STATISTICAL EVALUATION OF IMPACT OF ELECTRONIC BANKING IN MONEY DEPOSIT BANKS IN NIGERIA

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Abstract

This work examined the impact of electronic banking on the growth and development of money deposits banks in Nigeria. Some financial giants like United Bank for Africa Plc (UBA), First Bank Plc(FBN),Guaranty Trust Bank Plc(GTB) and Zenith Bank Plc(ZBN) were considered. The use of questionnaire was employed for data collection; Chi-square statistic and t-test were used for the analysis with the aid of SPSS. The result of this work showed that electronic banking impacts positively on economic growth and development of money deposit banks. The study further revealed a significant relationship between electronic banking and bank-customer relationship.

Keywords: Electronic banking, Money deposit banks, Economic growth and Return on Equity,

Introduction

Before the emergence of modern banking system, banking operation was manually done and this may have led to a slowdown in the settlement of transactions. This system involved posting transactions from one ledger to another manually. Manual counting of money resulted into errors. Most banks then used only one or few analog computers in carrying out their transactions but this of course did not ameliorate the sluggish nature of banking transactions, Sullivan (2012).

Electronic banking (e-banking) is the use of computers and telecommunications to enable banking transactions to be done by computer or telephone instead of human interaction, Awe (2006). Before the advent of Information Technology (IT), customers were not able to access account online. Its features include Automated Teller Machines (ATM), electronic fund transfers for retail purchases, automatic payroll deposits and bill payments or direct deposit of pay cheques into current, fixed or saving accounts.

Some banks offer home banking, whereby a person with a personal computer can make transactions either via direct connection or by accessing a website through the computer and telephone based systems. Bank customers can check deposits, move money from one account to another, pay bills, setup new accounts, request for loans and invest spare cash any time of the day or night. Electronic banking has vastly reduced the physical transfer of paper money and coins from one place to another, Al-Smadi & Al-Wabel (2011).

Before the introduction of electronic banking system, the use of raw cash transactions was said to have bred armed robbery and corruption through the cash and carry syndrome. Today electronic fund transfer allows money to be sent by one party in a destination to another party located differently through money transfer agent.

The banking industry in Nigeria has undergone a tremendous transformation from the traditional way of keeping records of numerous accounts. And the modern ways are related to customer's deposits and commitments to a more sophisticated rendering of corporate services such as deposit mobilization and strategic contact, processing and supervision of wholesale credit loan syndication, treasury operations and financial services, foreign operations, Onay *et al*. (2008) and Simpson, J. (2010). To perform these activities in an efficient and effective way, bank must be concerned with the

processing of data and its operations electronically so as to provide quality and accurate information.

Electronic banking appears to be growing rapidly and the global acceptance has reinforced the speed of operation. Tele-banking is capable of broadening the customer relationship, retain customer loyalty and enable banks to gain commanding height of market share, Hernando and Nieto (2006). The success of Electronic banking is contingent upon the provision of reliable and adequate data communication infrastructure.

In Nigeria, for customers, banking is no longer about safety of their funds and increased returns on their investment only. Customers demand efficient, fast and convenient service, Malhotra and Singh, (2010). Customers want a bank that will offer them services that will meet their particular needs (personalized banking) and support their business goals. Financial institutions need to continuously find better and faster ways to adapt to the competitive market in order to compete in today's high technology and fast paced environment. Banking industry need to provide a framework that encourages faster and better ways to transact business so as to reduce congestion in Nigeria banks. The delay of customers most especially in the banking hall when rendering bank services could be reduced to the barest minimum in the banking sector.

The banking industry being a major player must continue to show the direction of innovative technology, this can only be achieved if there is a corresponding increase in the level of awareness, which must not be restricted to existing customers alone. However, e-banking has not been totally embraced by the society due partly to the level of poverty, illiteracy and through general apathy as a result of distress of a number of banks where customer's deposits have been trapped, Al-hajri, (2008).

This study is thus, limited in scope to some particular financial giants which include; United Bank for Africa Plc (UBA), First Bank Plc (FBN), Guaranty Trust Bank Plc (GTB) and Zenith Bank Plc (ZBN). It is designed to analyze and examine the impact of e-banking on the growth and development of selected Money Deposit Banks. In addition, this study will portray the economic impact of e-banking and its usefulness in the banking industry and Nigeria society at large. The study is not meant for making new discoveries neither will it validate an existing theory, it will rather analyse and verify the actual happenings as a result of the evolvement of e-banking products within Nigeria

banking industry by using comparative method; primary data and secondary data to justify our findings.

Aim and objectives

The aim of this study is to examine the impact of e-banking on the growth and development of Money Deposit Banks in Nigeria. The objectives are to:

1. To find out the manner in which e-banking will affect the economic growth and development of Money Deposit Banks.
2. To ascertain if electronic banking will assist in economic growth and development.
3. To examine the effects of electronic banking on bank-customer relationship.

Statement of hypothesis

The following hypotheses are tested:

H_{01}: Electronic banking does not have a positive impact on the growth and development of

   Money Deposit Banks.

H_{02}: That there is no significant relationship between the adoption of electronic banking and

   bank-customer relationship

Research methodology

The research work will make use of questionnaires to capture the various E- banking technology adopted in Nigeria as well as the perceived importance of E-banking in Nigeria. The data collection was conducted in UBA Iree branch, GT Bank Osogbo branch, Zenith bank Osogbo branch and First Bank Plc, Ikirun branch. 150 questionnaires were distributed among the above mentioned banks but 121 were returned completed using judgmental sampling scheme. The study, as well utilizes secondary data extracted from the Nigerian Stock Exchange Fact Books and published annual reports of four sampled banks as comparative study to substantiate our findings. With the secondary data collected, returns on equity for the relevant years were computed. These four banks are the ones that have continued to retain their brand names and still quoted in the Nigerian Stock Exchange since 1997. The data collected covers the period 1997- 2010. Since the objective of the study has been to determine

whether e-banking has significantly improved the profitability performance of money deposits banks in Nigeria with regards to the returns on equity (ROE). The data was grouped into two i.e. pre and post adoption of electronic banking. The years 1997-2002 covers the pre adoption period and 2003- 2012 covers the post full adoption period of electronic banking in Nigeria.

Descriptive statistics with the aid of frequency, percentage, are employed to describe the data observed. However, Chi-Square (χ^2) analysis was used to test the hypothesis formulated for the primary data while t-test was used in the analysis of secondary data all with the aid of SPSS 17 and Microsoft excel 2007.

$$\chi^2 = \sum_{i=1}^{n} \frac{(O_i - e_i)^2}{e_i},$$ Where (o) is the observed frequency and (e) is the expected frequency

It also showed the relationship between variables observed.

And

$$t = \frac{\bar{x}_1 - \bar{x}_2}{\sqrt{\frac{s_1^2}{n_1} + \frac{s_2^2}{n_2}}}$$

Data presentation and analysis

Below are the descriptive report of the information gathered through questionnaires.

Table 1: Sex

	Frequency	Percent
Male	77	63.6
Female	44	36.4
Total	121	100.0

Table 2: Marital status

	Frequency	Percent
Single	53	43.8
Married	68	56.2
Total	121	100.0

Table 3: Which of the following bank do you patronize

	Frequency	Percent
GTB	19	15.7
First Bank	28	23.1
UBA	43	35.5
Zenith Bank	31	25.6
Total	121	100.0

Table 4:   Age

	Frequency	Percent
18-27years	49	40.5
28-37years	62	51.2
38-47years	8	6.6
48above	2	1.7
Total	121	100.0

Table 6: Educational qualification

	Frequency	Percent
WASSCE/GCE/SSCE	10	8.3

OND/NCE	17	14.0
HND/BSc.	94	77.7
Total	121	100.0

Table 5: Are you literate?

		Frequency	Percent
Valid	Yes	109	90.1
	No	12	9.9
	Total	121	100.0

Table 7: Which of the following banking services
do you use?

	Frequency	Percent
Direct payment/withdrawal	51	42.1
Internet banking	48	39.7
Mobile banking	13	10.7
Telephone banking	9	7.4
Total	121	100.0

Remark

The above table shows that among the sampled respondents; 77 (63.6%) are males while others are female. 40.5% are below the age of 27 years and majority of the respondents are of the age ranges from 28-37 years 62 (57.2%). 68 (56.2&) are married, 94 (77.7%) are also graduates, with only 12 (9.9%) are illiterates. The respondents spread across GTB, 19 (15.7%), First Bank 28(23.1%), UBA 43(35.5%), and Zenith Bank; 31(25.6%. However, majority of the respondents use direct payment/withdraw service 51(42.1%) followed closely by internet banking 48 (39.7%). Telephone banking takes the least 9 (7.4%) and while mobile banking is 13 (10.7%).

Below are the reports on the impacts and perspective of electronic banking as investigated.

Table 9: E-banking contributes to bank
customer relationship in banks

	Frequency	Percent
Strongly Agree	53	43.8
Agree	62	51.2

Table 8: E-banking impacts positively on economic growth and developments of banks

	Frequency	Percent
Strongly Agree	82	67.8
Agree	35	28.9
Strongly Disagree	4	3.3
Total	121	100.0

Undecided	2	1.7
Disagree	1	.8
Strongly Disagree	3	2.5
Total	121	100.0

Table10: E-banking service has been table to improve customers confidence in your bank

	Frequency	Percent
Strongly Agree	39	32.2
Agree	73	60.3
Undecided	1	.8
Strongly Disagree	8	6.6
Total	121	100.0

Table 11: E-banking assists in economic growth and development.

	Frequency	Percent
Strongly Agree	35	28.9
Agree	70	57.9
Undecided	4	3.3
Strongly	12	9.9
		00.0

Table 12: Security of transactions is ensured through the use of E- banking

	Frequency	Percent
Strongly Agree	36	29.8
Agree	73	60.3
Undecided	3	2.5
Disagree	2	1.7
Stongly Disagree	7	5.8
Total	121	100.0

Table 13: E-banking provides a more secure environments for financial transactions

	Frequency	Percent
Strongly Agree	40	33.1
Agree	70	57.9
Undecided	2	1.7
Disagree	1	.8
Strongly Disagree	8	6.6
Total	121	100.0

Chi-square test

Chi square (χ^2) test is employed in the analysis since the data involved are categorical in nature.

$$\chi^2 = \sum_{i=1}^{n} \frac{(O_i - e_i)^2}{e_i}$$

Table 14: Electronic banking impacts positively on economic growth and developments of banks

	Observed	Expected	Residual
Strongly Agree	82	40.3	41.7
Agree	35	40.3	-5.3
Strongly Disagree	4	40.3	-36.3
Total	121		

Table15: Electronic banking contributes to bank customer relationship in banks

	Observed	Expected	Residual
Strongly Agree	53	24.2	28.8
Agree	62	24.2	37.8
Undecided	2	24.2	-22.2
Disagree	1	24.2	-23.2
Stongly Disagree	3	24.2	-21.2
Total	121		

Table 15: Chi-square test statistics

	E-banking impacts positively on economic growth and developments of banks	E-banking contributes to bank customer relationship in banks
Chi-Square	76.479[a]	154.496[c]
df	2	4
Asymp. Sig.	.000	.000

From Table 15, the Chi-square test statistics above shows that all the tested hypotheses are statistically significant (P-values are 0.000) as the hypothesis test summary table above indicated.

Decision: Electronic banking impacts positively on economic growth and development of Money Deposit Banks. As well as presence of significant relationship between the adoption of electronic banking and bank-customer relationship.

The t-test

Since this study examines the impact of e-banking products on the performance of Nigerian Money Deposits Banks (DMBs), the dependent variable is banks' performance. Performance refers to the degree of success in attaining stated objectives, Al-Smadi and Al-wabel (2011). Following the literature, Return on Equity (ROE) i.e. Net Income after taxes is the common measure of performance. To measure profitability of each bank, we calculated return on equity (ROE) as: ROE = Net Income after taxes

Total Equity capital

Based on the means computed for each bank, the t-test for difference between means was conducted to test how significant our results are at 5% level of significance.

Table 16: ROE (return on equity) Pre Adoption of E-banking
X1, X2………….. X6 = ROE for all sampled Banks for the relevant years

	X1 197	X2 1998	X3 1999	X4 2000	X5 2001	X6 2002	Mean
Bank							
A	0.02	0.02	0.02	0.02	0.02	0.01	0.018
B	0.02	0.02	0.02	0.02	0.02	0.02	0.020
C	0.02	0	0.01	0.03	0.01	0.01	0.013
D	0.02	0.03	0.02	0.02	0.02	0.02	0.022
Total							0.073
Mean of means							0.018

Source: Computed from Stock Exchange Fact book (various issues) and Annual reports on
sampled banks for the relevant years

Table 17: ROE (Return on Equity) Post Adoption of E-banking
X1, X2………….. X8 = ROE for all sampled Banks for the relevant years

	X1 2003	X2 2004	X3 2005	X4 2006	X5 2007	X6 2008	X7 2009	X8 2010	X9 2011	X10 2012	Mean
Bank											
A	0.41	0.29	0.27	0.26	0.24	0.09	0.10	0.05	0.04	0.04	0.179
B	0.20	0.22	0.24	0.10	0.13	0.22	0	0	0	0.01	0.112
C	0.22	0.23	0.26	0.24	0.12	0.21	0.07	0.01	0.02	0.01	0.139
D	0.12	0.03	0.32	0.10	0.11	0	0	0.02	0.01	0.02	0.073
Total											0.613
Mean of means											0.1257

Source: Computed from Stock Exchange Fact books (various issues) and Annual reports on
banks for the relevant years.

Test for Difference between means

$$t = \frac{\bar{x}_1 - \bar{x}_2}{\sqrt{\frac{s_1^2}{n_1} + \frac{s_2^2}{n_2}}}$$

Table 18: t-test: Two-Sample Assuming Unequal Variances

	Variable 1	Variable 2
Mean	0.01825	0.12575
Variance	1.49167E-05	0.00199425
Observations	4	4
Hypothesized Mean Difference	0	
df	3	
t Stat	4.796566586	

P(T<=t) one-tail	0.008620826
t Critical one-tail	2.353363435
P(T<=t) two-tail	0.017241652
t Critical two-tail	3.182446305

Empirical Results and Discussion.

The test for difference between means were conducted for pre and post adoption of e-banking for returns on equity (ROE) at 5% levels of significance. The results revealed that there is significant difference between pre and post returns on equity on adoption of e-banking, since p value is less than 0.05. The clearer picture of the results is that adoption of e-banking in Nigeria has significantly improved Nigerian banks performance in terms of returns on equity (ROE).

Conclusion

This study investigated the impact of e-banking in money deposit banks in Nigeria. The study became necessary as a result of increased penetration of e-banking which has redefined the banking operations in Nigeria and around the world. Judgmental sampling method was adopted by utilizing data collected from four Nigerian banks which have consistently retained their brand names and remain quoted in the Nigerian Stock Exchange since 1997. Result of the primary data collected and analysed was further appraised and compared with the result of the secondary data obtained from various annual reports of the observed banks using the pre- and post-adoption of e-banking performance. The study revealed that the adoption of e-banking has positively and significantly improved the performance of Nigerian MDBs. The findings of this study have motivated new recommendations for bank customers, bank management and shareholders with regard to e-banking adoption for banking operations.

However, the operating costs are high. The costs of generating energy for about 24 hours daily to operate computers and other electronic machines used in e-banking activities are enormous. This is because people and corporate organisations resort to own generating set to augment epileptic power supply by the agency in charge of power supply in Nigeria - the PHCN.

Recommendations

Following the results and conclusion derived from the study, the following recommendations were thereby suggested:

➢ The banking industry should adjust to full and effective deployment of information technology due to its sophistication since the technology is irreversible with relative perceived advantage.

➢ Nigerian banks should be able to accept the level of risk that they can cope with in e-banking system, measurable to the bank's overall strategic and business plans. Though there is inherent risk for not adopting e-banking.

➢ Holder of banking transaction cards should be able to secure them by providing passwords. Those are unimaginable by the most immediate neighbours at intervals but recollectible at all times.

➢ The banks management should from time to time train customers with regard to electronic banking, its benefits and risk exposure, physical and electronic security to avoid financial loss in the hands of hackers. Also, trainings should be held for bank staff in short periods to acquaint them with modern developments of the sophisticated technology in changing times.

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