required capital for investment in human capital, development of equipment, and designing applications, among others. Despite these huge investments, there exist delay/latency in the operation of the Nigerian banks which cause queue where customers wait for several hours before being attended to. While there is a problem with internet security where hackers intrude into the banks' servers to have undue access to the banks' information, inter banks transfer of some banks takes a minimum of 24 hours before the beneficiary gets a credit alert. Unavailable or poor network services still characterize banking operations in Nigeria in the 21<sup>st</sup> century. This study evaluates how ICT impacts Nigeria's Quoted Deposit Money Banks' (DMBs') operational effectiveness. A questionnaire was used to source the required data. A regression was employed to test the stated hypotheses. The study uncovered a positive and substantial effect of ICT implementation on service quality delivery and saving operative times of quoted DMBs in Nigeria. This instigated the recommendation for intensifying efforts on maintaining ICT in bank operations so that they may, among other things, increase client satisfaction by offering excellent services.

**Keywords:** ICT, Operational-efficiency, DMBs, Quality- Service-Delivery, Time-Save.

## I. Introduction

There is no doubt that the most recent advancements in information and communication technology (ICT) have dramatically altered how businesses are conducted globally. There is no gain in saying also that in any country's economic progress, the bank is crucial. It is practically impossible to overstate the significance of managerial efficiency in the banking sector as the key player in the financial service industry of a country. Modern company operations and global linkages have given rise to Information and Communication Technology (ICT), which redefined business processes and procedures due to recent changes in technical advancement (Nwakoby, Charity, & Ofobruku, 2018). It is noteworthy that business globally has transitioned to a technological driven at this time (with the ICT serving as one of the primary driving forces) against the traditional means practiced before now (Okonkwo, Obinozie, Echekoba, 2015).

Yousafzai (2012) described ICT as a broad spectrum of technologies that use digital information, processes, transfer, generate and communicate outputs from the input. Businesses can collaborate more efficiently and connect digitally when ICT is used. Since the advent of ICT, time restrictions and a geographical impediment to obtaining relevant information are both abolished or significantly abridged, improving coordination of operations within organizational boundaries (Hassan & Momina, 2011). Amanawa and Nwiyii, (2022) argued that to improve organizational effectiveness through enhanced lettering ability, managers in companies are advised to conduct most of their internal and external communications through the use of smart devices and digital platforms.

Dabwor, Ezie, and Anyatonwu, (2017) noted that the future growth and expansion of the financial industry in Nigeria, particularly in the banking sector, will heavily rely on new IT due to the role it plays as a catalyst for economic change. More focus must be placed on e-banking security against fraudulent activities due to the heavy deployment of ICT apparatus in banking firms which comes with its challenges (Obasan, 2011). ICT has been used in the financial sector to replace conventional banking practices with more friendly online banking options. Numerous advantages of online banking abound. This helps banks to increase their competitive edge over their rivals while also increasing the value that they provide to customers in the form of higher-quality service offerings (Anoke & Ibrahim, 2022).

Undoubtedly, ICT today has a serious influence on managers' decision-making processes, planning, and the banking sector's product and service offerings. This will continue to alter how banks and their corporate partnerships operate for a long time (Jenevive, & Anyanwaokoro, 2017). Domestically, Nigeria's banking sector has seen an

enormous transformation as a result of ICT advancements throughout the years. Exploiting the several benefits of ICT has become essential in the banking industry especially in Nigeria as a result of the contrasting economy, quest for continued existence, and maintenance of current market share to cover up the shareholders' interest.

In light of the global ICT industry's vitality and the ever-rapid changes in the business environment it brought about, financial institutions in Nigeria have been confronted with substantial challenges regarding the required capital for investment in human capital, development of equipment, and designing applications, among others (Abubakar&Gatawa, 2013). Despite these huge investments, there exist delay/latency in the operation of the Nigerian banks which cause queue where customers wait for several hours before being attended to. While there is a problem with internet security where hackers intrude into the banks' servers to have undue access to the banks' information, inter banks transfer of some banks takes a minimum of 24 hours before a customer gets a credit or debit alert. Unavailable or poor network services still characterize banking operations in Nigeria in the 21st century. However, following banking best practices, the growing need for ICT deployment and execution is still a hot topic in the banking industry, especially in Nigeria and so the need to scrutinize its significance in bank operational efficiency becomes imperative.

This study's principal goal is to scrutinize the impact of ICT on the Operational Efficiency of Quoted DMBs in Nigeria. Specifically to:

Evaluate the association between the use of ICT in Nigeria DMBs and quality service delivery

Ascertain the link between ICT investment and Time saved in Nigerian QDMBs.

The following hypotheses are proposed following the specified objectives:

**H01:** ICT adoption in Nigeria has no discernible impact on the quality of quoted DMBs' service delivery.

**H02:** ICT implementation in Nigeria has no discernible correlation with Time Save of QDMBs.

## **II. Conceptual Clarifications**

Literatures concerning ICT and operational efficiency are reviewed, ranging from the concept of ICT, the concept of operational efficiency, and the relationship between information communication technology and operational efficiency, through the theoretical foundations upon which this research is built.

### **Concept of Information Communication Technology (ICT)**

The significance of ICT and operational efficiency in the banking sector especially in Nigeria cannot be over-emphasized. A breakthrough in ICT is now recognized as a vital tool for improving human life and eradicating global gaps. ICT is the automation of procedures, checks, and data generation using technology such as digital devices to ensure that operations are carried out smoothly and effectively (Adewoye, 2013). In the contemporary business environment, ICT functions have gone beyond that of merely processing electronic data or serving as a support service as almost all operations in any business environment revolve around ICT (Shehu, 2013). Ikpefan and Agwu, (2015) noted that with the knowledge-based economy and the increased reliance on research and development in the twenty-first century, the globe has seen an unparalleled influx of technological goods and services.

In the words of Alawode, and Emmanuel, (2011), modern business has undergone and is still undergoing a profound technological revolution, which has drastically changed most firms' pattern of operation and connected them to the global view. Ndukwe (2012) listed some bank services that have been modernized through the adoption and constant use of ICT in the banking sector, which its customers have benefited tremendously to include point of sale services, and bank verification numbers that have prevented identity theft to a large extent, and transaction and recording processing. In addition, ICT has made available the ever-demanding self-services options that help to decongest the ever-crowded banking halls. Agboola (2006) advised that all financial service providers who are yet to strategically position their institution through timely adoption of ICT should do so now and change their current operational procedures if they must survive beyond this period. Acha (2008) claimed that in the new competitive environment, only banks that update their operating system, distribution channel, and procedures to incorporate ICT are likely to survive and thrive.

According to Anoke (2019), e-banking has good effects on bank achievement, profitability, and innovativeness, especially when e-commerce is a component of the bank's bigger commercial strategies. Proper application of e-banking grows the banking sector based on market share, product diversification, program expansion, and better client demands for timely responsiveness. Chidi, Udegbumam, and Okonkwo, (2022) argued that the speed at which ICT is supplanting every element of governmental operations shows that e-government which helps the government in reducing corruption in Nigeria is here to stay.

**ICT and Operational Efficiency**

The 21st-century business owners and operators have seen tremendous technological improvement in all spheres of business and human endeavors. The rapid advancement in ICT has positively transformed the business landscape. Today, while this revolution is not peculiar to banking, the financial sector now requires ICT adoption to compete favourably in a slippery and complex business environment surrounded by the dynamic and highly unpredictable economic situation. This global shift curve is centred on ICT. The impact of operational efficiency on banks' operations especially in a depressed economy like Nigeria cannot be ignored. Sathye (2005) opined that operational efficiency is the effective and judicious use of people, required machinery or equipment, proper tools, expected materials, and funds for the achievement of organizational goals and objectives. Better use of any one of these, or a combination of them, can boost output and lower costs for goods and services. Kim and Kim (1997) cited by Mboma (2006) posted that operational efficiency is the strategic planning done by a company to ensure a favourable ratio of costs to output. It deals with reducing waste and optimizing resources to offer clients better services. The ability of a firm to offer goods or services promptly to its esteemed customers in the most economical way feasible while maintaining the high quality of its goods, services, and support is known as operational efficiency.

**Information Communication Technology (ICT) and Quality Services Delivery**

It has been discovered that the adoption and usage of ICTs serve as the cornerstones of economic growth and competitiveness for businesses and nations that can take advantage of them. Therefore, entrepreneurs must incorporate operational efficiency into their corporate strategic plan, defining the objectives, goals, and targets (Grover, 2012).

Zahra and Edris (2016) argued that customer satisfaction is positively and significantly impacted by the quality of the services (QS) provided by banks. In other words, the level of client satisfaction is influenced by the quality of service powered by ICT.

**Information Communication Technology (ICT) and Time Save**

As ICT drives the world today, social media has resulted in frequent interruptions to work schedules and flow in the organization. Therefore, organizations and people constantly and consistently struggle to finish their work schedules within the time frame. Prioritizing multiple jobs, projects, and interests are likewise getting harder. As a result, to accomplish all periodic tasks, corporate entities, and individuals tend to organize their business time (Balogun, 2016).

Udenwa and Uwaleke, 2015 noted that business demands are rising, yet many other things are vying for the attention of the company and its personnel. Besides the workload demanding proper attention, processes and duties are slowed down by interruptions and interference from phone calls, emails arriving in the personnel's private inbox, unofficial visitors showing up during office hours, and power outages especially in Nigeria are a re-occurrence decimal, and other environmental factors (Wilson, Odo&Ikenna, 2014). Therefore, it can be argued that time is a management tool used or employed in the process of achieving the organizational purpose.

According to Laudon and Laudon (2010), many executives working in a fog bank never really have the correct information at the right moment to make an informed choice. In the modern business world, managers rely on predictions and educated guesses to make prompt decisions that will benefit the corporation. A firm's competitive edge sustainability depends largely on the timely allocation of its products and services processes. In their own words, ICT has made it possible for executives to use real-time facts from the marketplace when business decisions are made.

**Empirical Evidence**

Chukwukaelo, Onyeiwu, and Amah (2018) studied the link between various e-banking channels and Nigerian businesses' profitability. The ROE of Nigeria's DMBs between 2006 and 2016 was regressed against four e-banking channels (ATM, POS, digital banking, and Electronic transfer). A panel data regression model was created and validated using the generalized method of the moment approach. The result revealed that the overall impact of electronic banking on the profitability of DMBs operating in Nigeria was substantial and positive. The report suggested that crucial parties involved and those who would benefit from electronic banking work together to establish a supportive environment for operations and a strong regulatory framework to ensure the best possible rollout of these services to customers.

Okonkwo, Obinozie, and Echekoba (2015) evaluated the association between ICT and innovative finance on the Nigerian Banks' performance. Eleven Banks were conveniently selected and used for the study. The analysis covered the years 2001 through 2013 and used annual data from the banks and the Central Bank of Nigeria statistics book. OLS was used to analyze and determine the effect of E-Banking services and ATMs on the Nigerian banks' performance. The study found that higher bank profitability results in higher commercial banks' Return on Equity

(ROE). The performance of Nigerian banks is not significantly enhanced by investments in e-banking and ATMs. The study suggested that rather than just making more investments, corporate governance and regulations that support the appropriate and effective use of financial innovation instruments should receive more attention. Tafa (2020) surveyed the association between quality service and monetary performance in the banking sector. 40 previous studies were reviewed and analyzed. The study's finding shows that the financial performance of banks is positively and sufficiently linked to their service quality. This implies that better service directly contributes to higher profitability as well as higher customer happiness and loyalty, which then indirectly contribute to higher bank profitability.

**Theoretical Framework**

This section covers the theory that this study is grounded upon  
 Socio-Technical Systems (STS): The STS viewpoint has gained attention in understanding the link between organizational performance, financial innovation, and ICT inclusion. According to the theory, an organization is a network of interconnected subunits that transforms inputs into desired outputs. A methodology for technological design based on STS theory emphasizes user involvement throughout the developmental process and a more comprehensive view of job satisfaction than merely task performance (Mansel, & Wehn, 1998). In reviewing technological acceptance, STS theorists believed that it will enhance efficiency and effectiveness, especially in the financial sector in which the bank is a critical stakeholder (Mittal & Dhingra, 2007).

**III. Methodology**

The study employed a descriptive research design as the study required to investigate the population by selecting samples, analyzing, and discovering occurrences. The study's population is the 19 QDMBs in Nigeria as of December 2021. Then, a non-probability method in form of a purposive sampling technique was employed to select banks based on the following criteria;

The banks are listed on the Nigeria Stock Exchange

Only banks whose market valuation is above **Four Hundred Billion Naira (400,000,000,000)** as of December 31, 2021, will be selected.

Based on the above conditions only 3 banks were selected for the study. They are Zenith Bank (#789.62B), Guarantee Trust Bank (#765.2B), and First Bank of Nigeria Ltd (409.2B). Stratified and Convenient sampling techniques were used to select 57, 54, and 53 respondents respectively from each of the sampled DMBs. Thus, 164 respondents were selected as a sample. In the event of a missing questionnaire; re-administration was done immediately to ensure the required sample size.

This study utilizes primary data. Data were collected basically with a questionnaire administered to the staff and customers of the selected quoted DMBs in Nigeria. The initial questionnaire was subjected to content validity testing to ascertain the study instrument's validity. Cronbach's alpha was used to indicate the reliability or internal consistency of the items inside the study's instrument, and it provides an average value of 0.82 for the questionnaire.

**Table 3.1 Scale Reliability of Variables**

<b>Variables</b>	<b>Cronbach's Alpha</b>
ICT Adoption	0.87
Service Quality	0.95
Time Save	0.87

**Source: Researchers' Computation (2022)**

**Data Presentation and Analysis**

Regression was used to determine the effects of variables. Hence, ICT investment was regressed against operational efficiency measured by service quality and time savings of QDMBs in Nigeria.

This is expressed in this study as follows:

$$SEVQTY_i = \alpha + \beta ICT_i + \mu_i \dots\dots\dots i$$

$$TS_i = \alpha + \beta ICT_i + \mu_i \dots\dots\dots ii$$

**Where:**

SERQTY = Service Quality;  
 TS = Time Save

ICT = Information and Communication Technology;  
 α=Intercept;

$\beta$ = represents the regression line Slope.  
 i = represents the dimension of cross-sectional;  
 t= time series  
 $\mu$ =error term.

The study hypotheses were analyzed at a 5% level of significance.

**ICT and Service Quality Delivery (SEVQTY) of Nigerian QDMBs**

**Table 4.1: Responses on ICT and**

Response	ICT	SEVQTY	Total Frequency
Highly Agree	64	92	156
Agree	87	55	142
Disagree	8	11	19
Highly Disagree	5	6	11
<b>Total</b>	164	164	328

Source: Field Survey, 2022

Table 4.1 denotes data regarding ICT and service quality delivery of Nigerian QDMBs. A larger percentage of the respondents highly affirmed that ICT implementation has sufficiently affected SEVQTY 92. While 55 of them affirmed, 11 disagreed and 6 highly disagreed respectively.

**Model Summary**

Model	R	R Square	Adjusted Square	Std. Error of the Estimate
1	.821 <sup>a</sup>	.675	.673	.42996

a. Predictors: (Constant), ICT

**ANOVA<sup>b</sup>**

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	60.289	1	60.288	326.123	.000 <sup>a</sup>
	Residual	29.216	162	.187		
	Total	89.499	163			

a. Predictors: (Constant), ICT

b. Dependent Variable: SEVQTY

**Coefficients<sup>a</sup>**

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	.417	.172		2.440	.017
	ICT	.919	.052	.822	18.061	.000

a. Dependent Variable: SEVQTY

The regression result,  $SEVQTY = 0.417 + 0.919 \text{ ICT}$  shows that the SEVQTY of QDMBs in Nigeria will rise by 0.919 units for every 1 unit rise in ICT. The P-value of 0.000 is less than the t-value of 0.05. The study, consequently, rejected **H01** and concludes that ICT is substantial to the quality of service delivery in Nigerian QDMBs. This is supported by the correlated coefficient (r) of 0.919 which indicates a substantial relationship between the variables and  $r^2$  of 0.822 which shows that about 82.2% of the variation in the SEVQTY can be accounted for by ICT or that

the regression line can accurately predict the SEVQTY is approximately 82.2%. In the absence of the ICT, SEVQTY of Q DMBs in Nigeria will remain at 0.417 as shown by constant ( $\alpha$ ).

**ICT and Time to Save of NigerianQDMBs**

**Table 4.2: Responses on ICT and Time Save**

Response	ICT	Time Save	Total Frequency
Highly Agree	64	24	88
Agree	87	31	118
Disagree	8	67	75
Highly Disagree	5	42	47
<b>Total</b>	164	164	328

Source: Field Survey, 2022

In Table 4.2, data regarding ICT and time savings of NigerianQDMBs is shown. A substantial of the respondents disagreed that ICT saves banking operation time (67). While 42 highly disagree, 31 agreed and 24 highly agree respectively.

**Model Summary**

Model	R	R Square	Adjusted Square	Std. Error of the Estimate
1	.768 <sup>a</sup>	.590	.588	.40498

a. Predictors: (Constant), ICT

**ANOVA<sup>b</sup>**

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	37.331	1	37.331	227.619	.000 <sup>a</sup>
	Residual	25.913	158	.164		
	Total	63.244	159			

a. Predictors: (Constant), ICT

b. Dependent Variable: Time Save

**Coefficients<sup>a</sup>**

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.186	.161		7.359	.000
	ICT	-.722	.048	-.768	-15.087	.000

a. Dependent Variable: Time Save

The regression result 1.186-0.722 ICT shows that time to resolve an issue in Nigerian QDMBs will decline by 0.722 units for every 1 unit rise in ICT. The P-value of 0.000 is less than the t-value of 0.05. The study, thus, rejects the Alternate hypothesis and concludes that ICT has no substantial effect on the operational time savings of Nigerian QDMBs. This is supported by the correlation coefficient (r) of 0.768 which indicates a robust relationship and R2 of 0.590 which denotes that about 59% of changes in operational time Save can be explained by ICT and 41% are not covered by this variable

**Discussion of Findings**

It is clear from the findings that ICT adoption is statistically significantly associated with the quality of service provided by QDMBs in Nigeria. This suggests that the adoption of ICT by the DMBs mentioned in Nigeria made consumers pleased since the banks were able to provide effective and efficient services to them easily. Customers who are encouraged by this development stick with the banks because they were happy with their service. This result is in line with Tafa's findings (2020) that discovered that the financial performance of banks is positively and sufficiently linked to their service quality.

Additionally, inverse and substantial effects of ICT adoption on time savings were revealed from the analysis. This affirms that an increase in the adoption of ICT in QDMBs in Nigeria decreases time usage. This finding is in tandem with the findings of Okonkwo, Obinozie, and Echekoba (2015) who found an inverse association between ICT adoption and e-banking. They maintained that rather than just making more ICT investments in banks, greater focus should be given to corporate governance and regulations that encourage the appropriate and effective use of financial innovation instruments.

### **V. Conclusions and Recommendations**

Based on the findings, it was evident that the quality of service delivery in Nigeria's QDMBs depends heavily on ICT deployment. This is because the use of ICT in the Nigerian QDMBs enhances their operational efficiency and customers' convenience. Customers can remain in the comfort of their homes and perform banking functions at a reduced time. Regarding the negative and detrimental consequences of ICT adoption on the amount of time saved by Nigerian QDMBs, the study concludes that adoption of ICT substantially minimizes the amount of time it takes to solve an operative problem. This explains why the banking hall's needless crowd is progressively turning away. This can be seen from the point that some customers can resolve their banking problems themselves without going to the bank hall. Given the overall finding of this study, it is settled that ICT adoption in Nigeria's QDMBs is crucial and improves operational effectiveness. Drawing from the findings and conclusion, the study recommends that:

The Nigerian quoted DMBs should step up their efforts in inculcating ICT in their business operations to sustain the efficacy of their services and satisfy their customers satisfactorily. Managers of QDMBs in Nigeria should ensure that the operators of the ICT gadgets in the bank are using them for what they are intended for. It has been uncovered that most ICT operators use the same for their personal use against the organizational interest even during official hours.

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