

## ARTICLE

# Automated Clearing System on Deposit Money Banks' Performance: Experience from the Nigerian Banks

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## ABSTRACT

This study majorly examined the effect of automated cheque clearing system on banks. Specifically, this study examined the effect of automated cheque clearing system on total deposits of deposit money banks in Nigeria. Data were extracted from the CBN Statistical Bulletin (2020). Using the ordinary least square method of analysis via E-views 10, the findings of the study revealed that deposit money banks' total deposits increased significantly owing to the decline in the value of cheques cleared, since the adoption of the automated cheque clearing system in Nigeria. Guided by the findings of this study, the researcher recommended that the regulatory authorities and banks should continue to liaise with each other on how to improve the efficiency of automated services so as to improve customer satisfaction and patronage.

**Keywords:** Automated cheque clearing system; Total deposit; Nigerian banks

## 1. Introduction

The banking sector, which plays an important role in a country's economic development, is no exception to the innovation orchestrated by this phenomenon in the twenty-first century. Prior to 1989, when technological innovations like Automated Teller Machines were introduced, banking practices in Ni-

geria were so primitive that customers could spend an entire day in the banking hall just to make a deposit or withdrawal, and in some cases had to return to the same bank the next day due to a long queue. Customers were unable to conduct transactions in another branch of the bank because banking operations were so based on "armchair brick and mortar" approaches at the time. Banking services in Nigeria

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were subpar during the conventional banking era because they were performed manually due to a lack of technological innovation<sup>[1]</sup>.

However, the advent of technology and its application since 1989 has undeniably refurbished the system, albeit with some hiccups. New technologies have transformed organizations by providing innovative ways of adding value to both existing and new markets, thereby creating opportunities that can extend firms' scope beyond organizational boundaries<sup>[2]</sup>.

Following the introduction of the Nigerian Automated Clearing System (NACS) in 2002, which automated the process of cheque clearing, was one significant application of technological innovation in the banking sector. The Bankers Committee initiated the Nigeria Automated Clearing System (NACS) in October 2002 as a mechanism for sorting cheques using the Magnetic Ink Character Recognition (MICR) format<sup>[3]</sup>. Even after the introduction of the automated cheque clearing system, another cheque clearing system, In 2012, the Cheque Truncation System (CTS) was implemented, which is the process by which physical cheques presented for payment in a bank are converted into an electronic form through scanning and the image is electronically transmitted to the clearing house for processing<sup>[3]</sup>.

It is evident in the literature that technological innovation has created enormous opportunities for banks not only in advanced countries but also in developing nations like Nigeria. However, the challenges this development has caused in the banking sector cannot be swept under the carpet because they are useful for policy and decision-making. The major problem observed in this study is that recently, a lot of policy changes have been made to the system of handling and clearing cheques and with the recent surges in other electronic means of payment such as ATMs and electronic funds transfers, the volume of cheque transactions seem to be on the decline. There is therefore need to justify the effort and financial outlays that have been committed towards the smooth running of the Nigeria Automated Clearing System on total deposits of deposit money banks in Nigeria.

## 2. Conceptual review

### 2.1 Cheque clearing

Cheque clearing, is the process of returning a cheque to the bank where the drawer has an account for verification and collection of the value. In general, every cheque goes through the clearing process, which involves confirming the validity of the instrument before the paying banker assigns value to the cheques<sup>[3]</sup>.

One key concept associated with cheque clearing is the cheque truncation system. Cheque truncation is a simplified banking model in which actual cheques are not sent to the paying bank, but instead are held in the receiving bank, which notifies the paying bank with digitized details of cheques received. Truncating a cheque is a process that involves stopping the physical movement of the cheque and replacing it with a scanned image of the cheque and the data contained in the Magnetic Ink Character Recognition Line<sup>[4]</sup>.

### 2.2 Theoretical framework

#### *Bank-focused theory*

This theory was popularized by Kapoor in 2010 and anchors on the premise that banks use non-traditional but conventional low-cost delivery channels to offer services to its customers. Such channels include automated teller machines (ATMs), mobile phone banking, Point of Sale (POS) among others. In using these platforms, the bank offers a large variety of services to its customers notwithstanding area and branch attachments. Enter the needed information into the system and the transaction is done.

This theory favours this study since the emphasis here is on electronic platforms as means of delivering services. The theory preferred banks in using non-traditional channels in offering banking services to their customers.

#### *Empirical review*

Used annual accounts in investigating the impact of the e-banking payment system on the performance of commercial banks in Nigeria<sup>[5]</sup>. E-cheque, ATM,

and POS were proxies for E-banking payments, whereas commercial bank performance was proxied by Return on Equity (ROE). The ex-post-facto research design is used, and the study spans the years 2009-2018. Diagnostic tests were performed, and an Auto Regressive Distributed Lag (ARDL) analysis was estimated using the Ordinary Least Square (OLS) method. The analysis tool is an e-view 10 statistical package. The analysis results show that current ATM, E-cheque, and POS values are statistically significant at less than 0.05. E-beta cheque's coefficient value was discovered to be positive. This means that E-cheque had a positive impact on bank performance. Examined the effectiveness of Automated Clearing System on the Nigerian Payment System <sup>[6]</sup>. The study covers cheque clearing processes (through the application of NBCS Cheque Truncation Model) which has facilitated efficient transfer of funds and enhanced the cashless policy of the Central Bank of Nigeria. Data were elicited using a stratified random sampling technique from current account holders and staff of three major banks in Nigeria. Interviews were also conducted with various funds transfer staff of the selected banks. Chi-square analysis was used to probe the association between the bank staff and account holders' responses. The study revealed that there is a significant agreement from the reports of the clearing staff and the customers of the banks. The study further lends support that there is a significant reduction in the length of time to complete a clearing cycle from T+3 to T+1 while the time of cheque return was reduced from T+1 to T. The study examined the data set for electronic payment performance in the Nigerian banking system <sup>[7]</sup>. The data used in the study included automated cheque clearing, electronic funds transfer, ATMs, POS and web pay. The data were analyzed using descriptive statistics such as means, frequencies and percentages. The findings of the study revealed that among the channels of e-payment systems, automated cheques have the lowest growth rate. The study investigated the significant effect of cheque truncation system (CTS) in the delivery of efficient financial services in Nigeria <sup>[3]</sup>. The study used desk research methodolo-

gy, reviewing extensive available relevant literature to provide direction to the topic under consideration. The study's findings revealed that the cheque truncation system reduced the time required for clearing cheques, improving the efficiency of Nigerian banks. Examined the nature of Electronic Cheque Clearing System (ECCS) in Ghana and explored banks' acceptance factors among Ghanaian Banks <sup>[8]</sup>. The purpose of this research was to understand the process of clearing cheques electronically in Ghana and to analyze and extend knowledge regarding influential factors that affect banks' accept ECCS. The research examines 25 commercial banks and 5 savings and loans companies which have different ways of adopting the technology. Data was collected through interviews, observations and direct participation while a survey instrument was used to gather data and Structural Equation Modelling (SEM) using Partial Least Squares (PLS) was used as the statistical model to analyze the data gathered. The findings revealed that whilst some banks centralize the process to reduce cost, other banks decentralize the process to enhance service delivery to customers. The study looked into the impact of an automated clearing system on the Nigerian banking system <sup>[9]</sup>. Secondary data were mostly obtained from publications published by the Central Bank of Nigeria and analyzed using t-test statistics to determine whether there was a significant difference between the pre and post automated clearing system. According to the findings, the automated clearing system has a significant positive impact on the overall payment system.

### 3. Methodology

#### 3.1 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. As the name implies "after the fact", the *Ex-Post Facto* research design draws a conclusion about a subject by analyzing facts that have already happened. This study is preferred for its lack of bias

or data manipulation as well as its suitability to the data used in this study.

### 3.2 Sources of data

The time series data on total assets and total deposits 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.

### 3.3 Model of the study

This study adopted a similar model which modelled return on investments (ROE) as a function of Electronic Funds Transfer (EFT), Namibia Inter-bank Settlement System (NISS) and Cheque issued (Cheque) as shown in Equation (1) <sup>[10]</sup>.

$$ROE = f(EFT, NISS, Cheque) \tag{1}$$

However, this study expresses Total Deposits (TDEP) as functions of Value of Cheque Cleared (VCC) as shown in Equations (2) and (3).

$$TDEP = f(VCC) \tag{2}$$

The functional models are modified to include parameters for data analysis. The modified models are shown in Equation (3).

$$TDEP = \alpha_0 + \alpha_1 VCC \tag{3}$$

where,  $\alpha_0$  is the constant term which accounts for the values of the bank performance variables which are not explained by automated cheque clearing system.  $\alpha_1$  is the coefficient of the regression.

### 3.4 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. An 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:

**Total Deposits:** Total deposits refer to the aggregation of deposits accumulated by the deposit money banks in Nigeria including demand, savings and timed deposits. It measures customer patronage of deposit money banks in Nigeria. This variable is expressed in billions of Naira.

### 3.5 Method of data presentation and 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 relationships with a satisfactory result. The OLS method provides the relevant statistics used to explain the relationship among variables. More so, the liability of this method lies in the desirability properties which are efficiency, consistency and unbiased. This implies that its error term has a minimum and equal variance.

## 4. Data analysis and result

### 4.1 Data analysis

The data used in this study are presented in **Table 1**. **Table 1** contains the post-NACS period bank performance indicators and the value of cheque cleared.

**Table 1.** Descriptive statistics.

	TDEP	VCC
Mean	11939.67	11787.55
Median	11452.76	7674.857
Maximum	31456.96	29436.02
Minimum	1157.112	4129.220
Std. Dev.	8586.415	7801.544
Skewness	0.452814	0.877166
Kurtosis	2.489772	2.477403
Jarque-Bera	0.855390	2.652709
Probability	0.652010	0.265443
Sum	226853.7	223963.4
Sum Sq. Dev.	1.33×10 <sup>9</sup>	1.10×10 <sup>9</sup>
Observations	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 in electronic cheque transac-

tions 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 show that liquidity ratio, loan-to-deposit ratio, total assets and total deposits have averaged annual figures of 49.8%, 66.22%, 20.617 trillion naira and 11.94 trillion naira respectively. The Jarque-Bera statistic reveals that all the variables are normally distributed as their p-values are all above 0.05. The skewness shows a positive designating a greater number of smaller values and this is considered exceptional. In Kurtosis on the other hand, the distribution is too emaciated showing that the distribution is more peaked than normal.

In **Table 2**, the correlation analysis supports ascertaining the degree of relationship between two or more variables. Pearson correlation coefficient was employed to evaluate the strength of trend of the relationship between the variables. The Pearson correlation analysis reveals that TDEP (-0.470), correlates negatively with VCC, showing that the degree of relationship between VCC and TDEP is 47%, and this is considered fair.

**Table 2.** Correlation matrix.

	VCC	TDEP
VCC	1	-0.469935
TDEP	-0.469935	1

## 4.2 Test of hypothesis

The hypothesis of the study is tested using the probability values (p-value) of the t-statistic. The decision rule states that if the p-value is less than the chosen level of significance, 5% (0.05), then the null hypothesis is rejected in favor of the alternate hypothesis. Otherwise, the null hypothesis is accepted while the alternate hypothesis is rejected.

### Hypothesis One

**H<sub>0</sub>:** Automated clearing system has not had a significant effect on the total deposits of deposit money banks in Nigeria.

**H<sub>1</sub>:** Automated clearing system has had a significant effect on the total deposits of deposit money banks in Nigeria.

The results shown in **Table 3** show that the value of cheques cleared has a negative effect on the total deposit of deposit money banks in Nigeria. The regression coefficient of -0.517213 reveals that every billion naira increase in the value of cheques cleared would lead to a decline of 517.21 million naira in the total deposit of deposit money banks in Nigeria. The R-squared value of 0.220839 revealed that about 22% of the trends in the total deposit of deposit money banks are explained by the value of electronic cheques cleared.

**Table 3.** OLS result for VCC and TDEP.

Variable	Coefficient	Std. Error	t-Statistic	Prob.
VCC	-0.517213	0.235624	-2.195072	0.0423
C	18036.34	3303.847	5.459194	0.0000
R-squared	0.220839	Mean dependent var		11939.67
Adjusted R-squared	0.175006	S.D. dependent var		8586.415
S.E. of regression	7798.970	Akaike info criterion		20.86067
Sum squared resid	1.03×10 <sup>9</sup>	Schwarz criterion		20.96009
Log likelihood	-196.1764	Hannan-Quinn criter.		20.87750
F-statistic	4.818343	Durbin-Watson stat		0.216137
Prob(F-statistic)	0.042333			

Source: E-views 10 OLS regression output, 2022.

**Table 2** shows that with a p-value of 0.0423 which is less than 0.05, indicating a rejection of the null hypothesis in favor of the alternate hypothesis. Therefore, automated clearing system has had a significant effect on the total deposits of deposit money banks in Nigeria.

## 5. Conclusions and recommendation

Automated cheque clearing implies that banks no longer need to physically receive the cheque slip in order to clear such transactions. Automated cheque clearing system has therefore reduced the time taken to confirm checking transactions. How this affected banks was what was examined majorly in this study. Using the ordinary least square method of analysis, the study found that deposit money banks' total deposits increased significantly owing to the decline in the value of cheques cleared, since the adoption of the automated cheque clearing system in Nigeria.

The probability value of the t-statistic however revealed that the effect was insignificant. This finding is in line with the prior expectation of the study. Also noted is that some manifestations of financial innovation such as electronic cheques have made some banking tasks more efficient and cheaper<sup>[10]</sup>. By so doing, banks are able to secure more customer patronage. Therefore, the decline in the value of automated cheques cleared since the automation of the cheque clearing process has caused an increase in the value of deposits amassed by deposit money banks.

Guided by the findings of this study, the researcher makes the following recommendations. The regulatory authorities and banks should continue to liaise with each other on how to improve the efficiency of automated services so as to improve customer satisfaction and patronage.

## Conflict of Interest

There is no conflict of interest.

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