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# DETERMINANTS OF PUBLICLY QUOTED BANKS' EARNINGS IN NIGERIA: THE ROLE OF PANDEMIC

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**Abstract**

This study examined the determinants of banks' earnings and the moderating role of pandemic in Nigeria. Ex-post facto research design was employed and secondary data comprising capital adequacy ratio, liquidity ratio, volume of loans granted, bank size and age were obtained from the audited financial statements of the sampled listed banks while pandemic variables comprising COVID19, Lassa fever, Yellow fever, Avian influenza, Cholera and meningitis were collected from the Nigeria Centre for Disease Control from 2013-2+/*022. Data obtained were analyzed using the fixed and random effects panel data regression and findings indicated that capital adequacy, liquidity, and age are vital determinants of banks' earnings. Also, it was shown that pandemic played a major moderating role on the relationship between the determinants of the study and banks' earnings in Nigeria. Meanwhile, a rise in their loan-granting volume will result in a -0.058991 decrease in the volume of earnings (ROA) that banks anticipate during the pandemic whereas LOTA's P-value is (P>/t/= 0.0616). This justifies that, the loans that the banks made throughout the pandemic era are not a major determinant for forecasting the earnings (ROA) of the banks throughout that reign of epidemic. The analysis also confirmed that banks from the earlier generation recorded lower returns on assets (ROA) during the epidemic. The study concludes that, the major determinant of earnings during the pandemic periods, from amongst the variables considered is the capital adequacy position of the bank, liquidity and bank age. In view of the findings, the management of large-sized banks should curtail volume of transactions in periods of pandemic in order to reduce the negative effect it may yield on earnings

**Keywords**: COVID19 Pandemic; Bank Earnings; Size; Age; Liquidity Ratio; Capital Adequacy Ratio; Loans And Advances.
**JEL Classification**:G21; M49

## INTRODUCTION

The expansion, growth, stability and sustainability of organizations cannot be assured in isolation of earnings. Gurung and Gurung (2022) see earnings as the difference between revenue and cost incurred in generating revenue. Earnings is very vital as organizations need to generate sufficient earnings in order to maximize shareholders wealth in the form of dividend payments and appreciation of shares required for growth and expansion (Dietrich & Wanzenried, 2010). Olaoye and Olarewaju (2015) opined that earnings is a measure of how banks perform efficiently in its intermediation role and the extent to which it is able to provide quality service to their customers.

Over the years, the Central Bank of Nigeria (CBN) has introduced various reforms with the aim of enhancing earnings stability of banks (Akinsulie, 2014; Kajola, Adedeji, Olabisi & Babaolu, 2018). While the efforts by the CBN seems to record some successes, the global pandemic emerged in 2020 to truncate the policy frameworks by the CBN that sought to enhance earnings stability. Hence, the effect of pandemic diseases on earnings capacity of banks in Nigeria cannot be overemphasized.

In the management literature, two dynamics have been identified to influence banks' earnings, namely bank-specific and macroeconomic indicators. Aremu, Expo and Mustapha (2013); Egunjobi (2022) contended that while banks' earnings are undoubtedly linked to both bank-specific and macroeconomic indicators, one of the vital indicators (macroeconomic)influencing earnings is the pandemic (such as Lassa fever, Yellow fever, COVID-19, Meningitis, Cholera and Avian influenza). KPMG(2020) reported that the effect of global pandemic put pressure on banks to find novel ways of growing deposits, loans and other banking services with the hope of increasing earnings and delivering positive returns to shareholders.

Laila, Revenio and Karima (2021) noted that the global pandemic threatened banks' profitability, reduced banks incomes and caused losses due to borrowers' inability to repay their loans and advances. Essentially, these situations positioned banks in a stringent survival chance, thus making them expedient to know their earnings determinants. While we acknowledged the plentiful empirical studies on the determinants of earnings of banks in Nigeria (Ozuagwu, 2014; Samad, 2015; Sanyaolu, Siyanbola, Ogunmefun & Makinde, 2019), there are limited researches that had assessed the role of global pandemic in moderating the determinants of earnings of publicly quoted banks in Nigeria.

Consequently, this study was carried out to fill the lacuna in the management literature and to examine the variables that determine earnings of publicly quoted banks in Nigeria during the global pandemic. In view of this, the specific objectives were to:

(1) examine whether liquidity position is a determinant of banks' earnings during global pandemic in Nigeria

(2) ascertain the extent to which capital adequacy level determines banks' earnings during global pandemic in Nigeria

(3) assess whether age is a determinant of banks' earnings during global pandemic in Nigeria

(4) ascertain the magnitude to which size affects banks' earnings during global pandemic in Nigeria

(5) examine the effect of volume of loans granted on banks' earnings during global pandemic in Nigeria.

## LITERATURE REVIEW

### Earnings and Determinants of Banks' Earnings

Earnings are essential for a bank to sustain its operations and for its shareholders to obtain fair returns on their investments. A good means of measuring performance of banks and other business enterprises is the financial analysis (Ozuagwu, 2014). Return on asset (ROA) becomes the most important metric to use if the goal is to determine how lucrative and efficient a bank's management is at managing the bank's total assets to create money and was used as a measure of earnings in the research (Alemu, 2014)

In this study, five (5) determinants of banks' earnings were identified, namely liquidity, capital adequacy, bank age, bank size and volume of loans granted to bank customers. First, Jeroh, Akobundu and Oboreh (2021) defined liquidity as the resources available at a bank disposal to meet its day to day obligation. In considering the information usefulness of liquidity, Akinsulire, (2014) defined liquidity as the amount of cash or current assets that can be easily converted into cash to meet the daily operational needs of a company. Thus, liquidity represents the amount that is invested in assets that are expected to be realized within a single accounting period or whenever it is required without loss in its value.

Second, Torbira and Zaagha (2016) asserted that capital adequacy is a measure of how much equity a bank has on reserve. Banks with more equity capital are perceived to have more safety and this can translate into higher earnings. The higher the capital adequacy ratio (CAR), the more profitable a commercial bank is. CAR measures a bank's financial strength by using its capital and assets. It is used to protect depositors and promote the stability and efficiency of financial systems (Saona, 2011).

Third, banks extend credits to different interest group and that, this decision is factored by many issues ranging from prevailing market rates, deposit volumes, liquidity magnitudes, public recognitions amongst other issues (Zalata & Roberts, 2016).

Fourth, Rahman, Hamid and Khan (2015) defined bank age as the number of years of incorporation of the company. Ndifon and Ubana (2014) defined bank age as the length of incorporation and argued that since a bank is a legal entity, it is born via incorporation. Sixth, bank size has been variously defined in the literature to refer to as aggregate/ total assets, scale of operations and number of employees among others (Aremu, et al, 2013; Laila, et al, 2021). With this definition, larger banks are assumed to have more resources at their disposal and can be used for profitable investment opportunities. Similarly, Mikias (2022) defined size by making reference to the banks' market value. Also, Odusanya (2018) aligning with prior definitions concluded that size of a company is better reflected by its total assets, sales, or market capitalization.

### Pandemic

Despite being a health risk, pandemics generally garner international attention and result in serious political, social, and economic issues (Egunjobi, 2022; Okoro & Egberi, 2020). Numerous studies have been conducted in the literature about the effects of the worldwide pandemic on commerce, development, and economic growth in both industrialized and developing nations. Still, not much research has been done on how the worldwide epidemic impacts Nigerian banks' profits.

Okoro and Egberi (2020) reported that, Nigeria's social, economic, and religious activities have been severely hampered by the worldwide epidemic. Additionally, government measures to stop the spread of various pandemics, including Lassa fever, Yellow fever, COVID-19, Meningitis, Cholera, and Avian influenza, have led to higher costs for goods and services, job losses, and dire repercussions for developing nations' health and education systems as well as their financial sectors (Okoro & Egberi, 2020; Musah, et al, 2022).

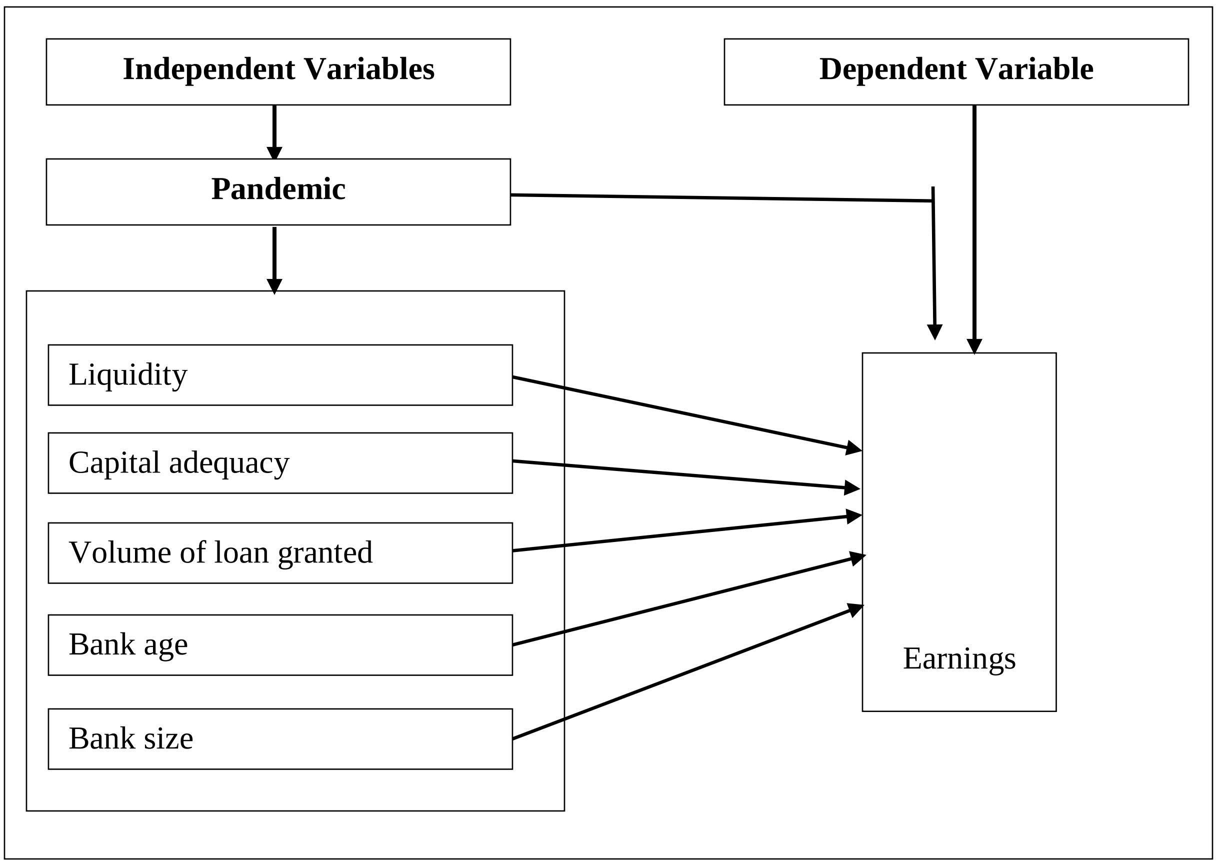


Figure 1: Conceptual Model of the Study

Source: Conceptualized by the Researchers (2023)

**Theoretical Framework**

This paper was hinged on the signaling theory. The theory stresses that, profitable firms provide efficient information. The theory further reiterates that, a higher capital base signal to the market value. The theory is suitable to the Nigerian business environment that is characterized by imperfections. The theory addresses information misalignments between investors and managers in the sense that managers have the access to private information which investors do not have.

According to Myers and Majluf (1984), firms need to release a part of the private information to investors and the public so as to attract more capital. This, according to Kajola et al., (2018), will lead to information symmetry between managers and shareholders and enable well capitalized banks to perform better. This theory therefore suggests, if CAR increase, firm performance would do as well.

**Empirical Studies**

Egunjobi (2022) examined the extent COVID-19 pandemic affect the Nigerian market. Primary data collected through a survey method and questionnaires was analysed using descriptive statistics and the chi square test. The study discovered that COVID-19 has significant impact on the Nigerian financial market

Gurung and Gurung (2022) studied the Nepali bank profitability predictors over 13 Nepali banks from 2009-2020. They confirmed that, loans to deposit are major bank profitability predictors.

Mikias, (2022) investigated the examined the Ethiopian bank profitability predictors from 2009-2018 using quantitative research approach. Data obtained were analyzed using panel regression. The result showed that that bank size, CAR, operational efficiency, liquidity risk, GDP & income diversification improves bank's profitability significantly.

Musah, et al, (2022) investigated the extent the COVID-19 pandemic affected the Ghanaian banks from 2017-2021. The study revealed that, COVID-19 pandemic did not affect Ghanaian banks' ROA.

Laila, et al (2021) examined the Oman bank profitability predictors from determinants. Seven banks were sampled. Findings indicated that, the macroeconomic factors only affected bank profitability minimally. Similarly, Jeroh, et al (2021) assessed banks' managerial efficiency during COVID-19 pandemic in Nigeria. Data from five (5) banks were analyzed via descriptive and diagnostic tests, structural equation model and regression techniques. The results indicated that the outbreak of COVID-19 pandemic significantly influenced managerial efficiency of the five banks studied.

Sanyaolu, et al (2019) examined the Nigerian bank profitability predictors from 2008-2017. Panel data and multiple regression analysis were used and the results showed existence of significant positive effect of NPLR and CAR while NPLR reduced bank profitability greatly.

## METHODOLOGY

The study adopted the *ex-post- facto* research design because the variables are secondary in nature. The target population was the entire twenty-four (24) banks in the Nigeria out of which ten (10) of them were sampled using the convenience sampling technique. The data were sourced from the annual financial reports of the sampled banks from 2013-2022.

Data on reported cases of pandemics were obtained from the database and published reports of the Nigerian Centre for Disease Control (NCDC) from 2013-2022 The pandemic diseases of interest include COVID-19, Lassa fever, Yellow fever, Avian influenza, Cholera and meningitis as recorded in Nigeria during the defined period. Descriptive statistics was use to obtain a brief descriptive coefficient that summarized the dataset. Correlation analysis was use to evaluate the degree of relationship between the variables while variance inflation factor (VIF) was used to measure multicollinearity in the dataset.

Furthermore, the fixed (FE) and random effects (RE) panel data regression was used in making statistical inferences; however, the study used the Hausman specification test to select between the fixed and random estimation models. In view of the variables of the study, the following empirical model was estimated:

$$\mathrm{ROA}=\beta_0+\beta_1\mathrm{LIQUID}+\beta_2\mathrm{CAPAD}+\beta_3\mathrm{LOTA}+\beta_4\mathrm{BAGE}+\beta_5\mathrm{BIZE}+\mathrm{PADEM}+\varepsilon_r \quad \text{- - - - Eqn 1}$$

Where: ROA= Return on Assets – Measure of Earning; LIQUID= Liquidity; CAPAD= Capital Adequacy; LOTA= Loan to Assets; BAGE = Bank age; BIZE = Bank size; PADEM= Pandemic Diseases; $\varepsilon_r$= Error term; $\beta_0$= Intercept; $\beta_1 – \beta_5$= Coefficients;

Table 1

Variable Measurements

| S/N | Variable | Symbol | Measurement |
|---|---|---|---|
| 1 | Earning | ROA | Net income divided by average total assets |
| 1 | Capital adequacy | CAP_AD | Equity Capital divided by total assets |
| 2 | Liquidity | LIQUID | Current assets minus inventory divided by current liabilities. |
| 3 | Volume of loans granted | LO_TA | Total loan divided by total assets |
| 4 | Bank age | BAGE | Natural log of listing years |
| 5 | Bank size | BIZE | Natural logarithm of total Assets |
| 6 | Pandemic Viruses | PANDEM | No of reported cases |

Sources: Compiled by the Researchers (2023)

## RESULTS AND DISCUSSION

### Preliminary Test

The two main preliminary tests considered prior to conducting the main regressions are descriptive statistics and correlation matrix analyses. They are presented thus:

Table 2

Descriptive Statistics

| | **Mean** | **Median** | **Maximum** | **Minimum** | **Std. Dev.** | **Observations** |
|---|---|---|---|---|---|---|
| ROA | 1.770400 | 1.365000 | 5.620000 | 0.020000 | 1.293214 | 100 |
| CAPAD | 11.99740 | 12.88500 | 23.75000 | 0.080000 | 5.080968 | 100 |
| LOTA | 20.80770 | 21.02500 | 56.09000 | 0.290000 | 11.22422 | 100 |
| LIQ | 1.466700 | 1.505000 | 3.130000 | 0.220000 | 0.461419 | 100 |
| BAGE | 26.10000 | 19.00000 | 53.00000 | 8.000000 | 15.10535 | 100 |
| BIZE | 6.956254 | 6.467500 | 9.811300 | 5.696800 | 1.239095 | 100 |
| PADEM | 2.995881 | 2.866284 | 5.095131 | 0.000000 | 1.521809 | 100 |

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The table shows that the average ROA for the chosen banks was 1.7. It was also found that the banks' yearly lowest ROA was 0.02 and their yearly maximum was 5.62. The selected bank earnings' mean values are below their average during the analyzed years, as indicated by the 1.29 standard deviation of the ROA. This offered more proof that bank earnings are not very variable. The graph also shows that the banks' average capital adequacy (CAPAD) during the pandemic was 11.9; their lowest and maximum CAPACITY were 0.07 and 23.8, respectively compared to the average value of 11.9, the CAPAD standard deviation of 5.

When it comes to the capital adequacy of commercial banks during epidemic times, the CAPAD standard deviation of 5 is less than the average value of 11.9. Furthermore, the average score for the banks' total loans to assets during that period was 20.8%; during the pandemic, this ratio ranged from 0.29% to 56%. However, the mean total loan to total asset value during the pandemic period was higher than the total loan to total asset value standard deviation. This suggests that commercial banks followed a similar policy during the pandemic, limiting the amount of loans made based on their total assets as a benchmark.

Furthermore, as the table illustrates, the average liquidity value of the banks during pandemics is 1.47, with commercial banks having the highest liquidity value at 3.13 and the lowest at 0.22. The table shows these particulars. The liquidity standard deviation of commercial banks during the pandemic was 0.46, which was lower than the mean of 1.47.

Ultimately, the average score for banks with a certain size was 6.96; the lowest score was 5.7, and the highest score was 9.8. However, the table showed that the year with the highest number of pandemic outbreak cases ever recorded was 124,489, the year with the fewest cases during our study period was 2013, with zero cases, and the average number of pandemic diseases reported during the period of 26,993 cases when logged was 2.995881 but deviated with a score of 1.521809. This shows that there was little change in the number of reported cases of pandemic illnesses over the study's duration.

Table 3

*Correlation Matrix Analyses*

| | ROA | CAPAD | LOTA | LIQ | BAGE | BIZE | PADEM |
|---|---|---|---|---|---|---|---|
| **ROA** | 1.000000 | | | | | | |
| **CAPAD** | 0.585345 | 1.000000 | | | | | |
| **LOTA** | 0.707944 | 0.175274 | 1.000000 | | | | |
| **LIQ** | 0.357009 | 0.148781 | 0.036872 | 1.000000 | | | |
| **BAGE** | -0.206832 | -0.072187 | -0.014689 | -0.027082 | 1.000000 | | |
| **BIZE** | -0.641869 | -0.129413 | 0.065052 | -0.012191 | -0.091416 | 1.000000 | |
| **PADEM** | -0.530393 | -0.077074 | -0.017869 | -0.142069 | 0.079488 | 0.068330 | 1.000000 |

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The correlation study revealed a positive association between bank profitability during pandemic times, as assessed by ROA, and CAPAD (0.585345), LOTA (0.707944), and LIQUID (0.35709). Furthermore, the enterprises' profits and BIZE (-0.641869), BAGE (-0.206832), and PANDEM (-0.530393) are adversely correlated. It should be mentioned that, with the exception of LIQUIDITY and CAPAD, which have the highest correlation coefficients of 0.148781, all other independent variables have weak relationships with one another. Nonetheless, the purpose of the VIF test was to determine whether or not the model has multicollinearity issues.

**Robustness Checks**

The model was initially the focus of a number of early analyses, which are provided here in order to guarantee that the study estimate is appropriately recorded:

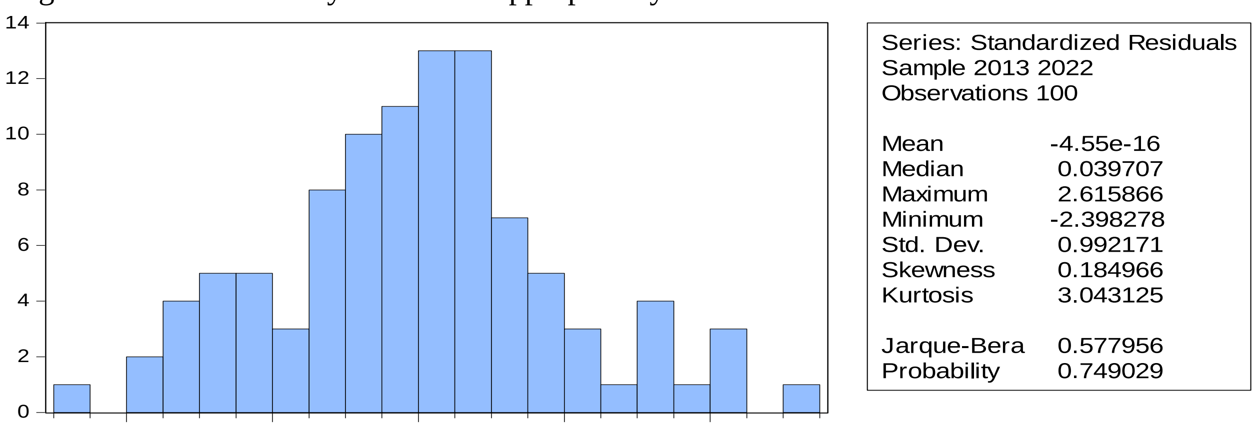


Figure 1: Normality Test

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The probability values of all the study's variables—ROA, CAPAD, LOTA, LIQUID, BAGE, BIZE, and PANDEM—are normally distributed, as can be seen from the result in figure 1. It indicates that using the regression result to formulate policy is doable.

Table 4

*Variance Inflation Factor (VIF)*

| **Variable** | **Variance Inflation Factors (VIF)** | **Tolerance Value (TOV)** |
|---|---|---|
| CAPAD | 1.2745 | 0.7846 |
| LOTA | 1.1596 | 0.8624 |
| LIQ | 1.1338 | 0.8820 |
| BAGE | 1.0859 | 0.9209 |
| BIZE | 1.0888 | 0.9185 |
| PADEM | 1.1878 | 0.8419 |
| **Mean** | **1.1551** | **0.8684** |

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The average VIF, according to Table 4, is 1.1551. However, the VIF standard requires that the benchmark mean of the acceptance level be 10. Therefore, any result with a mean VIF larger than 10 is deemed to have an elevated correlation between both independent variables. Since our result is 5.31, which is far less than the allowed maximum of 10, we conclude that our data do not exhibit multicollinearity. To further support this, the tolerance value of 0.8684 shows that the mode does not have any problems with multi-collinearity.

Table 5

*Other Diagnostic Tests*

| | | | | |
|---|---|---|---|---|
| **Heteroskedasticity Test** | F-statistic | 1.516273 | Prob. F(5,94) | 0.1922 |
| **Ramsey Reset Test** | F-statistic | 1.450760 | Prob. F (5, 94) | 0.2315 |

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Table 5 shows that the critical threshold of 0.05 is less than the probability value of 0.1922. Consequently, we draw the conclusion that the data distribution is Homoskedastic, indicating that the variance has a constant error term. In the meanwhile, a probability value of 0.2315 was recorded by the Ramsey RESET Test. This suggests that the model's variables are accurately described.

Table 6

*Hausman Test*

| **Test Summary** | **Chi-Sq. Statistic** | **Chi-Sq. d.f.** | **Prob.** |
|---|---|---|---|
| Period random | 3.251590 | 5 | 0.6613 |

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The table 6 presents that probability of the Hausman Test is 0.6613, meaning that is not significant. Hence, the random effect regression was selected.

Table 7
*Random Effect Analysis*

Dependent Variable: ROA
Total Balanced Panel Observations: 100 (Periods=10 (2013 to 2022) & Cross Sectional Units=10)

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| C | 5.865745 | 0.676329 | 8.672916 | 0.0000 |
| CAPAD | 0.140904 | 0.034557 | 4.077401 | 0.0001 |
| LOTA | -0.058991 | 0.031180 | -1.891965 | 0.0616 |
| LIQ | 0.118196 | 0.029862 | 3.958048 | 0.0001 |
| BAGE | -0.170221 | 0.070226 | -2.423913 | 0.0173 |
| BIZE | -0.083114 | 0.087476 | -0.950137 | 0.3445 |
| PADEM | -0.129330 | 0.026409 | -4.897138 | 0.0000 |

Weighted Statistics

| | | | |
|---|---|---|---|
| R-squared | 0.596692 | Mean dependent var | 1.623361 |
| Adjusted R-squared | 0.557769 | Durbin-Watson stat | 1.587237 |
| F-statistic | 10.19170 | Prob(F-statistic) | 0.000000 |

Unweighted Statistics

| | | | |
|---|---|---|---|
| R-squared | 0.611336 | Mean dependent var | 1.770400 |
| Sum squared resid | 97.46378 | Durbin-Watson stat | 1.601830 |

E-Views version 9.0 (2023)

Table 7 provided the F-statistic and P-value, which came out to be 10.32(0.000). This demonstrates that even with all of the techniques, our model can still be used to make conclusions because the results are statistically significant at 5% level. The study's R-squared score of 59.67% implies that the model has a high degree of predictive ability. In the meanwhile, the model appears to be devoid of serial/auto correlation, according to the Durbin-Watson stat of 1.601830.

Furthermore, the regression coefficient for CAPAD is 0.140904. According to this statistic, if all other factors remain same, a rise of one unit in equity capital relative to total assets would result in an increase of 0.140904 units to the banks' mean profits. Furthermore, a move by the companies to lower equity capital as a percentage of total assets would lower the banks' ROA volume. The probability value (P>/t/= 0.0001) indicates that ROA-adjusted profits are significantly influenced by CAPAD. Additionally, despite the epidemic, bank profitability as indicated by ROA grew by 0.118196 units. On the other hand, the liquidity situation has a positive significant influence on the p-value of liquidity, which has a score (P>/t/= 0.0001). Meanwhile, the liquidity situation a major factor influencing profitability throughout the pandemic periods under consideration, as indicated by the liquidity p-value of (P>/t/= 0.0001).

Again, ROA was lowered by -0.083114 and had a P-value of 0.3445 due to the banks' size. It follows that bank size has no discernible impact on earnings during pandemics. These results are consistent with those of Berger, Mester, and Isaya (2022) (1997). & Heffernan and Fu (2008) discovered no connection between the earnings of a bank and its size. On the other hand, Pickering's (2011), Muhindi and Domnic's (2018) data indicate that size has a noteworthy and favorable impact on earnings.

On the other hand, a rise in their loan-granting volume and bank age will result in a -0.058991 decrease in the volume of earnings (ROA) that banks anticipate during the pandemic. On the other hand, bank age's P-value is (P>/t/)= 0.365, whereas LOTA's P-value is (P>/t/= 0.0616). According to the data, the loans that the banks made throughout the pandemic era are not a major determinant for forecasting the earnings (ROA) of the banks throughout that reign of epidemic. The analysis also confirmed that banks from the earlier generation recorded lower ROA during the epidemic. This is consistent with research by Isaya (2022) and Dogan (2013), which discovered detrimental relationships between age and ROA. This is consistent with research by Isaya (2022) and Dogan (2013), which revealed a negative correlation between age and wages, but it differs with research by Ilaboya and Ohiokha (2016), Halil and Hasan (2012).

## CONCLUSION AND RECOMMENDATIONS

This study was premised on ascertaining the determinants of earnings in banks listed on Nigeria Exchange Group during the pandemic periods. Specifically the study covered the periods 2013-2022 within which the escalation of pandemic was hitting every facet of life. The driver variables considered include capital adequacy, total loans granted, liquidity, bank age and bank size while earnings was proxied with return on asst. The motivation for the study was that business activities seemed to have taken a new turn and the study desired to establish what was driving earnings within the periods of pandemic in Nigeria.

Secondary data were collected from the annual reports and accounts of the banks while pandemic data was gathered from the NCDC database. In-depth analyses were done using fixed and random effects panel regression and the study made conclusion which pursued a scientific process that, the major determinant of earnings during the pandemic periods, from amongst the variables considered is the capital adequacy position of the bank, liquidity and bank age. In view of the findings, it was recommended that management of large-sized banks should curtail volumes of transactions in periods of pandemic so as to reduce the negative effect it may have on earnings. Furthermore, since higher liquidity level impairs earnings strength, management is encouraged to maintain minimum liquidity requirement so as to make rational investments of other resources for greater returns.

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