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The Efficiency of Pension Funds in Nigeria from 2015 to 2022: Using the DEA Approach

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Abstract:

The rising interest in the efficiency of pension funds stems from dwindling returns and the transfer of financial risk from employer to employee under the Contributory Pension Scheme. Opportunities created by the transfer window that allows Pension contributors to move their funds from one pension fund to another in Nigeria have placed the responsibility of getting better returns from Retirement Savings Accounts in the hands of employees, thus making this research timely and useful. Data Envelopment Analysis (DEA) was used to ascertain the relative efficiency of 18 pension funds from 2015 to 2022. Drawn from a population of 19 based on data availability, Beginning Fund Balance, Total Expenses, and Number of RSAs were used as inputs, while Year end Fund Balance and Returns on Investment (ROI) measured by the annual percentage increase in the unit price of each fund as managed by individual pension funds represented outputs. Findings indicate that only three Pension Funds obtained efficiency scores of 1, and the remaining 15 pension funds had efficiency scores ranging from 0.99 to 0.89. This is an indication that they operated at various levels of inefficiency. It was recommended that these pension funds outside the efficiency frontier emulate the efficient fund managers, especially in improving their ratio of contribution to the number of active RSAs. Consequently, the ongoing wave of mergers and acquisitions in the Pension industry could offer an opportunity for discerning PFAs to improve efficiency via cost reduction gains associated with consolidation.

Keywords: Efficiency, contributory pension, pension fund, DEA, returns

1. Introduction

The pension scheme in Nigeria after the exit of colonial masters as a sequel to Nigerian independence has been a tale of sour tastes, from the mismanagement of pension funds to the near impossibility of accessing benefit entitlement. Since the enactment of the Pension Reforms Act 2004 and 2014, a new verve has been injected into pension fund management in the Country. According to Onyebuchi (2020), the old pension scheme in Nigeria was marred by poor funding as it was initially funded from budgetary allocation, and as funds were released at the start of the fiscal year, it was usually not enough to meet the total pensioners' liability. The new Contributory Pension Scheme entails a fully funded pension style that requires that the funds contributed by employer and employee are managed by competing pension fund administrators numbering 19 as of the end of 2023. The Net Asset Value of the Pension Industry represented 8.08% of GDP in 2020. This accentuates the position of the industry as a veritable source of medium to long-term funding and relative stability in the Nigerian financial markets (PenCom, 2021). As the weight of the contributory pension system (CPS) within the economy increases, it, therefore, becomes quite important for pension fund administrators who are saddled with the responsibility of investing the contributed pension funds to manage it well and use the available resources efficiently.

Since the new contributory pension shifts the entire pension financial risk to the contributor and makes it a garbage in-garbage-out mode, it then behoves pension managers to display good investment skills in managing these funds so that an average retiree can have a bigger cake to eat after retirement. In this research, Data Envelopment Analysis was used to assess the efficiency of individual pension funds. In the opinion of Ijeoma (2015), the contributory pension scheme was designed to bring about efficient and effective pension administration in Nigeria. This is because, with the defined contribution systems, beneficiaries have a direct incentive to seek improved management. The performance of pension funds could be viewed from three perspectives depending on the interest of the researcher. Measuring returns on assets or returns on equity seeks to assess the profitability of the fund. According to Ajibade, Jaiyeoba, and Aghahowa (2018), another performance indicator commonly used in pension clime is sustainability. This centers on the continuity of the fund in the face of economic headwinds and meeting the needs of the retirees. Ewuru, Falope & Nwoye (2023) affirmed from their research work that macro-economic factors like inflation, GDP growth rate etc. affects pension fund sustainability. Ijeoma & Nwugo (2015) and Olusegun, Makinde, and Adeoye (2019) also worked on pension fund sustainability. Yet, in the face of lean resources and low-interest income, the efficiency of input at the disposal of pension funds and output becomes inevitable in making informed decisions (Ololade, Adegboye & Salawu, 2019). This is the third parameter in measuring pension performance.

1.1. Objectives

- To ascertain the efficiency of individual Pension Funds in Nigeria
- To enquire if large pension funds are more efficient than small pension fund companies.
- To find out if bank-owned pension funds are more efficient than non-bank-owned pension funds.

Although a lot of investigations have been carried out about efficiency in the Pension industry in Nigeria, the emphasis has always been on Pension Companies Ahmed & Opusunju (2022) as against Pension Fund, which exists as an independent entity like mutual funds and is not accounted for in the Financial Statements of these Pension Fund Administrators. The few, who worked on Fund efficiencies, like Ololade, Adegboye, & Salawu (2019) and Ajibade, Jayeoba, & Aghahowa (2018), did not use data envelopment analysis. Besides, it is the efficiency of the funds (funds 1 to 6) that benefits the Contributor or Retiree and not the efficiency of the Pension Company. Thus, Chybalsk (2016) opined that the efficiency of a pension system from the perspective of an agent is the ratio between the number of benefits and the amount of contribution. An appropriate measure of this efficiency seems to be the rate of return. While Zamuee (2015) investigated pension fund efficiency in Namibia, Njaguna (2010) sought efficiency improvement strategies for Kenya's pension funds. Furthermore, whereas the total assets of the 19 Pension companies managing pension funds in Nigeria as of 31/12/23 was 188 billion, the value of the assets of the pension funds under their management was 18.3 trillion naira.

2. Literature Review

2.1. Concept of Efficiency

This research work was anchored on efficiency theory, which views processes as a system that takes input to produce outputs. Efficiency is all about using fewer inputs to get more outputs, and from a technical perspective, producers optimize by not wasting productive resources Kokkinou (2010). Efficiency typically means producing a good or service at the lowest cost possible while maintaining quality. However, the concept of efficiency had a much larger role during the early 20th century when industrialization was emphasized. Efficiency theory originally emanated from production lines of firms producing products in commercial quantity. Productivity refers to the ratio of input to output and is simple to compute if only one input and one output are involved, but in a real-life situation, the must-production process entails the use of multiple inputs and sometimes yields multiple outputs. Here comes the concept of efficiency, which seeks to measure the distance between the producing unit and the optimal value, otherwise called weights on each DMUK, $k = 1, \dots, K$, no efficiency score exceeds one

$$\frac{\sum_{m=1}^M y_m^k u_m^j}{\sum_{n=1}^N x_n^k v_n^j} \leq 1 \quad k = 1, \dots, K,$$

Note that all inputs and output weights must be non-negative. To allow for linear optimization, one typically constrains either the sum of outputs or the sum of inputs to equal a fixed value.

The use of Data Envelopment Analysis (DEA) measures relative efficiency. This entails weighing the ratio of inputs to output of each production entity or company, otherwise called a Decision-Making Unit (DMU), and making comparisons amongst them, classifying them on a scale of 0 to 1, where efficient DMUs will score 1 and less efficient ones will score below 1.

2.2. Input/Output Choice

DEA determines the relative efficiency of each pension fund (DMU) by using observed inputs and outputs and calculating the rate of weighted outputs to weighted inputs. The selection of appropriate inputs and outputs is the most crucial consideration in the application of Data Envelopment Analysis because the ability to measure the performance of pension funds will require choosing the right inputs and outputs that are necessary for estimating the efficiency of Decision-Making Units under consideration. Sticking to only those inputs and outputs that are easily measurable is the most common rule of thumb frequently applied. The choice of Data Envelopment Analysis was chosen over the stochastic frontier alternative because the data set used in this analysis did not meet the normality test, making it unfit to be subject to the parametric tools test. Hence, using non-parametric analysis tools like DEA is inevitable. However, Chen, Li, Liang, Salo and Wu (2015) opined that a major setback in using DEA is that inefficiencies arising from the organizational activities within her internal structure will not be identified. Nevertheless, the relative efficiency measuring posture of DEA still makes it a good option, coupled with the nature of data available at my disposal.

Inputs	Outputs	Previous Application
Beginning FUM	Ending FUM	Determines & Kececi 2020
No of RSA	Returns	Ahmed & Opsunju 2022
Total Expenses		Zamuee (2015)

Table 1: Details of Inputs and Outputs Variables Used

2.3. Variables

2.3.1. Funds Value at the Beginning of the Year

Funds at the disposal of the pension company to invest and manage for contributors and retirees at the beginning of each year are inputs that are expected to grow and will form the basis for access growth. Two reasons will account for growth, namely fresh pension remittances from employers and returns on investment in the form of interest or dividends and capital appreciation from stocks and mortgages purchased. Demitras & Kececi (2020), Zamuee (2015), and Njaguna (2010) all considered initial fund value as an input in their published works.

2.3.2. Number of RSA

Ahmed & Opusunju (2022) and Kurtara, Karakayi, Dagli (2013) used the number of employees, i.e., the number of active savings accounts, as input. Each retirement savings account opened is to accumulate pension remittances for the account holder. However, from experience, there exist a lot of RSAs that are not funded, while some are classified as partially funded because after the initial contributions, either the employer refused to fund it or the employee resigned or was dismissed and did not continue with the account. Also, there are instances where an employee operated more than one RSA within the same pension company and sometimes with other PFAs. It is the responsibility of pension companies to drive funding, which is a fundamental factor in measuring their efficiency. The National Pension Commission has stated that the deployment of the Enhanced Contributors Registration System will greatly enhance the integrity of contributors' data, thereby making it impossible for contributors to do multiple registrations because a unique identifier, National Identification Number, will be used.

2.3.3. Total Expenses

Fund managers spend money in the process of investing the contributions made for RSA holders apart from investment charges from financial intermediaries like Stockbrokers, Agents, and investment houses that constitute direct expenses, other costs like Staff costs, Branch costs, etc. which make up total expenses in the financial statement of Pension Fund Managers was used as a proxy for total expenses. Justification for using the total expenses was premised on the fact that the Pension Reform Act 2014 makes clear that Pension Companies licensed to manage pension funds will not engage in any other activity aside from the management of pension funds. It, therefore, suffices that any expense incurred by a PFA is just for the sole act of managing a pension fund. Zamuee (2015) applied Total Fund Expense as an input.

2.3.4. Fund Value at Year-End

The fund value at the end of the year is expected to be higher than the initial fund value at the beginning of the year. When pension companies invest wisely, bumper returns will add to the value of the fund; likewise, aggressive driving of RSA funding will increase the value of the contribution received. Demirtas & Kececi (2020) and Njaguna (2010) made it part of their output. Issues that will reduce the fund value at the end of the year include but are not limited to declining investment returns, increase in payouts like 25 percent, death benefit, and lump sum. Declining fund value at the end of each year is an indication that liabilities are outgrowing available assets, and this will be a threat to the sustainability of the fund.

2.3.5. Returns

The profitability of the pension fund is often measured by comparing the unit price of the fund at the beginning of the year with the unit price at the end of the year. The percentage change in the unit price constitutes the returns rate, otherwise called ROI (Returns on Investment). Ahmed & Opusunju (2022) and Zamuee (2015) made net income and investment return part of their outputs. Since pension values are measured in units representing net asset value, it is not always correct to assume that higher unit price amounts to better returns because to ascertain a better performance per Pension Fund, it is advisable to multiply the change in unit price by the number of units outstanding to obtain absolute gain in value.

2.3.6. Market Share

The size of the market attributable to each pension fund is measured by the Fund Under Management (FUM) by the Fund Manager as a percentage of the entire market FUM. Some scholars argue that the number of RSAs or the number of contributors should be the basis for determining market share since, in their argument, it is the human being that makes the market. However, the fact that the business of pensions is all about managing funds is only natural, and the size of the fund should be the basis for determining market leaders and laggards. Examples of researchers who took market share as output in their data envelopment analysis include Demirtas and Kececi (2020). However, because of constraints on the maximum number of inputs and variables relative to the number of Decision-Making Units (DMU) applicable in using Data Envelopment Analysis, the market will not be included.

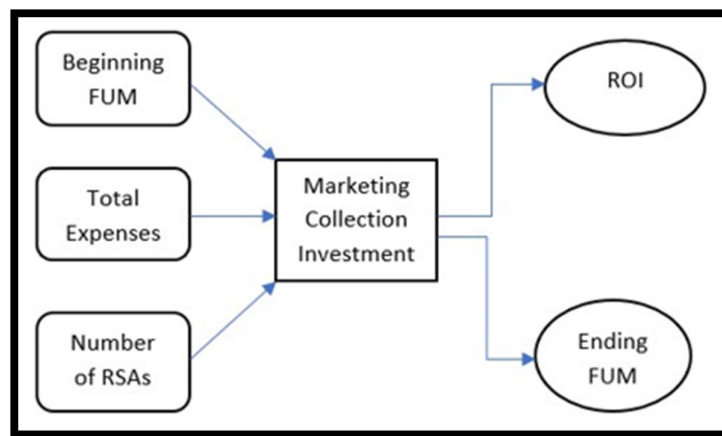


Figure 1: Conceptualizing Fund Management as a Production Process That Produces FUM and ROI

2.4. Test of Consistency and Validity

The validity of this performance measuring instrument cannot be isolated from the isotonicity property, which demands that for the outcome to be reliable, any increase in input should lead to an increase in output volume of increase notwithstanding. This can be confirmed in the data set used because an increase in funds under management reduces transactional costs and offers the fund a better negotiating advantage since bigger funds attract better investment rates, ultimately increasing the return on investment. DEA result is sensitive to the ratio of DMUs to the number of inputs/outputs, which, as a rule of thumb, is expected to be a minimum of 3:1 (Bowlin, 1998). Cronbach's Alpha score of 0.73 further confirmed the internal consistency of the data set used. The same metrics were used by Zamuee (2015) to establish the level of reliance on his data set as it relates to the Namibian Pension Fund.

3. Empirical Review

Umut (2023) used a 7-year data set ranging from 2016 to 2022 to ascertain the efficiency of private pension companies operating in Türkiye. The measuring instrument used was a novel efficiency measuring tool propounded by Deng Ju Long called the Gray Relational Analysis Method. Six major performance indicators used as variables include Equity, Total Assets, Number of Contributors, Fund under Management, Revenue, and Profit. From a population of 65 companies, 15 were selected as a sample. Findings revealed a decrease in the efficiency performance ratio of these pension companies under investigation. This decrease includes a reduction in some contributors. From the efficiency ranking of pension companies, Türkiye Hayat, Anadolu Hayat, and Garanti remained top three. Although Gray Relational Analysis was used, a second efficiency tool measuring option, Data Envelopment Analysis (DEA), was applied to the same data set, and the result obtained was consistent with the outcome that resulted from using Gray.

According to Badrizadeh, Paradi and Alirezaee (2023), using Data Envelopment Analysis (DEA) assessed the performance of Pension Funds in Canada, considering the Government regulatory impact on the efficiency of these funds. Three types of pension funds were included, namely: Defined Benefit, Defined Contribution and Hybrid Pension fund. The number of funds captured in this research was 90.37 and 136. Variables used as inputs include Investment Expenses, Management Fees, Standard deviation of Returns, and Contribution, while on the Input side, Investment Income and Benefits paid filled the gap. The outcome shows that out of the 90 Defined Benefits observed, 33 were efficient, while the average efficiency score was 0.58. Relating to the Defined Contribution plan numbering 37, the average efficiency score was 0.70, and 13 of them were efficient, representing 35 percent of the entire number of funds. From the list of 136 hybrid Combo Pension funds analyzed, only 39 proved efficient, as the remaining 97 all operated at different levels of inefficiency.

Using a sample of 10 pension fund administrators in Nigeria, Ahmed and Opusunju (2022) examined the impact of some financial ratios on the efficiency of pension companies. The ratios are Short Term Debt to Total Assets, Total Debt to Total Assets, and Total Debt to Total Equity. Data Envelopment Analysis was used to obtain the efficiency score of the Pension Companies under investigation using Employees, machinery and equipment cost, research and development cost, and total assets as inputs while operating revenue, net income, earnings per share, and market value were considered as outputs. From regressing the ratios over the efficiency score, it was discovered that total debt to total assets has a negative and statistically significant effect on the efficiency of pension administrators in Nigeria. The relevance of these findings to our investigation will be limited to the extent of selecting inputs and outputs for DEA because the Pension Reform Act and other regulations issued by the supervisory body prohibit Pension Funds from borrowing; therefore, these ratios are only obtainable in Pension Fund Administrators books.

Elsewhere in Indonesia, Seran, Suchayo, Atahau and Supramono (2023) sought to measure and evaluate the efficiency of 38 Employee Pension Funds that operated between 2011 and 2017. Here, Data Envelopment Analysis was used to obtain the relative efficiency of these Pension Funds where Net asset at the Start of the Period, Operational cost, Investment cost, and average total investment were considered inputs while Return on Investment ROI pictured as output as stage one which shows that the average efficiency level of pension funds between 2011 to 2017 was 70.9 percent and later in the second stage regressed the efficiency scores over some peculiar characteristics of pensions fund which include

Size, Ownership and Pension plan type. From the result, it was observed that differences in size and ownership determine the performance level of pension funds under consideration.

Using data envelopment analysis, Demirtas & Kececi (2020) measured the efficiency of private pension companies in Turkey using the number of Workers and Total Assets as inputs, while the outputs considered were the Number of Contracts, Total Contributions, and Market Share. The data set applied spanned from 2014 to 2016, i.e. three years. The result indicates that out of the 16 pension funds observed, 11 were efficient, while 5 operated at various levels of inefficiency.

Ajibade, Jayeoba and Aghahowa (2018) investigated Pension Fund Characteristics that affect Financial Performance in Nigeria. Using net asset value as a dependent variable, the age of the fund, the expenditure of the fund, the density of contribution, and idle contribution are independent variables. However, regression analysis was applied to assess the performance of the pension fund under investigation. The result shows that Age, Expenditure, Idle cash, and Contribution Density all have significant effects on the financial performance of pension funds. Data Envelopment Analysis was not considered in this performance-measuring endeavor.

On the strength of Njaguna's research work as it relates to Kenya pension funds efficiency, Zamuee (2015) published an efficiency work result as it affects pension funds in Namibia using DEA, inputs used were Admin cost, Investment cost, Total fund expenses, and retirement funds contribution. Outputs include investment returns and member fund credits. Findings show that most of the pension funds in Namibia operated below the efficiency frontier set by their efficient peers. Also, the efficiency results indicated that Namibian pension funds have relatively low-efficiency scores compared to their counterparts in Kenya and Australia.

Mhaka, Mhaka and Nyamwanza (2014) viewed efficiency from the perspective of fund size and its impact on financial performance in Zimbabwe using regression; 29 pension funds were studied for a period of four years, 2010 to 2013, with results showing that size had no impact on the financial performance of these pension funds. The finding aligns with the outcome of Njaguna's result as it relates to Pension Funds in Kenya.

Oluoch (2013) examined the Determinants of Performance of Pension Funds in Kenya using Time series regression analysis as the analytical tool. The performance of the funds was measured using the profitability index of Return on Assets (ROA); the age of the contributors measured by life expectancy; the net value of the assets of the pension funds; and the contributions received by the contributors to the pension fund were other variables considered. The outcome indicated that there was no strong relationship between the value of pension fund assets and the fund's performance in Kenya, meaning that a larger asset base does not automatically translate to better performance for the fund.

In 2010, Njaguna embarked on a study to ascertain strategies that would improve the efficiency of pension funds operating in Kenya. He used Data Envelopment Analysis to extract the relative efficiency score of pension funds in Kenya using FUM @ Beginning, Contributions and Payments to service providers as Input, While Retirement benefits paid to Retirees and value of FUM at year-end as outputs. 362 pension funds constituted the sample size, and the investigation span was from 2001 to 2008. His findings revealed that with an average efficiency score of 84.95 on a scale of 100, a lot of pension funds in Kenya operated at various levels of inefficiency. Other revelations include the fact that smaller Pension funds appeared more efficient than the bigger pension funds, and a high number of contributors spread across the country increased the expenses because of costs associated with administrating members' retirement savings accounts and record keeping.

4. Methodology

The sample units for this study were selected from a population of 19 based on the event criterion of pension funds that existed during the period of study (2014-2022). A sample of eighteen (18) pension funds was used in this investigation. NUPEMCO could not be included because it commenced operation in 2020. Data applied for this investigation were mainly secondary data from the financial statements of sampled PFA companies and the annual reports of the National Pension Commission for the period of 2015 to 2022. DEA Input orientation was selected with the VRS variable return to scale option. This was preferred because different fund managers have different performance capacities, and as such, return to scale cannot be adjudged constant.

Data Analysis: MaxDEA 12.1 computer software program was employed to conduct the analysis. This analysis entails the use of linear programming principles to calculate efficiency scores that range from 0 (nil) to 100%. This computation was done for each year beginning from 2015 to 2022. The average of the eight years was then calculated for each fund, which was considered as the efficiency score of each pension fund.

5. Results and Discussion

5.1. Research Question 1

- Is the majority of Pension Funds Administrators (PFA) operating in Nigeria efficient?

S/N	DMU	2015	2016	2017	2018	2019	2020	2021	2022	Ave
1	NPF Pensions	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
2	Radix Pensions	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
3	StanbicBTC Pension Mgr	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
4	Veritas Pensions	1.00	1.00	0.96	1.00	1.00	0.98	1.00	1.00	0.99
5	Guarantee Trust Pension	0.92	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.99
6	TangerineApt Pensions	0.90	1.00	1.00	0.99	1.00	0.95	1.00	1.00	0.98
7	Fidelity Pensions Mgrs	0.98	0.89	0.96	1.00	0.97	0.92	0.99	1.00	0.96
8	Oak Pensions	0.94	0.87	0.98	1.00	1.00	1.00	0.87	0.95	0.95
9	ARM Pension Managers	0.88	0.87	0.99	0.98	0.91	0.93	1.00	0.99	0.94
10	Crusader Sterling Pension	0.81	0.82	0.98	0.99	0.92	1.00	0.96	0.98	0.93
11	FCMB Pensions	0.95	1.00	0.72	0.97	0.90	0.91	1.00	0.97	0.93
12	Premium Pensions	0.82	0.89	0.95	0.98	0.94	0.85	0.98	0.96	0.92
13	PAL Pensions Ltd	0.82	0.82	0.99	0.98	0.91	0.89	0.95	1.00	0.92
14	Leadway Pensure PFA	0.78	0.78	0.98	0.94	0.91	0.93	1.00	1.00	0.92
15	Norrenberger Pensions	0.55	0.87	0.95	1.00	0.97	0.94	0.98	0.97	0.90
16	Access Pensions	0.77	0.85	0.96	0.75	1.00	0.87	1.00	1.00	0.90
17	Trustfund Pensions	0.83	0.76	0.96	0.95	0.86	0.93	0.95	0.93	0.90
18	NLPC Pensions	0.82	0.80	0.94	0.94	0.88	1.00	0.85	0.88	0.89
	Number of Efficient PFAs	4	7	5	8	8	7	10	10	3

Table 2: Efficiency Score of Pension Funds in Nigeria from 2015 to 2022 with Efficient Funds in Bold Letters

From the result above, it was observed that StanbicBTC, NPF Pensions, and Radix were the most efficient PFAs within the period under consideration, representing 17 percent of the entire PFAs in Nigeria, while the rest had elements of inefficiencies, the least being 0.89. The efficiency status of StanbicBTC seems to align with the position of Bikker & Dreu (2006) that Economies of scale may indeed be expected in pension fund administration and investment activities, as many costs are fixed or likely to increase less than proportionally with size.

S/N	Efficiency Range	No. of PFAs	Percentage
1	1	3	17
2	0.95 – 0.99	5	28
3	0.90 – 0.94	6	33
4	0.85 – 0.89	4	22
		18	100

Table 3: Efficiency Score Range of PFAs in Nigeria
Source: Author's Computation

5.2. Research Question 2

- Do Large Pension Funds have better efficiency scores than small ones?

S/N	DMU	2015	2016	2017	2018	2019	2020	2021	2022	Ave
1	NPF Pensions	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
2	Radix Pensions	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
3	StanbicBTC Pension Mgr	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
4	Veritas Pensions	1.00	1.00	0.96	1.00	1.00	0.98	1.00	1.00	0.99
5	Guarantee Trust Pension	0.92	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.99
6	TangerineApt Pensions	0.90	1.00	1.00	0.99	1.00	0.95	1.00	1.00	0.98
7	Fidelity Pensions Mgrs	0.98	0.89	0.96	1.00	0.97	0.92	0.99	1.00	0.96
8	Oak Pensions	0.94	0.87	0.98	1.00	1.00	1.00	0.87	0.95	0.95
9	ARM Pension Managers	0.88	0.87	0.99	0.98	0.91	0.93	1.00	0.99	0.94
10	Crusader Sterling Pension	0.81	0.82	0.98	0.99	0.92	1.00	0.96	0.98	0.93
11	FCMB Pensions	0.95	1.00	0.72	0.97	0.90	0.91	1.00	0.97	0.93
12	Premium Pensions	0.82	0.89	0.95	0.98	0.94	0.85	0.98	0.96	0.92
13	PAL Pensions	0.82	0.82	0.99	0.98	0.91	0.89	0.95	1.00	0.92

S/N	DMU	2015	2016	2017	2018	2019	2020	2021	2022	Ave
14	Leadway Pensure	0.78	0.78	0.98	0.94	0.91	0.93	1.00	1.00	0.92
15	Norrenberger Pensions	0.55	0.87	0.95	1.00	0.97	0.94	0.98	0.97	0.90
16	Access Pensions	0.77	0.85	0.96	0.75	1.00	0.87	1.00	1.00	0.90
17	Trustfund Pensions	0.83	0.76	0.96	0.95	0.86	0.93	0.95	0.93	0.90
18	NLPC PFA	0.82	0.80	0.94	0.94	0.88	1.00	0.85	0.88	0.89
	Source: Author's Computation									

Table 4: Efficiency Score of Pension Funds in Nigeria from 2015 to 2022 with Big-Sized Funds in Bold Letters

Out of the 6 Large sized PFAs (Nigerian Police Force Pension Limited, StanbicBTC Pension Managers Ltd, ARM Pension Managers Ltd, Premium Pension Managers Ltd Access Pensions Ltd, and Trustfund Pensions Ltd) referring to Pension Funds that had FUM above 600 billion Naira as of December 2022 and 1 Trillion Naira as at December 2023 including already existing schemes (AES) only two are efficient. Njuguna's findings in Kenya 2010 that smaller pension funds were more efficient than the big ones were reconfirmed considering the efficiency score of Radix pension, the smallest pension fund in Nigeria.

5.3. Research Question 3

- Are Bank-Owned Pension Fund administrators more efficient than their non-bank affiliated PFAs?

S/N	DMU	2015	2016	2017	2018	2019	2020	2021	2022	Ave
1	NPF Pensions	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
2	Radix Pensions	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
3	StanbicBTC Pension Mgr	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
4	Veritas Pensions	1.00	1.00	0.96	1.00	1.00	0.98	1.00	1.00	0.99
5	Guarantee Trust Pension	0.92	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.99
6	Tangerine Apt Pensions	0.90	1.00	1.00	0.99	1.00	0.95	1.00	1.00	0.98
7	Fidelity Pensions Mgrs	0.98	0.89	0.96	1.00	0.97	0.92	0.99	1.00	0.96
8	Oak Pensions	0.94	0.87	0.98	1.00	1.00	1.00	0.87	0.95	0.95
9	ARM Pension Managers	0.88	0.87	0.99	0.98	0.91	0.93	1.00	0.99	0.94
10	Crusader Sterling Pension	0.81	0.82	0.98	0.99	0.92	1.00	0.96	0.98	0.93
11	FCMB Pensions Limited	0.95	1.00	0.72	0.97	0.90	0.91	1.00	0.97	0.93
12	Premium Pensions	0.82	0.89	0.95	0.98	0.94	0.85	0.98	0.96	0.92
13	PAL Pensions	0.82	0.82	0.99	0.98	0.91	0.89	0.95	1.00	0.92
14	Leadway Pensure PFA	0.78	0.78	0.98	0.94	0.91	0.93	1.00	1.00	0.92
15	Norrenberger Pensions	0.55	0.87	0.95	1.00	0.97	0.94	0.98	0.97	0.90
16	Access Pensions	0.77	0.85	0.96	0.75	1.00	0.87	1.00	1.00	0.90
17	Trustfund Pensions	0.83	0.76	0.96	0.95	0.86	0.93	0.95	0.93	0.90
18	NLPC Pensions	0.82	0.80	0.94	0.94	0.88	1.00	0.85	0.88	0.89

Table 5: Efficiency Score of Pension Funds in Nigeria from 2015 to 2022 with Bank-owned Funds in Bold Letters
Source: Author's Computation

From the table above, out of the 5 banks owned PFAs, namely Access Pension Ltd, FCMB Pension Ltd, Fidelity Pension Managers Ltd, StanbicBTC Pension Managers Ltd, and Guarantee Trust Pension Ltd, only one, i.e. StanbicBTC Pension Managers emerged efficient. This is contrary to a prior expectation that bank-owned Pension funds will be more efficient than non-bank-owned pension funds, considering the possibilities of using their vantage position in the financial industry to the advantage of the funds they manage. While other pension Funds rent offices across the Country, bank-owned PFAs operate from their existing branches, thus saving costs that ought to have been reflected in their efficiency score. The implication from the table above is that bank-owned Pension Fund Managers are not more efficient than others.

6. Summary and Conclusion

The average efficiency score of Pension fund operators in Nigeria over the eight years was poor. However, when viewed on a year-by-year basis, it will be observed that remarkable improvement was witnessed up to 2022, when the majority of the Pension Funds, numbering 10, moved to the efficient frontier. Worth noting is the fact that except for StanbicBTC Pension, Large sized Pension Funds referring to pension funds with total funds under Management above 1 trillion nairas were not more efficient than the smaller Funds this may be attributable to the number of Contributors they need to render administrative services like the mandatory quarterly printing and distribution statements this discovery was not different from the findings of Njuguna (2010), Mhaka, Mhaka & Nyamwanza (2014). Furthermore, the prior expectation that pension funds being managed by banks would be more efficient than non-bank-affiliated pension funds

turned out not to be true. Despite the envisaged reduction in operation and investment cost considering the volume and consolidation fund.

7. Recommendation

Although there was steady improvement in the number of efficient Pension Funds in Nigeria from 4 in 2015 to 8 in 2019 and then 10 in 2022 there is still room for improvement as the remaining 8 PFAs will need to benchmark other efficient PFA operating on the efficiency frontier. Other Pension fund managers should emulate StanbicIBTC, who, despite having 20 per cent of the entire RSA registration, controls 37 percent of the entire industry Fund Under Management, indicating efficiency in driving funding. With recent mergers witnessed in the pension industry that led to the consolidation of some funds, it is expected that such combinations should translate to improved efficiency because economies of scale give an advantage to an entity in cost optimization. It is worth noting that in the investment world, bigger fund placement attracts a higher interest rate. Therefore, inefficient funds should explore the possibility of going into business combination as a way of improving efficiency.

Also, benchmarking the investment pattern of efficient funds will go a long way in giving the inefficient ones a better efficiency score since the operational strategy has been identified as one of the reasons Decision Making Units operate from a distance outside the efficiency frontier. The National Pension Commission, through its Regulation on Investment of pension funds, has given a band for each class of investment ranging from equity, bond, money market, etc. However, within this band, some discerning investors amongst the efficient pensions have developed winning ratios of investment guides that have given them optimal output over time and, therefore, need to be emulated. Furthermore, some Life Annuity Companies now manage pension funds for retirees who choose annuity over programmed withdrawal offered by pension companies at the point of retirement. These companies should be fully integrated into the pension fund management structure to allow them to register contributors from the beginning and manage their retirement savings account in competition with Pension Fund Administrators, as this will deepen commitment to drive efficiency.

8. References

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