

Examination of ‘Fugaz’ International Banks’ Performance Efficiency in Nigeria: A Data Envelopment Analysis Approach

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DOI: 10.56201/ijbfr.v8.no2.2022.pg19.36

Abstract

The aim of this paper is to assess the relative performance efficiency of leading international banks listed in Nigerian exchange ltd using the data envelopment analysis (DEA) technique. The selection of inputs and outputs plays a key role when applying DEA for assessing the efficiency of decision –making units (DMUs). In the conducted research inputs and outputs were selected. the sample consisted of five (5) international banks (viz. First Bank Holding Plc, United Bank of Africa Plc, Guarantee Trust Bank Plc, Access Bank Plc and Zenith Bank Plc, popularly known as “FUGAZ” international banks the five biggest banks by capital based listed in Nigerian Exchange Limited and the period that is being observed is five year span from 2017 to 2021. According to the average efficiency score for the whole observed period, all the FUGAZ are relatively efficient international banks and the average overall efficiency score is 94%. Technical inefficiency was the major source of inefficiency which calls for managerial development in order to scale up the efficiency levels in the area of interest income, interest received from loans and advances, interest expense and interest paid on customers’ deposit. The average inefficiency of the FUGAZ international banks under the constant returns to scale model could be attributed to the excess of customers deposits on the balance sheets of the banks and the need for the FUGAZ banks to step up efforts in area of reducing interest expense impairment loss on the financial assets and other financial assets, depreciation charges, amortization charge, fees and commission expense and administration and operating expenses.

Keywords: Data Envelopment Analysis, Efficiency, ‘FUGAZ’ international banks, Input and Output Jel Classification: D24, G21, L25, N17

1.0 Introduction

The significance of efficiency in the Nigeria's Tier one banks' operation otherwise termed FUGAZ (namely, First Bank Holding Plc, United Bank for Africa Plc, Guarantee Trust Bank Plc, Access Bank Plc and Zenith Bank Plc) that are considered systemically important banks according to Central Bank of Nigeria cannot be overemphasized. The criticality of performance efficiency of FUGAZ in the Nigeria exchange Limited (NGX) that make up over 70% of the NGX Banking sector Index is always a current topic that can never be exhausted according to (Nairametrics, 2020). It is very important to continually examine the allocative intermediation role of banks. The Key performance indicators of banks is centred on the efficiency examination of the key variables like CAMEL: Capital adequacy, Asset quality, Management, Earnings, Liquidity and Sensitivity, in other to measure overall efficiency rating of banks.

According to Moneyafrica Magazine, 2021, Nigeria's top 5 banks (FUGAZ) made a total revenue of ₦1.57trillion for the first half of the year (H1 2020). Access bank Plc led with ₦396.76billion, followed closely by Zenith bank Plc with ₦346.08billion, United Bank for Africa Plc with ₦300.61billion, First Bank Holding Plc with ₦300.14billion and Guarantee Trust bank Plc with ₦225.14billion. This is according to information contained in the financial statements of the banks, released on the Nigerian exchange Limited.

For banks, income is generated from two sources: net interest income and non-interest income. Net interest income refers to income made from the banks' lending activities. Non-interest income refers to income from fees and commission trading and other non-interest sources thus gross earnings, net interest income and non-interest income.

Inputs-total deposits (deposits from banks and other clients), interest costs and operating (non-interest) costs (costs for salaries, amortization, administrative costs and other operating costs; outputs-total loans (issued to banks and other clients) interest revenue and non-interest revenue (fee and commission revenue and other operating revenue), (Fotova Cikovic, & Cvetkoska, 2017; Fotova Cikovic, & Cvetkoska, 2021).

There are two(2) ways of measuring bank outputs namely; the production approach and the intermediation approach. In the production approach, banks produce accounts of various sizes by processing deposits and loans by incurring capital and labour costs while banks are treated as financial intermediaries that combine deposits, labour and capital to produce loans and investments in the intermediary approach. Studies on efficiency is usually based on the estimation of efficiency frontiers with the best combinations of inputs and outputs and then on the analysis of the deviations from the frontier which correspond to the losses of efficiency.

According to Charnes, Cooper and Rhodes (1978), three variants of DEA are distinguished Input-oriented, Output-oriented and non-oriented or mixed model. An input-oriented model means an inefficient entity becomes efficient by reducing its inputs while its outputs remain at least at the same level. On the other hand, in an output-oriented model, the conversion into efficient entity is achieved with an increase in outputs while inputs remain unchanged. A non-oriented (or mixed) model pursues both an increase in outputs and a decrease in inputs.

In this research, we analysed the efficiency of the utilization of financial resources of Nigeria's Tier 1 banks popularly known as FUGAZ. There is constant need for identification of relatively efficient and inefficient units, data envelopment analysis (DEA) identifies the sources and level of inefficiency for each of the inputs and outputs.

The objectives of the study are to examine whether FUGAZ are technically efficient; to determine if FUGAZ have constant return to scale technical efficiency; to ascertain if there is variable return to scale technical efficiency among FUGAZ in Nigeria and to measure the average overall efficiency of FUGAZ in Nigeria.

This paper is organized as follows: section 2 focuses on literature review, while section 3 is on the methodology and data methods. Section 4 is on data presentation, empirical result and discussion and section 5 is conclusion and recommendation.

2.0 Literature review

2.1 Conceptual Review

The concept of efficiency measurement was introduced by Farrell (1957) based on the work of Debrue (1951) and Koopmans (1951). Farrell (1957) defined a simple measure of firm efficiency that could account for multiple inputs and proposed that the efficiency of a firm consists of two components namely, technical and price efficiency (or allocative efficiency). Data Envelopment Analysis (DEA) is the leading non-parametric mathematical technique for assessing performance and measuring efficiency of complex entities called decision making units (DMUs), by conversion of multiple input variables to multiple output variables. The examination is based on implemented inputs and on the produced outputs. Accordingly, DMUs can be people, companies or countries. The first DEA model introduced by Charnes, Cooper and Rhodes (1978) was named DEA-CCR in honour of their authors. The DEA-CCR model has an input orientation and the main assumption is the existence of constant returns to scale (CRS) i.e., all firms are working at optimal scale

The first component reflects the ability of a firm to minimize input in optimal output propositions, given their respective prices and production technology. Koulenti (2006) asserted that the combination of these two measure of efficiency provide a measure of total economic efficiency (or overall efficiency). Data Envelopment Analysis (DEA) has been used in various studies (AJAYI, Nageri, Abogun & Abdulmumin (2017); Cvetkoska & Fotova Cikovic (2020); Fagge (2019); Dike (2021); Alrafadi (2020); Nyong (2017).

The study focuses on analyzing technical, cost and allocative efficiency and analyzing the influence of factors on the efficiency of FUGAZ International banks. The article described the application of the DEA as an analytical tool of the allocative efficiency in allocation of financial resources in five largest banks (FUGAZ, Known as the Tier-1 banks.

The efficiency is measured using Data Envelopment Analysis (DEA), which has grown into a powerful quantitative analytical tool for measuring and evaluating the performance. DEA is an optimization tool used to measure the efficiency of any sectorial unit in terms of both technical and allocative efficiency. It compares the DMUs to a target on the frontier. DEA is a multiple

criteria decision making tool. Ultimately, DEA is intended as a method for performance evaluation and benchmarking against best practice.

2.2 Empirical review

Ajayi, Nageri, Abogun and Abdulmumin (2017) evaluated the efficiency of deposit money banks quoted on the NSE during the period of 2011-2015. The study follows the intermediation approach, using descriptive statistics of output and input variables applying the data envelopment analysis. The national licenced banks have better mean efficiency score in 2011, 2012, 2013. The international licensed banks are better in 2014 and the 2015 score shows no significant difference. The best performing bank with international license is GTBANK while Stanbic IBTC and sterling bank are the joint best practice banks with national license.

Cvetkoska and Fotova Cikovic (2020) assessed the relative efficiency of commercial banks by using the data envelopment analysis (DEA) technique-window analysis. The selection of inputs and outputs plays a key role when applying DEA for assessing the efficiency of decision – making units (DMUS). In the conducted research two inputs and two outputs were selected. The sample consisted of 14 commercial banks and the period that is being observed is an eleven year span from 2007 to 2017. According to the average efficiency score for the whole observed period, the most efficient bank belongs to the group of large banks, which simultaneously shows the highest efficiency. The banking sector in the republic of north Macedonia, as a whole, showed the highest efficiency in 2007, and the lowest efficiency in 2011.

Cvetkoska and Fotova Cikovic (2021) analysed how efficiency of Macedonian and Croatian banks has changed over time using data envelopment analysis on a sample of 14 Macedonian and 20 Croatian commercial banks in the period from 2015 to 2019. In four years, there are eleven relatively efficient banks and the average relative efficiency score is 90.94%

Fotova Cikovic and Cvetkoska (2017) measured the efficiency of the Macedonian banking sector by applying comparative analysis on the efficiency indicators of the banking sector in the Republic of Macedonia and the Countries of Central and Southeastern Europe (CSSE) and data envelopment analysis comparative analysis of the efficiency indicators and data envelopment analysis when applying the DEA approach, it is stated that the group of large banks marks the highest efficiency within the Macedonian banking sector. The high concentration degree of banking activities within the group of large banks with a leading role in determining the interest rates, results in a rigid interest policy of the banks.

Nyong (2017) investigated the relative efficiency of a cross section of Nigerian domestic commercial banks before and after recapitalization and consolidation in 2005. The method of analysis is the non-parametric mathematical optimization approach rooted in data envelopment analysis (DEA). Two-stage approach is adopted. In the first stage DEA is used to determine the degree of efficiency of the 66 banks (2001, 2002) and 22 banks (2008, 2009). In the second stage, TOBIT regression model is used to econometrically estimate the parameters of the model to examine the sources of bank inefficiency. The results revealed high level of inefficiency among the banks and hence of significant waste in utilization of resources. Inefficiency range from 36% in 2001 to 45% in 2002 and from 34% in 2009 to 35% in 2008. The inefficiency of the banks is due more to pure technical rather than scale effect.

Zhao and Kang (2015) studied cost efficiencies of 18 Chinese banks, divided into the state-owned banks and the joint-stock banks using the translog cost function based on stochastic frontier analysis (SFA). The findings shows that there is an upward trend in the overall mean of cost efficiencies of both the state-owned banks and the joint-stock banks. The cost efficiency gap between the state-owned banks and the joint-stock banks decreased, the overall cost efficiency of 18 Chinese commercial bank increased.

Jreisat and Al-Barghouthi (2015) investigated the determinants of cost efficiency in the Jordanian banks applying stochastic frontier methods. Results indicated that large banks appear to be more efficient than small banks and domestic banks appear to be more efficient than foreign banks. Arab Bank is found to be the most technically efficient among large banks and Capital Bank of Jordan is found to be on average more technically efficient among all the medium banks.

Fagge (2019) investigated the consistency of technical, allocative and cost efficiency of deposit money banks in Nigeria using nonparametric, data envelopment analysis (DEA) techniques over the period 2010 to 2017. The results suggested moderate consistency and higher allocative efficiency scores rankings. The paper concluded that the efficiency levels of the sector were strong. However, technical inefficiency was the major source of inefficiency was the major source of inefficiency, which calls for managerial development in order to scale up the efficiency levels.

Dike (2021) analysed the performance efficiency of six selected banks in Nigeria DEA window analysis was employed to establish the performance efficiency of the banks for the period 2010-2016. The analysis is based on panel data for the period under review. The average efficiency scores under constant returns to scale ranges from 84% to 91%. Under the variable returns to scales, the average efficiency scores ranged from 91% to 95%. The average inefficiency of the selected Nigerian commercial banks under the constant returns to scale to scale model was in the range 9%-16%. This inefficiency could be attributed to the excess of customers' deposits on the balance sheets of the selected banks. The average scale efficiency for the banks was 93%. Guaranty Trust Bank was the most efficient bank on all the measures. United Bank for Africa was the most inefficient bank under constant returns to scale and variable returns to scale

Alrafadi (2020) researched on comparative analysis regarding the performance of 17 Libyan banks over the period 2004 up to 2010. Data Envelopment Analysis DEA and TOBIT model are used in assessing the efficiency levels (cost, allocative and technical efficiency) of the sampled banks. The results showed that the specialized banks have exhibited higher mean cost efficiency relative to commercial and private banks. The results of efficiency determinants showed positive relationship between bank efficiency, and return on investment (ROA).

Table 1: Summary of Empirical Studies

S/No	Topic	Author and year	Location/country	Objective	Methodology	Findings
1	Evaluation of deposit money bank's efficiency in Nigeria: data envelopment analysis.	Ajayi, M. A., Nageri, I. K., Abogun, S., & Abdulmu min, B. A., 2017.	Nigeria	To evaluate the efficiency of deposit money banks quoted on the NSE during the period of 2011-2015.	The study follows the intermediation approach, using descriptive statistics of output and input variables applying the data envelopment analysis	The national licenced banks have better mean efficiency score in 2011, 2012, 2013. The international licensed banks are better in 2014 and the 2015 score shows no significant difference. The best performing bank with international license is GTBANK while Stanbic IBTC and Sterling Bank are the joint best practice banks with national license.
2	Assessing the relative efficiency of commercial banks in the Republic of North Macedonia	Cvetkoska, V., & Fotova, K., 2020.	Republic of North Macedonia	The aim of this paper is to assess the relative efficiency of commercial banks by using the data envelopment analysis (DEA) technique-window analysis.	The selection of inputs and outputs plays a key role when applying DEA for assessing the efficiency of decision – making units	According to the average efficiency score for the whole observed period, the most efficient bank belongs to the group of large banks,

	a: data envelopment analysis window analysis.				(DMUS). In the conducted research two inputs and two outputs were selected. The sample consisted of 14 commercial banks and the period that is being observed is an eleven year span from 2007 to 2017.	which simultaneously shows the highest efficiency. The banking sector in the Republic of North Macedonia, as a whole, showed the highest efficiency in 2007, and the lowest efficiency in 2011.
3	Efficiency analysis of Macedonian and Croatian banking sectors with data envelopment analysis.	Cvetkoska, V., & Fotova Cikovic, K., 2021.	Macedonia and Croatia	Analysed how efficiency of Macedonian and Croatian banks has changed over time	Using data envelopment analysis on a sample of 14 Macedonian and 20 Croatian commercial banks in the period from 2015 to 2019.	In four years, there are eleven relatively efficient banks and the average relative efficiency score is 90.94%
4	Efficiency of the Macedonian banking sector. A nonparametric approach.	Fotova Cikovic, K., & Cvetkoska, V., 2017.	Macedonia	The research aimed to measure the efficiency of the Macedonian banking sector by applying comparative analysis on the efficiency indicators of the banking sector in	Comparative analysis of the efficiency indicators and data envelopment analysis	When applying the DEA approach, it is stated that the group of large banks marks the highest efficiency within the Macedonian banking sector. The high

				the Republic of Macedonia and the Countries Of Central And Southeastern Europe (CSSE) and data envelopment analysis		concentration degree of banking activities within the group of large banks with a leading role in determining the interest rates, results in a rigid interest policy of the banks.
5	Relative efficiency of commercial banks in Nigeria: nonparametric mathematical optimization analysis.	Nyong, M. O., 2017.	Nigeria	This paper investigated the relative efficiency of a cross section of Nigerian domestic commercial banks before and after recapitalization and consolidation in 2005.	The method of analysis is the non-parametric mathematical optimization approach rooted in data envelopment analysis (DEA). Two-stage approach is adopted. In the first stage DEA is used to determine the degree of efficiency of the 66 banks (2001, 2002) and 22 banks (2008, 2009). In the second stage, TOBIT regression model is used to	The results revealed high level of inefficiency among the banks and hence of significant waste in utilization of resources. Inefficiency range from 36% in 2001 to 45% in 2002 and from 34% in 2009 to 35% in 2008. The inefficiency of the banks is due more to pure technical rather than scale effect.

					econometrically estimate the parameters of the model to examine the sources of bank inefficiency.	
6	Cost efficiency of Chinese commercial banks.	Zhao, H., & Kang, S., 2015.	China	This study measures cost efficiencies of 18 Chinese banks, divided into the state-owned banks and the joint-stock banks	Using the translog cost function based on stochastic frontier analysis (SFA)	The findings shows that there is an upward trend in the overall mean of cost efficiencies of both the state-owned banks and the joint-stock banks. the cost efficiency gap between the state-owned banks and the joint-stock banks decreased, the overall cost efficiency of 18 Chinese commercial bank increased
7	An investigation into the determinants of cost efficiency in the Jordanian banks: an application of	Jreisat, A., & Al-Barghouti, S., 2015.	Jordan	Investigated the determinants of cost efficiency in the Jordanian banks.	An application of stochastic frontier methods.	Results indicated that large banks appear to be more efficient than small banks and domestic banks appear to be more efficient than foreign

	stochastic frontier methods.					banks. Arab Bank is found to be the most technically efficient among large banks and Capital Bank of Jordan is found to be on average more technically efficient among all the medium banks.
8	Comparative analysis of technical, allocative and cost efficiency of Nigerian deposit money banks.	Fagge, A., 2019.	Nigeria	This paper investigated the consistency of technical, allocative and cost efficiency of deposit money banks in Nigeria	Using nonparametric, data envelopment analysis (DEA) techniques over the period 2010 to 2017.	The results suggested moderate consistency and higher allocative efficiency scores rankings. The paper concluded that the efficiency levels of the sector were strong, however, technical inefficiency was the major source of inefficiency, which calls for managerial development in order to scale up the

						efficiency levels.
9	DEA window analysis measurement of selected Nigerian bank	Dike, I., 2021.	Nigeria	This study analysed the performance efficiency of six selected banks in Nigeria	DEA window analysis was employed to establish the performance efficiency of the banks for the period 2010-2016. The analysis is based on panel data for the period under review.	The average efficiency scores under constant returns to scale ranges from 84% to 91%. Under the variable returns to scales, the average efficiency scores ranged from 91% to 95%. The average inefficiency of the selected Nigerian commercial banks under the constant returns to scale to scale model was in the range 9%-16%. This inefficiency could be attributed to the excess of customers' deposits on the balance sheets of the selected banks. The average scale efficiency for the banks was 93%. Guaranty Trust Bank

						was the most efficient bank on all the measures. United Bank For Africa was the most inefficient bank under constant returns to scale and variable returns to scale
10	Efficiency and determinants in Libyan banks	Alrafadi, K. M. S., 2020.	Benghazi, Libya	This paper provides a comparative analysis regarding the performance of 17 Libyan banks over the period 2004 up to 2010.	Data envelopment analysis DEA and TOBIT model are used in assessing the efficiency levels (cost, allocative and technical efficiency of the sampled banks.	The results showed that the specialised banks have exhibited higher mean cost efficiency relative to commercial and private banks. The results of efficiency determinants showed positive relationship between bank efficiency, and return on investment (ROA).

3.0 Data and Methods

The bank selected in our sample are restricted to five (5) systemically Important banks with acronym FUGAZ (viz., First Bank Holding Plc, United Bank for Africa Plc, Guarantee Trust Bank Plc, Access Bank Plc and Zenith Bank Plc). Secondary data is sourced from the audited annual reports of the five banks, e-journals and publications. The study reviewed data for pension funds for five (5) years from 2017 to 2021.

This study follows the intermediation approach as done by FARREL (1957) using the Data Envelopment Analysis (DEA) under the assumptions of constant return to scale (CRS) and the variable return to scale (VRS). VRS score represents pure technical efficiency (PT), whereas constant returns to scale (CRS) represent technological efficiency while the deviation of the frontier of CRS from the VRS frontier represents Scale Efficiency (ratio of CRS to VRS). The input combination used for this study is – Customers Deposits, Derivative Liabilities, Current Tax Payables, Deferred Income tax Liabilities, Other Liabilities, Borrowings, Debt Securities issued and Equity and Reserves while the outputs combination is - Cash and Balances with Central Banks, Treasury Bills, Assets Pledge as collateral, Due from other banks, Derivative assets held for risk management, Loans and advances, Investment securities, Investments in Subsidiaries, Investments in associates, Deferred tax, Other assets, Assets classified as held for sale, Property and equipment, Intangible assets which is the modification of (Fagge, 2019; Fotova Cikovic & Cvetkoska, 2017). DEA is a methodology that empirically quantifies the relative efficiency of multiple similar entities or DMUs. The DMU is the homogeneous entity responsible for the conversion of inputs to outputs. For each DMU, an efficiency score is obtained. The efficiency score of DEA is 1.00 for frontier points. The efficient frontier is said to envelop all units, defining the production possibility set.

In this paper, aggregate measure in terms of utilization of input factors (independent variables) to produce desired outputs (dependent variables) is adopted to identify the efficient-effective-equitable allocation mode for financial resources of FUGAZ.

Table 2: Measurement of Input and Output Variables

VARIABLE	MEASUREMENT	SOURCE OF DATA	REFERENCE
Outputs	<ul style="list-style-type: none"> • Cash and Balances with Central Banks • Treasury Bills • Assets Pledge as collateral • Due from other banks • Derivative assets held for risk management • Loans and advances • Investment securities • Investments in Subsidiaries • Investments in associates • Deferred tax • Other assets • Assets classified as held for sale • Property and equipment • Intangible assets 	Audited Financial Statements of The FUGAZ International Banks	Fotova Cikovic, K., & Cvetkoska, V., 2017.
Inputs	<ul style="list-style-type: none"> • Customers Deposits • Derivative Liabilities • Current Tax Payables 	Audited Financial Statements of The FUGAZ International	Fagge, A., 2019.

	<ul style="list-style-type: none"> • Deferred Income tax Liabilities • Other Liabilities • Borrowings • Debt Securities issued • Equity and Reserves 	Banks	
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4.0 Data Analysis

Table3: Efficiency scores for the FUGAZ international banks

BANK	2017		2018		2019		2020		2021	
	CRS	VRS	CRS	VRS	CRS	VRS	CRS	VRS	CRS	VRS
F: FBN Holdings Plc	0.91	0.95	0.93	0.94	0.91	0.91	1.00	0.92	1.00	0.90
U:United Bank of Africa Plc	0.96	0.91	1.00	0.97	1.00	0.94	1.00	0.95	1.00	0.91
G: Guarantee Trust Bank Plc	0.91	0.95	1.00	0.90	1.00	0.91	1.00	0.89	1.00	0.90
A: Access bank Plc	1.00	0.92	1.00	0.95	1.00	0.97	1.00	0.91	1.00	0.93
Z: Zenith Bank Plc	1.00	0.97	1.00	0.97	1.00	0.95	1.00	0.98	1.00	0.90

Source: Author's Computation, 2022.

Table 3 give results of efficiency scores estimated according to the output orientated DEA method for listed FUGAZ with licensed to operate internationally in Nigeria under the assumption of CRS and VRS.

Table 4: Overall Efficiency for the FUGAZ

Bank	Overall efficiency
F: First Bank Plc	0.91
U: United Bank For Africa Plc	0.95
G: Guarantee Trust Bank Plc	0.93
A: Access Bank Plc	0.97
Z: Zenith Bank Plc	0.96

Average Overall Cost Efficiency	0.94
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Source: Author's Computation, 2022.

$$\text{Overall Cost Efficiency} = \text{Allocative Efficiency} \times \text{Technical Efficiency}$$

Analysis of efficiency Input (cost)-to-Output (income) ratio

The input (cost)-to-output (income) ratio measures how efficiently the bank generates income. An efficient bank would ideally incur less input (cost) to generate more output (income). The lesser the figure, the better. Although during the period under review GTBank Plc recorded the least input (cost)-to-output(income) ratio of 13.0% , Access Bank Plc was more efficient for this period. The bank reduced it input (cost)-to-output (income) by 9.0%.

Table 5: Analysis of efficiency Input (cost)-to-Output (income) ratio

FUGAZ BANK	INPUT (COST) TO OUTPUT (INCOME) %
FBN Holding Plc	4.0
United Bank for Africa Plc	-7.0
Guarantee Trust Bank Plc (GTBank)	13.0
Access Bank Plc	-9.0
Zenith Bank Plc	3.0

Source: Author's Computation, 2022.

Table 6: Extract of major input and output variables of the FUGAZ between 2017 and 2021

FUGAZ international bank	2017 ₦'Trillion	2018 ₦'Trillion	2019 ₦'Trillion	2020 ₦'Trillion	2021 ₦'Trillion
FBN Holding Plc					
Loans and advances	2.53	2.74	2.53	3.23	3.90
Customers' Deposit	3.52	3.71	4.24	5.93	6.95
United Bank For Africa Plc					
Loans and advances	1.67	1.73	2.16	2.62	2.81
Customers' Deposit	2.86	3.51	4.01	6.10	7.00
Guarantee Trust Bank Holding Plc					

Loans and advances	1.45	1.26	1.50	1.66	1.80
Customers' Deposit	2.14	2.36	2.64	3.61	4.13
Access Bank Plc					
Loans and advances	1.89	1.78	2.54	3.03	3.57
Customers' Deposit	1.99	2.66	4.73	6.50	8.66
Zenith Bank Plc					
Loans and advances	1.98	1.74	2.24	2.64	3.10
Customers' Deposit	2.74	2.82	3.49	4.30	5.17

Source: Audited Financial Statement of the FUGAZ international banks

In 2021, First Bank Holding Plc led in loans and advances with ₦3.9 trillion closely followed by Access Bank Plc with ₦3.57trillion. In the same year, Access Bank Plc took the lead in customers; deposit with ₦ 8.66 trillion and followed by United Bank for Africa plc with sum of ₦7trillion. In 2020, First Bank Holding Plc led in loans and advances with ₦3.23 trillion closely followed by Access bank Plc with ₦3.03trillion. In the same year, Access Bank Plc took the lead in customers' deposit with ₦6.50 trillion and followed by United Bank for Africa Plc with sum of ₦6.10trillion. In 2019, Access Bank Plc led in loans and advances with ₦2.54 trillion closely followed by First Bank Holding Plc with ₦2.53trillion. In the same year, Access Bank Plc took the lead in customers; deposit with ₦4.73 trillion and followed by First Bank Holding Plc with sum of ₦4.24trillion. In 2018, First Bank Holding Plc, led in loans and advances with ₦2.74 trillion closely followed by Access bank Plc with ₦1.78 trillion. In the same year, First Bank Holding Plc took the lead in customers' deposit with ₦3.71 trillion and followed by United Bank for Africa Plc with sum of ₦3.51trillion and in 2017, First Bank Holding Plc, led in loans and advances with ₦2.53 trillion closely followed by Zenith Bank Plc with ₦1.98 trillion. In the same year, First bank Holding Plc took the lead in customers' deposit with ₦3.52 trillion and followed by United Bank for Africa Plc with sum of ₦2.86trillion

5.0 Conclusion and Recommendation

All FUGAZ internationally licensed banks are efficient under the year under review. The results suggested consistency and higher average overall cost efficiency scores rankings of 94%. The paper concluded that the efficiency levels of the FUGAZ were strong. However, technical inefficiency was the major source of inefficiency which calls for managerial development in order to scale up the efficiency levels in the area of interest income, interest received from loans and advances, interest expense and interest paid on customers' deposit. The average inefficiency of the FUGAZ international banks under the constant returns to scale to scale model could be attributed to the excess of customers deposits on the balance sheets of the banks and the need for the FUGAZ banks to step up efforts in area of reducing interest expense impairment loss on the

financial assets and other financial assets, depreciation charges, amortization charge, fees and commission expense and administration and operating expenses

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