ASSET-LIABILITY-MIX AND FINANCIAL PERFORMANCE OF DEPOSIT MONEY BANKS IN NIGERIA

By

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ABSTRACT

One of the key issues faced by Deposit Money Banks is that of liquidity which arises as a result of poor decisions regarding the right mix of assets and liabilities used in financing the business. The purpose of this study was to examine how asset-liability-mix of DBMs in Nigeria affect their financial performance. Specifically, we examined the relationship between cash and cash equivalents; loans and advances; other assets; deposits; and other liabilities and financial performance. Employing the descriptive and correlational design approaches we surveyed all the 22 DMBs in Nigeria. Secondary data was obtained from the Statistical Bulletin of the CBN and analyzed using statistical cost accounting OLS model to examine the relationship between asset-liability-mix and financial performance. The study established significant positive relationships between cash and cash equivalents; loans and advances; and other assets, on one hand, and financial performance, on the other. Deposits had insignificant positive relationship, while other liabilities had insignificant negative relationship with financial performance. It was recommended that bank directors and managers should closely monitor asset and liability levels and quality by ensuring strict compliance with the CBN Prudential Guidelines, Circulars, and bank specific risk thresholds as a means of achieving optimal asset-liability-mixes for enhanced financial performance; and the CBN should occasionally tinker with the regulatory policy requirements towards a more convenient environment to enhance bank performance.

Keywords: Asset-liability-mix; Financial performance; Deposit Money Banks; Nigeria

1.0 INTRODUCTION

1.1 Background of the Study

The banking industry in Nigeria plays a very significant role in economic development of the country. According to the World Bank (2016) the banking industry in particular plays a vital role in the economic development of Nigeria by mobilizing savings and channeling them for investment in the real sector of the economy. Real sector such as agriculture, trade, manufacturing, mining and construction contribute significantly to GDP. According to a report by Businessday newspaper in February 2019, Nigerian Bureau of Statistics reported that the Nigeria Gross Domestic Product (GDP) at basic constant price (real GDP) grew by 2.27 per cent year-on-year (YoY) from N69.80 trillion in 2018 to N71.39 trillion in 2019 compared to 1.91 per cent in 2018. The growth was largely due to the contributions of the agricultural sector (N10.50 trillion), trade sector (N5.94 trillion) and the information and communication sector (N4.66

trillion) with 25.2 per cent, 16 per cent and 13 per cent shares of the total GDP respectively in 2019. Without the contribution of the banking industry in financing these sectors, it may be hard if not impossible to achieve such growth rate in GDP. This may partly explain why the financial performance of the banking sector is of interest not only to government but researchers as well.

To this end, several researchers have paid significant interest on factors that promote the financial performance of banks in Nigeria. Empirically, scholars have examined the relationship between risk management and financial management of banks in Nigeria (Adeusi, Akeke & Adebisi, 2014), Operational risk and financial performance of the banks (Fadun & Oye, 2020), credit risk and financial performance (Afolabi, Obamuyi & Egbetunde, 2020). Other scholars attribute financial performance of the banks to tax planning (Olamide, Azeez & Adewale, 2019). In addition, there is a lot of interest on how corporate governance variables influence financial performance of the banks (Uwuigbe, 2011; Uwuigbe & Fakile, 2012; Bebeji, Mohammed & Tanko, 2015). Though these studies have provided an understanding of the factors associated with financial performance of Deposit Money Banks (DMBs), they seem to ignore the role of asset-liability-mix in explaining variations in financial performance of DMBs. This study is set to fill the knowledge gap by examining the relationship between assets-liability-mix and financial performance of DMBs in Nigeria.

Asset liability mix is the matching of assets and liabilities in such a proportion that guarantees financial performance since excess of either assets or liability can result to sub-optimal performance (Pandey, 2010). Asset-liability-mix is an important aspect of banking strategic decision. As an integral component of banking strategic decision, it helps in businesses, including banks, to be profitable and sustainable in the short and long terms (Pandey, 2010; Van-Horne & Wachowicz, 2001). A bank also needs to be able to match its assets with its liabilities to optimize the yield (Baker, 1983), which also determines its credit and liquidity risks, both of which affect its financial performance (Belete, 2013). The relationship between balance sheet elements (assets and liabilities) and results in the income statement is the basis of the classical organic balance sheet theory (Ware & Amankwah, 2014; Dumitru & Doina, 2008), which considers the balance sheet as comprising assets and liabilities (resources) that when effectively composed and utilized result in profits.

1.2 Statement of the Problem

Considering the significant roles banks play in the economy, an analysis of the factors that influence their financial performance is considered paramount to aid them ascertain areas to improve in order to achieve better results. Regulators and policy makers are also interested in knowing these factors to help them in making more effective policies that would strengthen the banking sector, and by implication the economy. This largely explains the level of research interest in this area.

The literature indicates several studies have been undertaken on the determinants of financial performance of banks globally (Afolabi, Obamuyi & Egbetunde, 2020; Olamide, Azeez & Adewale, 2019; Fijalkowska, Dworcszak & Garsztka, 2018; Ashraf, Khan & Tariq, 2017; Mamati, Ayuma & Mwrigi, 2017; Raparia, 2017; Oppong, 2016; Uddin & Haque, 2016; Alshatti, 2015; Belete, 2013; Kavitha, 2012; Abbas, Tahir, & Rahman, 2012; Kamau, 2011; Samuel, 2011; Sangmi & Nazir, 2010; Al-Tamini, 2010; Asiri, 2007). However, results of these studies have been rather conflicting. While

some studies conclude significant relationships among selected factors and financial performance, others have concluded no significant relationships.

In the Nigerian context, empirical literature reveals the absence of research in the area of asset-liability-mix and financial performance of DMBs (Ajibola, 2016; Obrimah & Ebere, 2014; Ayodele, 2012). Again, of the few studies that ventured close to this area, they have avoided carrying out a census of the banks, which this study considers possible. These factors have created gaps which this study sets out to fill. It is in line with this that the study seeks to examine the relationship between asset-liability-mix and the financial performance of DMBs in Nigeria. In addition, it seeks to evaluate if differences in terms of asset-liability-mixes and financial performance of the banks in Nigeria.

1.3 Objectives of the Study

The main objective of this study is to examine the relationship between asset-liability-mix and the financial performance of DMBs in Nigeria. Specifically, the objectives of the study are:

i) To examine the relationship between assets and financial performance.
ii) To assess to relationship between liabilities and financial performance.

1.4 Statement of Hypotheses

The following hypotheses, stated in their null forms, were postulated:

H_{O1a}: Cash and cash equivalents have no significant relationship with the financial performance.

H_{O1b}: There is no significant relationship between loans and advances and the financial performance.

H_{O1c}: Other assets have no significant relationship with the financial performance.

H_{O2a}: There is no significant relationship between deposits and the financial performance.

H_{O2b}: Other liabilities have no significant relationship with the financial performance.

2.0 LITERATURE REVIEW

2.1 Theoretical Review

The study is underpinned on the organic theory of the balance sheet, propounded by Fritz Schmidt in 1921 (Clarke & Dean, 2013; Karelskaya & Zuga, 2012; Mattessich, 2008), which assumes the balance sheet has two functions: finding the results at a certain moment and determining the means and the resources at work. Thus, the balance sheet displays both the company's wealth at a particular moment and some results. This theory considers the balance sheet as a means for finding the results (profits) and explaining the resources (assets and liabilities) at work in a company that produce the results. This effectively relates assets and liabilities to profit or financial performance (Karelskaya & Zuga, 2012; Mattessich, 2008), which is the subject matter of this study. The organic balance sheet theory, thus, effectively have a direct relationship with the study on asset-liability-mix and financial performance of Deposit Money Banks.

2.2 Conceptual Review

Assets have been defined by the Conceptual Framework for Financial Reporting as a resource controlled by the entity as a result of a past event and from which future economic benefits are expected to flow into the entity (IASB, 2010). Thus, the exercise by an entity of control over a resource emanating from a past event; and ability of the resource to generate future economic benefits into the controlling entity are sine-qua-non requirements for classification as an asset. Bank assets such as loans and advances generate economic benefits through interest income and repayments. Investments in securities earn interests or dividends depending on whether they are in debt or equity instruments. Leases, on the other hand, earn rental income. Furthermore, as a principle, an asset that falls out of the control of an entity or no longer has the ability to generate future economic benefits to the entity is to be de-recognized as such. An asset may gradually and systematically lose its ability to generate future economic benefit through depreciation or amortization and impairment, which are treated as expenses in the income statement (IAS 16, 2008; IAS 36, 2008).

The Conceptual Framework defines a liability as a present obligation of the entity arising from past events, the settlement of which is expected to result in an outflow from the entity of resources embodying economic benefits (Melville, 2014). A liability that can only be measured by using a substantial degree of estimation is referred to as a provision (IAS 37, Provisions, Contingent Liabilities and Contingent Assets, 2008). Liabilities may be short term (settled within twelve months) or long term (settled after twelve months). They may carry a cost or may not, depending on if they carry interest or coupon rates. Those that carry coupon rates incur costs to the entity carrying them. In the banking industry these fall into the category of deposits, classified as savings, demand or time deposits. The interests accruable on these liabilities are costs to the bank which are charged against interest income, leading to profits or losses. This means they also have the capacity to affect a bank's performance.

Bank assets comprise generally of investments, loans and advances, and non-current assets, while their liabilities are made up of deposits, which may be in the form of savings, current and fixed/term, and equity, which are contributed by the owners. Mishikin (2004), posited that a commercial bank's liability which is mainly financed by current, savings, and fixed deposits and equity represent its sources of funds; while assets which comprise mainly of investments, loans and advances represent its use of funds.

A bank's asset-liability-mix represents the proportion of its assets in relation to its liabilities, which may be classified into their various components. Mishikin (2004) posits that given the legal requirements of commercial banking, each commercial bank determines its own mix of assets and liabilities, which determine its specific operating objective; maximizing shareholders' equity (profit). It follows, therefore, that the mix of a bank's assets and liabilities has the tendency to affect its financial performance.

Aburime (2008) observed that the importance of financial performance of banks can be appraised at the micro and macro levels. At the micro level, the basic aim of every bank management is to maximize profit, as an essential requirement for conducting business. At the macro level, profits provide an important source of equity especially if reinvested into the business (Flamini, Valentina, McDonald & Liliana, 2009). Sahajwala and Bergh (2000) viewed financial performance as measured in terms of *Assets Ratios* – the Return on Assets (ROA); *Operating Ratios* – Return on Income

(ROI); and *Operating Equity Ratios* – Return on Equity (ROE). They said ROA is widely recognized as the most useful measure to test performance.

Several studies have shown a number of factors that determine bank performance, which include the type of bank, changes in interest rates, exchange rates, unemployment and aggregate demand. Other factors include liquidity and concentration; cost to number of branches; bank asset to GDP ratio and market concentration ratio; cost efficiency of banks; capital size, size of credit portfolio and extent of ownership concentration; size of deposit liabilities, labour productivity, state of IT, ownership, control-ownership disparity and structural affiliation (Hefferman & Fu, 2010; Clair, 2004; Al-Tamini, 2010; Demirguc-Kunt & Huizinga, 1999; Wong, Fong, Wong & Choi, 2007; Aburime, 2008).

2.3 Empirical Review

The banking sector is vital for the smooth operation of a country's financial system and economy. Thus, the sector's financial performance is of major concern to those who are responsible for policy making and its day-to-day operation. Several studies have been carried out in the direction of the financial performance or financial performance of banks.

Among the several factors that affect banks financial performance, asset liability management (ALM) is a major (Asiri, 2007), in relation to which, different authors have studied the determinants of commercial banks financial performance. For example, Raparia (2017) found a positive maturity mismatch for the 1-7 days bracket to have a significant negative impact on profit of Indian banks, but that a negative maturity mismatch for the 8 days to 12 months was found to have a significant positive impact on profit. On the other hand, for the 3 to 5 years and greater than 5 years' maturity bracket, the values were insignificant.

Belete (2013) found the financial performance of banks in Ethiopia to be positively affected by assets management and negatively affected by liability management, real growth in GDP and the general rate of inflation. Similarly, Asiri (2007) had documented that assets management positively and liabilities management negatively related to the financial performance of Kuwaiti banks. Corporate social and environmental responsibility were found to have a significant impact on financial performance of banks in Central and Eastern European and Asian Countries (Fijalkowska, Zyznarska-Dworcszak & Garsztka, 2018; Ashraf, Khan & Tariq, 2017). Mohammed (2012) established that corporate governance positively affected the performance, but poor asset quality had a negative effect on banks in Nigeria. Chibuzor, Tella and Akingunola (2011) found no significant relationship between regulation and banks performance in Nigeria.

Studies related to asset-liability-management and financial performance of Bangladeshi, Nigerian and Ethiopian banks established loans and advances had a significant positive relationship with financial performance (Uddin & Haque, 2016; Ajibola, 2016; Belete, 2013); balances with other banks, investments, term deposits, total other deposits, and borrowings from other banks were all found to have an insignificant relationship with financial performance (Uddin & Haque, 2016; Ajibola, 2016). However, Belete, 2013), found deposits in other banks, other investments and debit balances, and fixed assets had no significant effect on banks financial performance.

Comparing the financial performance of Indian banks, Kavitha (2012) and Sangmi and Nazir (2010) established significant differences among banks. In a similar study in Pakistan, Abbas, Tahir and Rahman (2012) also established significant differences in all the measures of financial performance and total assets among banks.

Although, as can be seen from the foregoing paragraphs, much studies have been carried out on the determinants of bank performance, generally, both globally and in Nigeria, its relationship with asset-liability-mix has been largely ignored, which is considered very important since DMBs basically deal in assets and liabilities to generate profits. Furthermore, there is complete absence of literature that examines differences among DMBs in relation to their asset-liability-mix, as well as in their financial performance in Nigeria. Theoretically, also, nearly all the studies based on economic theories that are market based ignoring accounting-based theories. This study is based on the organic balance sheet theory, which is accounting-based. The study, therefore, sets out to close these identified gaps.

3.0 METHODOLOGY

3.1 Research Design

The study employed the descriptive and correlational designs, based on the positivistic philosophical paradigm. A descriptive design describes the characteristics of the phenomenon without controlling the variables. On the other hand, a correlational design is one in which the investigator does not intervene in any way or expose subjects to a manipulation. Instead, measurements are taken on a group of individuals or social entities, and relationships are determined among the measures (Mustapha, 2017), with a view to drawing conclusions.

3.2 Population

Overall, the population of this study comprises of all the 22 DMBs licensed by the CBN and operating in Nigeria at December 31, 2017 (CBN, 2017).

3.3 Sample and Sampling Technique

The study is a census of the entire 22 DMBs, considering the small number of players in the industry, and the availability of data from the CBN Statistical Bulletin.

3.4 Variable Definition and Measurement

The variables used in the study naturally flow from the assumptions of the organic balance sheet theory, which states that the balance sheet identifies and measures the assets owned and liabilities owed by an entity with which it achieves results (Dumitru & Doina, 2008). Empirical studies were also reviewed to aid the selection and definition of variables. Furthermore, to finally select the variables of the study, the classification criteria of the CBN and the DMBs were considered. The independent variables are assets and liabilities, while the dependent variable is financial performance. Control variables introduced are real growth rate in GDP and annual inflation rate. Equity was not included in this study, because the study specifically seeks to examine the relationship between assets and liabilities with financial performance, basing on the organic balance sheet theory. A summary of the definition and measurement of the variables is given in Table 1.

Table 1: Variable Definition and Measurement

S/No.	Variable	Symbol	Measurement	Source
1	Return on Assets	ROA	Operating profit / Total assets	ICAN (2014)
2	Cash and Cash Equivalents	CCE	Currency + balances with banks + money at call with banks + cheques for collection / Total assets	Hester and Zoellner (1966)
3	Loans and Advances	LADVS	Loans and advances to banks + loans and advances to customers / Total assets	Hester and Zoellner (1966)
4	Other Assets	OASSETS	Stabilization securities + CBN bills + Bills discounted + treasury bills + treasury certificates + Government bonds + bankers unit funds + ordinary shares + preference shares + debentures + other bonds + subsidiaries + other investments + commercial papers + bankers acceptances + factored debts + financial derivatives + placements with discount houses + inter-bank placements + certificates of deposits + property and equipment's + receivables + prepayments + bills receivables + sundry debtors + intangible assets + unamortized foreign inward transfers + FEM + CBN naira depreciation + NDIC + miscellaneous / Total assets	Hester and Zoellner (1966)
5	Deposits	DEPS	Demand deposits (private + governments) + savings deposits (private + governments) + time deposits (private + governments) + foreign currency deposits (private + governments) / Total assets	Hester and Zoellner (1966)
6	Other Liabilities	OLIABS	Money market instruments + bonds + foreign liabilities + Government other deposits + credit from CBN + unclassified liabilities + accounts payables + suspense accounts + provisions for tax payables + sundry creditors + forex revenue reserves + exchange difference liabilities deposits for shares + miscellaneous / Total assets	Hester and Zoellner (1966)
7	Asset-Liability-Rate	ALR	Total assets / Total Liabilities	
8	Real Growth Rate of GDP	RGDPR	Annual real growth rate of GDP	CBN (2017)
9	Inflation Rate	INFLR	Annual inflation rate	CBN (2017)

3.5 Method of Data Analysis

3.5.1 Statistical Cost Accounting Model Specification

To examine the relationship between asset-liability-mix and financial performance, the modified Statistical Cost Accounting (SCA) model, a variant of the OLS, developed by Hester and Zoellner (1966), which examines how operating profit is regressed by ALM in banks, was employed. The method has been tested in US, UK, Indian, Greek, Italian, Kuwaiti, Bangladeshi, and Jordanian banks (Belete, 2013). The SCA model for this study is:

$$ROA_t = a_0/A_{bt} + \sum a_{1i}LogCCE_{ibt}/A_{bt} + \sum a_{2i}LogLADVS_{ibt}/A_{bt} + \sum a_{3i}LogOASSETS_{ibt}/A_{bt} + \sum a_{4j}LogDEPS_{jbt}/A_{bt} + \sum a_{5j}LogOLIABS_{ibt}/A_{bt} + a_6RGDPGR_t + a_7INFLR_t + \mu_{bt}$$

Where: ROA = Return On Assets; CCE = Cash and Cash Equivalents; LADVS = Loans and Advances; OASSETS = Other Assets; DEPS = Deposits; OLIABS = Other Liabilities; RGDPGR = annual growth rate of real GDP; and INFLR = annual inflation rate. a_0, a_1 to a_7 = the intercept and coefficients of the independent variables, respectively; A_b = Total Assets of banks; t = time t; while μ_b is error term, representing all other factors (variables) not considered in the model.

3.5.2 Diagnostic/Robustness Tests

In order to test the association between the study variables, the OLS regression model was employed. For a regression model to be considered good for the purpose of analysis: the residuals must be normally distributed, must not be serially correlated, must be homoskedastic, and must be free from Multicollinearity (Hossain, 2013; Gujarati, 2004). Table 2 shows results of Shapiro-Wilk test for normal data, Serial Correlation (autocorrelation) and Heteroskedasticity tests, while result of Variance Inflation Factor (VIF) and Tolerance for Multicollinearity is depicted in Table 3.

Table 2: Diagnostic/Robustness Tests

Test	Type of Test	HO	F-Statistic/ Chi^2/ z	Prob. Values	Remark
Normality	Shapiro-Wilk test for normal data	Residuals are normally distributed	-1.387	0.9173	Residuals are normally distributed
Serial Correlation (Autocolinearity)	Breusch-Godfrey LM test	Residuals are not autocorrelated	2.127	0.1447	Residuals are not autocorrelated
Heteroskedasticity	Breusch-Pagan/Cook-Weisberg test	Residuals are homoskedastic	0.61	0.4354	Residuals are homoskedastic

The assessment of the normality shows p=0.9173>0.05, confirming the data meets the assumption of normality. The Breusch-Godfrey LM test indicates *p*=0.1447>0.05, implying no serial correlation. The result of homoskedasticity test shows *p*=0.4354>0.05, which implies the data is homoskedastic, and fit for analysis.

To screen for multicollinearity, Variance Inflation Factor (VIF) and Tolerance level were examined. The general rule of the cut-off points is that the VIF and the Tolerance values should not exceed 10 and supposed not to be less than 0.10, respectively (Nyahas, 2017; Hossain, 2013; Gujarati & Porter, 2009). Table 3 establishes all the independent variables conform to both assumptions, depicting the absence of multicollinearity and implying that the data qualify for further statistical tests.

Table 3: Variance Inflation Factor (VIF) and Tolerance for Multicollinearity

Variable	VIF	1/VIF
CCE	1.34	0.7445
LADVS	1.56	0.6405
OASSETS	1.91	0.5238
DEPS	1.36	0.7341
OLIABS	1.10	0.9130
DRGDPGR	1.25	0.7997
DINFLR	1.12	0.8897
Mean VIF	1.38	

4.0 RESULTS/INTERPRETATION AND DISCUSSION

4.1 Results

4.1.1 Descriptive Statistics

The descriptive statistics for the study variables are presented in Table 4.

Table 4: Descriptive statistics for the study variables

	Count	Mean	Standard Deviation	Minimum	Maximum	Sum
DROA	37	-0.1817	12.3221	-36.5773	31.3914	-6.7213
CCE	37	0.0090	0.2484	-0.9644	0.5282	0.3324
LADVS	37	-0.0002	0.0520	-0.1129	0.1572	-0.0087
OASSETS	37	-0.0016	0.0594	-0.1468	0.0984	-0.0615
DEPS	37	-0.0033	0.0319	-0.1152	0.0669	-0.1233
OLIABS	37	0.0359	0.1979	-0.4081	0.4267	1.3285
DRGDPGR	37	0.0594	12.3829	-36.5773	31.3914	2.2017
DINFLR	37	0.3772	4.5854	-12.1796	11.3413	13.9540

Results in Table 4 indicate that the mean scores of the variables range between -0.1817 and 0.0002, while the standard deviation ranges between 0.0319 and 12.3829. The standard deviations are large relative to their respective means, implying that the statistical means do provide a good fit of the observed data (Nyahas, 2017, citing Field, 2009).

4.1.2 Correlations

A preliminary test was carried out using the Pearson correlation (r) to find out if the variables in the study are correlated (see Table 5) with the dependent variable, and with one another (Nyahas, 2017; Hossain, 2013).

Table 5: Correlations of All DMBs

	DROA	*DA1*	*DA2*	*DA3*	*DL1*	*DL2*	*DRGDPGR*	*DINFLR*
DROA	1							
DA1	0.2622	1						
DA2	-0.1756	0.0633	1					
DA3	0.3804	-0.3663	-0.4420	1				
DL1	0.4271	-0.0281	-0.0583	0.4212	1			
DL2	-0.0128	0.1864	0.1312	-0.1749	-0.0904	1		
DRGDPGR	-0.5753	0.1467	0.3753	-0.1641	-0.1611	0.0046	1	
DINFLR	-0.2503	-0.2190	-0.0515	-0.0192	-0.1595	-0.1830	0.0294	1

Table 5 reveals the following positively correlate with Return on Assets (DROA): Cash and Cash Equivalents (CCE [DA1], r=0.2622); Other Assets (OASSETS [DA3], r=0.3804); and Deposits (DEPS [DL1], r=0.4271). Variables with negative correlation with DROA are Loans and Advances (LADVS [DA2], r=-0.1756); Other Liabilities (OLIABS [DL2], r=-0.0128); Real Growth Rate of GDP (DRGDPGR, r=-0.5753); and Inflation Rate (INFLR, r=-0.2503). All the variables have shown evidence of correlation with one another, which is desirable.

4.1.3 Tests of Hypotheses/Interpretation

In testing the hypotheses, results of the modified OLS analysis presented in Table 6 were used, which indicates that the independent variables account for 73.6% variation and significantly explain the dependent variable, financial performance (*F=11.55, p=0.0000<0.05)*. To test the hypotheses, *coefficients and p* values for each variable was used. The results indicate that Cash and Cash Equivalents is positively significant in explaining variations in financial performance (*Coef=26.3484, p=0.0000<0.05*), thus hypothesis 1 was not supported, resulting in the acceptance of the alternative. Loans and advances was found to positively and significantly relate to financial performance (*Coef=66.5278, p=0.0260<0.05*), thus hypothesis 2 was not supported, resulting in the acceptance of the alternative form. Other Assets was found to be positively and significantly related to financial performance (*Coef=110.7752, p=0.0000<0.05*), thus hypothesis 3 was not supported and the alternative form is accepted.

Deposits was found to be positive but insignificant in explaining variations in financial performance (*Coef=42.5486, p=0.3310>0.05*), thus hypothesis 4 was supported. Other liabilities was found to be negative and insignificant in explaining financial performance (*Coef=-3.5768, p=0.5690>0.05*), thus hypothesis 5 was supported. With respect to the control variables, both Real Growth Rate of GDP and Annual Inflation Rate were found to be negative. However, while Real Growth Rate of GDP was significant, Annual Inflation Rate was insignificant (*Coef=-0.6472, p=0.0000<0.05* and *Coef=-0.2223, p=0.4180>0.05*).

Table 6: Stata Output of SCA (OLS) Analysis

Source	SS	Df	MS	Number of obs =	37
				F (7, 29) =	11.55
Model	4022.8230	7	574.6890	Prob > F	0.0000
Residual	1443.1816	29	49.7649	R-squared =	0.736
				Adj R-squared =	0.6722
Total	5466.0064	36	151.8335	Root MSE =	7.0544

DROA	Coef.	Std.Err.	t	P>|t|	[95% Conf. Interval]	
CCE	26.3484	5.4854	4.8	0.0000	15.1295	37.5672
LADVS	66.5278	28.2531	2.35	0.0260	8.7438	124.3118
OASSETS	110.7752	27.3348	4.05	0.0000	54.8692	166.6812
DEPS	42.5486	43.0198	0.99	0.3310	-45.4368	130.5340
OLIABS	-3.5768	6.2161	-0.58	0.5690	-16.2902	9.1366
DRGDPGR	-0.6472	0.1062	-6.1	0.0000	-0.8647	-0.0430
DINFLR	-0.2223	0.2718	-0.82	0.4180	-0.7793	0.3326
_cons	0.1652	1.1921	0.14	0.8910	-2.2730	2.6033

4.2 Discussion of Findings

The test of hypothesis 1 indicates that cash and cash equivalents have a significant positive relationship with financial performance, implying that an increase of ₦1 in cash reserves will translate to a ₦26.35 increase in profits, and vice versa. This can be considered from the view that when a bank maintains an optimum cash reserve it is able to meet customers' withdrawal demands, more effectively, while still been able to make advances to its borrowers. This has the capacity to translate to happy and more confident customers who will continue to patronize the bank, and possibly attract more customers to the bank, which can grow the bank's business leading to higher financial performance.

The test of hypothesis 2 established that loans and advances have a significant positive relationship with financial performance, indicating that an increase of ₦1 in loans and advances will lead to a ₦66.53 increase in profits, and vice versa. This is connected with the view that increased advances lead to increased interest income which boosts the profits of the banks. This finding is consistent with Ajibola (2016) and Belete (2013) who documented that loans and advances have a significant positive relationship with financial performance. It however differs from the findings of Mohammed (2012) who found a negative effect of loans to deposit ratio on financial performance. This difference in findings may be accounted for by the fact that while the work by Mohammed (2012) was a survey of 9 banks only; this study is a census of all the DMBs operating in Nigeria. Furthermore, while the study by Mohammed (2012) covered only ten years (2001-2010), this study covers a period of 37 years from 1981 to 2017.

The test of hypothesis 3 showed that other assets have a significant positive relationship with financial performance, which means that a ₦1 increase in other assets will result in an increase of ₦110.775 in profits, and vice versa. It is important to note that a good portion of other assets include investments in securities, such as treasury bills, subsidiaries, associated companies, bonds, and investment properties from where the banks make additional income. The finding of Belete (2013) that other assets like deposits in other banks, other investments and debit balances had no significant effect on commercial bank financial performance, however, differs significantly from this finding. Differences with the Belete (2013) results may be accounted for by the difference in context. Countries do encounter differences in economic realities that affect their businesses. Again, while the study of Belete (2013) covered only 6 years, this study extends to 37 years. Methodologically, while Belete (2013) relied on pooled OLS panel data analysis, this study relied on time series data from the CBN; therefore, employing the SCA OLS model in carrying out analysis.

Hypothesis 4 tested the relationship between deposits and the financial performance of DMBs in Nigeria and found an insignificant positive relationship between deposits and the financial performance, indicating that a ₦1 increase in deposits will result in an increase of ₦45.548 in the profits of the banks, although in an insignificant way, and vice versa. This confirms the finding of Uddin and Haque (2016) who documented that deposits had insignificant relationship with financial performance. The finding of Ajibola (2016) of a negative but significant effect of both demand deposits and savings and fixed deposits on financial performance is not supported by this study. Meanwhile, while Ajibola (2016) was a survey of some selected banks, this study took a census of all the banks. Again, the result of Belete (2013) is in variance with this one as it concluded that, along with other liabilities, deposits significantly cost the financial performance of commercial banks. Causes of differences with the Belete (2013) finding have been highlighted earlier.

The test of hypothesis 5 established a negative and insignificant relationship of other liabilities and financial performance, indicating that a ₦1 increase in other liabilities will result in a decrease of ₦3.576 in the profits of the banks and vice versa, in an insignificant way. This finding agrees with Uddin and Haque (2016) who established an insignificant relationship with financial performance, but disagrees with Belete (2013) who found other liabilities and credit balances significantly cost the financial performance of commercial banks. Again. The differences in result could be explained by the presence of a large portion of other liabilities comprising of current income tax liabilities, deferred tax liabilities, and others that are not income generating liabilities. It is also made up of long-term borrowing, debts, bonds, and others that have large cost implications on the banks, which reduce their capacity to report profits. Thus, DMBs would do well to reduce the quantum of these liabilities.

5.0 CONCLUSION, RECOMMENDATIONS AND IMPLICATIONS

5.1 Conclusion

The main objective of this study was to examine the relationship between asset-liability-mix and financial performance of DMBs in Nigeria. Specifically, the study examined the relationship between each of cash and cash equivalents; loans and advances; other assets; deposits; and other liabilities and the financial performance of DMBs in Nigeria. From the findings, the study concludes a significant positive relationship between asset-liability-mix and financial performance.

Specifically, the study concluded a significant positive relationship between cash and cash equivalents and financial performance, underscoring the importance of this resource in furthering the financial performance of DMBs in Nigeria. Loans and advances are significant and positive. Other assets have a positive and significant. Deposits are positive but insignificant. Other liabilities and financial performance have a negative and insignificant relationship.

5.2 Recommendations

Consequent upon the findings, the following recommendations are put forward:

Directors and Managers of DMBs should pay close attention to cash and cash equivalents to ensure they are at the optimum levels at all times, especially by observing the CBN cash reserve requirement, to ensure continued customer satisfaction and retention, as well as avoidance of sanctions from the regulator, and availability of funds to finance advances to borrowers. DMBs Directors and Managers should more closely monitor the performance of loans and advances through strict compliance with the CBN Prudential Guidelines, Circulars, and bank specific risk thresholds, to ensure they remain performing and to maintain an acceptable risk level that will continue to enhance their financial performance.

DMBs need to elaborately analyze other assets and institute good controls over investments in them to ensure their quality and earning capacities remain intact for enhanced performance. Managers of DMBs should ensure compliance with the loan-to-deposit-ratio issued by the CBN. They should also seek to obtain deposits from cheaper sources that will ensure the cost incurred in sourcing and maintaining them is kept at the minimum to ensure the banks achieve better performance through a wider interest spread. Bank Managers should keep very close watch over the management of other liabilities to ensure they are incurred economically, efficiently, and effectively. Liabilities, like taxation, and other short-term payables should be settled at the appropriate regulatory or contractually agreed time to avoid unnecessary penalties that could have negative impacts on financial performance and financial performance.

5.3 Implications

Theoretically, the study finds support for the organic balance sheet theory of Fritz Schmidt, that bank resources (balance sheet elements) do explain the results (financial performance) of DMBs. Methodologically, results also provide support that the statistical cost accounting (SCA) model of Hester and Zoellner (1966) can be used to explain the relationship between bank assets and liabilities elements and their financial performance in Nigeria. In practical terms, asset-liability-mix has been shown to explain the financial performance of DMBs in Nigeria. Thus, DMBs can arrange their asset-liability-mix in such a way that maximizes their financial performance. Policy makers like the CBN can also use this knowledge to, once in a while, alter the policy requirements towards entrenching a more favourable environment to enhance the performance of DMBs in Nigeria. Researchers too can underpin studies in this direction on the organic balance sheet theory.

5.4 Limitations of the Study

Due to large unavailability of complete sets of financial statements of many of the DMBs, Time Series data available from the CBN Statistical Bulletin was relied on to carry out the study. This limited the ability to undertake many of the comparative analysis between banks hitherto contemplated. This also limited the study's ability to

examine the influences of firm specific factors such as age, size, ownership, and others, on financial performance. Again, the study centered on DMBs in Nigeria only, which means that since different jurisdictions may experience differences in economic and banking policies and realities due to their peculiarities, the findings of this study may not be generalized to other jurisdictions without modifications.

5.5 Suggestions for Further Study

Further research may be carried out using a sample of DMBs with complete range of financial statements to enable the examination of the influences of firm specific factors such as age, size, ownership, and others, on financial performance. Considering the Nigerian contextualization of the work, which limits the generalizability of findings across jurisdictions, future studies may need to be carried out in other countries or regions, for example like the ECOWAS, to provide external validity to the findings.

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APPENDIX A1

Data of Total Assets (TA), Total Liabilities (TL), Assets-Liability-Ratio (TATLR), Operating Profits (OPPROFIT), and Return on Assets (ROA) of Access Bank Plc, Diamond Bank Plc, and Guaranty Trust Bank Plc, for the years 2001 to 2017

YEAR	BANK	TA ₦'B	TL ₦'B	TATLR (Ratio)	OPPROFIT ₦'B	ROA (%)
2001	ACCESS	8.027	7.108	1.129	0.116	1.445
2002	ACCESS	11.342	9.399	1.207	-0.017	-0.150
2003	ACCESS	22.582	20.082	1.124	0.811	3.591
2004	ACCESS	31.342	28.339	1.106	0.952	3.037
2005	ACCESS	66.918	52.846	1.266	0.751	1.122
2006	ACCESS	174.554	145.660	1.198	1.120	0.642
2007	ACCESS	328.615	300.230	1.095	8.043	2.448
2008	ACCESS	514.415	412.597	1.247	12.990	2.525
2009	ACCESS	700.215	524.963	1.334	17.937	2.562
2010	ACCESS	796.216	631.569	1.261	12.584	1.580
2011	ACCESS	1629.003	1436.938	1.134	27.107	1.664
2012	ACCESS	1745.177	1505.841	1.159	44.880	2.572
2013	ACCESS	1835.466	1590.984	1.154	44.996	2.451
2014	ACCESS	2104.361	1826.950	1.152	52.022	2.472
2015	ACCESS	2591.330	2223.529	1.165	75.038	2.896
2016	ACCESS	3483.866	3029.371	1.150	90.339	2.593
2017	ACCESS	4102.243	3586.795	1.144	80.072	1.952
2001	DIAMOND	47.372	43.286	1.094	2.225	4.697
2002	DIAMOND	53.063	47.498	1.117	1.946	3.667
2003	DIAMOND	61.741	56.599	1.091	0.047	0.076
2004	DIAMOND	73.093	66.250	1.103	1.265	1.731
2005	DIAMOND	130.654	109.817	1.190	3.514	2.690
2006	DIAMOND	227.833	192.629	1.183	5.445	2.390
2007	DIAMOND	320.419	266.108	1.204	9.008	2.811
2008	DIAMOND	625.078	507.822	1.231	16.214	2.594
2009	DIAMOND	682.078	567.640	1.202	5.902	0.865
2010	DIAMOND	594.795	487.709	1.220	4.773	0.802
2011	DIAMOND	803.707	710.374	1.131	-16.261	-2.023
2012	DIAMOND	1178.104	1069.248	1.102	27.482	2.333
2013	DIAMOND	1518.856	1380.003	1.101	32.080	2.112
2014	DIAMOND	1933.123	1724.099	1.121	28.101	1.454
2015	DIAMOND	1753.232	1538.623	1.139	7.093	0.405
2016	DIAMOND	2049.799	1823.091	1.124	3.369	0.164
2017	DIAMOND	1714.807	1491.494	1.150	-11.547	-0.673
2001	GTBANK	45.472	41.324	1.100	2.153	4.735
2002	GTBANK	65.021	56.959	1.142	3.176	4.885
2003	GTBANK	90.245	80.472	1.121	4.210	4.665
2004	GTBANK	133.835	121.842	1.098	4.976	3.718
2005	GTBANK	185.151	153.751	1.204	6.781	3.662
2006	GTBANK	308.411	267.652	1.152	10.489	3.401
2007	GTBANK	486.491	436.505	1.115	15.716	3.230
2008	GTBANK	732.038	568.693	1.287	27.368	3.739
2009	GTBANK	959.184	777.149	1.234	35.329	3.683
2010	GTBANK	1066.504	874.258	1.220	27.963	2.622
2011	GTBANK	1608.653	1378.259	1.167	62.080	3.859
2012	GTBANK	1734.878	1453.051	1.194	103.028	5.939

2013	GTBANK	2102.846	1770.493	1.188	107.091	5.093
2014	GTBANK	2355.877	1991.162	1.183	116.386	4.940
2015	GTBANK	2524.594	2111.032	1.196	120.695	4.781
2016	GTBANK	3116.393	2611.491	1.193	165.136	5.299
2017	GTBANK	3351.097	2725.929	1.229	200.242	5.975

Source: *Access Bank Plc, Diamond Bank Plc, and Guaranty Trust Bank Plc Annual Financial Statement for Various Years.*

APPENDIX A2

Data of Return on Assets (ROA), Cash and Cash Equivalents (CCE), Loans and Advances (LADVS), Other Assets (OASSETS), Deposits (DEPS), Other Liabilities (OLIABS), Total Assets (TA), Total Liabilities (TL), Capital (CAP), Real Gross Domestic Product Growth Rate (RGDP), and Annual Inflation Rate (INFLR) of all the DMBs covering the years 1981 to 2017.

YEAR	ROA (%)	CCE ₦'B	LADVS ₦'B	OASSETS ₦'B	DEPS ₦'B	OLIABS ₦'B	TA ₦'B	TL ₦'B	CAP ₦'B	RGDPGR (%)	INFLR (%)
1981	7.43	1.97	8.24	9.27	18.83	0.15	19.48	18.98	0.50	-13.13	20.80
1982	7.17	2.36	9.88	10.42	21.65	0.35	22.66	21.99	0.67	-1.79	7.70
1983	8.07	2.39	10.26	14.05	25.49	0.37	26.70	25.86	0.85	-7.58	23.20
1984	5.14	2.00	10.81	17.26	28.89	0.21	30.07	29.10	0.97	-0.51	17.80
1985	0.89	1.38	11.72	18.89	30.59	0.28	32.00	30.87	1.13	8.52	7.40
1986	15.88	3.53	14.85	21.29	37.51	0.87	39.68	38.38	1.30	1.90	5.70
1987	8.68	6.42	16.61	26.80	47.29	0.99	49.83	48.28	1.55	0.17	11.30
1988	4.69	9.37	19.46	29.20	55.60	0.50	58.03	56.09	1.93	6.23	54.50
1989	11.41	9.52	21.85	33.50	60.99	1.19	64.87	62.18	2.69	6.66	50.50
1990	7.16	12.31	25.78	44.87	78.69	0.56	82.96	79.25	3.71	11.63	7.40
1991	18.56	25.13	32.40	59.98	112.17	1.05	117.51	113.21	4.30	-0.55	13.00
1992	-18.02	57.30	42.84	59.05	129.94	2.76	159.19	132.70	26.49	2.19	44.60
1993	13.37	80.20	46.00	99.96	190.39	6.19	226.16	196.57	29.59	1.57	57.20
1994	-1.09	83.64	89.36	122.03	244.11	18.78	295.03	262.89	32.14	0.26	57.00
1995	8.73	134.99	128.23	121.93	314.00	27.96	385.14	341.96	43.18	1.87	72.80
1996	7.28	131.87	158.22	168.68	365.57	37.57	458.78	403.14	55.64	4.05	14.31
1997	5.48	157.92	218.58	207.88	464.49	46.00	584.38	510.49	73.88	2.89	10.21
1998	13.22	174.02	251.93	268.67	550.50	42.76	694.62	593.25	101.36	2.50	11.91
1999	10.60	297.33	326.90	445.80	848.95	79.10	1070.02	928.05	141.97	0.52	0.22
2000	8.15	424.42	457.82	686.60	1240.62	131.55	1568.84	1372.18	196.66	5.52	14.53
2001	14.70	717.79	759.54	769.70	1730.22	152.56	2247.04	1882.78	364.26	6.67	16.49
2002	11.12	786.63	853.59	1126.66	2097.13	169.00	2766.88	2266.13	500.75	14.60	12.17
2003	-6.44	857.61	1068.74	1121.51	2312.40	198.25	3047.86	2510.65	537.21	9.50	23.81
2004	4.41	961.59	1374.94	1416.74	2767.66	299.54	3753.28	3067.20	686.08	10.44	10.01
2005	9.91	1019.92	1706.55	1788.65	3240.91	323.65	4515.12	3564.57	950.55	7.01	11.57

2006	12.60	2417.98	2246.08	2508.88	4720.94	1063.14	7172.93	5784.08	1388.86	6.73	8.55
2007	17.54	1947.95	4145.46	4888.28	7776.67	979.63	10981.69	8756.30	2225.39	7.32	6.56
2008	13.56	2699.80	6605.87	6613.89	11242.80	1312.07	15919.56	12554.87	3364.69	7.20	15.06
2009	-3.82	1313.15	8230.93	7978.78	10719.58	1872.66	17522.86	12592.25	4930.61	8.35	13.93
2010	-14.79	148.53	7208.31	9974.71	13033.43	2080.32	17331.56	15113.75	2217.80	9.54	11.80
2011	16.60	528.11	6923.99	11944.54	13945.27	1769.24	19396.63	15714.51	3682.12	5.31	10.30
2012	0.20	1489.07	7984.01	11830.87	15594.54	2068.73	21303.95	17663.27	3640.68	4.21	12.00
2013	1.87	4106.34	9478.86	10883.18	16488.01	4064.95	24468.37	20552.96	3915.41	5.49	7.96
2014	3.39	5715.52	12402.69	9571.90	19938.65	3235.20	27690.11	23173.85	4516.26	6.22	7.98
2015	3.95	4878.49	12503.71	10986.82	20307.31	3010.30	28369.03	23317.61	5051.42	2.79	9.55
2016	2.20	4678.06	15318.94	12133.45	22602.17	3843.30	32130.45	26445.47	5684.98	-1.58	18.55
2017	0.71	7302.06	13955.10	13889.68	24484.79	4695.62	35146.84	29180.41	5966.43	0.82	15.37

Source: CBN Statistical Bulletin, 2017 Edition.

APPENDIX B

Central Bank of Nigeria
List of Financial Institutions

Deposit Money Banks (DMBs)

1 Access Bank Plc
2 Citibank Nigeria Limited
3 Diamond Bank Plc
4 Ecobank Nigeria Plc
5 Enterprise Bank
6 Fidelity Bank Plc
7 First Bank of Nigeria Limited
8 First City Monument Bank Plc
9 Guaranty Trust Bank Plc
10 Heritage Banking Company Ltd.
11 Key Stone Bank
12 Main Street Bank
13 Skye Bank Plc

14 Stanbic IBTC Bank Ltd.
15 Standard Chartered Bank Nigeria Ltd.
16 Sterling Bank Plc
17 SunTrust Bank Nigeria Limited
18 Union Bank of Nigeria Plc
19 United Bank For Africa Plc
20 Unity Bank Plc
21 Wema Bank Plc
22 Zenith Bank Plc

Source: Central Bank of Nigeria.