Information and Communication Technology Costs and Financial Performance of Deposit Money Banks in Nigeria

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ABSTRACT

The study focused on information and communication technology costs and financial performance of deposit money banks in Nigeria. Information and communication technology cost was measured using e-technology/communication cost while financial performance was measured using return on asset, return on equity and earnings per share. Ex-post facto was adopted as the research design of the study. The data were collected through secondary source from annual report and account of the selected deposit money banks. The population of the study is made up of 14 listed deposit money banks while the sample size of 10 deposit money banks was derived using purposive sampling based on availability of data. The data collected were analyzed using ordinary least simple regression analysis. The result revealed that information and communication technology cost has a significant effect on return on equity and earnings per share but has no significant effect on return on asset of listed deposit money banks in Nigeria. Based on the findings, the study concludes that information and communication technology cost has the tendency of influencing the financial performance of deposit money banks in Nigeria. Therefore, the study recommends that banks should take more cost-effective steps and more reliable technologies that do not offer loopholes for illegal activities to take place. There should also be more investment in prevention and detection techniques, because banks invest significant sums in the production of these goods. The cost incurred in providing this security should accounted and reported in the financial statement to guide investors on true nature of the company especially in the area of their return on asset.

Keywords: ICT cost, financial performance, Return on asset, Return on equity, Earnings per share and deposit money banks.

INTRODUCTION

The world has witnessed tremendous expansion and development in the recent years, particularly in information communication technology (ICT). This hasprompted banks to exploit this development to communicate data and information through moderntechnology and the Internet with the intention of providing broader benefits to customers for the pursuit of excellence in service (Sulieman & Ahlam-Jebreen, 2017). Thus, electronic banking is the use of electronicand telecommunication networks to deliver a wide range of value-added products and services to bank customers. The use of information technology in banking operations is called electronic banking. Some author argues that electronic banking is a product of e- commerce in the field of banking and financial services.Banks are also offering payment services on behalf of their customers who shop in different e- shops. It is an umbrella term for the process by which a customer may perform banking transactions electronically without visiting a brick-and-mortar institution.

Today's business environment is extremely dynamic and experiences rapid changes as a result of technological improvement, increased awareness and demands that banks serve their customers electronically. Banks have traditionally been in the forefront of harnessing technology to improve theirproducts and services (Mawutor, 2024). The Banking industry of the 21st century operates in a complex and competitive environment characterised by these changing conditions and highly unpredictable economic climate. ICT is at the centre of

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this global change curve of electronic banking system in Nigeria today. Managers in the banking industry in Nigeria cannot ignore information systems because they play acritical impact in current banking system by pointing out that the entire cash flow of most banks are linked toinformation systems.

E-payment systems are becoming central to onlinebusiness process innovation, as companies look forways to serve customers faster and at lower cost. In linewith this, Chhabra, Suri and Verma (2022) recommendthat electronic payment systems are being used in air ticketing, insurance, banking, retail, health care, onlinemarkets and even governments - in fact, everywhere money needs to change hands. The advantages of an electronic mode of transfer over and above the conventional clearing house are numerous and conspicuous as banks are increasingly turning to technology for managing their payments. Some of the value attributes include secure payments, cost cutting, payment on due date and easier cash management compared to conventional systems. They have investedhuge amounts of money in implementing the self- banking services with the objective of improving the quality of customer service. The development of e- banking services is expected to decongest banking hallsand reduce the incidence of long queues in banking halls. ICT -based financial services have made a significant contribution in reducing the cost of offeringfinancial services.

Over the past few years, the payment industry in Nigeria has been transformed with the new wave of IT advancements. Currently the use of cash has been replaced by digital cash and digital wallets. It can be rightly said that this is the fourth stage of evolution afterBarter, Currency, Paper money (Cheques) and nowdigital cash (Abaenewe, Ogbulu & Ndugbu, 2023). Commercial banks in Nigeria are reported to have exponentially embraced the use of information andcommunication technologies in the provision of banking services which has enhanced the application of e-payments. The application of information and communication technology concepts, techniques, policies and implementation strategies to banking services has become a subject of fundamental importance and concern to all banks and indeed a prerequisite for local and global competitiveness banking. The advancement in technology has played animportant role in improving service delivery standards in the banking industry. In its simplest form, automatedteller machines (ATMs) and deposit machines nowallow consumers to carry out banking transactions beyond banking hours.

Thus, Nigerian banks today are seriously into new electronic delivery channels for banking products and services with a view to delivering better services and satisfying customers the more. Banks that cannot offer these services are increasingly losing their customers. Furthermore, existing literature shows that e-banking has been adopted by the Nigerian banks at a slow pace.Prior to the advancement of the e-banking, there were 89 commercial banks in Nigeria. The number of banks,however, reduced to 24 banks due to the consolidation (i.e., mergers and acquisition) program. After the consolidation, many banks have started to adopt the e- banking system IT facilities, such as global system for mobile communication (GSM) phones, ATM, Internet facilities, optical character recognition (OCR), smart cards, funds transfer, e-banking, electronic mail, and bankers automated clearing services, are now being used as a means of banking transactions.

Despite the significant role electronic banking has demonstrated so far, its maintenance and cost are too high for some banks and customers. For instance, the use of point of sale (POS) terminals in the cashless system attracts special charges that do not go with cashtransactions. A price tag of 1.25% of the cost of every transaction done through POS terminals is charged by the operators of the terminals.

This may be considered over-burdensome on the banking public given that this will not obviate nor lessen the normal commission on turnover charged by banks on withdrawals. Apart frombeing an additional charge on bank customers, the charges appear to be too high. Normal bank commissionon turnover is 5 for every 1000 representing 0.05% of the amount of such transactions, compared to the CBNapproved charges of 1.25% which would mean 12.50 for every 1000. Currently, apart from personnel costs, technology is usually the biggest item in the budget of a bank, and the fastest growing one.

Further, there are reported cases of system breakdown and inconsistence services on the on-line connectivity. This has affected banks effectiveness and efficiency of operation with itsattendant negative impact on their productivity andoverall profitability. Similarly, banks are often faced with system redundancy due to rapid technologicalchanges resulting to excessive costs hence, lower profitability. It is on this ground that this study aimed to examinethe effect of information and communication technology cost on financial performance of listed

deposit money banks in Nigeria. The specific objectives are:

(i) To examine the effect of information and communication technology costs on return on asset of listed deposit money banks in Nigeria.

(ii) To determine the effect of information and communication technology costs on return on equity of listed deposit money banks in Nigeria.

(iii) To examine the effect of information and communication technology costs on earnings per share of listed deposit money banks in Nigeria.

REVIEW OF RELATED LITERATURE

Conceptual Review

Information and Communication Technology (ICT)

Technology can be described as dynamic andcomplex strategic resources that modern digital organizations adopt and implement to enhance their operational activities and performance. Technology is a strategic tool toenhance innovativeness in service industry specifically in the modern money deposit banking system and operations. Technologies are modern machinery that the banking industry uses to enhance changes in innovative strategies in competitive markets (Kiani, Yang, Ghani and Hughes (2021); Kiani, Kanwal and Wang, (2019) and enhances strategic growth and attaincompetitive strengths and advantage (Kiani, etal., 2021; Covin & Wales, 2019; Ingram, Peake, Stewart and Watson, (2019).

Information and Communication Technology (ICT) is an advance concept fromtechnological variables that play the role of enhancing easy flow of information andcommunication to attain sustainable operational efficiency and performance in modern commercial banking operations. ICT is a modern technological variable that enhances easy flow of digital business opportunities and investment flow in modern business settings (Uyar, Khalil, Cemil,Mohammed and Friedrich 2021; Adam 2020).Bhujabal, and Sethi, (2020) also supported that ICT plays significant role in the smooth operation and implementation of foreign direct investment. Makanga and Paul, (2017) assert that operational and business performance measurement in business enterprises is vital to ascertain the rate of sustainability in achieving organizational goals and objectives. It is also a tool to make sure results attained are comparable over aperiod of time in an organization.

Effect of ICT and Financial Performance of Deposit Money Banks in Nigeria

ICT infrastructures have played critical roles in the operational performances of modern commercial banking system in Nigeria in different perspectives. Commercial banking system in Nigeria operates on highly competitive and innovative atmosphere as a result of the increase in advancement and improvement in modern ICT infrastructures. Customers service delivery in the commercial banking sectors have being effectively sustainable and profitable in their operational activities as results of modern adoption and implementation ICT and other technological variables. Several studies recently have deeply and tremendously proven that adoption and implementation of ICT infrastructures have immensely and significantly contributed to development and improvement inoperational sustainability and profitability of money deposit banks and in the banking system in their different perspectives (NguyenVan Thuy et al., 2021; Wiredu et al., 2020; Adegbie et al., 2020; Kyeremeh et al., 2019; Nwakoby et al., 2018).

Adegbie, et al., (2020) asserted in their study that many banks in Nigeria failed in smooth and effective operations due to failure to inculcate ICT infrastructures in the strategic operational and this has caused drastic negative changes in operational performance in Nigeria. Adegbie, et al., (2020) in another way round asserted that adoption and application of ICT can change the dimension of business operational failure in banking system if adequately implemented smoothlyto fit in with competitive marketing environment in the banking sectors. Kyeremeh et al., (2019) in their study assumed evidently that ICT has taking over all manual activities in the banking to becomeinternet and machine base operations and this has dramatically changes improvement in their

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strategic and operational sustainability on the long run.

Theoretical Review

Technology Acceptance Theory (TAT)

Davis, Bagozzi, and Warshaw (1989) propose TAT to explain the conceptual model that users' intention or acceptance degree towards information system or new technology. TAT is constructed on the foundations of perceived usefulness and perceived ease of use.Perceived usefulness refers to individual belief to improve the degree of job performance through using particular new technology and information system. Perceived ease of use indicates how easy an individuallearns how to operate or use new technology or information system. The model places more emphasis on how perceived ease of use would positively affect perceived usefulness. Exogenous variables such as environment are also the antecedent that induces perceived usefulness and perceived ease of use.

Thus, TAT is based on both important perceptive factors as perceived usefulness and perceived ease of use. TAT is widely applied on the research of information technology. Lee et al., (2021) examined the significant variables to build a successfulwebsite based on TAT theory. As a result of the empirical study, scholars find that TAT does not only apply to examine new information technology accept intention or behavior, but also ensures that TAT is suitable for the explanation of online user behavior issues (Pavlou, 2013).

Theory of Planned Behavior (TRA)

Early studies mainly focus on theory of reason action (TRA) as identified by (Fishbein & Ajzen, 1975). TRAis based on the fundamental variables of attitude and subjective norm. The two variables are seen to have a positive effect on individuals' behavioral intentions,which positively induce individuals' actual action. Attitude is an individual's positive or negative evaluation of self-performance of a particular behavior.The concept is the degree to which performance of the behavior is positively or negatively valued. Subjective norm is an individual's perception about particular behavior, which is influenced by the judgment of significant others (e.g., parents, spouse, friends, teachers). Behavioral intention is an indication of an individual's readiness to perform a given behavior and it is assumed to be immediate antecedent of behavior. However, the basic hypothesis of TRA states that the occurrence of behavior is based on volitional control ofone's willpower (Fishbein and Ajzen, 1975). Thus, the behavior occurs mostly from one's willing. Thus, Ajzen(1985) modifies TRA and further proposes the theory of planned behavior (TPB). TPB is founded on the threefactors as perceived behavioral control, attitude, and subjective norms. Hence, behavioral intention is influenced by perceived behavioral control, attitude, and subjective norms. Actual behavior is, in turn, determined by behavioral intention. Among all, perceived behavioral control refers to individual's perceived ease or difficulty of performing the particularbehaviors. In recent years, the use of internet has been widespread and has been more diversified. Studies on TPB applying on electronic commerce have increased.

Empirical Review

Okoro, Nnam, Joe and Obizuo (2024) examined the impact of financial technology on financial institutions' performance. Evidence from Nigerian banks. The volume of ATM transactions, POS transactions and internet bank transactions were used to measure financial technology while liquidity ratio was used to measure financial performance. To achieve the objective of the study, ex-post facto was adopted. The data were collected through secondary source from CBN statistical bulletin. The data collected were analyzed using ordinary least multiple regression analysis. The result revealed that ATM transactions have positive impact on the performance of commercial banks in Nigeria. POS transactions have positive impact on the performance of commercial banks in Nigeria. Internet banking transactions have negative impact on the performance of commercial banks in Nigeria. In order to support the findings, the study recommends that financial institutions do more to entice their clients to use FINTECH products more regularly. This might be done through streamlining product usage, upholding product security, and guaranteeing product speed and efficiency.

Mawutor (2024) investigated on the impact of electronic banking on the profitability of a Bank in Ghana. The

methodology was quantitative in nature. Inall, 150 questionnaires were administered to the interviewee from the selected branches of the Agricultural Development Bank who are customers, tosolicit information concerning the E-banking. All data from the structured self-administered questionnaires were correctly organized. The software that was used for this is, Statistical Package for Social Sciences (SPSS). After testing the hypothesis by using inferentialstatistics, it was discovered that E-banking does have animpact on the profitability of the Agricultural Development bank. There was a significant increase inthe net profit margin of the bank in the year (2011) E- banking was introduced and the even though it fell in the next year (2012) which wasn't much, it increased again in the third year (2023).The study revealed that E=banking has a positive effect on ADB's Profitability.

Abaenewe, Ogbulu and Ndugbu (2023) investigated the profitability performance of Nigerian banks following the full adoption of electronic banking system. Judgmental sampling method was adopted by utilizing data collected from four Nigerian banks. These four banks are the only banks in Nigeria that haveconsistently retained their brand names and remainquoted in the Nigerian Stock Exchange since 1997. Theprofitability performance of these banks was measuredin terms of returns on equity (ROE) and returns on assets (ROA). The data collected were tested using a standard statistical technique for independent sample at 5 percent level of significance for performance factors such as ROE and ROA. The study revealed that the adoption of electronic banking has positively and significantly improved the returns on equity (ROE) of Nigerian banks. On the other hand and on the contrary,it also revealed that e-banking has not significantly improved the returns on assets (ROA) of Nigerian banks.

Khalid, Abid and Sheikh (2022) examine the effect of Cyber Security Costs on Performance of E-banking in Pakistan. The targeted population was a managerial cadre staff member of e-banks working in Pakistan. The data were collected using structured questionnaire. The data collected were analyzed using multiple regression analysis. The consequence exhibited that the cyber security costs put considerable influence on product innovation performance and e-banking financial performance and product innovation performance considerably mediates in an association with cyber security costs and e-banking financial performance. The study concluded that the introduction of emerging technology and creative services and products has obviously had a positive effect on banks' operations. The recommendations and future area are also included in the study.

Chen (2021) carried out a study on the relationship between electronic banking and the performance of Nigerian commercial banks. Electronicbanking was proxied by value of Point-of-Sale transactions while commercial banking performance was proxied by customers' deposits. Engle-Granger cointegration model was used to analyse data for the sample period January 2009 to December 2013. The results show that POS is not cointegrated with both the savings and time deposits but are cointegrated with demand deposits. It is recommended that the monetary authorities and commercial banks should embark on an all inclusive enlightenment campaign for the banking public on the benefits, convenience and importance of adopting e-banking channels in completing their transactions.

Agu and Aguegboh (2020) investigated the impediments to e-banking services marketing within the Nigerian state. The study adopteda mixed method approach – comprising of both interview techniques and the use of questionnaires for data collection. Findings are multi-faceted and viewed from three angles viz: the user based, institutional basedand the government related roles. Findings further revealed among others the poor educational imbalance especially between the North and South and the lack ofadequate policy framework to safeguard customers'money as some of the challenges. The strategic implications of all these are clearly discussed and clear-cut recommendation derived for implementation by allconcerned.

Alnoukari (2020) investigates the impact of information security breaches on stock returns. Using event-study methodology, we provide empirical evidence on the effect of announcements of cyber attacks on the market value of firms from 1995 to 2015. We show that substantial negative market returns occur following announcements of cyber attacks. We find that financial entities often suffer greater negative effects than other companies. We also find that non-confidential cyber attacks are the most dangerous, especially for the financial sector. Our results seem to show a link between cyber crime and insider trading.

Bhujabal and Seth (2020) in his study on Information and Communication Technology (ICT) in Banking

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operations in Nigeria using the nature and degree of adoption of innovative technologies; degree of utilization of the identified technologies; and the impactof the adoption of ICT devices on banks, found out thattechnology was the main driving force of competition in the banking industry. During his study he witnessed increase in the adoption of ATMs, EFT, smart cards, electronic home and office banking and telephone banking. He indicates that adoption of ICT improves thebanks' image and leads to a wider, faster and more efficient market. He asserts that it is imperative for bankmanagement to intensify investment in ICT products tofacilitate speed, convenience, and accurate services, or otherwise lose out to their competitors.

Sulieman and Ahlam-Jebreen (2017) examined the impact of Electronic banking services on the customers' loyalty of commercial banks in Jordan. The Electronic banking services represented by (ease of use, usefulness, cost of use, web site design, Privacy and accessibility). The study used random sample of 400 participants while SPSS version17 was used to examinethe study hypotheses and achieve its objectives. The study found that there is statistical significant impact ofthe Electronic banking services (Ease of use, usefulness, Web Site Design, privacy) on Customers loyalty of commercial Banks in Jordan. Regarding the dimension of Accessibility, the study indicates that it had insignificant impact on Customers loyalty.

METHODOLOGY

Research Design

The research design adopted in this study is ex-post facto research design. This design was used because the researcher has no control over the exogenous variable and whatever happens occurred before the research. Furthermore, ex-post facto design was used when researchers are trying to ascertain the cause and effect of the relationships that exist between two variables.

Sources of Data

Secondary source of data was adopted through the use of annual reports and statement of accounts of the selected deposit money banks for the period of the study (2014 – 2023) to generate data.

Population of the Study

The population of this study is made up of all the fifteen (14) deposit money banks listed in Nigeria Exchange Group as at December, 2022. They include; Access Bank Plc, Eco Bank of Nigeria, Fidelity Bank Plc, First Bank of Nigeria, First City Monument Bank, Guaranty Trust Bank, Stanbic IBTC Bank, Sterling Bank Plc, Union Bank of Nigeria Plc, United Bank for Africa Plc, Unity Bank Plc, Wema Bank Plc, Zenith Bank Plc and Jaiz bank.

Sample Size/Sampling Techniques of the Study

The study adopted purposive sampling technique. The purposive sampling was used to selected only deposit money banks that have complete data on ICT cost. Based on that, ten (10) deposit money banks were purposively selected as the sample size of the study. These deposit money are; Access Bank Plc, Eco bank, Fidelity Bank Plc, First Bank of Nigeria, First City Monument Bank, Guaranty Trust Bank, Stanbic IBTC Bank, Sterling Bank Plc, United Bank for Africa Plc, and Union bank Plc. The study was carried out for the period of 10 years ranging from 2014-2023.

Data Analysis Techniques

This study employed the Ordinary Least Square based simple regression model to understand the interaction among the variables and estimating the relevant data.

Model Specification

Khalid, et al (2021) model will be adopted by this study.

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$FP = \beta_o + \beta_1 PDC_{it} + e_i$..... eq1

The model was modified to suit the present objectives

$ROA_{it} = \beta_o + \beta_1 ICTC_{it} + e_i$..... model 1

$ROE_{it} = \beta_o + \beta_1 ICTC_{it} + e_i$..... model 2

$EPS_{it} = \beta_o + \beta_1 ICTC_{it} + e_i$..... ... model 3.

Where;

ICTC = Information and communication technology cost

ROA = Return on asset

ROE = Return on equity

EPS = Earnings per share

e = error term signifying other variables not captured in the study

$_{it}$ = Firm i at time $_t$

DATA ANALYSIS, RESULT AND DISCUSSIONS

Data Presentation

The analysis focused on information and communication technology cost and financial performance of listed Deposit Money Banks in Nigeria. Information and communication technology cost (ICTC) represents the independent variable of the study and was measured using cost associated to technologies and e-businesses. However, financial performance represents the dependent variable of the study and it was measured using return on asset (ROA), return on equity (ROE) and earnings per share (EPS).

Data Analysis.

The data were analysed using both descriptive statistics and multiple regression analysis.

Descriptive Statistics

Table 4.1: Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
ICTC	100	3.07	8.29	5.7262	1.61550
ROA	100	.00	.25	.0366	.04937
ROE	100	.00	.37	.1276	.08539
EPS	100	-.03	6.05	1.2924	1.32538
Valid N (listwise)	100				

Source: Appendix 1

Table 4.1 shows that descriptive statistics of the variables. The result showed that information and communication technology cost (ICTC) has the minimum of 3.07 and maximum of 8.29. Return on asset (ROA) has the minimum 0.00 and maximum of 0.25. return on equity (ROE) has the minimum of 0.000 and maximum of 0.37. while earnings per share (EPS) has the minimum of -0.03 and maximum of 6.05. It is also revealed that

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the mean values of ICTC, ROA, ROE and EPS are 5.7262, 0.0366, 0.1276 and 1.2924 respectively for the period covered by the study, indicating that the average value of ICTC of the series is 5.7%, ROA is 0.0366%, that of ROE is 0.1276% and EPS is 1.2924%.

The standard deviation (Std. Dev.) indicates the dispersion from or spread of the series from their mean values. ICTC has the highest dispersion of 1.61550, followed by reporting EPS with the dispersion of 1.32538. ROE has a dispersion of 0.8539 while ROA has the lowest dispersion of 0.04937.

Regression Analysis

Parameters	Model 1 (ROA)	Model 2 (ROE)	Model 3 (EPS)
Constant	0.068167	0.013069	-0.047217
Coefficient	-0.005440	0.020229	0.236330
Std Error	0.003043	0.004889	0.079329
T-statistics	-1.787798	4.137950	2.979100
R-Square	0.031900	0.150037	0.083826
Adjusted R-Square	0.021919	0.141275	0.074381
F-statistics	3.196221	17.12263	8.875039
P-value	0.076931	0.000075	0.003653

Source: Appendix 2A, 2B and 2C

Table 4.3, presents the regression result on the effect of information and communication technology cost (ICTC) on financial performance (ROA, ROE and EPS). From the model summary table above, the following information can be distilled.

Empirical analysis for model 1

The R^2 which measure the level of variation of the dependent variable caused by the independent variables stood at 0.0319. The R^2 otherwise known as the coefficient of determination shows the percentage of the total variation of the dependent variable (ROA) that can be explained by the independent or explanatory variable (ICTC).Thus the R^2 value of approximately 0.032 indicates that 3.2% of the variation in the ROA of deposit money banks can be explained by a variation in cyber security cost while the remaining 97.8% (i.e. 100-R^2) could be accounted by other factors not included in this model.

The regression result as presented in table 4.2 determines the relationship between ICTC and ROA shows that when all the independent variables are held stationary; the ROA variable is estimated at 0.068. This simply implies that when all independent variables are held constant, there will be an increase in the ROA of deposit money banks up to the tune of 0.068% occasioned by factors not incorporated in this study. Thus, a unit increase in ICTC will lead to a decrease in ROA by 0.005440%. Finally, the result shows that there is a significant variation of Fisher's statistics (3.19622) has the probability value of 0.076931 which means the model as a whole is not statistically significant at 5% level.

Empirical analysis for model 2

The R^2 which measure the level of variation of the dependent variable caused by the independent variables stood at 0.150037. The R^2 otherwise known as the coefficient of determination shows the percentage of the total variation of the dependent variable (ROE) that can be explained by the independent or explanatory variable (ICTC).Thus the R^2 value of approximately 0.150 indicates that 15.0% of the variation in the ROE of deposit money banks can be explained by a variation in cyber security cost while the remaining 85.0% (i.e. 100-R^2) could be accounted by other factors not included in this model.

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The regression result as presented in table 4.2 determines the relationship between ICTC and ROE shows that when all the independent variables are held stationary; the ROE variable is estimated at 0.013069. This simply implies that when all independent variables are held constant, there will be an increase in the ROE of deposit money banks up to the tune of 0.013069% occasioned by factors not incorporated in this study. Thus, a unit increase in ICTC will lead to a decrease in ROE by 0.020229%. Finally, the result shows that there is a significant variation of Fisher's statistics (17.12263) has the probability value of 0.000075 which means the model as a whole is statistically significant at 5% level.

Empirical analysis for model 3

The R^2 which measure the level of variation of the dependent variable caused by the independent variables stood at 0.083826. The R^2 otherwise known as the coefficient of determination shows the percentage of the total variation of the dependent variable (EPS) that can be explained by the independent or explanatory variable (ICTC). Thus the R^2 value of approximately 0.084 indicates that 8.4% of the variation in the EPS of deposit money banks can be explained by a variation in cyber security cost while the remaining 91.6% (i.e. 100-R^2) could be accounted by other factors not included in this model. The regression result as presented in table 4.2 determines the relationship between ICTC and EPS shows that when all the independent variables are held stationary; the EPS variable is estimated at -0.047217. This simply implies that when all independent variables are held constant, there will be an increase in the EPS of deposit money banks up to the tune of 0.047217% occasioned by factors not incorporated in this study. Thus, a unit increase in ICTC will lead to a decrease in EPS by 0.236330%. Finally, the result shows that there is a significant variation of Fisher's statistics (8.875039) has the probability value of 0.003653 which means the model as a whole is statistically significant at 5% level.

Test of Hypothesis

Hypothesis one

HO_1: Information and communication technology cost has no significant effect on return on asset of listed deposit money banks in Nigeria.

Since the calculated probability value 0.076931 is greater than the accepted probability value of 0.05. The null hypothesis is accepted and the alternative rejected thus; information and communication technology cost has no significant effect on return on asset of listed deposit money banks in Nigeria.

Hypothesis two

HO_2: Information and communication technology cost has no significant effect on return on equity of listed deposit money banks in Nigeria.

Since the calculated probability value 0.000075 is less than the accepted probability value of 0.05. The null hypothesis is rejected and the alternative accepted thus; information and communication technology cost has a significant effect on return on equity of listed deposit money banks in Nigeria.

Hypothesis three

HO_2: Information and communication technology cost has no significant effect on earnings per share of listed deposit money banks in Nigeria.

Since the calculated probability value 0.003653 is less than the accepted probability value of 0.05. The null hypothesis is rejected and the alternative accepted thus; information and communication technology cost has a significant effect on earnings per share of listed deposit money banks in Nigeria.

Discussions on Findings

The result of hypothesis one revealed that information and communication technology cost has no significant effect on return on asset of listed deposit money banks in Nigeria. The result is contrary with prior studies of

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Mawutor (2024) investigated on the impact of electronic banking on the profitability of a Bank in Ghana. The methodology was quantitative in nature. Inall, 150 questionnaires were administered to the interviewee from the selected branches of the Agricultural Development Bank who are customers, tosolicit information concerning the E-banking. All data from the structured self-administered questionnaireswere correctly organized. The software that was used for this is, Statistical Package for Social Sciences (SPSS). After testing the hypothesis by using inferentialstatistics, it was discovered that E-banking does have animpact on the profitability of the Agricultural Development bank. There was a significant increase inthe net profit margin of the bank in the year (2011) E- banking was introduced and the even though it fell in the next year (2012) which wasn't much, it increased again in the third year (2023).The study revealed that E=banking has a positive effect on ADB's Profitability. Consequently, the result is contrary with prior studies of Khalid, et al. (2022), which examine the effect of Cyber Security Costs on Performance of E-banking in Pakistan. The data were collected using structured questionnaire. The data collected were analyzed using multiple regression analysis. The consequence exhibited that the cyber security costs put considerable influence on product innovation performance and e-banking financial performance and product innovation performance

The result of hypotheses 2 and 3 revealed that cyber security cost has a significant effect on return on equity and earnings per share of listed deposit money banks in Nigeria. The findings is consistent to the findings of Bhujabal and Seth (2020), in his study on Information and Communication Technology (ICT) in Banking operations in Nigeria using the nature and degree of adoption of innovative technologies; degree of utilization of the identified technologies; and the impactof the adoption of ICT devices on banks, found out thattechnology was the main driving force of competition in the banking industry. During his study he witnessed increase in the adoption of ATMs, EFT, smart cards, electronic home and office banking and telephone banking. He indicates that adoption of ICT improves thebanks' image and leads to a wider, faster and more efficient market. He asserts that it is imperative for bankmanagement to intensify investment in ICT products tofacilitate speed, convenience, and accurate services, or otherwise lose out to their competitors. Also, Abaenewe, Ogbulu and Ndugbu (2023) investigated the profitability performance of Nigerian banks following the full adoption of electronic banking system. Judgmental sampling method was adopted by utilizing data collected from four Nigerian banks. These four banks are the only banks in Nigeria that haveconsistently retained their brand names and remainquoted in the Nigerian Stock Exchange since 1997. Theprofitability performance of these banks was measuredin terms of returns on equity (ROE) and returns on assets (ROA). The data collected were tested using a standard statistical technique for independent sample at 5 percent level of significance for performance factors such as ROE and ROA. The study revealed that the adoption of electronic banking has positively and significantly improved the returns on equity (ROE) of Nigerian banks. On the other hand and on the contrary,it also revealed that e-banking has not significantly improved the returns on assets (ROA) of Nigerian banks.

CONCLUSION AND RECOMMENDATIONS

Conclusion

The analysis focused on information and communication technology cost and financial performance of listed deposit money banks in Nigeria. Data were collected from annual report and account of the 10 selected banks for the period of 10 years ranging from 2014 to 2023. The data collected were analyzed using both descriptive and inferential statistics (simple regression analysis). The findings revealed that information and communication technology cost has a significant effect on return on equity and earnings per share but does not have significant effect on return on asset of listed deposit money banks in Nigeria. Based on level of significance, it can be concluded that information and communication technology cost significantly affect bank performance in Nigeria.

Recommendations

Based on the findings of this study, it is therefore recommended that:

(i) It is recommended that the banks should take more cost-effective steps and more reliable technologies that do not offer loopholes for illegal activities to take place. There should also be more investment in prevention and detection techniques, because banks invest significant sums in the production of these

goods. The cost incurred in providing this security should accounted and reported in the financial statement to guide investors on true nature of the company especially in the area of their return on asset.

(ii) Strategic managers in deposit moneybanks in Nigeria need to fast track their strategic thinking toward adopting and implementing newer ICT infrastructures that drive their business intelligence system to attain sustainable operationaldecisions and performances especially in the area of return on equity.

(iii) Sustainable financial budget andcompetent strategic resources should be set aside to invest in modern digital ICT infrastructure to attain smooth competitive advantage and competitive strengths in modern commercial banking system. The cost attributes should be properly reported so as to determine that actual impact of ICT adoption on bank performance.

REFERENCES

1. Abaenewe, Z.C., Ogbulu, O.M. & Ndugbu, M.O. (2013). Electronic banking and bank performance In Nigeria. West African Journal ofIndustrial & Academic Research, 6(1).
2. Adam, I.O., (2020). Examining e-government development effects on corruption in Africa: the mediating effects of ICT development and institutional quality.Technol. Soc., 101245
3. Adegbie, F., Kehinde, O. Owolabi, B. (2020). Information and Communication Technology and Sustainable Performanceof Selected Listed Deposits Money Banks in Lagos State, Nigeria. International Journal of Sustainability Management and InformationTechnologies. 6(1), 18-35
4. Agu, C., & Aguegboh, E. (2020). ICT and Bank Performance in Sub-Saharan Africa:A Dynamic Panel Analysis.
5. Agwu, E., & Carter, A. L. (2014). Mobile phone banking in Nigeria: benefits, problems and prospects. International Journal of Business and Commerce, 3(6), 50-70.
6. Alnoukari, M. (2020) An examination of theorganizational impact of business intelligence and big data based on management theory. Journal of IntelligenceStudies in Business. 10 (3) 24-37.
7. Bhujabal Padmaja & Narayan Sethi & PurnaChandra Padhan (2021) ICT, foreign direct investment and environmental pollution in major Asia Pacific countries; Environmental Science and Pollution Research; https://doi.org/10.1007/s11356-021-13619-w.
8. Bogati, D., & Vongurai, R. (2018). Determinants Of Customer Satisfaction And Customer Loyalty In E-Banking: A Case Study of Thailand's Selected Commercial Banks in Bangkok's Central Business Area. International Research E-Journal on Business and Economics, 2(2), 32.
9. CBN. (2017). Cyber security for Deposit Money Banks (DMBs) and Payment Service Providers' (PSPs). Quarterly Economic Review, pp 35-56, 2017.
10. Chen, C.; Ye, A. (2021) Heterogeneous effects of ICT across multiple economicdevelopment in Chinese Cities: A Spatial Quantile Regression Model.Sustainability,13, 954.
11. Chhabra, T.N., Suri, R.K. & Verma, S. (2009). AnIntroduction to e-commerce Dhanpat Rai & Co.New Delhi: 9(8)
12. Chiu, C. L., Chiu, J. L., & Mansumitrchai, S. (2019). Stages in the development of consumers' online trust as mediating variable in online banking system: a proposed model. International Journal of Electronic Finance, 9(3), 170-201.
13. Daniel,E.(1999).Provision of electronic banking in the UK and the Republic of Ireland. International Journal of bank marketing.
14. Davis, F. D., Bagozzi, R. P. & Warshaw, P. R. (1989). User acceptance of computer technology: A Comparison Of Two. ManagementScience, 35 (8).
15. Davis, F.D., Bagozzi, R.P., & Warshaw, P.R. (1989). User acceptance of computer technology: a comparison of two theoretical models. Management Science, 35(8), 982-1003.
16. Fishbein, M., and Ajzen, I. (1975). Belief, attitudes, intention and behavior: An introduction to theory and research. Reading, MA: Addison-Wesley
17. Ingram, A., Peake, W. O., Stewart, W., & Watson, W. J. (2019). Emotional intelligence and venture performance.Journal of Small Business Management, 57(3), 780-800.
18. Kiani, A., Ali, A., Kanwal, S., & Wang, D.(2019). How and when entrepreneurs' passion lead to firms' radical innovation: Moderated mediation model. Technology Analysis & Strategic Management, 32(4), 443-456.

19. Kiani, A., Yang, D., Ghani, U., and Hughes, M. (2021). Entrepreneurial passion and technological innovation: The mediating effect of entrepreneurial orientation. Technology Analysis & Strategic Management, in press.
20. Kyeremeh, K., Prempeh, K. B. and AffulForson, Matilda (2019) Effect of Information Communication and Technology (ICT) on the Performance ofFinancial Institutions (A Case Study of Barclays Bank, Sunyani Branch), Munich Personal RePEc Archive, MPRA Paper No.95994.
21. Lee, Y.-C.; Malcein, L.A.; Kim, S.C(2021). Information and communicationstechnology (ICT) Usage during COVID- 19: Motivating Factors and Implications. Int. J. Environ. Res. Public Health, 18, 3571. https://doi.org/10.3390/ijerph18073571
22. Mahmoud, M. A. (2019). Gender, E-Banking, and Customer Retention. Journal of Global Marketing, 32(4), 269-287.
23. Makanga, R.O. & Paul, S.N. (2017). Influence of strategic management practices on performance of Kenya power and lighting company ltd, Nairobi County, Kenya. The Strategic Journal of Business & ChangeManagement, 4(4), 289-306.
24. Mawutor, J. K. M. (2014). Impact of E-banking on theprofitability of banks in Ghana. Research Journal of Finance and Accounting, 5(22)/
25. Mehmood, N.,Shah, F., Azhar,M., & Rasheed, A.(2014).The factors effecting e-banking usage in Pakistan. Journal of Management Information System and E-commerce, 1(1), 57-94.
26. Najaf, R., Najaf, K., & Pasowal, B. A. (2014). E-banking in Pakistan.American Scientific Research Journal for Engineering, Technology, and Sciences (ASRJETS), 10(1), 74-84.
27. Nguyen Van Thuy et al (2021) ICT and Bank Performance: Empirical Evidence from Vietnam; Journal of Contemporary Issues in Business and Government Vol. 27, No. 2,P-ISSN: 2204-1990; E-ISSN: 1323-6903; DOI: 10.47750/cibg.2021.27.02.433
28. Nwakoby N. P., Charity P. S. and Ofobruku, S. (2018) Impact Of Information And Communication Technology On The Performance Of Deposit Money Banks In Nigeria; International Journal of Management and Sustainability, 7(4), 225-239.
29. Ojeka, S. & Egbide, B. (2017). "Cyber-security in the Nigerian banking sector." International Review of Management and Marketing, 7(2), 340-346, 2017.
30. Okechi, O., & Kepeghom, O. M. (2013). Empirical evaluation of customers' use of electronic banking systems in Nigeria. African Journal of Computing & ICT, 6(1), 7-20.
31. Okoro, C.C. Nnam, H.I. Joe, W.E. & Obizuo, C.J. (2024). impact of financial technology on financial institutions' performance. Evidence from Nigerian banks. International Journal of Accounting and Financial Management Research, 10(3), 111-134.
32. Onyedimekwu O, & Oruan, M. K . (2013). Empirical evaluation of customers' use of electronic banking systems in Nigeria. African Journal of Computing & ICT, 6. (1), 2006-1781
33. Pavlou, P.A. (2002a). A theory of planned behavior perspective to the consumer adoption of electronic commerce. MIS Quarterly, 30(1),115-143.67.
34. Sampson E (2005) Technological developments and global banking innovation: Zenith Economic Quarterly
35. Shaari, R. (2020). Internet banking: from the perspective of Malaysian bankers. International Journal of Management Studies, 12(2), 115-124.
36. Sulieman, I. S. A. & Ahlam-Jebreen, A. H. (2017). Impact of electronic banking services on the customers loyalty of commercial banks in Jordan International Journal of Academic Research in Accounting, Finance andManagement Sciences. 7(1), 50–63
37. Uyar Ali, Khalil Nimer, Cemil Kuzey, Muhammad Shahbaz, Friedrich Schneider (2021) Can e-government initiativesalleviate tax evasion? The moderation effect of ICT; Technological Forecasting &Social Change 166, 120597
38. Walls, C. & Barnard, B. (2020). Successfactors of big data to achieveorganizational performance: TheoreticalPerspectives. Expert Journal of Business and Management, 8(1), 1- 16.
39. Wang, D., Xiang, Z.,& Fesenmaier, D.R. (2016). Smart phone use in everyday life and travel. Journal of travel research, 55(1), 52-63.
40. Wiredu, J., Labaran, U. I., Nketiah, E., & Osibo, K. (2020). Impact of information and communication technology (ICT) on rural banks management. A Case Study ofAtiwa-Rural Bank Limited in Ghana. American Journal of Industrial and Business Management, 10, 1681-1706.

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41. Zaid, A. H. A., Azman, N., & Azizan, N. (2020). Success Factors Consideration for E-banking Web site from User Perspectives in Malaysia: A Study Using the Knowledge Transfer Process Model. Journal of Global Scientific Research (ISSN: 2523-9376), 1, 295-306.

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APPENDICES

Appendix 1: Descriptive

Descriptive Statistics					
	N	Minimum	Maximum	Mean	Std. Deviation
ICTC	100	3.07	8.29	5.7262	1.61550
ROA	100	.00	.25	.0366	.04937
ROE	100	.00	.37	.1276	.08539
EPS	100	-.03	6.05	1.2924	1.32538
Valid N (listwise)	100				

Appendix 2: Regression Analysis

Appendix 2a: Roa

Dependent Variable: ROA				
Method: Least Squares				
Date: 08/08/24 Time: 09:59				
Sample: 1 100				
Included observations: 99				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.068167	0.018100	3.766109	0.0003
ICTC	-0.005440	0.003043	-1.787798	0.0769
R-squared	0.031900	Mean dependent var		0.037024
Adjusted R-squared	0.021919	S.D. dependent var		0.049454
S.E. of regression	0.048909	Akaike info criterion		-3.177716
Sum squared resid	0.232033	Schwarz criterion		-3.125289
Log likelihood	159.2969	Hannan-Quinn criter.		-3.156504
F-statistic	3.196221	Durbin-Watson stat		0.909144
Prob(F-statistic)	0.076931			

Appendix 2b: Roe

Dependent Variable: ROE				
Method: Least Squares				
Date: 08/08/24 Time: 10:00				
Sample: 1 100				
Included observations: 99				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.013069	0.029080	0.449430	0.6541
ICTC	0.020229	0.004889	4.137950	0.0001

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R-squared	0.150037	Mean dependent var	0.128878
Adjusted R-squared	0.141275	S.D. dependent var	0.084795
S.E. of regression	0.078577	Akaike info criterion	-2.229482
Sum squared resid	0.598910	Schwarz criterion	-2.177056
Log likelihood	112.3594	Hannan-Quinn criter.	-2.208270
F-statistic	17.12263	Durbin-Watson stat	0.623479
Prob(F-statistic)	0.000075		

Appendix 2c: Eps

Dependent Variable: EPS				
Method: Least Squares				
Date: 08/08/24 Time: 10:01				
Sample: 1 100				
Included observations: 99				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.047217	0.471890	-0.100059	0.9205
ICTC	0.236330	0.079329	2.979100	0.0037
R-squared	0.083826	Mean dependent var		1.305758
Adjusted R-squared	0.074381	S.D. dependent var		1.325346
S.E. of regression	1.275103	Akaike info criterion		3.343927
Sum squared resid	157.7112	Schwarz criterion		3.396353
Log likelihood	-163.5244	Hannan-Quinn criter.		3.365139
F-statistic	8.875039	Durbin-Watson stat		0.624862
Prob(F-statistic)	0.003653			