

Evaluation of Information Technology (It) Investments on Bank Returns: Evidence from Nigerian Banks.

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Abstract.

No bank can afford to ignore the need to adopt measures that will quicken the processing and transmission of business information, as well as saving time and cost, hence, the need for information technology in banking business. Notwithstanding the numerous benefits of information technology, information technology procurement requires huge investments outlay. Whether the level of investment done in IT actually brings real benefits to the banks, is still a matter of debate in academic circles. This paper therefore, evaluates the effect of information technology investment on bank returns. Our model was structured in a way that it showed the effect and the relationship between information technology expenditure and bank returns. OLS stated in a multiple form was applied to data generated from a sample of banks that survived the 2005 regulatory bank consolidation exercise in Nigeria. The analysis suggests that information technology expenditure has a negative relationship with bank profitability indicating that IT expenditures of all the studied banks do not increase bank profitability, but rather decreases it insignificantly.

Keywords: Information technology; bank returns; level of IT investment; correlation; effe

Introduction.

The revolution in ICT has changed the banking sector operations from the traditional to presumably better ways with technological innovation that improves efficiency. ICT can enhance efficiency via its use and in recent times banks have been encouraged by the rapid decline in the price of ICT gadgets. This has perhaps increased the bank level of ICT usage (Ovia, 2005). The increase might have also been attributable to business environment that became relatively flexible to accommodate new forms of technological changes as a result of reforms in the country.

ICT encompasses computer systems, telecommunication, networks, and multimedia applications and it came into use in the late 1980's replacing earlier terms like Electronic Data Processing (EDP), Management Information System (MIS), although the latter terms are still in use (Frenzel, 1996). ICT has transcended the role of support services or only electronic data processing; its fields of applications are somewhat global and unlimited. Its devices especially the Internet through the World Wide Web (www) and modern computer email facilities have further strengthened early innovations like the telephone and fax. Other ICT devices include data recognition equipment, factory automation hardware and services, tele-computing and teleconferences using real time and online system (Adeoti, 2005). It is a concept that is having a remarkable effect on almost entire aspects of the human endeavors. This connotes that it involves the application of principles to engage physical component in achieving an intended goal. The convergence of computer and telecommunication after about four decades of applying computers to routine data processing, mainly in information storage and retrieval, has created a new development where information has become the engine of growth around the world. This development has created catch-up opportunities for developing countries such as Nigeria to attain desired levels of development without necessarily 'reinventing the wheels' of economic growth. This new technology has brought far-reaching revolution in societies, which has tremendously transformed most business (banking) scenes (Ovia, 2005).

Banking has become highly ICT based and because of its inter-sectoral link, it appears to be reaping most of the benefits of revolution in technology, as can be seen by its application to almost all areas of its activities (Akinuli, 1999). It has broadened the scope of banking practices and changed the nature of banking as well as the competitive environment in which they operate. A broad opening has been experienced around the world for banks and they are currently taking due advantage of these innovations to provide improved customer services in the face of competition and faster services that enhance productivity (Akinuli, 1999; Ovia, 2005).

Technological advancement facilitates payments and creates convenient alternatives to cash and cheque for making transactions. Such new practices have led to the development of a truly global, seamless and Internet enabled 24-hour business of banking. Technological advance in payments are important due to the fact that it will be feasible to outsource quite a number of the banks' role in the payments system. Also banks' regulation

can be more technologically dependent and better focused rather than focusing on conceptual guidelines. ICT revolution both in terms of innovation rate, speedy operation, and cost per unit (portraying reduction in average total and marginal costs) has made a good number of banks embrace the use of ICT infrastructure in their operations (Akinuli, 1999).

The technological innovation that is being witnessed currently in the Nigerian banking sector is possible of impacting on the banks' mode of transactions especially in their payment systems. The payment systems are made feasible by ICT gadgets such as Automated Teller Machine (ATM), Electronic Fund Transfer (EFT), Clearing House Automated Payments (CHAPs), Electronic Purse (E-PURSE), Automated Cheque Sorter (ACS) and Electronic and Transfer at Point of Sale (EFTPOS), which have made transactions easy and convenient. This phenomenon is capable of bringing about speedy operations and enhanced productivity (Adeoti, 2005; Ovia, 2005). Though there may be little interruptions at times due to network failures, which may make customers unable to carry out transactions at that point in time. This little shortcoming is not in any way comparable to the days when banking halls were characterized by long queues mainly as a result of delays in the traditional banking operations.

Now banks can provide comprehensive services to their customers by making them access their accounts via online services. These instruments have an edge over the traditional payment instruments because it is safer, more efficient, convenient and cost effective. Before the introduction of these ICT services in the banking industry, manual processing of documents were in use. The bankers were made to cope with this onerous task, and the process made business transactions minimal. Besides several hectic procedures, people had to contend with, banks' customers were inevitably made to spend several hours in the congested banking halls in carrying out their transactions (Ovia, 2005).

The ICT culture in Nigerian economy can be said to be on the increase. It has been observed that Nigeria's teledensity had remarkably increased by more than 2,550% from 0.35% in 1992 to 9.3% in 2004, thereby greatly exceeding the International Telephone Union's (ITU) benchmark of 1% (Ndukwe, 2005). This phenomenon has helped banks keep substantial information on-line which reduces the cost of marketing their products. Being a competitive tool, it enhances the creation of customized services, reduces the cost of operation, and improves productivity as well as profitability. More interestingly, almost all the banks in Nigeria have internet and on-line real time banking facilities which has improved the scope of Nigerian banking. It has aided transfer of funds from one location to another without any involvement of physical transactions but not without a tendency to fraud. Notwithstanding the numerous benefits of IT, IT procurement requires huge investment outlay since no bank can afford to ignore the need to adopt measures that will quicken the processing and transmission of business information and as well saving time and cost. Whether the level of investment done in IT actually brings real benefits to the banks, is still a matter of debate in academic circles. It is against this background that this paper sets out to determine the effect of banks investment in IT on bank profitability. The rest of the paper is organized into four additional sections. Section two reviews related literature, section three dwells on the methodological framework, section four reports the findings while section five concludes the paper.

Review Of Related Literature.

Development of Information Technology in Banks.

During the late 1950's and throughout the 1960's, business data was processed through punched card equipment and massive main frame computers with far lower capability than today's microcomputers. The 1970's saw the advent of the primitive user networks as terminals got connected to the massive mainframes as a result of the challenges posed by large volumes of business data. This was the foundation era of information system (IT), Management Systems (MIS), and Decision Support System (DSS). The 1980's witnessed the fusion of telecommunications and networking technologies for business deployment. Then was the emergence of data processing, office information system (OIS), and personal computers (PC). The 1990's till date, advances technology which transforms the way banks do business and how the emerging global information infrastructure has levered to shape and support potential networking technology to enhance corporate performance and competitiveness.

Ajogabde (2007) observes that the first stage of information technology in banking started with an attempt to automate the process of banking services, which was being done mechanically. It was a mere process of simple electromechanical devices such as note counters and accounting calculators, to effect speed on basic transactions such as computation and counting of money. Alabede (1996) notes the second stage of information technology was in routine data processing especially in information storage and retrieval.

Far reaching changes in computers and communications technology have altered our way of life. It is this change which has also fundamentally altered the way in which banking is being performed. The basic

functions of banking have remained the same but the way in which banking services are provided has altered (Rangarajan, 2011). Rangarajan (2011) itemized the evolution of technology adoption in banking as follows: First, it started off with computerization of a few key functions and departments in principal branches through adoption of what he called advanced ledger posting machines. These systems were designed to take care of the accounts related functions of the banks which were at the heart of banking operations and which had assumed great significance in terms of the need for accuracy and control. Second, the next progress was towards branch automation. This enabled setting up of "Single Window Service" facilities which were focused on the customers. Third, there was the emergence of network based operations which were aimed at providing interbank connectivity. Fourth, an important stage in the evolution of the user friendly technology arrived with the deployment of ATMs and the adoption of Core Banking Solution which radically transformed the way banking was done by bankers and customers. The introduction of these various technology products has had a beneficial impact on both banks and customers. For the customers, the important benefits are anywhere banking, Internet banking, ATM banking and Mobile banking. It has also facilitated the use of secured debit and credit cards. For the banks, the major benefits are centralization of customer information, centralized transaction process, centralized accounting process, basic MIS reporting and real-time information availability. In positioning the Nigerian financial market for competitiveness in the 21st century, the deployment of information technology will play a dominant catalytic role in growing the banking industry.

Irechukwu (2000) also itemized some bank services that have been revolutionized through the use of ICT as including account opening, customer account mandate, and transaction processing and recording. Information and Communication Technology has provided self-service facilities (automated customer service machines) from where prospective customers can complete their account opening documents direct online. It assists customers to validate their account numbers and receive instruction on when and how to receive their cheque books, credit and debit cards. ICT products in use in the banking industry include Automated Teller Machine, Smart Cards, Telephone Banking, Electronic Funds Transfer, Electronic Data Interchange, Electronic Home and Office Banking. Adebowale (2007) states that what computers can do make it more valuable to the banking industry. According to Adebowale, the introduction of the Magnetic Ink Character Readers (MICR) cheques has helped in quick clearings by eliminating errors due to wrong sorting.

E-Banking and the Profitability of Banks

E-banking offers the convenience of conducting most of the banking transactions at a time that suits the customer with the aid of information technology IT. The customer can access funds and transfer funds between accounts, Pay bills and make purchases 24 hours a day, 7 days a week. E-banking could be defined as the provision of retail and small value banking products and services through electronic channels. Such products and services can include deposit taking, lending, account management, the provision of financial advice, electronic bill payment, and the provision of other electronic payment products and services such as electronic money (Basel Committee on banking supervision, 1998 and 2003). E-banking includes systems that enable financial institutions, customers, individuals and businesses, to access accounts, transact business, or obtain information on financial products and services through public or private networks, including the internet. Customers access e-banking services using an intelligent electronic device, such as a personal computer (PC), personal digital assistant (PDA), automated teller machine (ATM). Private networks "closed" restrict access to participant (financial institutions, customers, merchants, and third party service providers) bound by agreement on the terms of membership. Public networks "open" have no such membership requirements. The role of technology in supporting the e-banking function has become increasingly complex. IT operations which are traditionally housed in a computer data center with user connections through terminals have become more and more dynamic and include distributed environments, integrated applications, telecommunications options, interest connectivity, and an array of computer operating platforms. As the complexity of technology has grown, banks have increased their reliance on vendors, partners, and other third parties for a variety of technology solutions and services.

Melo de Brito, Tereza and Siegel (2002) investigated the return on investment for online banking services (an analysis of financial account aggregation). The return on investment of the Account Aggregation technology was evaluated using the calculation of the EBIT (Earnings before Interest and Taxes) NPV (Net Present Value) for a period of five consecutive years. The sample covers three basic bank sizes according to the number of its online customer accounts were considered. The primary conclusion of this investigation is that Account Aggregation is a compelling technology that should become a commodity in the sense that most important banks will provide it, and it will represent no more a differentiated competitive advantage.

Siam (2006) examined the effect of electronic banking in bank profitability in Jordan. The population of the study is all working banks in Jordan which have sites on the internet for the period of 1999-2004. The results

from the data analysis that were gathered from study instrument (questionnaire) showed that there is a correlation with statistical significance between the impacts of electronic banking on banks profitability.

Hernando and Nieto (2007) attempted to identify and estimate the impact of the adoption of a transactional website on financial performance using a sample of 72 commercial banks operating in Spain over the period 1994-2002. The analysis of the sample is based on several financial performance ratios. These financial ratios measure business activity as a percentage of total assets (loans, deposits, off-balance sheet and trading portfolio activity); operational performance as a percentage of average total assets (general expenses and more specifically staff, information technology and marketing costs) and profitability (return on equity –ROE–, return on assets –ROA–, intermediation margin, other income and securities brokerage commissions). The results showed that the impact on banks' performance of transactional web adoption takes time to appear. The adoption of the Internet as a delivery channel involves a gradual reduction in overhead expenses (particularly, staff, marketing and IT). This effect is statistically significant after one and a half years after adoption. The cost reduction translates into an improvement in banks' profitability, which becomes significant after one and a half years in terms of ROA and after three years in terms of ROE.

Khrawish and Al-Sa'di (2011) aimed to test the effect of e-banking services provided by banks on the internet on the profitability of these banks during the period 2000-2009. The study sample consists of all domestic banks in Jordan separated into 3 groups: Non-internet service providers, recent adopters of the service, and early adopters of the service. Ratios were used to test the effect on profitability; these ratios are Return on Assets, Return on Equity Margin of Interest as profitability measures. Other ratios used include independent variables which are: Market share, Overhead RATIO, Deposits/Assets, and Loan/Assets. Regression analysis was used to test the effect of e-banking services on the profit. The regression analysis showed that there is no significant effect of e-banking services on the profitability of recent adopter's banks in terms of ROA, and ROE. It gives an indicator of high expenses and cost associated with applying these services. Unlike Margin, It is significantly affected by the e-banking services. For early adopters, the result were much better than those for the early adopters, but still not significant with the profitability of these bank. Finally, Internet banking is new and changing rapidly, and therefore results of empirical studies on Internet banking may vary considerably with different sample and methods of analysis.

Sana, Mohammad, Hassan and Momina (2011) confirmed as follows: That Birch and Young (1997) analyzed the consumer side for e-banking and the results showed that consumers basically seek for transactional efficiency, choice for core and non-core banking products and access to competitive prices and returns; that Onay et al (2008) in their research on Turkish banks concluded that e-banking has a positive impact on the profits of banks. According to their study, "Internet has changed the dimensions of competition in the retail banking sector. It has also provided opportunities for emerging countries to build up their financial intermediation infrastructure. Investment in e-banking is a gradual process. The internet banking variable has had a positive effect on the performance of the banking system in Turkey"; Siam (2006) examined the impact of e-banking on Jordanian banks and concluded that majority of the banks are providing services on internet through their websites and his findings show that the attention is more to achieving e-banking as satisfying and fulfilling customers' needs. He also concluded that there should be a well-articulated strategy to achieve success and profits in the long run; in their research, De Young et al (2007) analyzed the effect of e-banking on the performance of banks by studying US community banks markets and compared the performance of virtual click and mortar banks with brick and mortar banks. Their findings concluded that e-banking improved the profitability of banks hence increasing their revenues. Also, E-banking is largely driven by the factors of minimizing the operating costs and maximizing operating profit, suggests Simpson (2002); According to Centeno (2004), the e-banking adoption factors are divided into two categories: 1). Factors relating to the infrastructure and accessing technology and 2) factors that are related to retail banking. The prior factors include skills on the part of consumers in using internet and other related technologies, attitudes towards technologies, internet penetration rate, privacy and security concerns. Later involves factors like banking culture, e-banking culture, trust in banking institutions and internet banking push. However, lack of PC and internet penetrations serve as barriers for development of e-banking; also, in their study conducted in Turkish retail banking sector Polatoglu and ekin (2001) concluded that e-banking decreases operational costs and it amplifies customers' satisfaction and retention. The usage of e-banking induces many risk factors to firms' overall risk profile. The Basel committee has issued Risk Management Principles for Electronic Banking in July 2003, it has recognized the related risk factors and its purpose is to enhance and promote safety of services offered by e-banking while maintaining flexibility keeping in regard the changing technologies due to dynamic environment.

Information Technology and Profitability.

Various works support the sustained evolution towards positions, which are more optimistic about the impact of IT (Hitt and Brynjolfsson, 1995, 1996a; Brynjolfsson and Hitt, 1996b; Brynjolfsson, Hitt and Yang, 2000). The 1996 researches by Hitt and Brynjolfsson, admitted that investment in IT were associated with an increase in productivity of workers who work with information and, additionally, they claim that investments in computing generates greater levels of productivity than any other type of investments, despite the short life-span of this type of tool (Brynjolfsson and Hitt, 1996a). Evidence showed off a relation between investment in IT and an improvement in global business performance, and not only productivity of work factor (Brynjolfsson, Hitt and Yang, 2000; Brynjolfsson and Hitt, 2001). Using a global result indicator, Tobin's Q ratio, based on the firm's value in the stock market, they concluded that those firms, which invested more in IT in the period 1987-1994, achieved superior results. More so, the correlation was stronger when the firm, along with the investment in IT which underwent a structural re-organisation involving interdisciplinary workgroups, increases in independent decision-making and support for employees' training.

Banking has become highly ICT based and due to its inter-sectoral link, it is reaping the benefits of technological revolution as evidenced by its application in most of its operations. Osabuohien (2008) carried out an empirical analysis on the anticipated role of ICT has in enhancing the operations of selected Nigerian banks in the light of current reforms. Primary data was employed and analyzed using cross-tabulations and regression technique built on the framework of technical progress. Factors such as bankers' age, educational qualification, computer literacy and type of ICT gadgets, were found to influence banks' degree of ICT usage, while ICT impacts significantly the speed of banking operations, productivity and profitability. The need for the banks to regularly train their workers, and procure quality ICT gadgets, which will enhance efficiency, etc, was stressed. This is crucial in the sector's current reforms where attention is focused on the ability of banks to attract and retain customers, which is mainly feasible through efficient service delivery that depend, to a large extent, on the use of ICT.

Lin (2008) investigated whether the firm Information technology (IT) capability can create economic value and competitive advantage. In contrast to past research, which generally assumed that IT investment leads to IT capability that in turn leads to competitive advantage, this study examines IT capability directly. Based on a cross-sectional sample of 155 banking firms, he investigated the main and interactive effects of IT capability and human capital investment on five firm-performance measures. The results of this study indicate that both IT capability and human capital investment contribute directly to the overall value-creation performance of banking firms. Further, the study suggests that IT capability and human capital investment can have a negative interactive effect on the firm's value creation. A firm's IT capability should be seen as an integral tool for creating economic value instead of a business infrastructure that makes business operations efficient. The results of this study support the resource-based view of the firm.

Kabiru, Mohd and Norlena (2012) investigated the moderating effect of IT capability in the relationship of Business Process Reengineering (BPR) factors and the organizational performance. BPR factors are operationalized by change management, BPR strategy alignment, customer focus, management commitment, IT investment, and adequate financial resources. The IT capability includes IT knowledge, IT operations and IT objects. Data was collected through a hand-delivery method by sending questionnaires to 560 banks (Commercial, Microfinance and Mortgage). This study used stratified random samplings proportionate to the numbers of the banks for sample selection. The findings showed that IT capability moderated the relationship between BPR factors such as change management, customer focus, management commitment and overall organizational performance of the bank. Furthermore, the result revealed that IT capability moderated the relationship between IT investment, management commitment and customer service management performance. The outcome of this study provides important insight to researchers for understanding on the effects of BPR factors and IT capability on organizational performance.

Baccelli (2006) investigated whether investment in Information Technology (IT) {hardware, software and other IT services} influences the performance of banks. Using a sample of 737 European banks over the period 1993-2000 Baccelli analysed whether IT investment is reflected in improved performance (measured using both standard accounting ratios and cost and alternative profit efficiency measures). Despite banks being major investors in IT Baccelli (2006) find little relationship between total IT investment and improved bank profitability or efficiency indicating the existence of a profitability paradox. However, the impact of different types of IT investment (hardware, software and services) on banks' performance is heterogeneous. Investment in IT services from external providers (consulting services, implementation services, training and education, support services) appears to have a positive influence on accounting profits and profit efficiency, while the acquisition of hardware and software seems to reduce banks' performance.

Mittal and Dhingra (2007) evaluated the impact of computerization on the performance of Indian banks in terms of their profitability and productivity. After defining input and output parameters, Data Envelopment Analysis (DEA) was used 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.

Methodology

This paper relied heavily on historic data as data that was used in the analysis were generated from annual financial reports of the sampled banks for a seven year period (2005 to 2011). In line with the approach adopted by Leckson-Leckey, Osei and Harvey (2011) in their work investments in Information Technology (IT) and Bank Business Performance in Ghana, this research handpicked data from the balance sheet and income statements of the sampled banks. This is because it is ideal in answering our research questions and to empirically test our research hypothesis.

A sample of four (4) banks was selected for this study via a non-probabilistic sampling method. Owing to paucity of data for the research variables of interest, the four banks selected are namely; First City Monument Bank (FCMB), Guaranty Trust Bank (GTB), First Bank (1st Bank), and Zenith Bank to represent the entire deposit money banks in Nigeria. The choice of the banks is because they carry information regarding the research variables in their annual reports and account for the study period.

The models for this paper were structured in a way that it showed the relationship between bank deployment of information technology and the performances of the sampled banks after the 2005 concluded consolidation exercise in Nigeria. The ratios used are stated and defined thus:

Return on Asset (ROA). Return on Assets (ROA) comes into help since assets include financial and physical assets such as equipment and buildings. Most of the banks' activities represented by revenues and expenses are closely related to their total assets. Changes in returns on assets reflect more accurately to changes in profitability. The ROA is a functional indicator of bank's profitability. It is a ratio calculated by dividing net income by total assets.

$$\text{Return on Assets} = \frac{\text{PBIT}}{\text{Total Assets}} \dots \dots \dots (1)$$

Where; PBIT = Profit before Interest and Tax.

This paper investigates the relationship and magnitude of investment in Information Technology and banks' performance by using a multiple regression comprising of panel data. This research analysed the relationship within the framework, that investments in Information Technology (I.T) influence firm performance, i.e. IT has a positive effect on performance by referring to prior research of Kim and Davidson (2004) and includes control variables which are firm characteristics drawn from extant literature. We investigate the relationship and the impact of investment in IT on bank performance by using a regression equation expressed in a multiple form based on return on equity (ROA).

$$\text{Profitability}_{it} = a_0 + a_1 + a_2\text{Branch} + a_3\text{ATM} + a_4\text{nlogITEX} \dots \dots \dots (3)$$

Profitability_{it} = Return on Asset (ROA) of bank i at the end of fiscal year t.

Branch_{it} = Total number of branches of bank i at the end of year t

ATM = Total number of ATM machines of bank i at the end of year t.

nlogITEX_{it} = the natural log of IT expenditure of bank i at the end of fiscal year t

These estimated coefficients provide evidence on whether the banks that spend more on IT (i.e. high IT level that links ATM machines and bank branches) have a greater impact on the financial performance. The key independent variable information in this study, IT investments (ITEXP) was collected from sampled banks annual reports as it is not readily available for all the banks in Nigeria. In the instance where data was not available, figures reported in financial statements as investment on computers was used as a proxy for IT investments.

Findings.

Given the lead role information technology play in the modern day banking by ensuring the interconnectivity of remote computers that enhances the provision of banking products, the table below shows the number of ATMs and branches of the banks that constitute our sample.

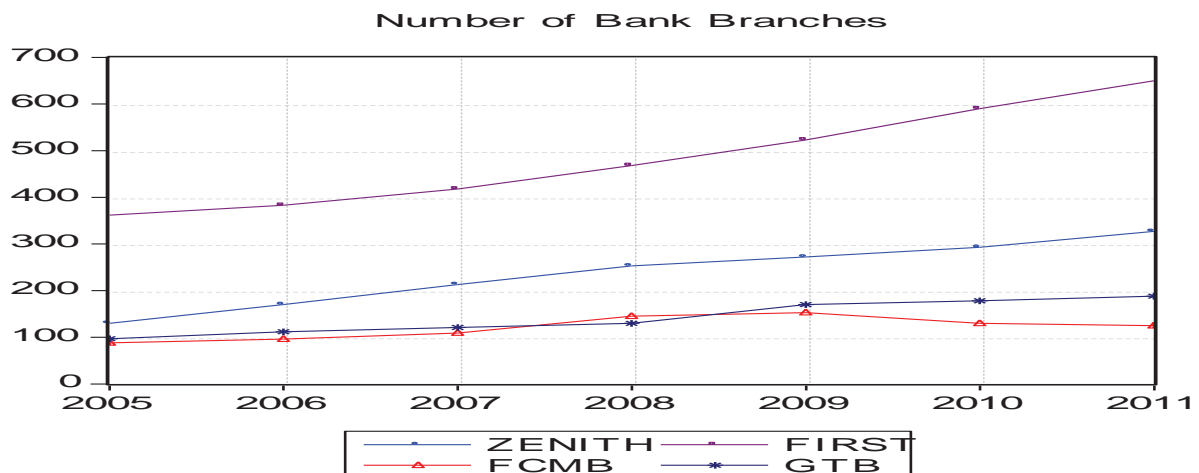
Table 1. Sampled Banks ATM/Branch Network.

Zenith Bank Plc.	Years	No. of ATM	No. of Branches
	2005	185	130
	2006	210	170
	2007	253	213
	2008	302	253
	2009	312	272
	2010	333	293
	2011	373	327
First City Monument Bank Plc.	2005	120	88
	2006	127	96
	2007	139	109
	2008	185	145
	2009	198	153
	2010	170	130
	2011	165	125
First Bank Nigeria Plc.	2005	397	362
	2006	424	383
	2007	453	418
	2008	503	468
	2009	563	523
	2010	665	590
	2011	710	650
Guaranty Trust Bank Plc.	2005	140	97
	2006	152	112
	2007	156	121
	2008	175	130
	2009	210	170
	2010	213	178
	2011	228	188

Source: Sampled Banks Annual Reports for various years.

The table above shows the number of ATM and the bank branches which their interconnectivity is made possible by the banks' deployment of information technology.

Fig. 1



In bank branching, First Bank Nigeria Plc has the highest of number of bank branches of 362 in year 2005 and the highest number of bank branches as at 2011, the end of the study period. The number of branches for First bank plc increased by 80% from 362 in 2005 to 650 in 2011. Zenith bank plc has 130 branches in 2005 and in 2011; an increment of 152% brought the total number of bank branches to 327. FCMB however recorded the highest number of bank branches of 153 in 2009 which declined to 125 in 2011. GTB Plc maintained a positive stance in branch expansion from 97 branches in 2005 to 188 in 2011.

Hypothesis Testing.

H0: Information Technology expenditure decreases bank profitability.

H1: Information Technology expenditure increases bank profitability.

Results.

The regression result model summary is presented in the table below.

Table 2: Model Summary^b

Model	R	R ²	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.772 ^a	.527	.299	.08434	.077	.608	3	22	.617	.845

a. Predictors: (Constant), ITExpenditure, ATMit, Branchit

b. Dependent Variable: ROAit

Though the coefficient of determination R is as high as 77.2% but the coefficient of multiple determinations R² which explains the extent to which the independent variables affect the dependent variable is 52.7%. This implies that .527 or 52.7% of the variations in the dependent variable are explained by the independent variables in our model. This is relatively above 50% and shows that our model fits. In other words, 52.7% variations of the independent variables determine bank profitability in our model.

Table 3: Coefficients.

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.337	.159		2.118	.046
	ATMit	-.001	.002	-2.007	-.461	.649
	Branchit	.001	.002	1.767	.398	.694
	ITExpenditure	-.021	.020	-.356	-1.052	.304

The estimated coefficient of information technology expenditure (ITExpenditure) is negative as expected. This is an indication that IT expenditures of all the banks under this study do not increase ROA, but rather decreases it insignificantly. This may be due to the fact that, investment in IT increases bank expenditure and assets while reducing operating profits and thereby reducing return on assets (ROA). We therefore accept the

null hypothesis and conclude that that information technology expenditures decrease Nigerian bank profitability. The result also shows that effect is rather insignificant as the p-value of .304 is $> .05$ significant level. This result is in line with the findings of Baccelli (2006) who investigated whether investment in Information Technology (IT) {hardware, software and other IT services} influences the performance of banks. Despite banks being major investors in IT Baccelli (2006) find little relationship between total IT investment and improved bank profitability or efficiency.

Conclusion

The deregulation of the banking sector brought about far-reaching transformation and competition through computerization and improved bank service delivery. This paper sets out to determine the extent that information technology expenditures increase or decreases bank performance. The ordinary least squares statistics was applied to a cross-sectional data gathered from the sampled banks annual reports and accounts. The analysis suggests that information technology expenditure has a negative relationship with bank profitability indicating that IT expenditures of all the studied banks do not increase bank profitability, but rather decreases it insignificantly. This result may be due to the fact that, investment in IT increases expenditure, as well as increasing assets thereby reducing operating profits as well as return on assets (ROA). Again, most of the banks in order to keep up with competition that arose as a result of consolidation and enhance efficiency invested heavily in ICT related facilities.

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