International Journal of Research Publication and Reviews

Automated Clearing System and Performance of Nigerian Banking Industry (1983 – 2020)

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Abstract

The study examined the effect of automated clearing system on banking performance in the Nigerian banking industry. Specifically, the study examine the effect of automated clearing system on the liquidity of deposit money banks in Nigeria, and determine the effect of automated clearing system on loan-to-deposit ratio of deposit money banks in Nigeria. *Ex Post Facto* research design was adopted for the study. Data were extracted from CBN statistical Bulletin, and were tested with regression analysis. The study shows that automated clearing system has significant effect on the liquidity of deposit money banks in Nigeria, while the study revealed that automated clearing system has no significant effect on the loan-to-deposit ratio of deposit money banks in Nigeria. Guided by the findings of this study, the researcher recommended that adequate care should be taken to address new threats and risks that may be associated with the automation of the cheque clearing process so as to ensure that all stakeholders are assured of its accuracy thereby fully adopting its use.

Keywords: Automated clearing system, liquidity and Loan-to-deposit ratio

INTRODUCTION

Despite the adoption of a mobile application for automated cheque clearing by Nigerian commercial banks in 2017, the volume and value of bank cheques cleared in 2017 nationwide fell by 7.7% and 6.9% (10.8m and N5.4bn, respectively) compared to the previous year, according to a CBN report (2020). When compared to the previous year, the volume and value of payments on e-money products such as ATMs, Point of Sales (PoS), mobile and internet banking increased by 43.2% and 37.6% (1.02m and N9.13bn, respectively) in 2017 (CBN, 2020).

In 2017, the volume and value of web transactions increased by 105.8% and 39.4% (28.99m and N184.6bn, respectively) over the previous year. In 2017, mobile payments increased in volume and value by 1.6% and 45.7% (47.81m and N1.1bn, respectively) over the previous year. Electronic fund transfers on the Nigeria Inter-Bank Settlement Systems Plc (NIBSS) increased by 4.3 and 2.5% (31.03m and N14.95bn, respectively) in 2017 compared to the previous year simply because consumers preferred the platform to bank cheques for cost effectiveness and convenience (Ohiani, 2020). These figures may have an impact on the performance of Nigerian deposit money banks.

Several studies have recently attempted to investigate the impact of the aforementioned trends in electronic banking on the performance of Nigerian banks. Profit before taxes (Nwakoby, Chukwu, and Oghenetega, 2020), loan to deposit ratio, total assets, bank deposits, liquidity ratio, cost effectiveness, efficient gains, and improved operational flexibility (Anidiobu et al., 2016), return on assets, and return on equity have all been used to assess bank performance (Mustapha, 2018; Abu, Halilu and Oluwatobi, 2021). After establishing this illuminating context for the study, the researcher is directed to investigate the impact of automated clearing systems on the performance of the banking sector.

The problem is exacerbated by the fact that, to the best of the researcher's knowledge, very few studies have examined the effect of automated clearing systems on the performance of the Nigerian banking sector (Onuorah, 2009; Mustapha, 2018; Davies and Chibuzo, 2019; Abu et al., 2021). These few studies have primarily focused on areas such as check processing efficiency, which is only a subset of bank performance. As a result, key metrics of banking performance such as liquidity, deposit accumulation, asset value, and loan-to-deposit ratio have been overlooked in these studies. These issues motivate the researcher to look into the impact of an automated clearing system on the performance of the Nigerian banking sector.

The broad objectives of the study are to examine the impact of automated clearing system on banking performance in the Nigerian banking industry. The specific objectives therefore include;

1. To examine the effect of automated clearing system on the liquidity of deposit money banks in Nigeria.

2. To determine the effect of automated clearing system on loan-to-deposit ratio of deposit money banks in Nigeria.

REVIEW OF RELATED LITERATURE

Conceptual Review

Cheques are written instructions from account holders to their banks to pay specified sums of money to named beneficiaries. A cheque is also a written order addressed and signed by a bank customer to a bank instructing the bank to pay a specific amount of money to the person named on it or the bearer (Anidiobu, Agu and Ezinwa, 2016). A cheque isn't money unless it's backed up by demand deposits. Unfortunately, some cheques are written by people who do not have enough money in their accounts to back them up. In that case, banks must devise a method to ensure that a cheque is properly drawn before crediting the account of the customer. In order to find out whether the drawer of a cheque has money in his account to back-up the cheque demands that the cheque gets back to the drawee bank where the customer has an account for verification. It is only the said bank that can look into the customer's ledger account and not only confirm sufficiency of fund to offset the face value of the cheque, but also ensure the cheque is properly drawn. If that bank is satisfied there is money in the account, and the cheque is correctly drawn, the bank will authorize payment of the cheque and then debit the account of the drawer before the payee can get value of the cheque.

Automated Clearing System

The extraction and recognition of handwritten or user-entered information from various data fields on a bank cheque, such as the courtesy amount, legal amount, and date, is known as automatic clearing (Shibly, 2011). Based on the definitions provided above, an automated cheque clearing system is the process of electronically capturing bank cheques and transmitting them to other banks without the physical movement of the cheques. The process of inter-bank cheque settlement using both cheque electronic records and scanned copies of the cheque is referred to as the Automated Cheque Clearing System (Asmah, 2015). According to (Ndangoh, 2018), an electronic clearing system is a modern method of clearing interbank debt that does not require manual movement of cheques from bank branches to head offices. Inter-bank clearing in Nigeria can now be completed in 24 hours, compared to 3-5 days in the traditional banking system; this e-payment and interbank settlement technique is an effort to modernize banks in developing countries in accordance with global standards (Ohiani, 2020).

Liquidity Management

Decisions about liquidity management are part of financial management, and effective liquidity management ensures a balance of liquidity and profitability (Bhunia & Khan, 2011). Because it affects banks' day-to-day operations, liquidity management is critical in both the external and internal business environments (Bhunia & Khan, 2011). Olatunde (2015) concluded that improved and maintained liquidity coverage ratios by financial regulators and bank management in Nigeria can lead to improved business performance. The regulators are responsible for ensuring compliance, while management is responsible for ensuring compliance by maintaining the minimum required liquidity and profiting from the bank's available resources. Bank liquidity is defined as the rate at which current assets and other readily available resources are converted into cash to meet liquidity demand preferences and reserve requirements (Nwaezeaku, 2006). It symbolizes the bank's negotiating power and strength in retaining depositors for additional savings. The liquidity quotient is commonly used to track and calculate the liquidity situation of deposit money banks (Rychtarik, 2009). The current ratio is one of the variables used as a proxy for liquidity management in this study. A high current ratio is commonly regarded as an indicator of a company's ability to pay off short-term debts quickly (Berk, 2009). Increasing the current ratio over time indicates improved business liquidity, whereas decreasing the current ratio indicates a deteriorating business liquidity position or a shorter company working capital cycle.

Empirical Review

Ohiani (2020) examined the prospects and challenges of technology innovation in the Nigerian banking system. Secondary data were retrieved from the annual reports of Central Bank of Nigeria (CBN) and Nigeria Deposit Insurance Corporation (NDIC) from 2013 to 2017 to know the interaction between e-banking platforms and performance of banks in Nigeria. The study administered a questionnaire to the bank customers in Lagos Island, Nigeria to understand their perception towards e-banking. The findings of this study reveal the migration from cheques to electronic related transactions. It further indicates a high rate of fraud committed through those channels. The analysis of primary data shows that innovation adoption, service quality, cybercrime have significant relationship with the competitiveness of banks, the intention of bank customers, and perception of customers towards online services. Wong, Lau and Yip (2020) examined the effects of cashless policy and economic growth: evidenced from selected OECD countries using data from 2007 to 2016. Data used in this study include; e-money, credit card and debit card transactions, e-cheques, and GDP. The study used the Panel Least Square (random effects) in analyzing the data. The results revealed that e-cheques and credit card transactions have no significant effect on economic growth while debit card transactions have positive and significant effect on economic growth. David and Kaulihowa (2018) examined the impact of e-banking on commercial banks' performance in Namibia using an error correction modelling and granger causality test for the period 2012M1 to 2015M8. The finding reports that return on investment is significantly driven by interbank settlement systems, electronic funds transfer and cheques. The advent of the internet has resulted in paradigm shifts in the banking industry towards electronic banking to create a competitive edge over rivals. Although this rapid development of information technology has made some banking tasks more efficient and cheaper, there are concerns that technological investments are taking a larger share of bank's resources. Ndangoh (2018) sought to learn more about the electronic clearing system and how it aids in debt settlement. This thesis was based on an internship that inspired the writer to learn more about the electronic clearing system and how it differs from the traditional means of clearing. Chekpemoi (2018) investigated the impact of the cheque truncation system on the financial performance of Nairobi Stock Exchange-

listed Kenyan commercial banks (NSE). The descriptive research design was used on a population of 11 NSE-listed commercial banks. 55 respondents were given semi-structured questionnaires, 5 from each commercial bank. The data collected were analyzed using inferential statistics. The results showed that the influence of cheque truncation system on the financial performance of commercial banks in Kenya is statistically significant. (manual clearing system). The research was based on personal observations and research with the use of questionnaires which were sampled to a randomly selected staff and customers of the case institution. From the responses received from the questionnaires and also from the personal observations and the writing of others about the electronic clearing system, it is assumed that the electronic clearing system has played a great role in settling debts or financial differences between banks on behalf of their customers. Gathuku (2013) studied the impact of the cheque truncation system on the performance of Kenyan commercial banks. To achieve the desired population representations, the study used a descriptive survey as its research design, as well as the purposive sampling technique (which is CFC Stanbic Bank). The study's findings revealed that I the introduction of the cheque truncation system improved bank performance, (ii) the reduction in clearing cycle affected bank performance significantly, (iii) CTS would reduce fraud in banks, and (iv) ICT as a result of CTS affected bank performance significantly.

Gap in Literature

Having reviewed the empirical works in section 2.3, the researcher observed that none of the reviewed studies attempted to comprehensively examine several performance indicators of the banking sector such as liquidity and loan to deposit ratio. To cover this gap, the researcher examines the effect of automated cheque clearing on banking sector performance as measured by total assets, total deposits, loan-to-deposit ratio and liquidity ratio. This study also covers a time gap of 2 years by extending the study period to 2020, whereas the previous studies did not go beyond 2018.

METHODOLOGY

Research Design

An *ex-post facto* research design is utilized as design owing to the time series nature of the data used in this study. The ex-post facto research design adopts statistical analysis of already established and factual data.

Sources of Data

The time series data on liquidity (as proxied by liquidity ratio), loan-to-deposit ratio which were used in this study were sourced from the CBN statistical Bulletin (2020). Other information and literary works were sourced from articles, blogs and webpages retrieved from the internet.

Model of the Study

This study adopted a similar model with the study of David and Kaulihowa (2018) which modelled return on investments (ROE) as a function of Electronic Funds Transfer (EFT), Namibia Interbank Settlement System (NISS) and Cheque issued (Cheque) as shown in equation 1.

ROE = f(EFT, NISS, Cheque)   eq 1

However, this study expresses liquidity ratio (LQR), Loan-to-Deposit ratio (LDR), Total Assets (TAS) and Total Deposits (TDEP) as functions of Value of Cheque Cleared (VCC) as shown in equations 2, 3, 4 and 5

LQR = f(VCC)   eq 2

LDR = f(VCC)   eq 3

The functional models are modified to include parameters for data analysis. The modified models are shown in equations 4 and 5

LQR = $\alpha_0 + \alpha_1$VCC   eq 4

LDR = $\alpha_0 + \alpha_1$VCC   eq 5

Where;

a_0 is the constant term which accounts for the values of the bank performance variables which are not explained by automated cheque clearing system

α_1 is the coefficient of the regression.

Description of the Variables

The variables used in this study include the dependent and independent variables. The independent variable is the variable that is expected to affect the dependent variable in a way. Automated cheque clearing system is the independent variable. On the other hand, the dependent variable is the variable of interest whose behaviour or trends the researcher seeks to predict as a function of the dependent variable. The dependent variables are deposit money banks' performance which is measured by the following;

Liquidity Ratio: Liquidity refers to the availability of liquid assets; assets that are easily convertible to cash without loss in value. Liquidity ratio is therefore the ratio of liquid assets held by deposit money banks. It measures the ability of the bank to meet its short-term maturing obligations. This ratio is expressed in percentage terms

Loan-to-deposit Ratio: This refers to the amount of loans divided by the total deposits of the deposit money banks. It measures the efficiency of banks in converting deposits into profitable loans. This ratio is expressed as a percentage.

Method of Data Analysis

The data used in this study are presented in tabular form. The data were examined using the Ordinary Least Square regression method. The OLS Method has been used in a wide range of economic relationship with satisfactory result. The OLS method provides the relevant statistics used to explain the relationship among variables. More so, the liability of this method lies on the desirability properties which are efficiency, consistency and unbiased. This implies that its error term has a minimum and equal variance. The conditional mean is zero and normally distributed (Gujarat, 2004).

Decision Rule

The hypotheses of the study were tested using the probability value (p-value) of the t-statistic procured by the OLS regression estimate. The decision rule is to accept the hypothesis of a significant effect if the corresponding p-value is less than 0.05. However, if the corresponding p-value is greater than 0.05, then the null hypothesis is confirmed and the effect is ruled as insignificant.

Data Analysis

Table 1: Descriptive Statistics

	LQR	LDR	VCC
Mean	49.80811	66.22349	11787.55
Median	49.71872	63.60699	7674.857
Maximum	81.42032	96.81702	29436.02
Minimum	26.39276	37.55947	4129.220
Std. Dev.	14.53979	15.72873	7801.544
Skewness	0.551929	0.010139	0.877166
Kurtosis	2.915210	2.438154	2.477403
Jarque-Bera	0.970338	0.250231	2.652709
Probability	0.615593	0.882395	0.265443
Sum	946.3541	1258.246	223963.4
Sum Sq. Dev.	3805.300	4453.075	1.10E+09
Observations	19	19	19

Source: *SPSS 22.0 Descriptive Statistics Output, 2022*

As shown in table 1, indicates that an average of 11,787.55 trillion naira electronic cheque transactions has been recorded annually over the reviewed period. This includes its highest figure of 29.436 trillion naira and its lowest figure of 4.129 trillion naira. Similarly, the descriptive statistics shows that liquidity ratio and loan to deposit ratio have averaged annual figures of; 49.8% and 66.22% trillion naira respectively. The Jarque-Bera statistic reveals that all the variables are normally distributed as their p-values are all above 0.05.

Test of Hypotheses

Hypotheses One

H_0: Automated clearing system has not had significant effect on the liquidity of deposit money banks in Nigeria.

H_1: Automated clearing system has had significant effect on the liquidity of deposit money banks in Nigeria.

Table 2: OLS Result for VCC and LQR

Dependent Variable: LQR
Method: Least Squares
Date: 02/10/22   Time: 02:38
Sample: 2002 2020
Included observations: 19

Variable	Coefficient	Std. Error	t-Statistic	Prob.

VCC	-0.000992	0.000383	-2.593859	0.0189
C	61.50622	5.364701	11.46499	0.0000
R-squared	0.283550	Mean dependent var		49.80811
Adjusted R-squared	0.241406	S.D. dependent var		14.53979
S.E. of regression	12.66377	Akaike info criterion		8.014668
Sum squared resid	2726.307	Schwarz criterion		8.114082
Log likelihood	-74.13934	Hannan-Quinn criter.		8.031493
F-statistic	6.728104	Durbin-Watson stat		1.263368
Prob(F-statistic)	0.018919			

Source: *E-views 10 OLS Regression Output, 2022*

The results shown in table 2 shows that the value of cheques cleared has negative effect on the liquidity ratio of deposit money banks in Nigeria. The regression coefficient of -0.000992 reveals that every billion naira increase in the value of cheques cleared would lead to a decline of 0.09% in the liquidity ratio of deposit money banks in Nigeria. The R-squared value of 0.283550 revealed that about 28% of the trends in liquidity ratio of deposit money banks are explained by the value of electronic cheques cleared.

As shown in table 2, the p-value for liquidity ratio is 0.0189 which is less than 0.05. This indicates a rejection of the null hypothesis. Therefore, automated clearing system has significant effect on the liquidity of deposit money banks in Nigeria.

Hypotheses Two

H_0: Automated clearing system has not had significant effect on the loan-to-deposit ratio of deposit money banks in Nigeria.

H_1: Automated clearing system has had significant effect on the loan-to-deposit ratio of deposit money banks in Nigeria.

Table 3: OLS Result for VCC and LDR

Dependent Variable: LDR
Method: Least Squares
Date: 02/10/22   Time: 02:39
Sample: 2002 2020
Included observations: 19

Variable	Coefficient	Std. Error	t-Statistic	Prob.
VCC	0.000712	0.000457	1.556743	0.1380
C	57.82908	6.414303	9.015645	0.0000
R-squared	0.124769	Mean dependent var		66.22349
Adjusted R-squared	0.073285	S.D. dependent var		15.72873
S.E. of regression	15.14143	Akaike info criterion		8.372047
Sum squared resid	3897.468	Schwarz criterion		8.471462
Log likelihood	-77.53445	Hannan-Quinn criter.		8.388872
F-statistic	2.423449	Durbin-Watson stat		1.709977
Prob(F-statistic)	0.137951			

Source: *E-views 10 OLS Regression Output, 2022*

The results shown in table 3 shows that the value of cheques cleared has positive effect on the loan-to-deposit ratio of deposit money banks in Nigeria. The regression coefficient of 0.000712 reveals that every billion naira increase in the value of cheques cleared would lead to an increase of 0.07% in the loan-to-deposit ratio of deposit money banks in Nigeria. The R-squared value of 0.124769 revealed that about 12% of the trends in loan-to-deposit ratio of deposit money banks are explained by the value of electronic cheques cleared.

The corresponding p-value shown in table 3 is 0.1380 which is greater than 0.05. This implies that the null hypothesis is accepted at the expense of the alternate hypothesis. Therefore, automated clearing system has no significant effect on the loan-to-deposit ratio of deposit money banks in Nigeria.

CONCLUSION AND RECOMMENDATIONS

The findings of the study leads the researcher to a conclusion that automated cheque clearing system has to a large extent contributed negatively to the performance of deposit money banks in Nigeria. This shows that banks have performed better in periods in which the value of electronic cheques cleared

were lower. Specifically, in terms of liquidity ratio, deposit money banks have performed better owing to the reduction in the value of automated cheque clearing system than before its inception. Banks have been able to secure more deposits and expand their asset base because automation of the cheque clearing process has made them more efficient in their services. However, banks have issued lesser percentage of their deposit as loans owing to reduction in the value of cheques cleared since the automation of the cheque clearing system.

Recommendations

Guided by the findings of this study, the researcher makes the following recommendations.

1. Adequate care should be taken to address new threats and risks that may be associated with the automation of the cheque clearing process so as to ensure that all stakeholders are assured of its accuracy thereby fully adopting its use.

2. Banks should continue to seek ways to automate certain other services that seem to delay banking transactions of customers. This would drastically improve their service delivery

References

Abu, S., Halilu, I. & Oluwatobi, O. (2021). E-payment Article. *International Journal of Management Studies & Entrepreneurial Development, 2*(1), 58-75

Anidiobu, G., Agu, B. & Ezinwa, C. (2016). Essence of cheque truncation system toward efficient financial service delivery in Nigeria. *Journal of Policy and Development Studies (JPDS), 10*(3), 72-81

Asmah, A. (2015). Factors that affect banks' acceptance of electronic cheque clearing system: Evidence from Ghana. Thesis is submitted to The University of Ghana, Legon.

Bhunia, A., & Khan, I. U. (2011). Liquidity management efficiency of Indian Steel Companies (a Case Study). Far East Journal of Psychology and Business, 3(3), 3-13. Retrieved from https://econpapers. repec.org/article/fejarticl/v_3 a3c_ 3ay_3a2011_3ai_3a1_3ap_3a3-13. Htm

Central Bank of Nigeria (2020). *Statistical Bulletin: Financial Statistics.* Abuja: CBN Publishers.

Chepkemoi, A. (2018). Influence of cheque truncation system project on financial performance of Kenyan commercial bank: A case of Nairobi county. A research project report submitted to the department of Project Planning and Management, University of Nairobi.

David, L. & Kaulihowa, T. (2018). The impact of E-banking on commercial banks' performance in Namibia. *International Journal of Economics and Financial Research, 4*(10), 313-321

Davies, N. & Chibuzor, I. (2019). Automated clearing system as an effective payment platform. *IIARD International Journal of Banking and Finance Research, 5*(2), 21-28

Gathuku, M. (2013). Effects of the cheque truncation system on the performance of commercial banks: A case of CFC Stanbic Bank. *International Journal of Economics and Finance, 1*(2), 340 – 356.

Mustapha, A. (2018). E-Payment technology effect on bank performance in emerging economies–evidence from Nigeria. *Journal of Open Innovation, Technology, Market and Complexity, 4*(43), 1-14.

Ndangoh, C. (2018). The electronic clearing system and settlement of debts. Thesis submitted to the department of Business Management, Centria University of Applied Science.

Nwakoby, C., Chukwu, K. & Oghenetega, O. (2020). Effect of cashless policy on deposit money banks profitability in Nigeria. *Asian Journal of Economics, Business and Accounting, 19*(4), 48-63

Nwaezeaku, N. C. (2006). Theories and Practice of Financial Management. Owerri: Ever Standard Publishing.

Olatunde, S. (2015). Basel II and Financial Performance of Deposit Money Banks in Nigeria (M.Sc. Thesis). Nigeria: Ahmadu Bello University. Retrieved from http://kubanni.abu.edu.ng/jspui/bitstream/123456789/8851/1/ BASEL%20II%20AND%20 FINANCIAL%20PERFOR-MANCE%20OF%20DEPOS-IT%20MONEY%20BANKS%20 IN%20NIGERIA.pdf

Ohiani, S. (2020). Technology innovation in the Nigerian banking system: prospects and challenges. *Rajagiri Management Journal, 15*(1), 1-15

Onuorah, A. (2009). Automated clearing system and the banking sector performance: The Nigerian experience. *International Journal of Development and Management Review (INJODEMAR), 4*(1), 220-232

Rychtárik, Š. (2009). Liquidity Scenario Analysis in the Luxembourg Banking Sector (BCL Working Papers No. 41). Central Bank of Luxembourg. Retrieved from https://ideas.repec.org/p/ bcl/bclwop/bclwp041.html

Shibly, H. (2011). An extended tam model to evaluate user's acceptance of electronic cheque clearing system at Jordanian commercial banks. *Australian Journal of Basic and Applied Sciences, 5*(5), 147-156