

## **THE RELATIONSHIP BETWEEN ELECTRONIC BANKING AND LIQUIDITY OF DEPOSIT MONEY BANKS IN NIGERIA**

**Ahmadu Abubakar** 

Department of Business Management, Federal University, Dutsin-ma, Katsina State, Nigeria

aabubakar@fudutsinma.edu.ng, ahmedabubakartamed@yahoo.com

**Jibrin Nuhu Shagari**

Department of Business Management, Federal University, Dutsin-ma, Katsina State, Nigeria

njibrin@fudutsinma.edu.ng, tawakaltu1428@yahoo.com

**Kazeem Lekan Olusegun**

Department of Business Management, Federal University, Dutsin-ma, Katsina State, Nigeria

kolusegun@fudutsinma.edu.ng

### **Abstract**

*This study examined the relationship between electronic banking and liquidity of deposit money banks in Nigeria, using time series data for the period 2006- 2014. The data was analyzed using both descriptive and correlation analysis to describe the data set and to identify the association between electronic banking, proxies by internet banking, mobile banking and point of sale, and liquidity, proxy by current ratio respectively. Results from the correlation analysis reveal that mobile banking and point of sale had no significant relationship with liquidity, while there is significant negative relationship between internet banking and liquidity. The study recommends among others that mobile banking and point of sale transactions limit should be maintained, while internet banking transaction limit should be reviewed downwards since an upward review will affect liquidity of deposit money banks negatively.*

*Key words: Electronic Banking, Liquidity, Internet Banking, Mobile Banking, Point of Sale*

## INTRODUCTION

The Structural Adjustment Programme (SAP) initiated in 1986 by the Babangida Administration brought to an end the kind of banking services rendered by the first generation of banks which have been described as “Arm Chair Banking”. The SAP changed not only the structure but also the content of banking business. Just as the number of banks grew tremendously from 40 in 1985 to 125 in 1991, the SAP made possible the licensing of more banks and which posed more threat to existing ones and made more aggressive the marketing techniques adopted by them. In the process of the intense competition, adoption of electronic banking was seen as a necessity to maintaining a good competitive position, whereas e-banking stormed the British Banking scene in the late sixties, Nigeria started the long and tortuous journey in November, 1990 when Societe Generale launched its first Automated Teller Machine (Adewuyi, 2011).

Similarly, the competition train in the banking industry has shifted to technology and intensive delivery of services which has created paradigm shift in banking services in Nigeria. Banks like Zenith Bank and Guaranty Trust Bank used technology as a competitive weapon and successfully became one of the largest banks in Nigeria within four years post-consolidation era. Banking service delivery was re-engineered with the introduction of technology and several new products such as: internet banking, Automated Teller Machines (ATMs), phone banking / cell banking, debit cards, credit cards etc.

Electronic banking is gaining patronage where information from central server is made accessible to the account holder using a PIN or PASSWORD. Account statements, account transfer facilities, bulk payment facilities, list of cheques to be cleared, loan facilities in form of assets, vehicle and mortgage, international bank transfer are some of the facilities given by the banks to their customers. However, recent security threat to customers savings have made banks to be more careful in their online transactions, customers are alerted from time to time on the security of their password. All banks often communicate relevant information through electronic mail (e-mail) or short messages on phone to their customers. Banks also have their websites to promote their products and services as well as publicize information that is relevant to the public about the bank.

Credit and debit cards are gaining patronage; many Nigerian banks have started providing these services. Master and Visa are the most preferred companies with which banks make arrangements for providing credit / debit cards to clients, many banks are also having their own debit cards on which the Nigerian currency could be loaded for transactions depending on the nature of the account. If the account is a domiciliary account, then the foreign currency could be loaded on it. And it is essentially used to operate the account that the customer is having with the bank; this has become important in the light of the fact that most

Nigerian banks now have branches in other parts of the world particularly in Britain and most West African countries. Account balances are now being sent through phone and alerts are also sent when money is deposited, transferred or withdrawn from an account. Virtual banks are on the horizon in Nigeria (Olalekan, 2011).

Furthermore, the electronic payment market in Nigeria deepened further in the year 2006 with the introduction of new products, such as loyalty cards, naira-denominated credit cards and other on-line products. The development enhanced the efficiency of funds intermediation in the banking system. The volume and value of electronic card based transactions in 2006 were ₦13.0 million and ₦86.2 billion respectively (CBN, 2006). However, activities through off-line point of sale terminal (POS) declined during the year due to public preference for on-line transactions. POS transactions in volume and value terms were 763,866 and ₦20.2 billion, down by 21.7 per cent and 51.7 per cent respectively, relative to the levels in 2005. Similarly, the automated teller machine (ATM) segment recorded significant patronage as its volume and value of transactions increased, relative to 2005 levels by 247.8 per cent and 265.3 per cent respectively to 12.1 million and ₦63.2 billion. The substantial increase in activities in this segment reflected growing public confidence and access to ATMs which increased to 776 from 425 in 2005. ATM transactions accounted for 93.1 and 73.4 per cent in volume and value of total card-based transactions, respectively in 2006 (CBN, 2006).

In addition, the use of various forms of e-banking products grew significantly in the year 2009 as the volume and value of the transactions stood at 114.6 million and ₦645.04 billion respectively (CBN, 2009). The CBN notes that the volume and value of electronic card transactions increased significantly from 195,525,568 and ₦1,072.9 billion in 2010 to 355,252,201 and 16,714.4 billion in 2011, an increase of 81.5 per cent and 55.8 per cent respectively. ATMs account for 97.8 per cent, followed by web-payments (1 per cent), POS and mobile payments (0.6 per cent) in terms of volume. In value terms, ATMs accounted for 93.4 per cent, web (3.5 per cent), POS (1.9 per cent) and mobile (1.2 per cent). The CBN's policy of promoting electronic cards and channels is driven by the objectives of reducing banking industry costs by 30 per cent. It estimated the total direct cost of cash management in the Nigerian banking industry as ₦114.5 billion (\$715.6 million) as at 2009, with cash in transit costs (24 per cent), cash processing cost (67 per cent) and vault management costs (9 per cent). The CBN projects numerous benefits including enhanced tax revenue, increased economic growth, increased financial inclusion, reduced robberies and cash-based fraud, reduced operating cost for increased payment system efficiency and increased banking penetration (CBN, 2011).

Moreover, the value of electronic payments rose by 25.6 per cent to ₦1,416.1 billion in the first half of 2013 over the level in the second half of 2012, while the volume declined by 27.2

per cent to 146,961,511 from 201,793,172 in the preceding period. A breakdown of the e-payment channels for the review period indicated that ATM remained the most patronized, accounting for 93.0 per cent, followed by mobile payments and POS terminal, with 4.1 and 2.1 per cent, respectively. The web (internet) was the least patronized, accounting for 0.8 per cent of the total. In terms of value, ATM accounted for 90.8 per cent; POS, 4.0 per cent; the web (internet), 1.5 per cent; and mobile payments accounted for 3.7 per cent (CBN, 2013).

This study examined the relationship between electronic banking and liquidity of deposit money banks in Nigeria with reference to internet banking, mobile banking, point of sale (POS) and current ratio of entire deposit money banks in Nigeria.

### **Statement of the Problem**

The challenges of inefficient liquidity management in Nigerian banks were brought to fore during the liquidation and distress era of 1980s and 1990s which lingered up to the recapitalization era in 2005 in which banks were mandated to increase their capital base from ₦2b to ₦25b. The recapitalization exercise was expected to stabilize and resolved the liquidity challenges that were prevalent in the economy. However, barely 5 years after, what was applauded and considered a step in the right direction towards repositioning Nigerian banks against liquidity shortage, the Central Bank of Nigerian (CBN) injected ₦620b to save the 5 affected banks that were operating on negative shareholder's funds, while Asset Management Corporation of Nigeria (AMCON) was set up to buy the toxic assets of the affected banks (Agbada & Osuji, 2013).

A number of studies have been carried out concerning electronic banking but none to the best of our knowledge focused on the relationship between electronic banking and liquidity of Deposit Money Banks in Nigeria. For instance, Abubakar (2014a) examined the effects of Electronic Banking on Growth of Deposit Money Banks in Nigeria; Adewuyi (2011) investigated Electronic Banking in Nigeria: Challenges of Regulatory Authorities and the Way Forward; Mahdi and Mehrdad (2010) examined Electronic Banking in Emerging Economy: Empirical Evidence from Iran; Kolodinsky (2004) studied the Adoption of Electronic Banking Technologies by US Consumers; Izogo, Nnaemeka, Ezema and Onuoha (2012) wrote on the Impact of Demographic Variables on Consumer Adoption of E-banking in Nigeria; Imiefoh (2012) studied "Towards Effective Implementation of Electronic Banking in Nigeria"; Fonchamnyo (2013) wrote on Customers' Perception of E-banking Adoption in Cameroun; Ekwueme, Egbunike and Amara (2012) investigated "An Empirical Assessment of the Operational Efficiency of Electronic Banking: Evidence of Nigerian Banks; Dogarawa (2005) studied the Impact of E-banking on Customer Satisfaction in Nigeria; Christopher, Mike and Army (2006) wrote on "A Logic Analysis

of Electronic Banking in New Zealand; Chibueze, Maxwell and Osondu (2013) investigated Electronic Banking and Bank Performance in Nigeria; Ayo, Adewoye and Oni (2010) wrote on the State of E-banking Implementation in Nigeria; Auta (2010) studied E-banking in Developing Economy: Empirical Evidence from Nigeria; Alagheband (2006) investigated the Adoption of Electronic Banking Services by Iranian Customers; Agboola (2001a) examined the Impact of Electronic Banking on Customer Services in Lagos, Nigeria; Oluwatolani, Joshua and Philip (2011) studied the Impact of Information Technology in Nigerian Banking Industry; Olalekan (2011) conducted a study on E-banking Patronage in Nigeria; Maiyaki and Mokhtar (2012) studied the Effects of Electronic Banking Facilities, Employment Sector and Age Group on Customers' Choice of Banks in Nigeria; Ojokuku and Sajuyigbe (2012) wrote on the Impact of Electronic Banking on Human Resources Performance in the Nigerian Banking Industry; Siam (2006) investigated the Role of Electronic Banking Services on the Profitability of Jordanian Banks.

Similarly, Idowu, Alu and Adagunodo (2002) investigated the effects of Information Technology on the Growth of banking industry; Okibo and Wario (2014) studied the effects of E-Banking on Growth of Customer Base in Kenyan Banks; Adewale and Afolabi (2013) wrote on the effects of ICT on the Growth of Nigerian Banking Industry: A study of five Quoted banks in Nigeria.; Frank and Oluwafemi (2012) conducted a study on the impact of Information Technology on Nigerian Banking Industry: A study of Skye bank; and Agbaje and Ayanbadejo (2013) examined Electronic Payments and Economic Growth. However, none of these studies attempted to use the data for the entire deposit money banks in Nigeria to examine the relationship between electronic banking and liquidity of deposit money banks in Nigeria. This study is therefore, an attempt to bridge this gap in knowledge.

### **Objectives of the Study**

The general objective of this study is to examine the relationship between electronic banking and liquidity of deposit money banks in Nigeria.

Specifically, the study objectives are to:

- i. Determine the relationship between internet banking and liquidity of deposit money banks in Nigeria.
- ii. Assess the relationship between mobile banking and liquidity of deposit money banks in Nigeria.
- iii. Examine the relationship between point of sale (POS) and liquidity of deposit money banks in Nigeria.

## Research Hypotheses

The following hypotheses were tested:

H<sub>0</sub>1: There is no significant relationship between internet banking and liquidity of deposit money banks in Nigeria.

H<sub>0</sub>2: There is no significant relationship between mobile banking and liquidity of deposit money banks in Nigeria.

H<sub>0</sub>3: There is no significant relationship between point of sale (POS) and liquidity of deposit money banks in Nigeria.

## LITERATURE REVIEW

### Concept of Electronic Banking

Electronic banking has been variously defined. For example, Abubakar (2014b) sees electronic banking as the provision of variety of banking services at any point in time other than the banking hall through electronic and mobile platforms. Akinyele and Olorunleke (2010) assert that electronic banking is the provision of information about the bank and its product via a page on the internet. Additionally, Mohammed, Siba and Sreekmar (2009) opined that electronic banking uses the internet as the delivery channel by which to conduct banking activities. Electronic banking is the use of electronic and telecommunication networks to deliver a wide range of value added products and services to bank customers (Steven, 2002). Okoro (2014) defines electronic banking as the use computers and telecommunication to carry out banking transactions instead of human interactions. Mohammad (2009) posits that electronic banking includes all types of banking activities performed through electronic network. It is the most recent delivery channel of banking services which is used for both business-to-business and business-to-customers transactions. Imiefoh (2012) maintains that electronic banking is an umbrella term for the process by which a customer performs banking transactions electronically without visiting a brick and mortar institution.

In addition, the introduction of electronic banking according to Fagbuyi (2003) would increase the potential of business to attain greater productivity and profitability as trading and transactions, which would be carried out via communication networks would be a lot faster and distance would no longer be barrier to effective transactions. Ayo, Adewoye and Oni (2010) assert that E-banking helps banks to increase speed, shorten processing periods, improve the flexibility of business transactions and reduce cost associated with having personnel serve customers physically. In support of the argument for e-banking, Wada and Odulaja (2012) opined that e-banking has enabled banks overcome borders, adopt strategic outlook and bring

in new possibilities. They further assert that e-banking is able to enlarge customer relationships, loyalty and has given banks competitive advantage as far market share is concerned.

Similarly, Christopher et al. (2006) revealed that electronic banking has become an important channel to sell products and services and is perceived to be a necessity in order to stay profitable and successful. Mobile e-banking also offers tremendous profit potential by providing mobile financial services to attract the mobile consumers. In fact, it is apparent that many banks are motivated to implement e-banking by forces relating to the maximization of the earning through increased market scope and improved customer relationship due to product delivery convenience and service customization (Simpson, 2002; Wind, 2001). The internet is used as a strategic and differentiating channel to offer high valued financial services and complex products at the same time or improved quality at lower costs without physical boundaries and to cross sell products like credit cards and loans (Hassan, Mamman & Farouk, 2013). Woherem, (2000) contend that only banks that overhaul the whole of their payment and delivery systems and apply Information and Telecommunication Technology to their operations are likely to survive and prosper in the new millennium. Consequently, e-banking has made banking flexible, accessible, efficient and cost effective.

### **Concept of Liquidity**

Liquidity is extremely essential for a firm to be able to meet its obligations as at when due. Liquidity ratios measure the ability of a firm to meet its current obligations. A firm should ensure that it does not suffer from lack of liquidity, and also it does not have excess liquidity. The failure of a company to meet its obligations due to lack of sufficient liquidity will result in poor credit worthiness, loss of creditors confidence or even legal tangles resulting in closure of the company. Additionally, a very high degree of liquidity is also bad because idle funds will unnecessarily be tied up in current assets earning nothing. Therefore, it becomes necessary to strike a proper balance between high liquidity and lack of liquidity (Pandey, 2010).

In addition, liquidity is the ability of a company to meet its short term obligation (Adebayo, David & Samuel, 2011). Global Association of Risk Professionals (2013) assert that liquidity is a bank's ability to fund increase in assets and meet both expected and unexpected cash and collateral obligations at a reasonable cost and without incurring unacceptable losses. Nwaezeaku (2006) state that liquidity in banking measures the availability of cash and the rate of which current assets are converted into cash to meet ordinary and extra ordinary request. Similarly, Agbada and Osuji (2013) describe bank liquidity as the ability of the bank to maintain sufficient funds to pay its maturing obligations. Ogbuabor, Malaolu and Mba (2013) maintain that liquidity is a measure of the relative amount of assets in cash or which can be quickly

converted into cash without any loss in value available to meet short term liabilities. Additionally, Liquidity is the ability to meet all obligations without endangering its financial conditions (Olagunji, Adeyanju & Olabode, 2011).

### **Review of Empirical Studies**

Numerous empirical studies have been conducted regarding electronic banking around the world. In this regard, Ojokuku and Sajuyigbe (2012) in their study on the impact of Electronic Banking on Human Resources Performance in the Nigerian Banking Industry, using data from 35 respondents randomly selected from 5 branches of first bank Ltd, revealed that the introduction of electronic banking in the Nigerian Banking Sector has helped tremendously in improving the productivity of bank personnel, leading to efficiency and effectiveness in service delivery. The study also found that the implementation of electronic banking system has boosted customer-relationship and customers' satisfaction.

Ekwueme et al. (2012) studied an empirical assessment of the operational efficiency of electronic banking in Nigeria using correlation technique, and reported that e-banking introduction in Nigeria had aid the operations of Nigerian banks through banks' employees' productivity and general performance. Dogarawa (2005) carried out a study on the impact of e-banking on customer satisfaction using a sample size of 60 each drawn from first bank of Nigeria Ltd, Guaranty trust bank Plc. and Zenith bank Plc. The findings revealed that electronic banking offer bank customers' services at a much lower cost and empowers them with unprecedented freedom in choosing vendors for their financial service need.

Similarly, Maiyaki and Mokhtar (2010) using a survey of 417 bank customers in 33 organizations in Kano state of Nigeria, examined effects of electronic banking facilities, employment sector and age-group on customers' choice of banks in Nigeria, and found that availability of electronic banking facilities such as ATM, online operation and telephone banking do not have significant influence in customer's decision to choose banks. This according to them could perhaps be explained by the fact that presently, almost all the players in the Nigerian banking sector do have electronic facilities.

Agboola (2001b) conducted a study on the impact of computer automation on banking services in Lagos, Nigeria. The findings revealed that the introduction of electronic banking has brought about various innovations that now dictate the pace for banking activities. This according to him has far reaching effects on both the customer and personnel requirements. Idowu, et al. (2002) carried out a study on the effects of information technology on the growth of banking industry in Nigeria. The result from the analysis of questionnaire administered on customers of five major banks in Nigeria showed that information technology (IT) has

contributed immensely to the growth of banking industry in Nigeria. Similarly, Adewale and Afolabi (2013) conducted a study on the effects of information and communications technology (ICT) on the growth of Nigerian Banking industry using five quoted banks. The result revealed that electronic banking has improved customer satisfaction. Also, Wario and Okibo (2014) using a sample of 135 respondents, investigated the effects of e-banking on growth of customer base in Kenyan banks. The results revealed that e-banking has enhanced the growth of customer base for banking institutions in Kenya. Additionally, Abubakar (2014a) studied the effects of electronic banking on growth of deposit money banks in Nigeria, using multiple regression technique. The study revealed that positive relationships exist between mobile banking and total deposits, and between internet banking and total asset, while on the other hand, there is no significant relationship between internet banking and total deposits, and between mobile banking and total asset.

Hassan et al. (2013) studied electronic banking products and performance of Nigerian deposit money banks. The study used secondary data of six (6) banks between 2006- 2011, and found that the adoption of electronic banking products (e-mobile and ATM) has strongly and significantly impacted on the performance of Nigerian banks on one hand, while on the other hand, the result showed that e-direct and SMS alert has not significantly impacted on the performance of the banks.

Chibueze et al. (2013) investigated electronic banking and bank performance in Nigeria, using secondary data for four banks that have retained their brand names and remain quoted in the Nigeria stock exchange since 1997. The results revealed that e-banking has positively and significantly impacted on the return on equity (ROE) of Nigerian banks, but has not significantly improved the return on assets (ROA) of Nigerian banks.

In addition, Meihami, Varmaghani and Meihami (2013) examined the effect of using electronic banking on profitability of banks using both descriptive and inferential statistics. The findings show that electronic banking has improved the performance of banks measured by bank incomes. Aduda and Kingoo (2012) carried out a study on the relationship between electronic banking and financial performance among commercial banks in Kenya. Using return on assets as proxy for financial performance and investment in e-banking, number of ATMs and number of debit cards issued to customers as surrogate for e-banking, the results reveal that positive relationship exists between e-banking and bank performance.

Malhotra and Singh (2009) assessed the impact of internet banking on bank performance and risk in Indian, using multiple regression technique. The results reveal that there is no significant association between internet banking and profitability on one hand, and

on the other hand, there is a significant negative association between internet banking and risk profile of banks in Indian.

From the foregoing, it can be seen that none of above empirical studies address the issues of relationship between electronic banking and liquidity, this is the gap that this study intends to fill.

## **METHODOLOGY**

### **Research Design**

The study adopted ex-post factor (non-experimental) research design to determine the relationship between electronic banking and liquidity of deposit money banks in Nigeria. This becomes necessary because the study was entirely based on secondary data. This type of research design is appropriate where the researcher is attempting to use secondary data to explain how the phenomenon operates by identifying the underlying factors that produce change in it, in which case there is no manipulation of the independent variable (Kerlinger & Lee, 2000). This study therefore, used ex-post factor research design to establish relationship between electronic banking variables (internet banking, mobile banking, and point of sale) and liquidity (current ratio) of deposit money banks in Nigeria.

### **Population of the Study**

The population of this study consists of all the twenty three (23) deposit money banks in Nigeria as at 31<sup>st</sup> December, 2014. There was no sampling and sample size because the study covers the entire population. In addition, the study of the entire population is considered appropriate because the population size is quite small. Moreover, sampling is only appropriate if the population size is large and if both cost and time associated with obtaining information from the population is high (Swain, 2008).

### **Data Sources**

Data was collected from secondary sources. Data on the value of internet banking, mobile banking and point of sale for the period 2006- 2014 were obtained from CBN annual report and statistical bulletin for various years, while data on current ratio of the entire deposit money banks in Nigeria were obtained from CBN 2014 statistical bulletin for the period under study.

The study covers the period 2006 to 2014 with 2006 as the benchmark year and 2014 as the end year. The beginning year was considered more appropriate because electronic banking full adoption in Nigeria started between 2003 and 2004, hence, the effect cannot be felt within just few years of adoption. Additionally, data on internet and mobile banking were available from

2006. The study period witnessed major reforms in the banking sector such as recapitalization of banks in 2005, the introduction of cashless policy, and establishment of Asset Management Corporation of Nigeria (AMCON) among others. The end year 2014 was chosen because annual reports and statistical bulletins reports activities of the previous years.

### Method of Data Analysis

The technique of data analysis adopted for this study was both descriptive statistics in the form minimum value, maximum value, mean and standard deviation, and inferential statistics in the form of correlation analysis. Descriptive statistics was used to describe the data set while correlation analysis was used to identify the relationship between electronic banking variables and liquidity variable used in the study. The key variable of liquidity that was measured in relation to deposit money banks in this study is deposit money banks' current ratio and this constitutes the dependent variable. Electronic banking is the independent variable and was measured using internet banking, mobile banking and point of sale.

Hence, the functional relationship between the dependent variable and independent variables is expressed as follows:

$$L = f(EB)$$

Where: L= Liquidity, EB = Electronic Banking

## EMPIRICAL RESULTS AND DISCUSSIONS

### Descriptive Statistics

Table 1 shows the descriptive statistics for deposit money banks in Nigeria for the period 2006-2014. The result shows that electronic banking measured by POS, internet and mobile banking averaged ~~N~~68.7b, ~~N~~39.9b and ~~N~~61.1b respectively. This shows that on the average, POS has the highest value of transactions during the period of study, while internet banking has the least value of transactions.

The average liquidity measured by current ratio stood at 43%. This is an indication that 43% of total current liabilities of deposit money banks in Nigeria are financed by liquid assets. This result shows that some deposit money banks have more than the minimum liquidity ratio of 30% prescribed by Central Bank of Nigeria, the apex regulatory body of financial institutions in Nigeria.

Table 1: Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
POS	9	6.40	312.10	68.7256	103.12296
INTERNET	9	3.00	84.20	39.8611	27.92373
MOBILE	9	.10	346.50	61.1333	116.33901
LIQUIDITY	9	.30	.56	.4289	.08681
Valid (listwise)	N 9				

### Correlation Results

Table 2 shows the relationship between point of sale (POS), internet banking, mobile banking and liquidity of deposit money banks in Nigeria during the period under study. The results revealed that all the independent variables had a negative relationship with the independent variable i.e. liquidity, but only the relationship between internet banking and liquidity is significant at 0.1 levels of significance. The relationship between POS and liquidity and the relationship between mobile banking and liquidity is not significant because their probability values are greater than 0.1 levels of significance.

Table 2: Correlations

		POS	INTERNET	MOBILE	LIQUIDITY
POS	Pearson Correlation	1	.484	.996(***)	-.096
	Sig. (2-tailed)		.187	.000	.807
	N	9	9	9	9
INTERNET	Pearson Correlation	.484	1	.498	-.636(*)
	Sig. (2-tailed)	.187		.173	.065
	N	9	9	9	9
MOBILE	Pearson Correlation	.996(***)	.498	1	-.141
	Sig. (2-tailed)	.000	.173		.717
	N	9	9	9	9
LIQUIDITY	Pearson Correlation	-.096	-.636(*)	-.141	1
	Sig. (2-tailed)	.807	.065	.717	
	N	9	9	9	9

\*\*\*Correlation is significant at the 0.01 level (2-tailed).

\* Correlation is significant at 0.1 levels (2-tailed).

## Hypotheses Testing

Hypotheses testing were done using the correlation results in Table 2.

**Hypothesis One:** Table 2 shows that a significant negative relationship exists between internet banking and liquidity. This is confirmed by the correlation coefficient of  $-.636$  which is significant at 0.1 levels of significance. The decision rule is to reject the null hypothesis if the P-value is less than the chosen level of significance (0.1). Since the P-value of  $.065$  is less than 0.1, we reject the null hypothesis, and conclude that there is a significant negative relationship between internet banking and liquidity of deposit money banks in Nigeria during the study period.

**Hypothesis Two:** Table 2 shows a very weak negative relationship between mobile banking and liquidity, but the relationship is not significant. Since the P-value of  $.717$  is greater than 0.1, we fail to reject the null hypothesis, and conclude that there is no significant relationship between mobile banking and liquidity of deposit money banks in Nigeria.

**Hypothesis Three:** Table 2 also shows a very weak non-significant relationship between point of sale and liquidity. The weak relationship is confirmed by correlation coefficient of  $-.096$ . Since the P-value of  $.707$  is greater than 0.1, we fail to reject the null hypothesis, and conclude that there is no significant relationship between point of sale and liquidity of deposit money banks in Nigeria.

Table 3: Hypotheses Testing and Results

No.	Hypotheses	Results	Tool
H <sub>0</sub> :1	There is no significant relationship between internet banking and liquidity of deposit money banks in Nigeria.	Rejected	Correlation
H <sub>0</sub> :2	There is no significant relationship between mobile banking and liquidity of deposit money banks in Nigeria.	Accepted	Correlation
H <sub>0</sub> :3	There is no significant relationship between point of sale and liquidity of deposit money banks in Nigeria.	Accepted	Correlation

## CONCLUSIONS

This study examined the relationship between electronic banking and liquidity of deposit money banks in Nigeria for the period 2006- 2014. The major findings are summarized below:

The mean values are ₦68.7b, ₦39.9b and ₦61.1b for point of sale, internet banking and mobile banking respectively. This suggests that POS is the most patronized in terms of the value of transactions during the study period.

It was discovered that the mean value of liquidity is 43%. This implies that about 43% of the total current liabilities of deposit money banks are financed by liquid assets. It also discovered also that the minimum and maximum values for liquidity are 30 and 56 per cent

respectively. This confirms that majority of deposit money banks in Nigeria comply with the CBN minimum liquidity requirement of 30%.

In addition, the association between internet banking and liquidity was found to be negatively significant, meaning that an increase in the value of internet banking (web transactions) will result in decrease in liquidity. The study also discovered that there was no significant relationship between mobile banking and liquidity, and POS and liquidity during the period under review.

Based on the major findings, the following conclusions are drawn: Point of sale is the most patronized in terms of value of transactions during the period under review. This means that customers prefer to use the off-line channel to the online transactions.

Deposit money banks in Nigeria are not facing liquidity problems during the period of study, and their current liabilities are financed by less than 50% of their liquid assets. Deposit money banks in Nigeria have indicated that they can meet their customers' short term needs, and this will go a long way in boosting customers' confidence and patronage.

Deposit money banks comply with CBN liquidity requirements, and this will strengthen in them in carrying out their intermediation role of channeling funds from the surplus unit to the deficit unit.

Additionally, we also found evidence to draw conclusion that point of sale and mobile banking had no significant relationship with liquidity, while internet banking had a significant negative relationship with liquidity.

## **RECOMMENDATIONS**

Based on the major conclusions of this study, the following recommendations are made for consideration by deposit money banks and their regulatory bodies:

1. Deposit money banks should maintain their current liquidity position as this will enable them meet their short term obligations as at when they fall due. Liquidity in banking is very essential as lack of it will erode customers' confidence and consequently lead to non-patronage.
2. Point of sale and mobile banking had no significant relationship with liquidity. Therefore, CBN should maintain the transactions limit, as any review will not have any significant effect on liquidity.
3. Although, on the average, POS is the most patronized during the period of study, more awareness should be embarked upon and transaction charges reviewed downwards to encourage more patronage, as this will enhance financial inclusion.

4. Negative relationship exists between internet banking and liquidity. Therefore, CBN should review downwards web transactions' limit especially transactions involving transfers and payments to foreign countries. limitations and Scope for Further Studies

## LIMITATIONS AND SCOPE FOR FURTHER STUDIES

This study is limited to discovering relationship between three retail electronic banking variables (Internet banking, Mobile banking and Point of sale) and liquidity of deposit money banks in Nigeria measured by current ratio. Wholesale payment system such as real time gross settlement (RTGS), Nigeria interbank settlement system (NIBSS) instant payment (NIP) and NIBSS electronic fund transfer (NEFT) are not included in this study. Similarly, other players in the banking sector such as interest free banks and micro finance banks are not included in this study.

Given the limitations of the study as stated above, further research should be conducted using other variables. Although, the secondary data covers all the deposit money banks in Nigeria, It is therefore, recommended that further research would be useful in the following related areas:

1. The relationship between ATM and liquidity of deposit money banks in Nigeria.
2. The relationship between electronic banking and liquidity of micro finance banks in Nigeria.
3. The relationship between electronic banking and liquidity of Non-interest Bank in Nigeria.
4. The relationship between wholesale electronic payment channels and liquidity of Deposit Money Banks in Nigeria.

## REFERENCES

- Abubakar, A. (2014a). The Effects of Electronic Banking on Growth of Deposit Money Banks in Nigeria. *European Journal of Business and Management*, 6 (33), 79- 89.
- Abubakar, A. (2014b). The Effects of Electronic Payment Channels on Growth of Deposit Base of Nigerian Deposit Money Banks. *International Journal of Research in Computer Application and Management*, 4 (12), 77- 81.
- Adebayo, O., David, A. O., & Samuel, O. O. (2011). Liquidity Management and Commercial Bank's Profitability in Nigeria. *Research Journal of Finance & Accounting*, 2 (7/8), 24- 39.
- Adewale, A.A., & Afolabi, B.A. (2013). The Effects of ICT on the Growth of Nigerian Banking Industry: A Study of Five Quoted Banks in Nigeria. Retrieved September 20, 2014 from <http://ssm.com/abstract=2325163>.
- Adewuyi, I.D. (2011). Electronic Banking in Nigeria: Challenges of Regulatory Authorities and the Way Forward. *International Journal of Economics Development, Research and Investment*, 2 (1), 149- 156.
- Aduda, J., & Kingoo, N. (2012). The Relationship between Electronic Banking and Financial Performance among Commercial Banks in Kenya. *Journal of Finance and Investment Analysis*, 1 (3), 99- 118.

- Afolabi, F.O. (2009). The Role of Information Technology in Nigerian Banks: A Case Study of Intercontinental Bank, Guaranty Trust Bank and First Bank PLC.
- Agbada, A. O., & Osuji, C. C. (2013). The Efficiency of Liquidity Management and Banking Performance in Nigeria. *International Review of Management and Business Research*, 2 (1), 223- 233.
- Agbaje, O., & Ayanbadejo, K. (2013). Electronic Payment and Economic Growth in Nigeria. A Report by RTC Advisory Services Ltd.
- Agboola, A.A. (2001b). Impact of Computer Automation on the Banking Services in Lagos. *Journal of Social Sciences*, 7 (1), 29- 36.
- Agboola, A.A. (2001a). Impact of Electronic Banking on Customer Services in Lagos, Nigeria. *Ife Journal of Economics and Finance*, 5 (1), 1- 2.
- Akinyele, S.T., & Olorunleke, K. (2010). Technology and Service Quality in the Banking Industry: An Empirical Study on the Various Factors of Electronic Banking. *International Journal of Business Management*, 4 (4), 209- 221.
- Alagheband, P. (2006). Adoption of Electronic Banking Services by Iranian Customers. Unpublished Master's Thesis, Lulea University of Technology, Sweden.
- Auta, E.M. (2010). E-Banking in Developing Economy: Empirical Evidence from Nigeria. *Journal of Applied Quantitative Methods*, 5 (2), 212- 222.
- Ayo, C.K., Adewoye, J.O., & Oni, A.A. (2010). The State of E-banking Implementation in Nigeria: A post Consolidation Review. *Journal of Emerging Trends in Economics and Management Sciences*, 1 (1), 37- 45.
- Central Bank of Nigeria (2006). Annual Report & Statement of Accounts. Retrieved August 26, 2014 from <http://www.cenbank.org>.
- Central Bank of Nigeria (2007). Annual Report & Statement of Accounts. Retrieved August 26, 2014 from <http://www.cenbank.org>.
- Central Bank of Nigeria (2011). Annual Report & Statement of Accounts. Retrieved August 26, 2014 from <http://www.cenbank.org>.
- Central Bank of Nigeria (2014). Economic Report. Retrieved August 26, 2014 from <http://www.cenbank.org>.
- Central Bank of Nigeria (2013). Half Year Economic Review. Retrieved August 26, 2014 from <http://www.cenbank.org>.
- Central Bank of Nigeria (2013). Statistical Bulletin. Retrieved August 26, 2014 from <http://www.cenbank.org>.
- Central Bank of Nigeria (2014). Statistical Bulletin. Retrieved July 26, 2015 from <http://www.cenbank.org>.
- Chibueze, A.Z., & Maxwell, O.O., & Osondu, N.M. (2003). Electronic Banking and Bank Performance in Nigeria. *West African Journal of Industrial and Academic Research*, 6 (1), 1- 17.
- Christopher, G.C., Mike, L.V., & Army, W. (2006). A Logic Analysis of Electronic Banking in New Zealand. *International Journal of Bank Marketing*, 24 (2006), 360- 383.
- Dogarawa, A. B. (2005). The Impact of E-banking on Customer Satisfaction in Nigeria. Retrieved September 15, 2013 from <http://mpira.ub.uni-muenchen.de/23200/>.
- Ekwueme, C.M., Egbunike, P.A., & Amara, O. (2012). An Empirical Assessment of the Operational Efficiency of Electronic Banking: Evidence of Nigerian Banks. *Review of Public Administration and Management*, 1 (2), 108- 138. Retrieved February 28, 2014
- Fagbuyi, T. (2003, August 25). New Security Requirements for E-banking System. *Business Times*, p.36.

- Fonchamnyo, D.C. (2013). Customers' Perception of E-banking Adoption in Cameroon: An Empirical Assessment of an Extended TAM. *International Journal of Economics and Finance*, 5 (1), 166-176.
- Frank, I., & Oluwafemi, O. (2012). Impact of Information Technology on Nigerian Banking Industry: A Study of Skye Bank. *International Journal of Computing Academic Research*, 1 (1), 25- 35.
- Global Association of Risk Professionals (2013). *Liquidity Risk Management Overview & Practitioners' Challenges*. Dubai.
- Hassan, S.U., Mamman, A., & Farouk, M.A. (2013). Electronic Banking Products and Performance of Nigerian Deposit Money Banks. *American Journal of Compute Technology and Application*, 1 (10), 138-148.
- Idowu, P.A., Alu, A.O., & Adagunodo, E.R. (2002). The Effect of Information Technology on the Growth of the Banking Industry in Nigeria. *The Electronic Journal of Information Systems in Developing Countries*, 10 (2), 1-8.
- Imiefoh, P. (2012). Towards Effective Implementation of Electronic Banking in Nigeria. *An Internet Multi-Disciplinary Journal*, 6 (2), 290- 300.
- Izogo, E.E., Nnaemeka, O.C., Ezema, K.S., & Onuoha (2012). Impact of Demographic Variables on Consumers' Adoption of E-banking in Nigeria: An Empirical Investigation. *European Journal of Business and Management*, 4 (17), 27- 39.
- Kerlinger, F.N., & Lee, H.B. (2000). *Foundations of Behavioural Research* (4th ed.). Forth Worth, TX: Harcourt.
- Kolodinsky, J.M. (2004). The Adoption of Electronic Banking Technologies by US Consumers. *International Journal of Bank Marketing*, 22 (4), 238- 259.
- Mahdi, S., & Mehrdad, A. (2010). E-Banking in Emerging Economy: Empirical Evidence of Iran. *International Journal of Economics and Finance*, 2 (1), 201- 209.
- Maiyaki, A.A., & Mokhtar, S.S.M. (2012). Effects of Electronic Banking Facilities, Employment Sector and Age-Group on Customers' Choice of Banks in Nigeria. *Journal of Internet Banking and Commerce*, 15 (1), 1- 8.
- Malhotra, P., & Singh, B. (2009). The Impact of Internet Banking on Bank Performance & Risk: The Indian Experience. *Eurasian Journal of Business and Economics*, 2 (4), 43- 62.
- Meihami, B., Varmaghani, Z., & Meihami, H. (2013). *Interdisciplinary Journal of Contemporary Research in Business*, 4 (12), 1299- 1318.
- Mohammad, M. R. (2009). *E-Banking in Bangladesh: Some Policy Implications*.
- Mohammed, S.K., Siba, S.M., & Sreekmar. (2009). Service Quality in Internet Banking: An Empirical Evidence. *International Journal of Indian Culture and Business Management*, 2 (1), 30- 46.
- Nwaezeaku, N. C. (2006). *Theories and Practice of Financial Management*. Owerri: Ever Standard Publishing.
- Ojokuku, R.M., & Sajuyigbe, A.S. (2012). The Impact of Electronic Banking on Human Resources Performance in the Nigerian Banking Industry. *International Journal of Economic Development Research and Investment*, 3 (2), 61- 69.
- Ogbuabor, J. E., Malaolu, V. A., & Mba, I. C. (2013). A Panel Data Analysis of the Impact of Informality on the Liquidity of Deposit Money Banks in Nigeria. *Global Journal of Human Resource Management*, 1 (3), 12- 28.
- Okibo, B.W., & Wario, A.Y. (2014). Effects of E-banking on Growth of Customer Base in Kenyan Banks. *International Journal of Research in Management & Business Studies*, 1 (1), 78- 84.
- Okoro, A. S. (2014). Impact of Electronic Banking Instruments on the Intermediation Efficiency of the Nigerian Economy. *International Journal of Accounting Research*, 1 (6), 14- 21.

- Olagunji, A., Adeyanju, O. D., & Olabode, O. S. (2011). Liquidity Management and Commercial Bank's Profitability in Nigeria. *Research Journal of Finance and Accounting*, 2, (718), 24- 38.
- Olalekan, A. (2011). E-banking Patronage in Nigeria: An Exploratory Study of Gender differences. *Business Intelligence Journal*, 4 (2), 243 – 252.
- Oluwatolani, O., Joshua, A., & Philip, A. (2011). The Impact of Information Technology in Nigeria's Banking Industry. *Journal of Computer Science and Engineering*, 7(2), 63- 67.
- Pandey, I.M. (2010). *Financial Management* (10th ed.). New Delhi, India: Vikas Publishing House PVT Ltd.
- Siam, A.Z. (2006). Role of Electronic Banking Services on the Profits of Jordanian Banks. *American Journal of Applied Sciences*, 3 (9), 1999- 2004.
- Simpson, J. (2002). The Impact of the Internet in Banking: Observations and Evidence from Developed and Emerging Markets. *Telematics and Infomatics*, 19 (4), 315- 330.
- Steven, A. (2002). *Information System: The Information of E-Business*. New Jersey: Natalie Anderson.
- Swain, A.K.P.C. (2008). *A Text Book of Research Methodology*. New Delhi, India: Kalyani Publishers.
- Wada, F., & Odulaja, G.O. (2013). Assessing Cyber Crime and its Impact on E-banking in Nigeria using Social Theories. *African Journal of Computer and ICT*, 4 (2).
- Wind, Y. (2001). The Challenges of Customization in Financial Services. *Communication of ACM*, 44 (5), 39- 44.
- Woherem, E.W. (2000). *Information Technology in the Nigerian Banking Industry*. Ibadan: Spectrum Books Limited.