EFFECT OF RISK COMPONENTS ON OPERATIONAL EFFICIENCY OF DEPOSIT MONEY BANKS IN NIGERIA
A STUDY OF LISTED DEPOSIT MONEY BANKS IN NIGERIA
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ABSTRACT
The main objective of this study is to examine effect of risk components on operational efficiency of Deposit Money Banks in Nigeria. The data to be used for the study will be extracted from secondary sources only. The data will be panel data which will be subjected to time and cross-sectional attributes and this will enable us to study innovation and performance of firms over time and as well as across the sampled quoted banks. The findings of the study revealed that credit risk increases the operational efficiency of Deposit money Banks. Also, the study found that liquidity risk has negative and significant effect on operational efficiency. The result also found that capital adequacy has positive and significant effect on operational efficiency. The study recommended that the management of the Deposit Money Banks should device viable measurement for evaluating the risk components confronting the banking operation and not to rely on the bank model with an assumption that that risk is incorporated into bank output without explicitly modeling its role in explaining inefficiency. This is because failure to account for risk-taking may lead to biased estimations of bank efficiency and misleading estimates of scale economies and cost elasticities.

Keyword: Credit risk, Liquidity risk, Capital adequacy and Operational efficiency

1.0 INTRODUCTION
It is usually emphasized that operational efficiency in business operation by corporate entities especially banks that perform the fiduciary role of financial intermediation cannot be underestimated (Ifeacho, 2019). Operational efficiency remains an important attribute of organizational performance because all inputs/resources are scarce and limited (time, money and raw materials), so it makes economic sense to try to conserve them while maintaining an acceptable level of output or level. Efficiency equally relates to reducing the amount of wasted inputs (weighted) that brings higher expected value or results (weighted) when programming is involved (Moradi, 2019). Operational efficiency is the ratio between the input to run a business operation and the output gained from the business. Its aim is to minimize redundancy and waste so that the reduced internal costs that result from operational efficiency will enable the firm to achieve higher profit margins or be more successful in highly competitive market like Nigeria (Olarewaju, 2016).

The important role of the financial system, especially the banking industry with its intermediary function, in modern economics and their influences on economic growth has been confirmed in the previous theories related to economics (Schumpeter, 2014). Therefore, there is a long conventional attention of the research community on both the theoretical and empirical level of banks’ efficiency which refers to the ability of banks to generate revenue from a given number of
assets and make a profit from a given source of income (European Central Bank, 2013). In view of the stated problem, the following hypotheses were stated in a null form:

\[ H_0: \text{Credit risk has no significant effect on operational efficiency of Deposit Money Banks in Nigeria}. \]
\[ H_{0ii}: \text{Liquidity risk has no significant effect on operational efficiency of Deposit Money Banks in Nigeria}. \]
\[ H_{0iii}: \text{Capital adequacy has no significant effect on operational efficiency of Deposit Money Banks in Nigeria}. \]

### 2.0 LITERATURE REVIEW AND THEORETICAL FRAMEWORK

In this chapter, related literature on this topic will be explored and reviewed. It will cover most aspects of risk components and operational efficiency. The chapter will discuss the various viewpoints about the effect of risk components on operational efficiency of Deposit Money Banks in Nigeria.

#### Concept of Risk

Risk is the probability that an investment’s actual return will be different than predictable return. Oldfield, (2019) argued that risk facing financial institutions can be segmented into three distinguishable categories from a management outlook. These are risks that can be eliminated or avoided by simple business practices, risks that can be transferred to other participants and risk that must be actively managed at the firm level. Avoiding risk by business practices has the goal of ridding the bank of risks that are not essential to the services provided or absorbing on the optimal quantity of a particular kind of risk.

#### Concept of Risk Management

Cumming and Hirtle (2018) stressed that risk management as the overall process that a financial institution follows to define a business strategy, to identify the risks to which it is exposed, to quantify those risks, and to understand and control the nature of risks it faces. Risk Management therefore refers to the process of identification, analysis and either acceptance or mitigation of uncertainty in investment decision-making. Parreñas (2016) states that robust risk management practices in the banking sector are important for both financial stability and economic development.

#### Concept of Efficiency

Efficiency is the ability to deliver products and services cost effectively without sacrificing quality. It involves a combination of right variables to enhance productivity and value of business operations, while driving down the cost of routine operations to a desired level. According to Chen (2018), Efficiency in banking has been defined and studied in different dimensions including: (i) scale efficiency (ii) Scope efficiency and (iii) Operational efficiency. A bank has the scale efficiency, when it operates within the range of constant return to scale. Scope efficiency comes into play when the bank operates in different numerous locations. Operational efficiency refers to the efficient utilization of human and material resources or the efficient use of people, machine tools and materials funds. Better utilization of any or a combination of these three, can increase output of goods and services and reduce costs. Operational efficiency is the tactical planning of an organization to maintain a safe
balance between cost and productivity. It identifies the wasteful processes that contribute to loss of resources and organizational profits. It deals with minimizing waste and maximizing the benefits of resource to provide better services to the customers. For effective competition, lowering costs is a best option as internal wastage enhances more cost. Any input that is not processed through system so as to generate useful output is waste. It means producing more goods and services with no greater use of resources or maintaining the same level of production using fewer resources.

**Review of Empirical Literature**

This section reviewed similar works that have been conducted on risk components and operational efficiency in the developing and developed countries.

Keramati, Ardalan and Ashtiani (2019) investigated the relationship between risk components and operational efficiency in the context of the Iranian Steel private firms. The study revealed that there was a link between risk components and operational efficiency. Bintu (2017) researched on effects of Risk components Strategy on Performance of Small Scale Businesses in Maiduguri Metropolitan, Borno State Nigeria.

Kiprotich (2018) carried out a research on effects of risk components on operational efficiency of automotive fuels of selected services stations in Nakuru Town and found out that risk components enhances operational efficiency. Munyole (2015) carried out a research on marketing strategies adopted by veterinary pharmaceutical firms in Kenya to enhance performance and he found out that marketing strategies improve performance.

Muchohi (2020) conducted a study on risk components strategies adopted by tennis affiliated organizations to enhance competitiveness. The results revealed that there is a strong positive relationship between risk components strategies and competitiveness. However, it is evident that the study did not focus on marketing strategies adopted by petroleum companies in Kenya. Obonyo (2017) evaluated risk components strategies adopted for competitiveness by supermarkets in Kisii Town. The study established that price management rarely attracts customers. However, the study fails to determine the proportional level each strategy needs to be employed to maximize the performance. A lot of studies have been done in other industries to find out the effects of risk components on operational efficiency but none have been done on Feeds manufacturing companies. 6 Therefore the study seeks to address this knowledge gap by focusing on effects of risk components on operational efficiency at Unga feeds.

Ndulue and Ekechukwu (2019) carried out a research study in Nigeria on the impact of risk components on operational efficiency in Nigerian Breweries Company, Kaduna. The research findings showed that there is a positive relationship between risk components and operational efficiency in the organization. Also, Saranya (2017) investigated influence of risk components on operational efficiency. The results indicate unit-level and individual-level risk components have unique multilevel
influences on performance. Khan, Nawaz, Aleem and Hamed conducted a study to examine the impact of risk components on operational efficiency in autonomous Medical Institutions of Pakistan. The results of the research study demonstrated that a positive relationship exists between risk components and operational efficiency.

Theoretical Framework

This section presents a review of theoretical literature upon which the study is anchored. It covers loan pricing theory, firm characteristics theories and credit market theory. Thus, in the course of examining the effect of risk components on the operational efficiency of Deposit Money Banks, these theories are considered relevant.

Loan Pricing Theory

This theory advocates that banks cannot always set high interest rates without considering the problems of adverse selection and moral hazard since it is very difficult to forecast the borrower type at the start of the banking relationship (Stiglitz & Weiss, 2017). These relationship can invariable been drawn from loan pricing theory. This theory underpin the study.

3.0 RESEARCH METHODOLOGY

This chapter describes the techniques and procedures used by the researcher in conducting the study and collecting the data for the study. It comprises of the research design, the sources and methods of data collection, population of the study, sample of the study and the technique of data analysis.

Population of the Study

According to Kothari (2017), a population refers to all items in any field of inquiry and is also known as the universe of the researcher. The population the study comprise the 14 Deposit Money Banks operating in Nigeria (NSE, 2022).

Sample Size and Sampling Techniques

The sample of the study is arrived at through census sampling technique. Thus, the sample of the study comprises of all 14 Deposit Money Banks listed at the Nigerian Stock Exchange as at 31st December 2020. That main reason for the use of listed banks is that listed companies are required by law to submit their financial report to the stock exchange and that information provided in the financial statement of the listed companies are reliable and verifiable.

Method of Data collection and Analysis

The data to be used for the study will be extracted from secondary sources only. Given the nature of hypotheses formulated to guide the research, the data would be analyzed using the panel data regression analysis.

The model specification is specified below:

\[ \text{EFF}_{it} = \beta_0 + \beta_1 \text{CR}_{it} + \beta_2 \text{LR}_{it} + \beta_3 \text{CA}_{it} + \epsilon_{it} \]

where EFF\(_{it}\) represent efficiency, CR\(_{it}\) represents credit risk, LR\(_{it}\) represents liquidity risk, CA\(_{it}\) represents capital adequacy, \(i\) represent period, \(t\) represent time, \(\beta_0\) represent Constant and \(\beta_1 - \beta_3\) represent veta coefficient.

4.0 RESULTS AND DISCUSSIONS

In this chapter, the study presents the results of the descriptive and inferential statistics

Table 4.1 Descriptive Statistics
Variable | Mean | Std. Dev. | Min | Max  
---|---|---|---|---
Eff  | .5501643 | .2154378 | .3015 | 1.6958  
Cr  | .3225697 | .1073689 | .0687189 | .6503108  
Lr  | .0994349 | .0695126 | -.2327469 | .3267384  
Cad  | .3207357 | .3013353 | -1.5888 | 1.3842  
Fmsz  | 5.743438 | .4601798 | 4.2886 | 6.5429  

Source: Researcher computation from STATA output, (2022)

The mean values of eff, cr, lr, cad and fms are .5501643, .3225697, .0994349 and 5.743437 respectively. The common feature of these variables is that they all have positive mean values. This means that each of the variables displays increasing tendency throughout the sampling period. The average or mean value of efficiency is approximately .5502 which implies that the proportion of operational efficiency of the deposit money banks is, is very high and it indicates increase in operational efficiency in the banking system. The average value of credit risk is approximately.3226. This average ratio is very high purporting that the credit risk of the deposit money banks reviewed on average amount to about 32 per cent. The average value of capital adequacy ratio 32.07% purporting that the tendency of deposit money banks capacity of this sector to absorb the eventual losses generated by the manifestation of certain risks or certain significant macroeconomic imbalances is low. The average value of firm size is approximately 5.74 which indicate that there is growth in the size of deposit money banks.

Table 4.2 Correlation Analysis

<table>
<thead>
<tr>
<th></th>
<th>Eff</th>
<th>cr</th>
<th>lr</th>
<th>cad</th>
<th>Fmsz</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eff</td>
<td>1.0000</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>cr</td>
<td>-0.2351</td>
<td>1.0000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>lr</td>
<td>-0.2748</td>
<td>0.4264</td>
<td>1.0000</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1
Pearson correlation coefficients are used to study the extent of association among the variables for the period between 2019 and 2020. The interpretation of the Pearson correlation would follow Guilford rule of thumb which is < 0.2 is a negligible correlation, 0.2 to 0.4 is low correlation, 0.4 to 0.7 is a moderate correlation, 0.7 to 0.9 is a high correlation, > 0.9 is a very high correlation. The result shows that the correlation between the independent variables and dependent variable used in the model is generally small. The largest correlation coefficients exist between the fund liquidity risk and solvency risk (75.28%). The result shows that efficiency is negatively correlated to credit risk, liquidity risk, capital adequacy and firm size. Also, the correlation matrices does not reveals that two explanatory variable are perfectly correlated. This means there is absence of multicollinearity problem in our model. This was confirmed by Variance Inflation Factors (VIF) and Tolerance Values (TV) below.

**Interpretation of Regression result**

This section discusses in detail the analysis of the results for each explanatory variable and their effect on financial flexibility of Deposit Money Banks. Hence, the following discussions present the interpretation on the fixed effects model regression results as shown from the result of hausman test above.

**Table 4.3 Dependent Variables: Efficiency**

<table>
<thead>
<tr>
<th>Variables</th>
<th>Coef.</th>
<th>Std. Err.</th>
<th>t-statistics</th>
<th>P-values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cr</td>
<td>.4572927</td>
<td>.2780364</td>
<td>1.64</td>
<td>0.100</td>
</tr>
<tr>
<td>Lr</td>
<td>-1.889652</td>
<td>.6224763</td>
<td>3.04</td>
<td>0.002</td>
</tr>
<tr>
<td>Cad</td>
<td>.294599</td>
<td>.1287125</td>
<td>2.29</td>
<td>0.022</td>
</tr>
<tr>
<td>fmsz</td>
<td>-.1492994</td>
<td>.0388616</td>
<td>0.000</td>
<td>0.000</td>
</tr>
<tr>
<td>cons</td>
<td>1.353556</td>
<td>.2238899</td>
<td>6.05</td>
<td>0.000</td>
</tr>
<tr>
<td>R-Sq</td>
<td>0.2606</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Wald chi2 22.77
Prob 0.0001

Source: Researcher computation from STATA output, (2022)

From the result, it is shown that the adjusted $R^2$ value is 33.18\% which indicates that the dependent variable of operational efficiency of Deposit Money Banks is well explained by the independent variables and Control variables (measured as credit risk, liquidity risk, capital adequacy and firm size). Thus, these variables collectively are good explanatory variables to identify the effect of risk components on Deposit Money Banks’ operational efficiency in Nigeria. The wald chi-square from the regression is 22.77 and with the p-value of zero attached to the test statistic reveal that the null hypothesis that all of the coefficients are jointly zero should be rejected. Thus, it implies that the independent variables in the model were able to explain variations in the dependent variable.

**Test of Hypotheses**

**Ho:** Credit risk has no significant effect on operational efficiency of Deposit Money Banks.

From the results above it was found that credit risk has a positive but insignificant effect on operational efficiency of Deposit Money Banks. Hence the null hypothesis that credit risk has no significant effect on operational efficiency of Deposit Money Banks will not be rejected.

**Hoi:** Liquidity risk has no significant effect on operational efficiency of Deposit Money Banks.

Also, result also reveals that liquidity risk has negative but significant on operational efficiency of Deposit Money Banks. Hence the null hypothesis that liquidity risk has no significant effect on operational efficiency of Deposit Money Banks will not be accepted rather the alternate hypothesis that liquidity risk has significant effect on operational efficiency of Deposit Money Banks will be accepted.

**Hoiii:** Capital adequacy has no significant effect on operational efficiency of Deposit Money Banks.

More so, result reveals that capital adequacy positive and significant effect on operational efficiency of Deposit Money Banks. Hence the null hypothesis that capital adequacy has no significant effect on operational efficiency of Deposit Money Banks will not be accepted rather the alternate hypothesis that capital adequacy has significant effect on operational efficiency of Deposit Money Banks will be accepted.

**Discussion of Findings**

This section analysed the statistical findings of the study in relation to the previous empirical evidences. From the regression results it was found that credit risk has positive but insignificant effect on operational efficiency. This means that an
increase in funding credit risk increases the operational efficiency of Deposit money Banks. This conforms to the findings of Hoseininassab, et al. (2012)
Also the study found that liquidity risk has negative and significant effect on operational efficiency. This implies that an increase in liquidity risk will lead to a decrease in operational efficiency of the Deposit Money Banks. Alternatively, a decrease in liquidity risk will improve the operational efficiency of Deposit Money Banks. This conforms to the finding of Hoseininassab, et al., (2012).
The result also found that capital adequacy has positive and significant effect on operational efficiency. This implies that higher the capital adequacy, the higher the operational efficiency of Deposit Money Banks. This conforms to the findings of Pessarossi and Weill, (2015). The explanation for this is that higher capital adequacy levels lead to higher efficiency in domestic banks.

5.0 CONCLUSION AND RECOMMENDATIONS
Conclusion
This study concluded that risk components have significant effect on the operational efficiency of deposit money banks considering the liquidity risk and capital adequacy while credit risk has no significant effect on operational efficiency. Also, the bank size contributes to the operational efficiency of the banking industry. It is usually emphasized that operational efficiency in business operation by corporate entities especially banks that perform the fiduciary role of financial intermediation cannot be underestimated.

Recommendations
In line with the conclusion, the following recommendations are made in this study:
The management of the Deposit Money Banks should device viable measurement for evaluating the risk components confronting the banking operation and not to rely on the bank model with an assumption that that risk is incorporated into bank output without explicitly modeling its role in explaining inefficiency. This is because failure to account for risk-taking may lead to biased estimations of bank efficiency and misleading estimates of scale economies and cost elasticities.
Also, regulators such Central Bank of Nigeria should be aware not only of the consequences of macro prudential regulation on bank performance, but also of the different effects that polices intended to discourage risk exposure have on banks with different characteristics. More so, the policy makers need to ensure that their countries’ economies are in a mature and stable situation, to boost the level of operational efficiency of the Deposit Money Banks. This is crucial, because the banking industry serves as the main channel for monetary policy transmission in the developing countries.
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