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EVALUATION OF ASSETS AND LIABILITIES MANAGEMENT ON THE PROFITABILITY OF DEPOSIT MONEY BANKS IN NIGERIA

Dada, O. S.
Department of Accounting, Federal University of Technology, Akure, Nigeria
Author Email: dadaolakunle@gmail.com

Adeyemo, F. H.
Department of Management Science, Bamidele Olumilua University of Education, Science and Technology, Ikere, Nigeria
Corresponding Author Emails: adeyemo.foluke@bouesti.edu.ng, fhadeyemo@gmail.com

Olayeye, F. F.
Department of Accounting, Federal University of Technology, Akure, Nigeria
Email: olayeyeff@gmail.com

Faleye, O. C.
Department of Management Science, Bamidele Olumilua University of Education, Science and Technology, Ikere, Nigeria
Email: faleye.olubunmi@bouesti.edu.ng

Abstract:
This study evaluates the effect of assets and liability management (ALM) on the profitability of some selected deposit money banks in Nigeria. The profitability of deposit money banks is vital for the smooth operation of the financial system of a country. Return on asset (ROA), which is a measure of profitability, was employed in this work. We calculated ROA by dividing net profit after tax by total assets. A sample of ten (10) banks was selected for the study, which covered a period of ten (10) years, from 2008 to 2017. A purposive sampling technique was used in the selection of the sample. We conducted the data analysis using correlation and panel regression analysis. The study finds that the ALM position negatively affects bank profitability (ROA) (β = -0.003, z = -0.02, p > 0.05). A unit increase in the ALM proportion necessitated by either an increase in advances or a decrease in deposits results in a decline in the ROA of up to 0.003 (0.3%). The findings revealed that loans to customers' deposits have a significant effect on the profitability of selected deposit money banks in Nigeria. It was observed that asset-liability management has a significant effect on the profitability of deposit money banks in Nigeria. Finally, the study recommends that banks need to improve credit administration, monitoring, and credit quality. Banks should timely identify and mitigate risks to secure trading funds. Banks should also focus on improving their capital levels to improve their financial performance.

Keywords; Assets; Banks; Evaluation; Liabilities; Profitability

Introduction

Banks are financial institutions whose business involves the management of monetary assets and liabilities. The World Savings and Retail Banking Institute (WSBI) (2022) establishes that banks play a key role in allocating finances for the functioning of the economy. Unlike other business organizations, such as manufacturing firms that stock tangible goods as inventory, the stock of the banking industry is money; this means that banks trade on money. Asset-liability management basically refers to the process by which an institution manages its statements of financial position in order to allow for alternative interest rate and liquidity scenarios. (Corporate Finance Institute, 2022) Banks face a number of challenges within the internal and external business environment. The operation of banks is associated with risks that include credit risk, market risk, interest rate risk, default risk, operational risk, exchange rate risk, and liquidity risk. As opined by Carmona, Climent, and Momparler (2019), the risk-taking approaches that are taken into consideration are found to increase due to liquidity risk factors. When all requirements are not fulfilled, credit risk arises as the risk of default on a debt. It is seen that loss of principal, interest, and collection costs are considered credit risk factors, and thus, these need to be completed or fulfilled in partial profits. Afriyie and Akotey (2018) define the management of assets and liabilities as the strategic management of the statements of financial position for risk optimization of liabilities and assets of banks, considering all market risks. (Isaac and Akinwumi, 2018) The World Savings and Retail Banking Institute (WSBI) (2022) establishes that banks play a key role in allocating finances for the functioning of the economy. The following objectives will be followed in this study: (a) assess the effect of asset and liability management on the deposit on profitability of selected deposit money banks in Nigeria; (b) evaluate the effect of customers deposits on the profitability of selected deposit money banks in Nigeria; and (c) determine the effect of loans to customers on the profitability of selected deposit money banks in Nigeria. As per the views of Abbas and Masood (2020), large commercial banks are responsible for adjusting their capital ratios in order to have an empirical outcome in their banking growth. Apart from that, an ALM framework is applied to determine non-performing assets and lost assets that are present within the financial sector.

Methodology and Research Design

The study is an analytical research design where panel regression was employed by the researcher to study the financial statements of the banks selected. A sample of ten (10) banks was selected out of the population based on the criteria that the banks must have been quoted since 2004 by the Nigerian stock exchange when the initial share capital of Nigerian banks was increased to N25 billion minimum capital base and maintained its name till date. The selection considered both old and new-generation banks. We used a purposive sampling method to select the sample. The ten banks selected represent forty-five percent (45%) of the licensed deposit money banks in Nigeria, and this sample is assumed to be a true representation of the licensed banks in Nigeria. Secondary data were used throughout this study. Data were collected in relation to loans (assets), liabilities (deposits), and profitability (profit after tax) for all the deposit money banks that form the sample size for the period under study (2008–2017). The

annual reports provided the necessary data with respect to the assets and liabilities of the banks selected for the study. Also, the profitability of the banks was obtained from the financial statements of the relevant years. The data collected from the published financial statements of the selected banks was already submitted to the Nigerian Stock Exchange Commission and the Central Bank of Nigeria (CBN) before being published. The CBN also publishes the Banking Survey as an annual publication, which contains the annual financial statements of all banks in Nigeria. Descriptive, correlational, and regression analyses were applied to the study to compare the effects of independent variables on the dependent variable.

Study Area and Population

We conducted the study on selected banks in Nigeria. Banks in Nigeria mostly have their corporate headquarters in Lagos, Nigeria, but have branches located in different parts of the country. The Nigerian Stock Exchange, which was established in 1960 as the Lagos Stock Exchange, is the regulatory body empowered to register companies that meet the criteria of registration for their shares to be traded openly on the floor of the Nigerian Stock Exchange. The population of this study comprised all licensed (22) Deposit Money Banks (DMBs) by the Central Bank of Nigeria but also listed on the Nigeria Stock Exchange as of December 31, 2004. The population would consider 22 licensed deposit money banks in Nigeria. A sample of ten (10) banks was selected out of the population based on the criteria that the banks must have been quoted since 2004 by the Nigerian stock exchange when the initial share capital of Nigerian banks was increased to N25 billion minimum capital base and maintained its name till date. The selection considered both old and new-generation banks. We used a purposive sampling method to select the sample. The ten banks selected represent forty-five percent (45%) of the licensed deposit money banks in Nigeria, and this sample is assumed to be a true representation of the licensed banks in Nigeria. The sample was based on the following criteria: The availability of a consistent data set over the 10-year period, licensed by the Central Bank of Nigeria and listed on the Nigerian Stock Exchange since 2004 banking reform for a N25 billion capital base Functional accessibility on the internet for data retrieval and information gathering. The selected banks consist of small, medium, and large banks to represent the sector.

Results and Discussion

The study sought to assess the effect of asset and liability management on profitability of selected deposit money banks in Nigeria. Presentation of the findings from the data analysis in line with the research objectives is done in this section

Table 1: Summary of Statistics of Dependent and Independent Variables

	LDR	AQR	LR	ROA
Mean	0.635483	0.057033	0.273228	0.037311
Median	0.636907	0.036809	0.178871	0.015889
Maximum	1.752221	0.5906	1.855699	2.465143
Minimum	0.10304	-0.41833	0.022232	-0.29643
Std. Dev.	0.207397	0.099667	0.332323	0.249
Skewness	1.258478	1.425253	2.882647	9.381367
Kurtosis	10.01051	17.05996	11.65446	92.25177
Jarque-Bera	231.1765	857.5331	450.5763	34658
Probability	0.000	0.000	0.000	0.000
Sum	63.54829	5.703312	27.32283	3.731072
Sum Sq. Dev.	4.258347	0.983414	10.93344	6.138101
Observations	100	100	100	100

Table 1 shows the descriptive statistics of the entire dataset. The skewness and kurtosis values of the datasets indicate that the values are not symmetrical, which confirms the existence of a trend in the datasets. Furthermore, shown in Figures 1–4 are the summaries of the loan-to-deposit ratio (LDR), asset quality ratio (AQR), liquidity ratio (LR), and return on assets (ROA) of the selected banks. Figure 1 shows that FCMB had the highest LDR within the period studied, while Union Bank had the least LDR. Also, Figure 2 shows that Ecobank had the highest AQR and UBA had the least AQR. Figures 3 and 4 show that First Bank had the highest LR, while GTB had the highest ROA.

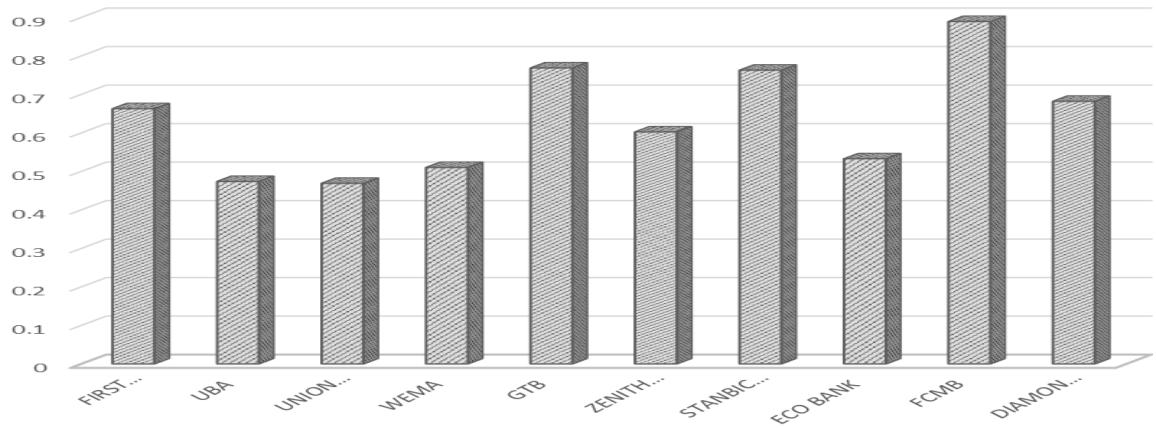

Figure 1: Summary of Loan to Deposit Ratio (LDR)

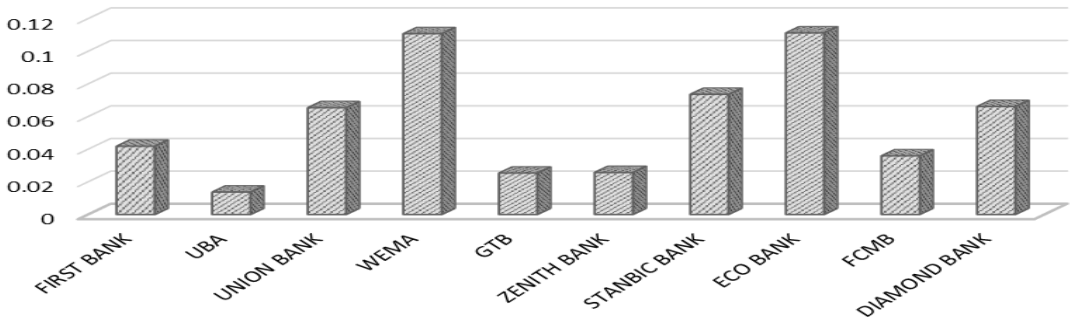

Figure 2: Summary of Asset Quality Ratio (AQR)

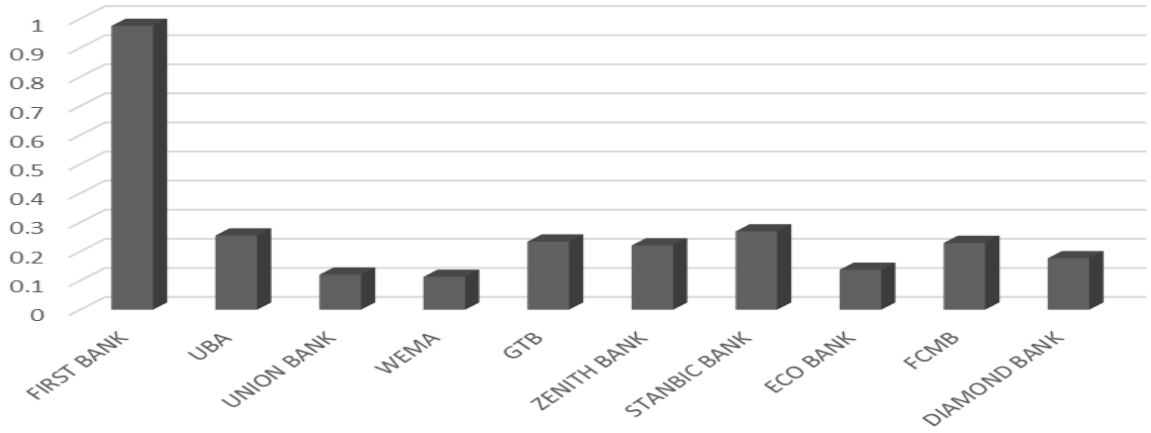

Figure 3: Summary of Liquidity Ratio (LR)

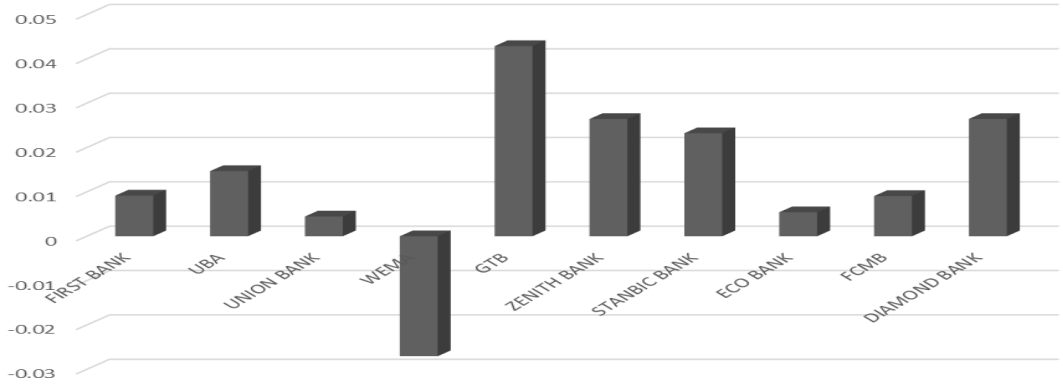

Figure 4: Summary of Return On Asset (ROA)

Effect of asset and liability management on profitability of selected deposit money banks in Nigeria. Table 2 presents the relationship between asset and liability management (ALM) and profit after tax of the selected deposit money banks. The asset-liability management (ALM) is a concept that deals with the optimal investment of assets in view of meeting current goals and future liabilities. According to Hosna, manzura and juanjuan (2019) asset-liability management is the process that is concerned with strategic management of assets (uses of funds) and liabilities (sources of funds) of banks against various risks such as liquidity. It was revealed that the assets-liability management of all the selected banks have a positive relationship with the respective profit after tax of the banks respectively Onaolapo and Adegoke (2020).

This implied that the profit after tax of each of the deposit money banks increases with increase in the practice of assets-liability management. This suggests that there are gains in practicing assets-liability management by the Deposit Money Banks since it covers all prudential component management of all possible risks. Although, a positive relationship was observed between the asset-liability management of the banks and their respective profits after tax, however, these relationships were not significant contrary to a priori expectation. This can be associated to the fact that asset-liability management involves the process of managing the use of assets and cash flows to meet the bank's obligations in order to reduce the risk of loss from not paying a liability on time. Therefore, if assets-liability management is properly handled, the banks can significantly increase profits in agreement with the findings of Adegbite and Dada (2018). It is therefore appropriate for these Deposit Money Banks to focus on asset-liability management when they face financial risks of different types.

Table 3 shows the effect of customers deposit on profitability of selected deposit money banks in Nigeria. The profitability of deposit money banks is vital for the smooth operation of the financial system of a country. To get a picture of the profitability of the banks, ROA, which is a measure of profitability, has been employed. ROA reflects the ability of a bank's management to generate profits from the bank's assets and was calculated as net profit after tax divided by Total assets.

Table 4 shows the relationship between customers deposit and profitability of selected deposit money banks. It was revealed that a positive relationship was found between the asset quality of the selected Deposit Money Banks and their profit. This is indications that increase in the asset quality of the Deposit Money Banks increases their profitability and vice versa. It was further shown that the relationship between the asset quality and profitability of Zenith bank ($r = .696^{*}$) and Stanbic bank ($r = .696^{*}$) is significant. This suggests that these two banks have high quality assets which significantly increase their profitability. However, apart from Zenith bank and Stanbic IBTC bank, the relationship between the asset quality and profitability of other selected banks were not found to be significant. This suggests that the potentials of asset quality have not been fully tapped into by the other selected banks in improving their profitability. It is however necessary for the other Deposit Money Banks to explore this since poor asset quality has been identified as one of the major causes of bank failures in the past.

Table 2: Correlations of Asset-Liability Management and Profitability of Selected DMBs in Nigeria

		First Bank Profit after Tax	UBA Profit after Tax	Union Bank Profit after Tax	-	ECOBANK Profit after Tax	FCMB Profit after Tax	DIAMOND Profit after Tax
First Bank Asset liability management (loan to deposit ratio)	Pearson Correlation	**.595**	-.443	.023	-	-.301	-.127	0.209
	Sig. (2-tailed)	**.070**	.200	.950	-	.431	.726	0.562
	N	**10**	10	10	-	9	10	10
UBA Asset liability management (loan to deposit ratio)	Pearson Correlation	-.065	**.008**	.070	-	.108	.158	0.007
	Sig. (2-tailed)	.858	**.982**	.849	-	.782	.663	0.985
	N	10	**10**	10	-	9	10	10
Union Asset liability management (loan to deposit ratio)	Pearson Correlation	-.226	.436	**.071**	-	.098	.558	0.283
	Sig. (2-tailed)	.529	.208	**.846**	-	.802	.093	0.428
	N	10	10	**10**	-	9	10	10
WEMA Asset liability management (loan to deposit ratio)	Pearson Correlation	.073	.548	.115	-	.245	.486	0.154
	Sig. (2-tailed)	.842	.101	.751	-	.525	.154	0.672
	N	10	10	10	-	9	10	10
	Sig. (2-tailed)	.402	.525	.407	-	.947	.884	0.667

	N	10	10	10	-	9	10	10
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-
ECOBANK Asset liability management (loan to deposit ratio)	Pearson Correlation	-.144	.314	.338	-	**.394**	.241	-0.054
	Sig. (2-tailed)	.692	.377	.340	-	**.294**	.502	0.883
	N	10	10	10	-	**9**	10	10
FCMB Asset liability management (loan to deposit ratio)	Pearson Correlation	.235	.163	.070	-	-.088	**.093**	-0.127
	Sig. (2-tailed)	.513	.653	.847	-	.821	**.797**	0.726
	N	10	10	10	-	9	**10**	10
DIAMOND Asset liability management (loan to deposit ratio)	Pearson Correlation	-.035	-.160	.499	-	-.585	-.379	**0.428**
	Sig. (2-tailed)	.925	.658	.142	-	.098	.281	**0.217**
	N	10	10	10	-	9	10	**10**

Table 3: Random-effects GLS regression of the effect of asset and liability management on profitability of selected DMBs in Nigeria

Random-effects GLS regression					Number of obs = 100	
Group variable: bank					Number of groups = 10	
R-sq:					Obs per group:	
	within = 0.0031					min = 10
	between = 0.0456					avg = 10
	overall = 0.0000					max = 10
					Wald chi2(1) = 0.00	
					Prob > chi2 = 0.9806	
ROA	Coef.	Std. Err.	z	P>z	[95% Conf.	Interval]
LDR	-0.003	0.12423	-0.02	0.981	-0.2465	0.24046
_cons	0.03924	0.08337	0.47	0.638	-0.1242	0.20264
sigma_u	0.03182					
sigma_e	0.24896					

Table 4: Correlations of Asset Quality and Profitability of Selected Deposit Money Banks in Nigeria

		First Bank Profit after Tax	UBA Profit after Tax	Union Bank Profit after Tax	WEMA bank Profit after Tax	ECOBANK Profit after Tax	FCMB Profit after Tax	DIAMOND Profit after Tax
First Asset Quality (Ratio of Non-performing loans to total loans)	Pearson Correlation	**.067**	.049	.452	-.377	-.441	.072	-.307
	Sig. (2-tailed)	**.853**	.893	.190	.282	.235	.844	.389
	N	**10**	10	10	10	9	10	10
UBA Asset Quality (Ratio of Non-performing loans to total	Pearson Correlation	-.508	**.527**	-.116	-.689*	-.455	-.157	-.266
	Sig. (2-tailed)	.133	**.118**	.749	.027	.219	.666	.458
	N	10	**10**	10	10	9	10	10

loans)								
Union Asset Quality (Ratio of Non-performing loans to total loans)	Pearson Correlation	-.484	-.540	**.267**	-.771**	-.315	-.104	-.287
	Sig. (2-tailed)	.156	.107	**.455**	.009	.408	.774	.421
	N	10	10	**10**	10	9	10	10
WEMA Asset Quality (Ratio of Non-performing loans to total loans)	Pearson Correlation	-.618	-.576	.005	**.102**	-.286	-.149	.117
	Sig. (2-tailed)	.057	.081	.990	**.779**	.456	.681	.747
	N	10	10	10	**10**	9	10	10
	Sig. (2-tailed)	.427	.180	.866	.038	.148	.429	.257
	N	10	10	10	10	9	10	10
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-
ECOBANK Asset Quality (Ratio of Non-performing loans to total loans)	Pearson Correlation	.193	-.451	-.361	-.396	**.058**	-.480	-.300
	Sig. (2-tailed)	.593	.191	.305	.257	**.882**	.161	.399
	N	10	10	10	10	**9**	10	10
FCMB Asset Quality (Ratio of Non-performing loans to total loans)	Pearson Correlation	-.680*	.022	-.062	-.700*	-.438	**.375**	-.003
	Sig. (2-tailed)	.031	.952	.865	.024	.238	**.285**	.993
	N	10	10	10	10	9	**10**	10

DIAMOND Asset Quality (Ratio of Non-performing loans to total loans)	Pearson Correlation	-.324	-.475	-.437	-.275	.096	-.114	**.262**
	Sig. (2-tailed)	.360	.165	.207	.442	.805	.753	**.465**
	N	10	10	10	10	9	10	**10**

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at tailed).

As shown in Table 5, the study adopted a panel regression model to assess the effect of customers' deposits (measured using loan ratios) on the profitability of selected deposit money banks in Nigeria. Using 100 observations from 10 deposit banks, the study finds that customer deposits positively affect bank profitability (ROA) ($\beta = 0.015$, $z = 0.192$, $p > 0.05$). A unit increase in the customer deposit proportion necessitated by either an increase in advances or a decrease in deposits results in an increase in the ROA of up to 0.015 (1.5%). The results indicated that there is a positive but insignificant relationship between loan ratio and ROA. The coefficient of determination (R squared) was found to be insignificant at 0.0002. A Wald chi2 value of 0.04 (<0.05) indicates a good model.

This finding was supported by Belete (2018) who found a regression coefficient of 3.551 (p value=0.022) between loan ratio (LR) and return on asset (ROA). The findings agree with those in Bologna (2011), who noted that deposits play a pivotal role in a bank's funding, as a predominant portion of the bank's assets are usually financed through customer deposits. The main expense of any deposit money bank is the interest expense, and therefore, for a deposit money bank to be profitable, it must be able to raise deposits at reasonable rates in order to lend to its customers. A bank that can generate more deposits cheaply will be able to supply more loans competitively and hence make more profits if all other factors remain constant.

Furthermore, the findings agree with those of Ajibola and Olowolaju (2017), who provided evidence that the best-performing banks are those that maintain a high level of deposit accounts. The findings also agree with those in Ochung (1999), who focused on the deposit portfolio as a determinant of deposit money bank profitability and found a positive correlation between the deposit portfolio and bank profitability.

Table 6 shows the relationship between asset quality and profitability of the selected banks using the Pearson Product Moment Correlation Coefficient. The quality of assets held by a bank depends on exposure to specific risks, trends in non-performing loans, and the health and

profitability of bank borrowers (Hosna, Manzura, and Juanjuan, 2019). Hence, the extent of the credit risk depends on the quality of assets held by an individual bank. According to Obaleye (2018), the profitability of a bank depends on its ability to foresee, avoid, and monitor risks, possibly to cover losses brought about by risks that arise. Hence, in making decisions on the allocation of resources to asset deals, a bank must consider the level of risk to the assets. It was revealed that a positive relationship was found between the asset quality of the selected Deposit Money Banks and their profit. This is an indication that an increase in the asset quality of the deposit money banks increases their profitability, and vice versa.

Table 7 shows that AQR has an insignificant negative effect on the profitability of deposit money banks in Nigeria, as shown by statistical values of (β = -0.047, z = -0.19, p > 0.05). According to the results obtained from random effect panel regression analysis, no significant negative effect is found between ROA, indicating bank profitability, and asset quality ratio, indicating loans to customers.

Table 5: Random-effects GLS regression of the effect of customers' deposit on profitability of selected DMBs in Nigeria

Random-effects GLS regression					Number of obs = 100	
Group variable: banknum					Number of groups = 10	
R-sq:					Obs per group:	
	within = 0.0035					min = 10
	between = 0.0115					avg = 10
	overall = 0.0002					max = 10
					Wald chi2(1) = 0.04	
					Prob > chi2 = 0.8490	
ROA	Coef.	Std. Err.	z	P>z	[95% Conf.	Interval]
LR	.0149754	.0786536	0.19	0.849	-.1391829	.1691337
_cons	.033219	.0346967	0.96	0.338	-.0347852	.1012233
sigma_u	.0356713					
sigma_e	.2489192					

Table 6: Relationship between Asset Quality Ratio and Profitability of Selected DMBs in Nigeria

		First Bank Profit after Tax	UBA Profit after Tax	Union Bank Profit after Tax	WEMA bank Profit after Tax	ECOBANK Profit after Tax	FCMB Profit after Tax	DIAMOND Profit after Tax
First Asset Quality (Ratio of Non-performing loans to total loans)	Pearson Correlation	**.067**	.049	.452	-.377	-.441	.072	-.307
	Sig. (2-tailed)	**.853**	.893	.190	.282	.235	.844	.389
	N	**10**	10	10	10	9	10	10
UBA Asset Quality (Ratio of Non-performing loans to total loans)	Pearson Correlation	-.508	**.527**	-.116	-.689*	-.455	-.157	-.266
	Sig. (2-tailed)	.133	**.118**	.749	.027	.219	.666	.458
	N	10	**10**	10	10	9	10	10
Union Asset Quality (Ratio of Non-performing loans to total loans)	Pearson Correlation	-.484	-.540	**.267**	-.771**	-.315	-.104	-.287
	Sig. (2-tailed)	.156	.107	**.455**	.009	.408	.774	.421
	N	10	10	**10**	10	9	10	10
WEMA Asset Quality (Ratio of Non-performing loans to total loans)	Pearson Correlation	-.618	-.576	.005	**.102**	-.286	-.149	.117
	Sig. (2-tailed)	.057	.081	.990	**.779**	.456	.681	.747
	N	10	10	10	**10**	9	10	10

-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-
ECOBANK Asset Quality (Ratio of Non-performing loans to total loans)	Pearson Correlation	.193	-.451	-.361	-.396	**.058**	-.480	-.300
	Sig. (2-tailed)	.593	.191	.305	.257	**.882**	.161	.399
	N	10	10	10	10	**9**	10	10
FCMB Asset Quality (Ratio of Non-performing loans to total loans)	Pearson Correlation	-.680*	.022	-.062	-.700*	-.438	**.375**	-.003
	Sig. (2-tailed)	.031	.952	.865	.024	.238	**.285**	.993
	N	10	10	10	10	9	**10**	10
DIAMOND Asset Quality (Ratio of Non-performing loans to total loans)	Pearson Correlation	-.324	-.475	-.437	-.275	.096	-.114	**.262**
	Sig. (2-tailed)	.360	.165	.207	.442	.805	.753	**.465**
	N	10	10	10	10	9	10	**10**

*. Correlation is significant at the 0.05 level (2-tailed).

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

Table 7: Random-effects GLS regression of the effect of loans to customers on profitability of selected DMBs in Nigeria

Random-effects GLS regression					Number of obs = 100	
Group variable: banknum					Number of groups = 10	
R-sq:					Obs per group:	
	within = 0.0002					min = 10
	between = 0.0032					avg = 10
	overall = 0.0004					max = 10
					Wald chi2(1) = 0.03	
					Prob > chi2 = 0.8519	
ROA	Coef.	Std. Err.	z	P>z	[95% Conf.	Interval]
AQR	-.047152	.2525767	- 0.19	0.852	-.5421935	.447889
_cons	.04		1.30	0.195	-.0205052	.1005051
sigma_u	.0362562					
sigma_e	.2493229					

Conclusion

It was concluded that the asset-liability management of all the selected banks has a positive relationship with the respective profit after tax of the banks, respectively. It was revealed that a positive relationship was found between the asset quality of the selected deposit money banks and their profit, which suggests that an increase in the asset quality of the deposit money banks increases their profitability and vice versa. However, the study concluded that there is an inverse relationship between the ratio of the selected banks and their profitability in the study area. This is an indication that profitability reduces as the liquidity ratio increases, and vice versa.

Recommendations

Based on the study's findings, the following recommendations were made to enhance the performance of deposit money banks in Nigeria: a. Nigerian deposit money banks should actively invest in attracting deposits. This is because deposits play a pivotal role in a bank's funding, as a predominant portion of a commercial bank's assets are usually financed through customer deposits. b. The study also recommends that Nigerian deposit money banks need to monitor the interest on deposits carefully. The management of Nigerian deposit money banks should enhance their capacity in credit analysis, appraisals, and loan administration. Management should establish clear credit policies and lending guidelines. Management is also required to make sure that the terms and conditions are adhered to in loan approval.

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