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Effects of Information Technology on Organisational Performance in Nigerian Banking Industries

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Abstract
Nigerian banks have benefited from global technology innovation. Introduction of Information and Communication Technologies (ICT) have affected employee performance and customers' responses .This thesis examined customer's and employee's responses to technology innovation, and their effects on the performance of the Nigerian banks. Fifteen (20) major banks were selected for the research. Two null hypotheses based on sets of questionnaires distributed to selected banks' employees and customers were formulated to test whether there is no significant relationship between technology innovation and customer's satisfaction; and between technological innovation and Nigerian banks employee's performance. Four hundred and fifty (450) questionnaires were distributed to customers to test the first hypothesis out of which 400 were collected which is 88.88% of the distributed questionnaires, Chi square was used to test the hypothesis . Findings revealed that technological innovation influenced banks employee's performance, customer's satisfaction and improvement in banks profitability. The study recommends effective management of technological innovation for improved employees performance, customer's satisfaction, sustainable profit, increased return on investment, returns on equity, and to promote competitiveness in the Nigerian banking industry.

INTRODUCTION

The application of electronic payment (concepts, techniques, policies) and implementation of electronic devices in banking industry has become a subject of fundamental importance and concerns to all banks operating within Nigeria territory and indeed a prerequisite for local and global competitiveness. The recent consolidation exercise in Nigerian banking sector has drawn the attentions of many banks to application of various technological devises in promoting/achieving better customer service delivery that guaranteed continuous increase in profitability and higher return on investment. However, the rapid growth in the global banking services has increased the pressure on the Nigerian banks for improved productivity. The new age of banking allows customers to walk into any computerized bank and conclude their transaction within a twinkle of an eye. In order to enhance banking services, majority of banks especially the new generation banks have adopted the electronic banking services to enhance their customer service delivery through the advancement in the information technology.

David (1982)[7] confirms that there has been a very modest move away from cash. Patrick (1985)8 also contends that the advantage of cash charismatic as the value of transactions increases. Consequently the use of non-cash payment rises with increasing value. All these have been brought about by the advancement in Information and Communication Technology (ICT). ICT has streamlined the processes for cash lodgments (deposits) and withdrawals locally and internationally. Tellers are today equipped to issue receipts (deposits slips) for cash deposits. The service of ordering bank drafts or certified cheques made payable to third parties has also been increasingly automated (Ikechukwu, 2000)[9] Writing on new technologies and performance enhancement in the banking industry, Ovia (1997)[10] states that the new technologies have created from point A to point B has resulted in turning the central money into bits and bytes through satellite transponders, fiber optic cables or regular telephone lines. Bill (1996)[11] contends that for banks, the new technologies present not only a challenge to adapt but also many opportunities to utilize. Stan (1997)[12] also defined electronic payment as a system of payment whereby transaction takes place electronically without the use of cash.

According to Steve (1996)[13] electronic payment is a system that is automated through the use of information technology where bank transactions are done within and without banking halls and not necessarily the customer's branch. Information Technology is the major driver that helps in the enhancement of the e1ectronic system to enhance customer service delivery. It is information technology that brought about electronic banking that is banking services that are conducted on the platform of mobile devices and wireless networks, also provision of banking and financial services with the help of mobile telecommunication devices. Consequently, electronic payment system deals with clearing network characteristics which is automated clearing service which manifest in the use of magnetic ink character reader in Nigeria.

The remote services or point of sales characteristics addresses the units of banking activities that transfer fund from one bank's account to another. The transfer is always authorized and the record is kept on file of that authorization. Also deals with pre-authorized debit and credit characteristics of electronic payment which manifests in the use of cards.

Plastic cards are used to identify customers and pass same to machine to initiate a paper or electronic payment. Steve (1996)[13] said it is a mechanisms by which personal customer could interface with electronic banking industry.

Financial institutions issue credit/debit cards designed as a system in order to provide credit or debit facilities to their customers. Debit cards are card designed as a convenient method of payment in place of cash while credit cards are used as means of borrowing or as a convenient method of payment. In order to enhance the customer service delivery in Nigeria banks, banks are expected to adopt latest technologies available for electronic payment system brought about by the advancement in the information technology. The increase in emerging Information Technology has made banking services become more and more automated and less paper work than in the past as averred in the Central Bank Nigeria reports and statistical bulletins, annual reports of most Nigerian banks and other literature of banking and finance (Keramati, 2007)[14].

Banks in Nigeria have realized that they would soon go out of corporate existence unless they keep with the pace at which Information Technology (IT) has redefined the creation of value and worth for their customers. This situation calls for informed method(s) of effecting banking transaction, one of which is IT-based method of E-banking as an upsurge in the modern banking system. Evidences from the literature as shown by (Fenuga in Zhu, Jr, and Chen, 2002; Waite & Harrison, 2002; Garcia, Hahn and Layne-Farrar, 2006)[15] reveal that E-banking system is expected to serve the purpose of decongesting banking hall, reducing waiting time for bank services, maintaining one branch bank, making customers more liquid and ensuring cashless economy.

Bickersteth (2005)[16] attributed the slow pace of development of e payment to lack of adequate infrastructure, low Internet penetration, absence of open standards/trust among banks and providers as well as absence of adequate legislation or national policy on IT development. According to Olesin (2006) and Ezeoha (2006)[17], image problem was another issue.

The Advance Fee Fraud code-named 419, is one of the most popular Internet frauds in Nigeria. Generally, Denny (1998)[18] attributed e-payment problems to the issues of customer identification and account verification of online purchasers. Another issue is lack of security. There is need to put in place effective security measures to safeguard the client, server as well as the media of transmission (Ghosh, 1997)[19]. Electronic banking is a feature that ensures that customer's transaction updates are done online real time. This way customer is assured of the most current transaction and balances in their account at any point in time. Electronic banking is an IT based banking that makes all transaction in an account of a customer done within a short term at any branch of these banks.

Statement of the Problem.

In Nigeria, customers of banks today are no longer about safety of their funds and increase returns on their investments only. Customers demand efficient, fast and convenient services. Customers want a Bank that will offer them services that will meet their particular needs (personalized Banking) and support their Business goal. For instance; businessmen want to travel without carry about cash for security reasons. They want to be able to check their balance online, find out if a cheque is cleared, transfer funds among accounts and even want to download transaction records into their own computer at work or home. Customers want a ensuring cashless economy. Bickersteth (2005)[16] attributed the slow pace of development of e payment to lack of adequate infrastructure, low Internet penetration, absence of open standards/trust among banks and providers as well as absence of adequate legislation or national policy on IT development. According to Olesin (2006) and Ezeoha (2006)[17], image problem was another issue. The Advance Fee Fraud code-named 419, is one of the most popular Internet frauds in Nigeria. Generally, Denny (1998)[18] attributed e-payment problems to the issues of customer identification and account verification of online purchasers. Another issue is lack of security. There is need to put in place effective security measures to safeguard the client, server as well as the media of transmission (Ghosh, 1997)[19]. Electronic banking is a feature that ensures that customer's transaction updates are done online real time. This way customer is assured of the most current transaction and balances in their account at any point in time. Electronic banking is an IT based banking that makes all transaction in an account of a customer done within a short term at any branch of these banks.

1.6 Significance of the study

In the light of the stated objectives in this study is set to achieve, the following are the significance of the study:

1. It would help to evaluate the adoption of information technology by Nigerian banks in terms of its effect on banks efficiency and bank-customers relationship.
2. It would also justify the application of information technology in banking services delivery in terms of profitability of banks. This could be used as yard stick by banks that are yet to adopt information technology in their operations.
3. It could contribute to existing literature by identifying the major barriers to the adoption of information technology in banking operations in Nigeria and suggest how to address them.

4. It would also be an invaluable tool for students, academic institutions and individuals that want to know more about the impact of relevance of information technology in Nigerian banking sector.

1.7 Scope of the study. This research is on the effects of Information Technology on organisational performance in the Nigerian Banking industries. The research covers twenty commercial Banks in Nigeria as at November 2011 as listed in the Nigerian stock exchange (NSE). The aim is to evaluate the effectiveness of Information Technology on the operations in the Banking sector.

1.8 Plan of the study.
This thesis shall be divided into five chapters. The first chapter which is the introduction shall present the background of the study,

2.0 LITERATURE REVIEW AND THEORETICAL FRAMEWORK

2.1 **Conceptual framework**: Technology can be referred to as the application of knowledge for the execution of a given task. It entails skills and processes necessary for carrying out activities (works) in a given context. While Information and Communication Technology (ICT), encompasses computer systems, telecommunication, networks, and multimedia applications (Frenzel, 1996)[1]. 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)[2]. It is a concept that is having a remarkable effect on almost entire aspects of the human endavours. 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)[3].

Review of empirical Studies. Today's business environment is very dynamic and undergoes rapid changes as a result of technological innovation, increased awareness and demands from customers. Business organisations, especially the banking industry of the 21st century operates in a complex and competitive environment characterized by these changing conditions and highly unpredictable economic climate. Information and Communication Technology (ICT) is at the centre of this global change curve. Laudon and Laudon, (1991)[4] contend that managers cannot ignore 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 chequebooks, credit and debit cards. Communication Technology deals with the Physical devices and software that link various computer hardware components and transfer data from one physical location to another (Laudon and Laudon; 2001)[9].

ICT products in use in the banking industry include Automated Teller Machine, Smart Cards, Telephone Banking, MICR, Electronic Funds Transfer, Electronic Data Interchange, Electronic Home and Office Banking. Several authors have conducted investigation on the impact of ICT on the banking sector of the Nigeria economy. Agboola et al (2002)10 discussed the dimensions in which automation in the banking industry manifest in Nigeria. They include:
(i) Bankers Automated Clearing Services: This involves the use of Magnetic Ink Character Reader (MICR) for cheque processing. It is capable of encoding, reading and sorting cheques.
(ii) Automated Payment Systems: Devices used here include Automatic Teller Machine (ATM), Plastic Cards and Electronic Funds Transfer.
(iii) Automated Delivery Channels: These include interactive television and the Internet.

Agboola (2001)[11] studied the impact of computer automation on the banking services in Lagos and discovered that Electronic Banking has tremendously improved the services of some banks to their customers in Lagos. The study was however restricted to the commercial nerve center of Nigeria and concentrated on only six banks. He made a comparative analysis between the old and new generation banks and discovered variation in the rate of adoption of the automated devices.

Aragba-Akpore (1998)[12] wrote on the application of information technology in Nigerian banks and pointed out that IT is becoming the backbone of banks' services regeneration in Nigeria. He cited the Diamond Integrated Banking Services (DIBS) of Diamond Bank Limited and Electronic Smart Card Account (ESCA) of All States Bank Limited as efforts geared towards creating sophistication in the banking sector.

Ovia (2000)[13] discovered that banking in Nigeria has increasingly depended on the deployment of Information Technology and that the IT budget for banking is by far larger than that of any other industry in Nigeria. He contended that On-line system has facilitated Internet banking in Nigeria as evidenced in some of them launching websites. He found also that banks now offer customers the flexibility of operating an account in any branch irrespective of which branch the account is domiciled.

Woherem (1997)[14] discovered that Nigeria banks since 1980s have performed better in their investment profile and use of ICT systems, than the rest of industrial sector of the economy. An analysis of the study carried out by African Development Consulting Group Ltd. (ADCG) on IT diffusion in Nigeria shows that banks have invested more on IT, have more IT personnel, more installed base for PCs, LANs, and WANs and a better linkage to the Internet than other sectors of the Nigerian economy.

2.3 Theoretical framework. Electronic commerce can be considered as a package of innovations (Zwass, 2003; Molla,2006)[15]; various authors have applied innovation theory to study adoption of IT innovations (Kamal, 2006; Aguila-Obra & Padilla-Melendez, 2006; Kuan & Chau, 2001)[16].

2.3.1 **Innovation diffusion theory.**

Rogers (1983)[17] defined organizational innovation as the development and implementation of ideas, systems, products, or technologies that are new to the organization adopting it. The adoption of innovations is a process that includes the generation, development, and implementation of new ideas or behaviors (Rogers, 1983)[17]. The innovation does not necessarily have to be new in terms of discovery or invention; it only has to be perceived as new by the organization (Zaltman, Duncan & Holbek, 1973)[18]. Thus, innovation diffusion theory is well suited for researching the adoption of ecommerce in developing countries. Various studies have classified the factors influencing innovation adoption (Kim and Galliers, 2004)19. Rogers (1983)[17] grouped the factors under characteristics of innovation. Tornatzky and Fleischer (1990)[20] identified three different categories of factors – organizational, technological, and environmental factors – that influence the technological innovation decision. Kimberly and Evanisko (1981)[21] identified three groups of predictors of innovation: characteristics of organizational leaders, characteristics of organization, and characteristics of environment. In summary, four categories of factors can be found in technological innovation literature: (1) Managerial; (2) Organizational; (3) Technological; and (4) Environmental. Researchers have identified the following common

3.0 RESEARCH METHODOLOGY

3.1 Research design. The study design is mainly of field survey. The survey focused on the customers of the twenty banks which forms the population of this thesis. Necessary data were collected to ascertain the extent of the benefits and the problems of the effects of Information Technology on organizational performance of Nigeria banking Industries and the delivery of services to customers in Nigerian banks. To achieve the objectives of the study, primary source of data was employed. The primary source of data was based on the use of Questionnaire distributed and collected from the selected banks' customers.

The target population of study was all the customers of consolidated banks in Nigeria taking into consideration banking activities before and after the 2005 bank consolidation exercise. Since it is not possible to study the entire Population, a sample of 100 respondents was randomly selected and

Administered questionnaire from the banks studied. The sampling technique used for this study was stratified random sampling technique in selecting the Sample for empirical examination. The questionnaire was designed in such a way that alternatives were provided for the respondents to choose from and opinions were expected to be expressed. In the questionnaire, the Likert scale measurement of variables was used; this requires the respondents to indicate a degree of agreement or disagreement. Special statistical packages called SPSS was used to obtained the result given. A non-parametric statistics (Chi-square) was employed in testing the hypothesis set, equally, regression and ANOVA was used to test whether there exist a linear relationship and the level of linearity between high levels of automation of banking services and improvement in delivery of services in Nigeria. The non-parametric statistical test Chi-square was used to test the formulated hypothesis symbolically.

2 **Study Population and Sampling Procedure**:

The commercial banks in Nigeria make up the population of this research. There are Twenty one indigenous commercial banks which are the target population for this study. The list of the banks is shown in the table below

Table 3..2.1. Banks currently operating in Nigeria and their website addresses.

Name	Website	Description
Access Bank Plc	www.accessbankplc.com	Adopter
Diamond Bank	www.diamondbank.com	Adopter
GT Bank	www.gtbplc.com	Adopter
Ecobank	www.ecobank.com	Foreign
Equitorial Trust Bank	www.equitorialtrustbank.com	Adopter
FCMB	www.fcmb-ltd.com	Nonadopter
S-IBTC	www.sibtc.com	Adopter
First Bank	www.firstbanknigeria.com	Adopter
UBA	www.ubagroup.com	Adopter
Zenith Bank	www.zenithbank.com	Adopter
Citibank	www.citigroup.com	Foreign
Fidelity Bank	www.fidelitybankplc.com	Non-adopter
Oceanic Bank	www.oceanicbanknigeria.com	Adopter
First Inland	www.firstinlandbankplc.net	Non-adopter
Skye Bank	www.skyebankng.com	Non-adopter
Standard Chartered	www.standardchartered.com	Foreign
Union Bank	www.unionbankng.com	Non-adopter
Unity Bank Nigeria	www.unitybankng.com	Adopter
Wema Bank	www.wemabank.com	Non-adopter
Sterling Bank	www.sterlingbankng.com	Foreign

Table 3.2.1 *Nigerian commercial banks*

The banks were contacted and agreed to participate in the survey. Twenty questionnaires were sent to each bank making a total of four hundred questionnaires.

Respondents were classified into two groups according to the existence of ecommerce

The researcher in consultation with the supervisor and experts in the departments of Accountancy Federal Polytechnic Ado Ekiti, did content validity of the instrument. A senior lecturer in educational management at Lead City University, Ibadan was also consulted on the suitability of the items. Items were retained in the instruments if considered relevant, essential and properly worded by the experts 'technique is an acceptable method for achieving content validity. Content and face validity of the work perception scale were done .The researcher along with some experts in the departments of education, psychology, and sociology at the University of Ado-Ekiti certified the instrument as being valid. An expert in statistics, test and measurement at the Lead City University, Ibadan, confirmed the same.

3.5 Reliability of the Instruments

The reliability of an instrument is concerned with the extent to which the measure would yield consistent result each time it is used. Cronbach alpha reliability was used to ascertain the internal consistency of the scales used for this study. The full- scale reliability is highly essential for lower error variance. Based on the pilot study conducted in this research, the instruments results were found to be highly reliable.

3.6 Administration of Research Instruments

Before the administration of the questionnaire, the researcher sought permission from the management of the selected firms where data were to be

4.1 Descriptive Analysis of Information on the research Instrument

The results of the data gathered with the questionnaire were analyzed. Explanations of the associations and relations found among the data and groups of data are thus presented in this chapter.

4.2 Data presentation.

The various socio-demographic characteristics of the respondents are of importance to a research of this nature. Such information provides the composition of the study population and it shows the relationship between individual traits and their degrees of influence on their behavior. Gender, age, academic qualification, job title, working experience, form the socio-demographic variables used in this study. They all constitute part of the independent variables used in the study.

Table 4.1 Frequency and percentage distribution showing the sex of the respondents.

variables	Absolute frequency	Relative frequency
Male	256	64
Female	144	36
Total	400	100

Source: Researchers field survey 2011

Table 4.1 shows the sex distribution of the respondents

A total of 400 respondents form the valid population of the study out of 400 respondents, 256 (64%0 are male while 144 (36%) are female. This disparity in gender composition of staff spread across the various corporate organisations.

Table 4.2 Frequency and percentage distribution showing the age of the respondents.

variables	Absolute frequency	Relative frequency
20-29	10	2.5
30-39	180	45
40-49	110	27.5
50 and above	100	25
Total	400	100

Source: Researchers field survey 2011

Table 4.2 shows the age composition of the sample respondents, in all age (30-39) bracket constitutes the largest percentage of the respondents (45%). The table table also revealed that 27.5% were 40-49 year bracket while 25% indicated they were 50 and above years old.

However, only 2.5% age groups were found to be between ages 20-29 years. This disparity could be as a result of variations in recruitment policies across the various corporate organisations.

Table 4.3 Frequency and percentage distribution showing the educational status of the respondents.

Variables	Abosolute Frequency	Relative frequency
NCE/OND	15	3.75
HND/BSC	250	62.50
MSC/MBA	100	25.00
Professional	35	8.75
Total	400	100

Source: researchers field survey 2011

The frequency and percentage distribution of the repondents wee showm in figure 4.3. 35 (8.75%) of the total respondents were professionals while 100 (25%) of the respondent has MSC/MBA degrees. The table show also showed that 250 (62.50%) had HND/BSC while 15 (3.75%) had NCE/OND across the various corporate organisations. Thus, it can be said that the population used for this study are highly literate.

Table 4.4 Frequency and percentage distribution showing the present position job title

Variables	Absolute frequency	relative frequency
CEO	150	37.50
AGM	40	10.0
MANAGER	120	30.0
OFFICERS	90	22.50
Total	400	100

Source: researcher's field of study 2011

Table 4.4 above shows the frequency and percentage distributions of the respondents by their position or job title. Staff who indicated officers attracted 90 (22.50%) of the total sampled respondents managers attracted 120 (30%) of the population while assistant general managers 40 (10%) showed very low frequency and percentage. The table also revealed 150 (37.50%) as chief executive officers. This indicates that the respondents are highly skilled and trained officers.

Table 4.5 Frequency and percentage distributions showing working experience of the respondents

Variables	Absolute frequency	Relative frequency
Less than 5 years	10	2.50
5-9 years	50	12.50
10-14 years	120	30.00
More than 25 years	220	55.00
Total	400	100

Source: Researchers field survey 2011

Table 4. 5 shows the frequency and percentage distribution of respondents working experience. From

the table, 55% indicated they had spent more than 25 years in their organisation, while 30% had spent 10-14 years. 12.5% fell between 5-9 years while only 2.5% had below 5 and it shows that respondents are skilful and have experience in their various fields of endeavours'.

Table 4.6 Frequency and percentage distribution showing the category of organisation.

Variables	Abosolute frequency	Relative frequency
Banking	100	25.00
Conglomerates	50	12.50
Breweries	10	2.50
Parastatals	40	10.00
Training & Human resources	200	50.00
Total	400	100

Source: Researchers field survey 2011.

Table 4.6 shows the category which various organisations are grouped in this study. Training and human resources 200 (50%) has the highest frequency and percentage distribution of respondents while parastatals had 10% frequency. Breweries had the lowest frequency distribution among the sampled organization with AFG 10 and RF of 2.5%. 12.50% of the sampled distribution are conglomerates while 25% are banking industries. This disparity may be due to the nature of the Nigerian market structure, government policies or availability or resources.

Table 4.7 Frequency and percentage distribution showing the composition of the board of directors

Variables	Absolute frequency	Relative frequency
<5 persons	5	1.25
>6<9 persons	90	22.50
10-14 persons	50	12.50
>15	255	63.75
Total	400	100

Source: Researchers fields survey 2011

Table 4.7 shows the frequency and the percentage distribution of the board of the various organisations investigated. From the table, (1.25%) respondents indicated that there are 5 persons in their organisations board, 90 (22.50%) indicated there are over 15 persons in their organisations board.

SECTION B

Hypothesis testing

Hypothesis one. **There is no significant relationship between the use of I C T and customers satisfaction.**

Question 1 Table 4.8 does the introduction of I T improve customers satisfaction and retention?

Options	A	B	C	D	E	Total
Response	300	100	-	-	-	400
Percentage	**75%**	**25%**	**-**	**-**	-	**100%**

Source: researchers fields survey 2011

Question 2 Table 4.9 do you agree that I T influence error rate detection?

Options	A	B	C	D	E	Total
Reponses	200	150	20	30	-	
percentage	50	37.50	5.00	7.5	-	100%

Source: Researcher's field study 2011

Question 3 Table 4.10 do I C T influence time saving?

Options	A	B	C	D	E	Total
Responses	250	100	50	-	-	
percentages	62.50	25.00	12.50			100%

Soures: researchers field survey 2011

Question 4 Table 4.11 are adequate securities provided by the banks?

Options	A	B	C	D	E	Total
Responses	350	50				
percentages	87.50	12.50				100%

Source: researchers field survey 2011

Question 5 Table 4.12. Are the resources good enough to enhance workers ability?

Options	A	B	C	D	E	Total
Reponses	250	150				
percentages	62.50	37.50				100%

Source: researchers field survey 2011

TABLE 4.13. observed frequency for hypothesis one

Options	S M level	MM level	Total	%
S.A	100	30	130	32.50
A.	150	120	270	67.50
D	-	-	-	-
S.D	-	-	-	-
M	-	-	-	-
Total	**250**	**150**	**400**	**100**

Source: computed from data 2011

Expected value of each cell: $EV = \frac{\text{row total x column total}}{\text{Grand total}}$

C_{11} =130 x 250/400 = 81.25
C_{12} = 130 x 150/400 =48.75
C_{21} =270 x 250/400 = 168.75
C_{22} = 270 x 150/400 = 101.25

In the table above, the results of chi-square is obtained using the formula $X^2_c = \frac{(O-E)^2}{E}$

Where O = the observed frequency
E = Expected frequency
X^2_c= Chi-squared calculated
D:f= Degree of frequency giving as df (r-1) (c-1)
R = The number of row
C = The number of columns

Therefore df = (2-1) (2-1) = 1

Calculation of expected frequency

CELL	O	E	O-E	$(O-E)^2$	$(O-E)^2/E$
C_{11}	81.25	100	-18.75	351.56	3.5156
C_{12}	48.75	30	18.75	351.56	3.5156
C_{21}	168.75	150	18.75	351.56	3.5156
C_{22}	10h 1.25	120	-18.75	351.56	3.5156
Total	**400**	**400**	-		14.0624

Source: computed from data 2011

X^2_c@ 0.05 @ 2d.f = 5.991
Result: X^2_c = 14.0624 , X^2_t = 3.84
Decision rule: if $X^2C > X^2_t$ --- accept or otherwise Reject
Since $X^2_c > X^2_t$ the Null hypothesis is Accepted.

IMPLICATION: since the Null hypothesis is accepted, it means then that there is a significant relationship between the uses of I T and customers satisfaction.

Hypothesis two: **there is no significant relationship between technology innovation and Nigerian banking industries.**

Question1 the uses of I T has increased the performance of banks employees which in turn leads to more returns on investment.

Options	A	B	C	D	E	Total
Responses	200	200	-	-	-	400
percentages	50	50	-	-	-	100%

Source: researchers field study 2011

Question 2 Doe innovation technology spread across the branches?

Options	A	B	C	D	E	Total
Responses	270	100	30	-	-	400
percentage	67.50	25	75	-	-	100%

Source: researchers field survey 2011

Question3 Does the introduction of I T induce customers to patronize banks?

Options	A	B	C	D	E	Total
Responses	100	300	-	-	-	400
percentages	25	75	-	-	-	10%

Sources: researchers field of survey 2011

Question 4 Has I T influenced management's decision?

Options	**A**	**B**	**C**	**D**	**E**	**Total**
Responses	350	50	-	-	-	400
percentages	37.5	12.5	-	-	-	100%

Sources: researchers field survey 2011

Question 5 Does I T has any effect on global competitiveness?

Options	**A**	**B**	**C**	**D**	**E**	**Total**
Responses	300	30	70	-	-	400
percentages	75	7.5	17.5	-	-	100%

Sources: researchers field survey 2011

Hypothesis two

There is no significant relationship between technology innovation and Nigeria Banks performance

Table 4.14. observed frequency for hypothesis two

Options	**S M level**	**MM level**	**Total**	**%**
S.A	160	70	220	55.00
A	70	25	95	23.75
D	30	55	85	21.25
S.D	-	-	-	-
M	-	-	-	-
Total	**250**	**150**	**400**	**100**

Source: computed data 2011

C_{11} = 220 x 250/400 = 137.50
C_{12} = 220 x 150/400 = 82.50
C_{21} = 95 x 250/400 = 59.375
C_{22} = 95 x 150/400 = 35.625
C_{31} = 85 x 250/400 = 53.125
C_{32} = 85 x 150/400 = 31.875

Therefore df= (3-1) (3-1) = 4

Calculation of expected frequency

CELL	**O**	**E**	**O-E**	**$(0-E)^2$**	**$(O-E)^2/E$**
C_{11}	137.50	150	-12.5	156.25	1.0416
C_{12}	82.50	70	12.5	156.25	1.0416
C_{21}	50.375	70	-10.625	112.89	1.6127
C_{22}	35.625	25	10.625	112.89	1.6127
C_{31}	53.125	30	23.125	534.77	17.8255
C_{32}	31.875	55	-23.125	534.77	17.8255
Total	400	400			**40.9596**

Source: computed from data 2011

Result: $X^2_c = 40.9596$, $X^2_t = 5.99$

Decision rule: if $X^2C > X^2_t$ --- accept or otherwise Reject

Since $X^2_c > X^2_t$ the Null hypothesis is Accepted.

IMPLICATION: since the Null hypothesis is accepted, it means then that there is a significant relationship between technology innovation and Nigeria Banks performance.

Hypothesis two: **there are no barriers to the adaptation of I T to Nigerian banking operations.**

Question 1 Do you agree that Nigerian banks had invested much in I T?

Options	A	**B**	**C**	**D**	**E**	**Total**
Responses	**20**	50	30	300	-	400
Percentage	**5**	**12.5**	**7.5**	**75**	**-**	**100%**

Source: researchers field survey 2011

Question 2 Do the Nigerian banks has adequate backups?

Options	**A**	**B**	**C**	**D**	**E**	**Total**
Responses	20	20	360	-	-	400
percentage	5	5	90	-	-	10%

Source: Researchers field survey 2011

Question 3 What are the major barriers to I T in Nigeria banking industries? (a) power failure (b) insecurity (c) low public acceptance (d) retrenchment € corruption

Options	A	B	C	D	E	Total
Responses	200	150	-	-	-	400
percentages	50	50	-	-	-	100%

Source: Researchers field of survey 2011

Question 4. What are the public's perception of the introduction of I T to banking operations? (a) highly accepted (b) moderately accepted (c) not accepted (d) rejected € indifference

Options	A	B	C	D	E	Total
Responses	250	150	-	-	-	400
Percentage	62.5	37.5	-	-	-	100%

Source: Researchers field survey 2011

Question 5. Do you agree that Nigerian banks had prepared enough for this global challenge?

Options	A	B	C	D	E	Total
Responses	350	50	-	-	-	400
percentages	87.5	12.5	-	-	-	100%

Source: Researchers field of survey 2011

Table 4.15. Observed frequency for hypothesis three

Options	S m level	M M level	Total	%
S.A	**20**	**10**	**30**	**7.50**
A	**50**	**20**	**70**	**17.50**
D	**180**	**120**	**300**	**75.00**
S.D	-	-	-	-
M	-	-	-	-
Total	**250**	**150**	**400**	**100**

Source: Computed from data 2011

C_{11} = 30 x 250/400 = 18.75
C_{12} = 30 x 150/400 = 11.25
C_{21} = 70 x 250/400 = 43.75
C_{22} = 70 x 150/400 = 26.25
C_{31} = 300 x 250/400 = 187.50
C_{32} = 300 x 150/400 = 112.50
Therefore df= (3-1) (3-1) = 4
Calculation of expected frequency

CELLS	O	E	O-E	$(O-E)^2$	$(O-E)^2/E$
C_{11}	18.75	20	-1.25	1.5625	0.0781
C_{12}	11.25	10	1.25	1.5625	0.1563
C_{21}	43.75	50	-6.25	39.0625	0.7813
C_{22}	26.25	20	6.25	39.0625	1.9531
C_{31}	187.50	180	7.50	56.2500	0.3125
C_{32}	112.50	120	6.25	39.0625	0.3255
Total	400	**400**			**3.6068**

Source: computed from data 2011

Result: $X^2_c = 3.6068$, $X^2_t = 9.49$
Decision rule: if $X^2C > X^2_t$ --- accept or otherwise Reject
Decision: Since $X^2_c > X^2_t$ the Null hypothesis should be rejected
IMPLICATION: since the Null hypothesis is rejected, it means that the adaptions of I T to banking operations are faced with many barriers.

SUMMARY OF RESULTS AND DECISION TAKEN

Hypothesis	Df	Observed	X^2_t @ 0.05	Remark
Hypothesis 1	1	14.06	3.84	Accept
Hypothesis 2	2	40.96	5.99	Accept
Hypothesis 3	3	3.6068	9.49	Reject

Hypothesis 1--- There is a significant relationship between the uses of I C T and customer's satisfaction
Hypothesis 2--- There is a strong relationship between technology innovation and Nigerian banks performance
Hypothesis 3--- The adaption of I T to banking operations are faced with many barriers/ challenges.

5.0 DISCUSSION, CONCLUSION RECOMMENDATION

5.1 Discussions of Findings

The major findings of the study as revealed by the results presented in appendices 2 as discussed above can be summarized as follows:

1) The banks usually engage young degree holders.
2) Gender of the bankers does not affect their efficiency in the use of ICT in the banks.
3) Factors that influence the banks' intensity of ICT usage include the bankers' age, educational qualification, computer literacy and type of ICT gadgets used.
4) ICT usage has positive and significant impacts on the speed of operations and service delivery, productivity and profit level of the banks.

5.2 CONCLUSION

Technological developments particularly in the area of information and communication technology are revolutionalizing the way business is done in Nigeria. This has resulted to changes in trade, interconnection and business transaction in the national and international market places and set in motion a revolution in the banking sector. Banks are now required to invest in ICT for the provision of a transaction and payment systems that is compatible with the demands of the electronically interconnected global market place.

The adoption of various forms of innovation has greatly influenced the content and quality of banking operations. The findings reveal that technology innovation has influenced Nigerian banking industry performance.

The introduction of ICT has influenced customer satisfactions. ICT has increased banks return on equity and profitability.

5.3 Recommendations

Top management should establish the right roles and processes, set clear goals and relevant measures and review progress at every stage. Innovation experience and opportunities may occur through unexpected occurrence, ingenuities, process needs, industry and market changes, demographic changes, changes in perception and new knowledge. All these when properly understood and managed promote technology innovation.

It is imperative for managers to employ human resource management theories, concepts and practices for the progress and development of their organizations and nations. They should plan, staff, organize, control and lead their human resources in the most appropriate manner. They should also acquire, train, appraise, reward and compensate them to get the best from them. These will enable organization to hire the right employee, placed them on the right job, experience low turnover and motivate their employee to work efficiently and effectively and to motivate their employees to innovate.

Regular training should be given to the bankers from time to time to keep them abreast of the current innovations in the use of ICT. This will enhance their efficiency and quality of service delivery that will ensure customers retention and productivity, which will translate to the banks' profitability, *ceteris paribus*. This stance is essential especially in this era of reforms in the nation's financial sector where attention is no longer on the banks that have the required capital.. The key issue at moment is the ability of banks to retain their current customers as well as attract potential customers. This is mainly feasible in their efficient service delivery, which depend largely, on the premium placed on the use of ICT.

It is therefore recommended that investment in ICT should form an important component in the overall strategy of banking operation. It is imperative for bank management to intensify investment in ICT products to facilitate speed, convenience, and accurate services. These will make Nigerian banks to be efficient, profitable, and competitive and to cope with the changes and challenges that are the outcome of ICT controlled globalized economy.

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