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ELECTRONIC BANKING INNOVATIONS AND SELECTED BANKS PERFORMANCE IN NIGERIA

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ABSTRACT

In the past few years, Nigerian banks have embraced the global trend of digitalization in banking operations. Thus, after the consolidation and recapitalization exercises, many banks have strengthened and streamlined their facilities, tailored their services as well as automated their operations. In the heat of competition, banks are now adding to the stock of e-banking in order to maintain a competitive edge over their competitors. However, despite the rapid development in electronic banking innovations, it is not clear whether e-banking innovations have impacted positively and significantly on banks' performance in Nigeria. The main objective of this paper therefore is to estimate the impact of e-banking innovations (ATM transactions, mobile banking transactions, and point of sales transactions) on the performance of six selected banks in Nigeria. The study adopts a SURE model in the quantitative analysis of six selected old and new generation banks. The results indicate that automated teller machine transactions, point of sale transactions, mobile banking transactions are major e-banking innovations that contribute to old and new banks' performance in Nigeria. The study therefore concludes that the selected banks and other banks should intensify efforts to increase their asset base and continue to invest in e-banking innovations in order keep preforming well and also remain profitable. The study also calls for efficient management and utilization of funds to train and educate bank workers and general public regularly on how to deploy and use e-banking channels and other related technological innovations respectively.

Contribution/Originality: This study is among the first in Nigeria to estimate the impact of e-banking innovations (ATM transactions, mobile banking transactions, and point of sales transactions) on the performance of six selected banks in Nigeria since after the consolidation and recapitalization exercise. Unlike other similar studies, the study adopts a SURE model in the quantitative analysis of six selected old and new generation banks.

1. BACKGROUND AND MOTIVATION

Globalization, technological innovations and advanced development in different economies' financial system especially in this 21st century have really changed the dynamics of financial transactions globally (Johnnson, 2005). According to Oyewole *et al.* (2013) explosive growth in ICTs have removed the narrowed digital divide and turned business sphere into an electronic world (e-world). Nigerian banks are no exception as banks in Nigeria, especially after the consolidation and recapitalization exercises, have strengthened and streamlined their facilities, tailored their services as well as automated their operations in line with   those linked with account Balances, account statement, fixed deposit and check statements. Payment include those associated with credit and debit cards, funds

transfers, payments of utility bills and direct money payments. Finally, customer download account information, their profile, bank guidelines and bank annual reports and statement of accounts.

Statistics indicate that online shopping alone in Nigeria through banks is estimated at N62 billion in 2011 and by 2014 this has reached N150 billion which is trending in line with the rate of internet penetration estimated at 12.5 million users and in this segment group the affluent and the youth make up the major adopters (Onwuegbuchi, 2007).

On the customer end however, the story is not the same. A report by the National Space Research and Development Agency showed that only about 21 Percent of Nigerians out of 170 million actively make use of the internet, putting internet service point in the country at 885,469. KPMG review for 2013 put value of daily electronic funds transfers in Nigeria at N80 billion, number of ATM deployed at 11,700, number of cards issued at 26 million and number of ATM deployed at 117,000 numbers of cards issues at 26 million and number of POS terminals at 170000 (KPMG, 2013).

Nigeria has adopted several reforms to reposition her financial sector and improve banking performance. These policies ranges from financial liberalization, capitalization and consolidation, electronic banking, cashless policy, non –interest banking, and most recently Bank Verification Number to stabilize the financial system and eliminate fraud. These Financial sector reforms and development have played a vital role in promoting bank performance in Nigeria through electronic banking. Electronic banking development emanates with changes in the form of innovations.

Figure 1 depicts stylized facts on trend performance of the electronic payment channels in Nigeria. As depicted in the figure, value of ATM cash dispensing and transactions rose from N63.2 billion in 2006 to N399.7 billion in 2008 and further increased to N548.60 billion in 2009. The value of ATMs fell sharply to N399.71 billion in 2010 but thereafter rose rapidly N1, 561.74 billion in 2011. The value of ATMs further increased from N1, 984.66 billion in 2012 to N3, 679.88 billion in 2014.
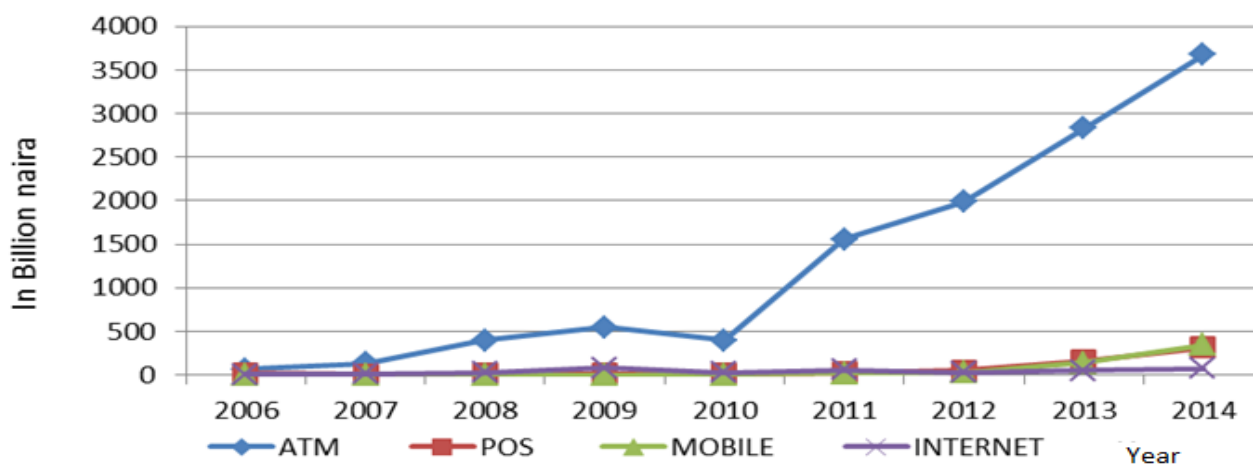

Figure-1. Performance of E-payment channels in Nigeria, 2006-2014

Source: CBN (2015) and Researcher's computation, (2015)

The value of POS transactions declined from N20.2 billion in 2006 to N6.4 billion in 2007. The value of POS thereafter increased rapidly to N16.1 billion in 2008 but fell again to N11.03 billion in 2009. The value of POS thereafter increased from N12.72 billion in 2010 to N48.01 billion in 2012. The value of POS then increased rapidly from N 161.02 billion in 2013 to N312.07 billion in 2014 (CBN, 2015).

Statistics in figure 1 further showed that the value of mobile payments increased consistently from N0.10 billion in 2006 to N1.27 billion in 2009 and increased further to N18.98 billion in 2011. The value of mobile transaction increased further from 142.80 billion in 2013 to N346.47 billion in 2014. The increase in the use of mobile payment system was due to the increase in the number of banks offering the services and increased public

confidence in e-payments. Further examination of information in figure 1 showed that the value of internet transaction rose from N3.0 billion in 2006 to N25.1 billion in 2008 and thereafter rose sharply to N84.15 million in 2009. The value of internet transaction declined to N25.05 billion in 2010 before rising consistently to N74.04 billion in 2014 (CBN, 2015).

During the same period, returns on asset (ROA) declined from 1.85 percent in 2005 to 1.61 percent in 2006 but increased consistently to 3.95 percent in 2008 and fell to 1.85 percent in 2009. In the same period, return on equity (ROE) increased from 10.60 percent in 2006 to 23.84 percent in 2007 and then fell sharply to -22.80 percent in 2009 and thereafter increased rapidly to 26.50 percent in 2010. Return on asset increased gradually from 2.08 percent in 2010 to 4.10 percent in 2012 but fell to 3.13 percent in 2014 and then rose slightly to 4.01 percent in 2015. On the other hand, return on equity fell to 0.50 percent in 2011 and rose sharply to 11.20 percent in 2012 and thereafter fluctuated between 10.10 percent and 21.23 percent from 2013 to 2015 (see figure 2).

Figure-2. Performance of Return on Assets (ROA) and Return on Equity (ROE) (2006-2015)
Source: CBN (2016) and Researcher's Computation, 2015

Notwithstanding the rapid increase in both the volume and value of the various payment channels in Nigeria, the e-payment system is not without its dark side. In Nigeria, Internet banking and ATM are the leading channels for perpetuating e-fraud. Statistics show that the volume of e-fraud reported was 822 in 2013 and in 2014, the volume rose rapidly to 1,461 (CBN, 2015). In the literature, studies such as Kato *et al.* (2014); Aduda and Kingoo (2012) and Al-Smadi and Al-Wabel (2011) have been conducted to investigate the impact of different aspect of electronic banking on the performance of banks in Kenya, Jordan and other developing countries and found mixed results.

Again, in Nigeria there is a serious debate on whether the financial sector reforms have contributed to performance of the banking sector. This is because the Nigeria's financial system is not effectively providing its development roles as such and is currently not in a position to fulfill its potential as a propeller of economic growth and development (Nkoro and Uko, 2013). And in spite of the banking sector reforms in the areas of bank recapitalization, electronic banking and effective corporate governance, the Nigeria's major productive sectors have not really performed optimally, thus prompting the arguments as to the efficacy of the reforms. Thus, despite the rapid development in electronic banking innovations, it is not clear whether e-banking innovations have impacted positively and significantly on banks' performance in Nigeria. The main objective of this paper therefore is to estimate the impact of e-banking innovations (ATM transactions, mobile banking transactions, and point of sales transactions) on the performance of six selected banks in Nigeria. The paper is structured as follows: Section 2 focuses on data and methodology. The results and discussion are presented in section 3, while section 4 concludes the paper.

2. DATA AND METHODOLOGY

Data used for the study were sourced from Central Bank of Nigeria Publications, National Bureau of Statistics Publication and the sampled commercial banks' annual report and statement of accounts between 2007 and 2016. This period is chosen because of the increase in awareness of e-banking innovations across the 24 Nigerian deposit money banks immediately after the banking consolidation exercise in Nigeria. The selected deposit money banks for this study include: First Bank of Nigeria Plc, United Bank for Africa Plc, Union Bank of Nigeria Plc, Zenith Bank Plc, Guaranty Trust Bank Plc, and Diamond Bank Plc. The six banks are chosen based on the fact that the first three represents the old generation banks and the last three represent new generation banks in Nigeria.

The empirical model for this study can be expressed functionally as:

$$\text{ROA} = f(\text{ATM, POS, MOB, SIZE, PIV, INFL}) \tag{4.1}$$

Where:

ROA = return on assets, measuring performance of deposit money banks.

ATM = value of Automated Teller Machines transactions

POS = value of Point of Sales transactions

MOB = mobile banking transactions

SIZE = bank size, represented by total assets of the banks

PIV = private investment in Nigeria.

INFL = inflation rate, measuring macroeconomic instability

Econometrically, equation 4.1 can be expressed in its linear form as:

$$\text{ROA}_{it} = \beta_0 + \beta_1 \text{ATM}_{it} + \beta_2 \text{POS}_{it} + \beta_3 \text{MOB}_{it} + \beta_4 \text{SIZE}_{it} + \beta_5 \text{PIV}_{it} + \beta_6 \text{INFL}_{it} + \mu \tag{4.2}$$

Where:

β_0 to β_6 are the parameters to be estimated

$\mu=$ Stochastic error term

t=   time dimension of the variables

This study employs the Seemingly Unrelated Regression Equations (SURE) in the modeling of equations for this study. A seemingly unrelated regression equation (SURE) is a system of equations comprising several individual relationships that are linked by the fact that their disturbances are correlated. The SURE model can be expressed analytically by considering a model comprising of M multiple regression equations of the form:

$$y_{ti} = \sum_{j=1}^{ki} x_{tij} \beta_{ij} + \varepsilon_{ti}, t = 1,2,...,T; i = 1,2,...,M; j = 1,2,....,K_i \tag{4.3}$$

Where: y_{ti} is the tth observation on the ith dependent variable which is to be explained by the ith regression equation, X_{tij} is the ith observation on j^{th} explanatory variable appearing in the ith equation, β_{ij} is the coefficient associated with X_{tij} at each observation and ε_{ti} is the ith value of the random error component associated with equation of the model.

The M system of equations can be expressed in a compact way as:

$$Y_i = X_i \beta_i + \varepsilon_i, I = 1, 2,...,M \tag{4.4}$$

Where: y_i is (T x 1) vector with element y_{ti}; X_i is (T x K_i) matrix whose columns represent the T observations on an explanatory variable in the ith equation; β_i is a (K_i x 1) vector with elements β_{ij}; and ε_i is a (T x 1) vector of disturbances.

The M equations can be further expressed as:

$$
\begin{bmatrix} y_1 \\ y_2 \\ \cdot \\ \cdot \\ y_3 \end{bmatrix} = \begin{bmatrix} X_1 & 0 \ldots\ldots\ldots & 0 \\ 0 & X_2 \ldots\ldots\ldots & 0 \\ & \cdot & \\ \cdot & \cdot & \cdot & \cdot \\ \cdot & \cdot & \cdot & \cdot \\ 0 & 0 \ldots\ldots\ldots & X_M \end{bmatrix} \cdot \begin{bmatrix} \beta_1 \\ \beta_2 \\ \cdot \\ \cdot \\ \beta_3 \end{bmatrix} \cdot + \begin{bmatrix} \varepsilon_1 \\ \varepsilon_2 \\ \cdot \\ \cdot \\ \varepsilon_3 \end{bmatrix} \cdot
$$

4.5

Or

Y = Xβ + ε   4.6

Where the order of Y is (TM x 1), X is (TM x K*), β is (K* x 1), ε is (TM x 1) and $K^* = \sum_i K_i$

2.1. Description and Justification of Variables

Dependent Variable

Return on Assets (ROA): Return on assets is the ratio of annual net income to average total assets of a business during a financial year. It measures efficiency of the business in using its assets to generate net income. Return on assets (ROA) assesses how efficiently a bank is managing its revenues and expenses, and also reflects the ability of the management of the bank to generate profits by using the available financial and real assets (Jahan, 2012).

$$\text{Return on assets (ROA)} = \frac{\text{Annual net income}}{\text{Average total assets}}$$

Net income is the *after-tax income which can be found on income statement of companies. Average total assets are calculated by dividing the sum of total assets at the beginning and at the end of the financial year by 2.

Independent Variables

Automated Teller Machine (ATM): These are computer-enhanced telecommunication machines that permit bank customers to have accessibility to cash and perform financial transactions, usually situated in public places and in the enclosure of banks. Automated teller machine (ATMs) is captured in this study by value of ATMs transactions in the studied banks in Nigeria. An increase in the number of ATMs leads to an increase in the volume and value of transactions. The increase in the volume and value of ATM transaction enhances the payment system in turn, which leads to banking sector performance. Thus, the coefficient of ATMs is expected to be positive in relation to banking performance.

Mobile Banking (MOB): This is the process whereby formal banking transactions are carried out through the use of telephone and mobile phones. Mobile banking allows its customers to conduct some financial transactions remotely using a mobile device such as a mobile phone or tablet. Mobile banking is represented by value of mobile banking transactions in the sampled banks for this study. An increase in the volume and value of mobile banking transactions enhance payment system and hence increase in bank performance. Therefore, the coefficient of mobile banking variable is expected to be positive.

Point of Sale (POS) terminal: This is a machine used to accept cards for payment of goods and services. POS terminal allows a cardholder to have a real-time online access to funds and information in his/her bank account through debit or cash cards. POS system can include the ability to record and track customer orders, process credit and debit cards, connect to other systems in a network, and manage inventory. Point of sale terminal is represented in this study by value of point of sale transactions. A positive relationship is expected on the coefficient of POS since POS terminal reduces the cost of banks transactions, access to credit and reduces the cost of setting bank infrastructure such as bank branches as a case may be.

Control Variables

Bank Size (Size): This represents the economies and diseconomies of scale associated with firm size. Bank size is captured in this study by bank assets. According to the financial intermediation theory, banks can only make profit as a result of the degree of economies of scale. For example, larger banks that engaged on oligopoly can enjoy low transaction cost and retained high profit (Flamini *et al.*, 2009). Also, these banks would have access to larger levels of loans, product diversification and market assess compared to smaller banks (Guru *et al.*, 2002).

Private investment: This is the purchase of a capital asset that is expected to produce income, appreciate in value, or both generate income and appreciate in value. This type of investment is undertaken by the private individuals mainly for profit motives. It is argued that an increase in accumulation of capital stock increases the overall investment level in the country including investment in financial sector. Thus, an increase in capital formation leads to an increase in investment and hence an increase in banking sector performance. The coefficient of private investment is expected to be positive.

Inflation (INF): This is consistent and sustained increase in the general level of prices in the country. The extent to which inflation impacts on the profitability of deposit money banks depends on the rational expectations. It is ambiguous. It may be negative or positive. That is, whether the inflation is anticipated or unanticipated. If the rate is anticipated it may be that the bank can plan ahead by adjusting interest rate which increases it faster than cost thus impacting positively on profit. If inflation rate is unanticipated, it could lead to increase in cost due to imperfect interest rate adjustment and hence reduces profit (Kehinde and Adejuwon, 2011). For this study, we expect inflation rate to have a negative effect on profit of the banks. This is because high inflation rate discourages savings as the value of money is reduced. People will prefer to spend their cash rather than save. A reduction in saving reduces the ability of banks to mobilize deposit which can be lent out and earn profit from interest charged. Thus, inflation is expected to exert a negative impact on bank performance.

The general assumption of Cross-Sectional independence as applicable to first generation panels, the Im-Persaran-Shin (IPS) test was used to test for the presence of unit root in the panel series. This test controls the assumption of the Levin-Lin-Chu test, that ρ_i must be the same for all series under the alternative hypothesis.

The Correlation Matrix Test

The Correlation matrix test was conducted to choose either OLS or SURE estimation methods, and Simultaneous covariance testing was employed to investigate whether there are correlations between SURE errors. For the simultaneous covariance test, r(ij) values are calculated. Firstly variance-covariance and correlation matrices are calculated from the errors obtained from the SURE method to show how SURE model is appropriate.

3. RESULTS AND DISCUSSION

Table-3.1. Unit Root Test at 5% Significance Level

	Levin, Lin and Chu Test				Pesaran and Shin Test				Order
	Levels		Ist difference		Levels		1stdifference		
	T-stat	P V	T-stat	PV	T-stat	P V	T-stat	PV	
ROA	-0.21631	0.4144	-5.64362	0.0000	1.14700	0.8743	-2.01737	0.0218	I(1)
ATM	1.14561	0.8740	-2.84732	0.0022	2.58283	0.9951	-0.4077	0.3417	I(1)
POS	-1.64057	0.0504	-3.29433	0.0005	-1.45695	0.0726	-0.89181	0.1862	I(1)
MOB	1.75543	0.9604	-3.55364	0.0002	1.41775	0.9219	-0.05832	0.4767	I(1)
SZE	1.25723	0.8957	-22.4264	0.0000	3.53508	0.9998	-4.09890	0.0000	I(1)
PIV	0.0000	1.0000			-7.8E+12	0.0000			I(0)
INF	49.9058	1.0000			8.76045	1.0000			1(0)

The result in table 3.1 showed the series used for the respective banks using both Levin-Lin-Chu test and the Persaran-Shin test. All the variables were integrated of order one except PIV and INF was found to be stationary at first difference.

3.1. Analysis of Empirical Results for Banks

Table-3.2. The Estimated **SURE** model Result for New Generation Banks (Diamond Bank)

DEPENDENT VARIABLE (RoA)

Variables	Coefficients	Std. Error	T-Tatistics	P_Value
CONSTANT	–5.166044	3.5248	–1.465590	0.2804
Log(ATM)	0.357614	0.1559	2.293360	0.1488
Log(POS)	–0.148506	0.23479	–0.632485	0.5917
Log(MOB)	0.098114	0.1133	0.865888	0.4778
Log(PIV)	0.101406	0.02022	5.013861	0.0376
SIZE	2.29E-09	4.91E-10	4.674025	0.0429
INFL(-1)	–0.395887	0.102830	–3.849900	0.0613
R-squared	0.984975			
Adjusted R-Squared	0.939899			
DurbinWatson Stat.	2.011888			

3.1.1. Analysis of Empirical Results for New Generation Banks (Diamond Bank)

The Estimated SURE model result for Diamond bank revealed that Log(ATM) , Log(MOB), Log(PIV) and BANK SIZE are positively related to return of assets which are consistent with apriori expectation because of their signs and magnitude while Log(POS) and INFL(-1) are negatively related to return on asset which does not conform to apriori expectation indicating that a unit increase in Log(ATM) , Log(MOB), Log(PIV) and SIZE will lead to a corresponding increase in ROA by (0.357614) units, (0.098114)units (0.101406) units and (2.29E-09) units respectively with a minimum standard error of 35 percent for Log(ATM), 11 percent for Log(MOB), 2 percent for Log(PIV).

In contrast, Log (POS) and INFL (-1) have a negative relationship with ROA implying that a unit increase in Log (POS) and INF (-1) will reduce return on asset by -0.148506 and -0.395887 respectively with a minimum standard error of 23 percent for Log(POS) and 10 percent for INFL(-1).

Therefore, based on the findings, ATM, PIV and BANK SIZE have a positive and significant impact on return on asset indicating that ATM, PIV and BANK SIZE are the major determinants of Diamond bank performance in Nigeria.

This result is in line with the study conducted by Mohamad and Saad (2010) in Malaysia using Chi-square methods of analysis. Findings from the study indicates that adoption of e-banking has benefited bank customers greatly as it helped overcome the hindrance associated with the traditional banking system. But contrary with the study conducted by Al-Smadi and Al-Wabel (2011) in Jordan using ordinary least square (OLS) which revealed that e-banking has significant negative effect on the performance of banks.

The value of R-squared for the Diamond bank estimated SURE model result is pegged at 0.98 indicating that ATM, POS, MOB, SIZE, PIV and INFL explained about 98% systematic variation in the level of profit over the observed years in the Nigerian banks while the remaining 2% variation is explained by other determining variables outside the model.

3.1.2. Analysis of Empirical Results for New Generation Banks (Guaranty trust bank)

Table-3.3. The Estimated **Sure** model Result for New Generation Banks (Guaranty trust bank)

DEPENDENT VARIABLE (RoA)

Variables	Coefficients	Std. Error	T-Statistics	P_Value
CONSTANT	125.0471	55.25277	2.263183	0.1520
ATM	9.92E-12	0.002775	4.562638	0.0448
Log(POS)	-1.000435	0.128910	-7.760719	0.0162
Log(MOB)	0.30752	0.037072	10.27057	0.0093
Log(PIV)	0.012663	2.389568	-1.678047	0.2353
Log(SIZE)	-4.009807	2.18E-12	4.547292	0.0451
INFL(-1)	0.229970	0.040569	5.668674	0.0297
R-squared	0.936446			
Adj. R-Squared	0.745783			
D.Watson Stat.	2.121107			

Analysis of Empirical Results for New Generation Banks (Guaranty Trust Bank)

The estimated SURE model result for GTB bank revealed that Log(PIV), Log(MOB), ATM and INFL(-1) are positively related to return of assets which are consistent with apriori expectation because of their signs and magnitudes while Log(POS) and Log(SIZE) are negatively related to return on asset which does not conform to apriori expectation indicating that a unit increase in Log(PIV), Log(MOB), ATM and INFL(-1) will lead to a corresponding increase in ROA by (0.012663) units, (0.380752)units (9.92E-12) units and (0.229970) units respectively with a minimum standard error of 1.2 percent for Log(PIV), 3 percent for Log(MOB), 21 percent for ATM and 4 percent for INFL(-1).In the same view, Log(POS and Log(SIZE) have a negative relationship with return on asset which does not conform with the apriori expectation indicating that a unit increase in Log(POS) and Log(SIZE) will reduce return on asset by (-1.000435) units and (-4.009807) units with a minimum standard error of 12 percent for Log(POS), 23 percent for Log(SIZE). Therefore, based on the findings, PIV, MOB, ATM and INF have a positive and significant impact on return on asset implying that PIV, MOB, ATM and INF are the major determinants of Guaranty trust bank performance in Nigeria.

This result is in line with the study conducted by Oyewole *et al.* (2013) in Nigeria using panel data method of analysis which revealed that e-banking contribute positively to bank performance in Nigeria with a time lag of two years while a negative impact was observed in the first year of adoption. The value of R-squared for Guaranty Trust Bank estimated SURE model result is pegged at 0.93 indicating that the explanatory variables explained about 93% systematic variation in the level of profit over the observed years in the Nigerian banks while the remaining 7% variation is explained by other determining variables outside the model.

3.1.3. Analysis of Empirical SURE model Results for New Generation Banks (Zenith Bank)

Table-3.4. Analysis of Empirical SURE model Results for New Generation Banks (Zenith bank)

DEPENDENT VARIABLE (RoA)

Variables	Coefficients	Std. Error	T-Statistics	P_Value
CONSTANT	8.40E+09	5.55E+09	1.513506	0.2693
Log(ATM)	1.01E+09	1.10E+08	9.191025	0.0116
Log(POS)	-4.710346	1.006341	-4.680664	0.0427
Log(MOB)	5.33E+08	8.0426950	6.626528	0.0220
Log(PIV)	0.357491	0.056390	6.339571	0.0240
SIZE	0.438812	0.169542	2.588214	0.1225
INFL(-1)	-0.0000107	3.41E-05	-3.148421	0.0878
R-squared	0.997			
Adjusted R-squared	0.991			
Durbin Watson Stat.	1.77			

Analysis of Empirical Results for New Generation Banks (Zenith Bank)

The estimated SURE model result for Zenith bank revealed that Log(ATM(-1)), PIV, MOB and INFL(-1) are positively related to return of assets which are consistent with apriori expectation because of their signs and magnitudes while POS and SIZE are negatively related to return on asset which does not conform to apriori expectation indicating that a unit increase in Log(ATM(-1)), PIV, MOB and INFL(-1) will lead to a corresponding increase in return on asset by (1.01E+09) units, (5.33E+08)units, (0.357491) units and (0.438812) units respectively with a minimum standard error term of 11 percent for Log(ATM(-1)), 8 percent for PIV, 5 percent for MOB and 10 percent for INFL(-1). In the same view, Log(POS) and Log(SIZE) have a negative relationship with return on asset which does not conform with the apriori expectation indicating that a unit increase in Log(POS) and Log(SIZE) will reduce return on asset by (-4.710346) units and (-0.000107) units with a minimum standard error term of 10 percent for Log(POS), 16 percent for Log(SIZE). Therefore, based on the findings, ATM, PIV, MOB, and INF have a positive and significant impact on return on asset which means that PIV, MOB, ATM and INF are the major determinants of Zenith bank performance in Nigeria.

The value of R-squared (0.99) for the Zenith bank estimated SURE model result is pegged at 99% indicating that ATM, POS, MOB, SIZE, PIV and INFL explained about 99% systematic variation in the level of profit over the observed years in the Nigerian banks while the remaining 1% variation is explained by other determining variables outside the model.

3.1.4. Analysis of Empirical Results for Old Generation Banks (United Bank for Africa)

Table-3.5. The Estimated **Sure** model Result for Old Generation Banks (United Bank for Africa)

DEPENDENT VARIABLE (RoA)

Variables	Coefficients	Std. Error	T-Statistics	P_Value
CONSTANT	8.93E+09	6.31E+09	1.414548	0.2928
Log(ATM(-1))	9.94E+08	1.35E+08	7.385487	0.0178
POS	-4.602681	1.145970	-4.016405	0.0568
PIV	0.360519	8.9775393	6.211937	0.0249
MOB	0.360519	0.064242	5.611919	0.0303
INFL	-0.395439	0.219353	-1.802748	0.2132
SIZE	-0.000162	4.11E-05	-3.932576	0.0590
R-squared	0.997148			
Adj.R-Squared	0.988590			
DW Stat.	1.916117			

Analysis of Empirical Results for Old Generation Banks (United Bank for Africa)

The estimated SURE model result for United Bank for Africa revealed that Log(ATM(-1)), PIV and MOB are positively related to return of assets which are consistent with apriori expectation because of their signs and magnitudes indicating that a unit increase in Log(ATM(-1)), PIV and MOB will lead to a corresponding increase in return on asset by (9.94E+08) units, (5.58E+08) units and (0.360519) units respectively with a minimum standard error term of 13 percent for Log(ATM(-1)), 8 percent for PIV and 6 percent for MOB. In the same view, POS, INFL and SIZE have a negative relationship with return on asset which does not conform to apriori expectation indicating that a unit increase in POS, INFL and SIZE will reduce return on asset by (-4.602681) units, (-0.395439) units and (-0.000162) units with a minimum standard error term of 11percent for POS, 20 percent for INFL and 41 percent for Bank SIZE.

Therefore, based on the findings, ATM, PIV and MOB have a positive and significant impact on return on asset which implies that PIV, MOB, ATM and INF are the major determinants of United Bank for Africa performance in Nigeria. The value of R-squared (0.99) for UBA estimated SURE model result is pegged at 99% indicating that the explanatory variables explained about 99% systematic variation in the level of profit over the

observed years in the Nigerian banks while the remaining 1% variation is explained by other determining variables outside the model.

3.1.5. Analysis of Empirical Results for Old Generation Banks (Union Bank)

Table-3.6. The Estimated Sure Model Result for Old Generation Banks (Union bank)

DEPENDENT VARIABLE (RoA)

Variables	Coefficients	Std. Error	T-Statistics	P_Value
CONSTANT	8.40E+09	5.55E+09	1.513506	0.2693
Log(ATM(-1))	1.01E+09	1.10E+08	9.191025	0.0116
Log(POS)	-4.710346	1.006341	-4.680664	0.0427
PIV	5.33E+08	8.0426950	6.626528	0.0220
MOB	0.438812	0.056390	6.339571	0.0240
INFL(-1)	0.438812	0.169542	2.588214	0.1225
SIZE	-0.000107	3.41E-05	-3.148421	0.0878
R-squared	0.997			
Adj. R-squared	0.991			
DW. Stat	1.776			

The estimated SURE model result for Union bank of Nigeria revealed that Log(ATM(-1)), PIV, MOB and INFL(-1) are positively related to return of assets which are consistent with apriori expectation because of their signs and magnitudes indicating that a unit increase in Log(ATM(-1)), PIV, MOB and INFL(-1) will lead to a corresponding increase in return on asset by (1.01E+09) units, (5.33E+08) units, (0.438812) units and (0.438812)units respectively with a minimum standard error term of 55 percent for Log(ATM(-1)), 11 percent for POS and 5 percent for MOB. In the same view, POS, and SIZE have a negative relationship with return on asset which does not conform to apriori expectation indicating that a unit increase in POS, and SIZE will reduce return on asset by (-4.710346) units, and (-0.000107) units with a minimum standard error term of 10percent for POS and 34 percent for INFL.

Therefore, based on the findings, ATM, PIV, MOB and INFL have a positive and significant impact on return on asset which indicates that ATM, PIV, MOB and INFL are the major determinants of Union bank of Nigeria performance in Nigeria. The value of R-squared for Union bank estimated SURE model result is pegged at 99% indicating that the explanatory variables explained about 99% systematic variation in the level of profit over the observed years in the Nigerian banks while the remaining 1% variation is explained by other determining variables outside the model.

3.1.6. Analysis of Empirical Results for Old Generation Banks (First Bank of Nigeria)

Table-3.7. The Estimated Sure model Result for Old Generation Banks (First bank of Nigeria)

DEPENDENT VARIABLE (RoA)

Variables	Coefficients	Std. Error	T-Statistics	P_Value
CONSTANT	-6.04E+09	1.62E+09	-3.737974	0.0647
Log(ATM)	0.007768	0.001810	4.291159	0.0502
Log(POS)	0.131288	0.048637	2.699355	0.1142
Log(MOB(-1))	-0.249340	0.065288	-3.819075	0.0622
SIZE	1.621500	0.338394	4.791750	0.0409
PIV	-6.37E-05	2.28E-05	-2.794306	0.1078
INFL(-1)	-5.87E+08	1.34E+08	-4.372144	0.0485
R-squared	0.987512			
Adj. R-Squared	0.950049			
Durbin Watson Stat.	2.801695			

The estimated SURE model result for First Bank of Nigeria revealed that ATM, POS and SIZE are positively related to return of assets which are consistent with apriori expectation because of their signs and magnitudes indicating that a unit increase in ATM, POS and SIZE will lead to a corresponding increase in return on asset by (0.007768) units, (0.131288) units and (1.621500) units respectively with a minimum standard error term of 0.1 percent for ATM, 4 percent for POS and 30 percent for SIZE.

In the same view, MOB (-1), PIV and INFL (-1) have a negative relationship with return on asset which does not conform to apriori expectation indicating that a unit increase in MOB, PIV and INFL(-1) will reduce return on asset by (-0.249340) units, (-6.37E-05) and (-5.87E+08) units with a minimum standard error term of 6 percent for MOB,22 percent for PIV and 13 percent for INFL.

Therefore, based on the findings, ATM, POS, SIZE have a positive and significant impact on return on asset which indicates that ATM, POS, SIZE are the major determinants of First Bank of Nigeria performance in Nigeria.

This result is in line with the study conducted by Agboola (2006) in Nigeria using survey data Analysis, which revealed that there has been significant migration of people away from holding cash to automated transactions, there by leading to the reduction in the volume of cash in circulation. But contrary with the study conducted by Al-Smadi and Al-Wabel (2011) in Jordan using Ordinary least square analysis, which revealed that the adoption of electronic banking has significant negative effect on the performance of banks in Jordan.

The value of R-squared (0.98) for the First bank of Nigeria estimated SURE model result is pegged at 98% indicating that ATM, POS, MOB, SIZE, PIV and INFL explained about 98% systematic variation in the level of profit over the observed years in the Nigerian banks while the remaining 2% variation is explained by other determining variables outside the model.

4. CONCLUSION AND POLICY RECOMMENDATION

The use of e-banking is wide spread in banks and most financial institutions nowadays. The internet has really changed the dimensions of competition in the retail banking sector. New distributive channels used in rendering services to customers are being achieved. Bankers and banks customers have adopted e-banking because of acceptance of the new innovative information technology of which customers in Nigeria are not exempted. The notion that e-banking would significantly impact on return on asset (profitability) has been established in this study which means that e-banking is an integral part of the participating bank's business strategies to make profits.

The finding from this study presented significant progress toward understanding the nature of e-banking and its perceived impact on commercial banks in Nigeria. Findings revealed that in sum, Automated teller machine, point of sale, mobile banking and bank size were positive and statistically significant factors contributing to old and new generation banks performance in Nigeria compared to other e-banking indicators. This finding is interesting but not surprising because of the rate of usage of these factors and structural changes that affected banks performances in Nigeria. The finding is in contrast to the study conducted by Hernando and Nieto (2006) that found a negative effect deposit growth on return on equity for Spanish banks using GLS Estimation.

Summarily, the study has shown that electronic banking innovations impact on the overall banking performance and the impact is significant. Again, the major determinants of banks performance among the variables captured in the study are automated teller machine, point of sale, mobile banking and bank size.

Electronic banking innovation impact on the overall banking performance and the impact is significant. The major determinants of banks performance among the variables captured in the study are automated teller machine, point of sale, mobile banking and bank size. The study therefore recommends that the selected banks and other banks should intensify efforts to increase their asset base and continue to invest in e-banking innovations in order keep preforming well and also remain profitable. The study also calls for efficient management and utilization of funds to train and educate bank workers and general public regularly on how to deploy and use e-banking channels and other related technological innovations respectively.

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