



## **Performance Sustainability Strategy of Pension Fund Managers in the Emerging Market**

**Adeoye Amuda Afolabi**  
([adeoye.afolabi@kwasu.edu.ng](mailto:adeoye.afolabi@kwasu.edu.ng))

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*Department of Accounting and Finance, Kwara State University, Malete, Nigeria.*

### **Abstract**

*This study examines the sustainability of pension fund managers in emerging economy, specifically focusing on data from Nigeria's National Pension Commission. A mixed-methods approach is utilized, combining secondary data analysis with primary data collected through a survey questionnaire distributed to stakeholders within the pension industry. Descriptive statistics and an Independent Samples T-Test are used to analyze the data, and ARDL regression is employed to test the research hypotheses. The findings indicate that higher costs in areas unrelated to pensions result in lower benefit payouts in both the short and long term. Additionally, administrative costs incurred by pension fund managers have a positive and statistically significant relationship with benefits paid. Several factors, including investments in federal government securities, total contributions to pension funds, and inflation, contribute to increased investment income. The survey responses from industry stakeholders highlight various obstacles that hinder the long-term sustainability of pension fund managers' performance. These barriers include insufficient skills, a lack of innovation, and inadequate processes. However, the respondents also recognize the importance of good governance, operational efficiency, and effective planning and management in sustaining the performance of pension funds. Based on the findings, the study recommends that pension fund managers diversify their investment portfolios by including federal bonds and other securities. Furthermore, they should focus on developing skills, improving processes, and fostering innovative solutions to overcome the barriers to performance.*

**Keywords:** Benefits, Contribution; Cost; Inflation; Securities

### **1. Introduction**

The Nigerian pension industry is regulated and supervised by the National Pension Commission (NPC) in a transparent and consultative manner (NPC, 2019). The NPC's regulatory and supervisory activities encompass surveillance, compliance and enforcement, investments monitoring, and the maintenance of a databank on pension matters, all aimed at achieving a sound and sustainable pension industry. According to recent data (Gimi & Mohammed, 2023), the total membership of pension schemes in Nigeria experienced a 5.67% increase, reaching 8,949,536 members by the end of 2019. The Retirement Saving Account (RSA) scheme constituted the majority of memberships at 8,891,236 members, while the Approved Existing Scheme (AES) and Closed Pension Fund Administrators (CPFAs) accounted for the remaining 0.65% of members. RSA registrations saw a growth



rate of 5.72%, attributed to factors such as increased compliance in the private sector, the Commission's efforts to improve compliance and coverage, and effective marketing strategies by pension fund managers (NPC, 2019). The introduction of the Micro Pension Plan (MPP) in 2019 further contributed to increasing scheme membership. The CPFAs and AES schemes had memberships of 17,349 and 40,951, respectively, with marginal declines and stagnation partly due to scheme closures for new members as mandated by the Pension Reform Act (PRA) (NPC, 2019).

Globally, the aging population and fiscal pressures have raised concerns about pension fund systems in developed countries like the UK and the USA (Anantharaman & Chuk, 2023). In these countries, reducing high operating costs without compromising the quality of retirement services has become a priority. Pensioners and beneficiaries are interested in optimal returns and value generation from their retirement savings (Aida, 2018). Developed countries' pension fund industries have played significant roles in economic growth and societal well-being, leading to substantial growth in global pension fund investments over the past decades (Aida, 2018; Erzurumlu & Ucardag, 2020). Assessing pension fund designs involves considering target returns, asset allocation, cash flow, fund manager selection, and associated costs (Wanger, 2021). In OECD countries, pension fund assets reached EUR15.6 trillion in 2011, signifying the industry's substantial investment presence (Investments and Price, 2023). From 2008 to the end of 2019, OECD pension funds experienced an annual asset size growth of 10%, amounting to US\$32.2 trillion (Erzurumlu & Ucardag, 2020).

Numerous research studies have explored the performance of pension funds in developed countries. These studies have covered various topics such as active management and value investing in the Euro zone (Otero-Gonzalez et al., 2021), the impact of de-risking strategies on pension buy-ins in the UK (Li & Cowton, 2021), pension regulation and performance governance challenges in the UK (Clark, 2022), and investor responses to performance measures of pension plans in Spain (Fernández, García-Albacete, Jaime-Castillo & Radl, 2023). Several studies have also examined pension fund performance in different countries and contexts. For example, Erzurumlu and Ucardag (2020) investigated the relationship between private pension fund flow, performance, and cost in Turkey, considering the effects of frequent regulatory changes. Wang, Wang, and Li (2023) studied the persistence of performance among pension fund managers in Hong Kong. In Chile, Miglino, Navarrete, Navarrete, and Navarrete (2023) compared the risk-adjusted returns of the pension fund system and its alignment with the Chilean economy. In Nigeria, Ifenna and Arinze (2020) examined the link between pension fund administrators and financial transparency in retirement savings. Prior to their study, Nigeria faced challenges in pension administration in both the public and private sectors, leading to the pension reforms of 2004. The Pension Reforms Act (PRA) of 2004, subsequently amended in 2014, aimed to address the difficulties faced by retirees in Nigeria (NPC, 2019). The PRA applies to pension fund members in both the public and private sectors and establishes the Defined Contribution Scheme (DCS) overseen by the National Pension Commission. Under the



DCS, retirement benefits are determined based on factors such as member contributions and the investment performance of the fund. Pension fund managers are responsible for managing the Retirement Savings Account (RSA) within the DCS (NPC, 2019).

This study specifically examines the sustainability strategy employed by pension fund managers in Nigeria to assess their performance. The focus is on evaluating whether the Pension Reform Act (PRA) effectively addressed the challenges associated with the previous Defined Benefit Scheme (DBS). This study investigates the impact of various factors such as pension costs, revenue, inflation rate, and total contributions on benefits paid and cash inflow, as such it hypothesizes that there is no statistically significant relationship between pension cost, revenue, and the inflation rate with benefits paid and inflow contribution. Additionally, it analyzes the influence of federal government bonds, securities, revenue, total contributions, and inflation rate on investment income, such that there is no statistically significant relationship between Federal Government Bonds, Securities, Contribution, Revenue, and the Inflation Rate with Investment Income. The study also assesses the performance of pension fund managers using key indicators and explores the barriers that hinder their performance. The significance of this research lies in the increasing number of retirees, registered pension fund contributors, and pension fund managers in Nigeria, despite insufficient growth in pension fund assets. The paper is structured into seven sections. It begins with an introduction and background in section one, followed by a literature review in section two. Section three describes the methodology employed in the study. The empirical results derived from the data analysis are presented in section four, and the findings are discussed in section five. Section six concludes with recommendations, while section seven acknowledges the study's limitations and suggests potential areas for future research.

## **2. Literature Review**

Unfunded pension schemes face risks related to demographics, wages, and longevity, as they rely on contributions from the working population. Authors such as Appiah (2023) and Wanger (2021) emphasize the need for pension contributions to correspond with retirement rates and be well-managed to ensure sustainability. This has led many emerging countries, including Nigeria, to transition from Defined Benefit Schemes (DBS) to Defined Contribution Schemes (DCS). Afolabi and Erasmus (2023) found that as individual pension plans grow in size, administrative costs in pension fund management increase at a lower rate due to investment benefits. They suggest that larger pension plans offer cost savings. Similarly, Chinazam and Nnaemeka (2023) argue that higher pension administrative costs are associated with an increase in the total value of pension assets and the number of contributors. Wang and Zhu (2022) emphasize the importance of considering inflation rates during the investment period of a DCS, as inflation can be influenced by financial market fluctuations. They propose an optimal asset allocation approach for DCSs to address inflation risk. Xiaohua (2022) reveals challenges in the performance sustainability of the China Pension Insurance System, where the revenue of public pension funds (DBSs) does not cover expenditure in most provinces.



Regarding rationality assumptions and market efficiency, Wagner (2021) suggests that demographic and market realities, as well as the level of education and information available to pension participants, may limit the rationality assumption of neoclassical economics. The Efficient Market Hypothesis (EMH) supports fairness in pension payments and indicates the importance of information in financial decision making. Tomassetti (2023) finds evidence of significant short-term performance but weaker evidence of persistent long-term performance among UK pension fund managers. To ensure sustainability, Alonso-Garca (2017) and Wanger (2021) identify challenges facing pay-as-you-go public pension systems, including inadequate income for pensioners, lack of fair payment levels corresponding to contributions, and financial unsustainability. According to Boado-Penas et al. (2021), countries generally benefit from transitioning from a DBS to a DCS, although there are risks associated with inadequate retirement income in a DCS unless optimal allocation strategies and increased contribution rates are implemented. Cussatt and Demere (2023) analyze corporate pension liabilities based on factors such as contract terms, interest and principal payments, and debt characteristics.

Pension fund managers aim to maximize pension fund value while considering liability-related and operational risks (Fernández *et al.*, 2023; Ambachtsheer *et al.*, 1998). However, research conducted by Chinazam and Nnaemeka (2023) suggests that pension funds' average performance is relatively poor compared to external benchmarks. Ahmed and Wathik (2022) argue that survivorship bias can influence the evaluation of pension fund manager performance, particularly when funds consistently hire the same fund management house over time. Wanger (2021) examined several indicators to assess the design of Defined Contribution Schemes (DCS), including automatic enrollment, addressing procrastination, dynamic asset allocation until retirement, aiming for higher replacement ratios, workplace financial education, the median number of asset allocation changes, different saving rates for males and females, and the use of life cycle (target-date) funds. However, the study also identified drawbacks of DCS, such as its voluntary nature, inherent default behavior, endorsement effect (herding), and inertia. Davis (2005) emphasized the significance of DCS by highlighting optimal investment choices that strike a balance between low risk and higher returns. The author stressed the potential benefits of international investments in pension funds, despite a considerable concentration of pension assets in domestic markets.

#### *Performance Sustainability Strategy of Pension fund Managers*

Pension fund managers' performance is critical for determining the future income received by beneficiaries. Identifying managers with positive prospects compared to competitors has been a subject of research (Otero-Gonzalez, 2020). Studies have examined various criteria to assess pension fund performance, including manager gender, experience, tenure, specialization, investment skills, expenses, regulatory impact, and the use of active management and value investment strategies. Government regulations often influence the pension industry in different countries. Examples include minimum return guarantees in Germany, pension vesting and lock-in regulations in Canada, and the balance between



commercial viability and social-political stability of private pension provision in the UK (Naczyk & Hassel, 2019; Messacar, 2018; Tuytens, 2019). In the US, public pension funds may be incentivized to invest in risky assets to report higher funding levels (Andonov et al., 2017). Regulations in Turkey have also influenced investor behavior, with cost minimization becoming a priority due to lower expected returns (Erzurumlu & Ucardag, 2020).

In developing countries like Nigeria, limited research has focused on pension fund administrators and the financial transparency of retirement savings funds (Ifenna & Arinze, 2020). Ambachtsheer *et al.* (1998) identified drivers of fund performance, such as fund size, proportion of assets managed passively, and organizational design quality. They also highlighted factors affecting organizational performance, including effective communication, trust between fiduciaries and the investment team, and control balance (Akomea-Frimpong *et al.*, 2022). To ensure effective management and minimize political interference, OECD countries have implemented internal and external governance mechanisms and investment controls for pension funds, adhering to OECD standards (Investments and Price, 2023). Aida *et al.* (2017) conducted a study on UK equity pension fund managers and found that management specialization is crucial for assessing performance. They observed varying levels of performance persistence among managers, with some demonstrating superior investment skills. The study also noted the influence of market conditions on managers' performance. Jonsdottir, Sigurjonsson, Johannsdottir, and Wendt (2022) have identified challenges in the pension system of developed countries, particularly in the United States. These challenges include a persistently low overall saving rate, the absence of a national retirement policy, and a lack of legislation and economic framework that can effectively shape pension legislation and regulation due to frequent changes in pension laws. Meanwhile, van Dijk (2020) highlighted the presence of climate risk as a financial risk faced by investors in the pension funds industry, using Dutch Pension Funds as a case study. The study proposed four major approaches to mitigate climate risks, namely diversification, exclusion, best-in-class, and engagement strategies..

### **3. Methodology**

The research methodology employed in this study is primarily epistemological and deductive. It involves empirical investigation using annual data obtained from the National Pension Commission (NPC). The data is analyzed using techniques such as Augmented Dickey-Fuller Testing (Unit Root Test) and ARDL regression to test the formulated hypotheses. The study also adopts an interpretive approach, considering different perspectives and interpretations. Furthermore, the methodology utilized in this study can be classified as mixed-method, specifically triangulation. It combines both secondary data analysis and primary data collection through survey questionnaires. The inclusion of survey questionnaires allows for gathering the opinions and perspectives of stakeholders involved in budget pension fund management. This mixed-method approach helps to provide a comprehensive understanding of the research topic.



The study predominantly relied on secondary data, which was sourced from various authoritative institutions such as the National Pension Commission (NPC), the National Bureau of Statistics (NBS) in Abuja, Nigeria, and the Central Bank of Nigeria. The annual reports from these organizations were used as valuable sources of information for the research. Additionally, the study also incorporated primary data through the use of survey questionnaires. These questionnaires were administered to stakeholders within the pension industry. By collecting primary data through surveys, the study aimed to gather insights, perspectives, and opinions directly from the individuals involved in the pension sector. This combination of secondary and primary data sources enhances the comprehensiveness and validity of the study's findings.

In order to assess the performance of pension fund managers, the study collected secondary data from the annual reports of the National Pension Commission (NPC) covering the period from 2004 to 2020. The performance analysis focused on three key indicators: Benefits Paid to pensioners, Inflow Contribution, and Investment Income. These variables were used as measures of the pension fund managers' performance. In addition to the performance indicators, the study also considered other independent variables. These variables included pension contribution cost, Revenue, Total Assets, and the Inflation rate, which served as a control variable. By examining these factors in conjunction with the performance measures, the study aimed to analyze the relationship between the financial performance of pension fund managers and various contributing factors. The use of secondary data allowed for a comprehensive assessment of the pension fund managers' performance over a significant time period.

Based on the formulated hypotheses in the literature review section, the following models of performance sustainability of pension fund managers are formulated:

$$\begin{aligned} \text{Benefit Paid} &= \beta_0 + \beta_1(\text{Pension Contribution Cost}) + \beta_2(\text{Pension Administration Cost}) + \\ &\beta_3(\text{Revenue}) + \beta_4(\text{Total Assets}) + \beta_5(\text{Inflation Rate}) + u_i \dots\dots\dots 1 \\ \text{Inflow Contribution} &= \beta_0 + \beta_1(\text{Pension Contribution Cost}) + \beta_2(\text{Pension Administration Cost}) + \\ &\beta_3(\text{Revenue}) + \beta_4(\text{Total Assets}) + \beta_5(\text{Inflation Rate}) + u_i \dots\dots\dots 2 \\ \text{Investment Income} &= \beta_0 + \beta_1(\text{FG\_Bond}) + \beta_2(\text{Other Securities}) + \beta_3(\text{Revenue}) + \beta_4(\text{Total Contribution}) + \\ &\beta_5(\text{Inflation Rate}) + u_i \dots\dots\dots 3 \end{aligned}$$

The study considered three dependent variables in its analysis: Benefits Paid (Model 1), Inflow Contribution (Model 2), and Investment Income (Model 3). These variables were the focus of the study's investigation into the performance of pension fund managers. By examining these variables, the study aimed to assess the financial outcomes associated with the management of pension funds. For models 1 and 2, the independent variables consisted of other Pension Cost, Pension Administration Cost, Revenue, Inflation Rate, and Total Contribution. These variables were included to analyze their impact on Benefits Paid and Inflow Contribution, respectively. In model 3, the independent variables were Federal Government Bond (Treasury bill), Other Securities, Revenue, Total Contribution, and Inflation Rate. These variables were considered to examine their influence on Investment



Income. The study aimed to assess how these variables affected the performance of pension fund managers and their ability to generate investment returns

To assess the performance sustainability strategy of pension fund managers, the study employed a combination of secondary data analysis and a survey questionnaire. The primary data collected through the survey questionnaire aimed to measure the performance of pension fund managers and identify any barriers that hinder their performance. The target population for the study include various stakeholders in the pension industry, such as regulatory body officers, pension fund operators (PFAs and PFCs), pension fund contributors, pensioners, and members of NGOs and civil society organizations. Additionally, selected financial and non-financial firms from different sectors of listed companies were also included. The sampling method utilized in the study was snowball sampling, where initial respondents served as referral sources to recruit additional participants. This non-parametric sampling approach was chosen due to the large population size and allowed for gradual data accumulation through survey questionnaires and interviews. A total of 1,500 survey questionnaires were administered using a purposive sampling approach followed by snowball sampling. Out of the 1,500 questionnaires distributed, 1,260 were returned, resulting in an 84% response rate.

#### 4. Results

The findings from the analysis of secondary data were presented first, followed by the analysis of primary data from the survey questionnaire. The results of the Augmented Dickey-Fuller Testing (Unit Root Test) were presented to determine the stationarity of the variables. This test was applied to ascertain whether the variables exhibited a stationary behavior or not.

Table 1: ADF test (Units root Test) for the variables in Model 1 and 2

Variables	Level	First Difference	Order of Integration
Benefits Paid	-2.93**	-6.23***	I(0)
Inflation Rate	-2.77*	-3.97***	I(0)
Inflow Contribution	-2.76*	-6.71***	I(0)
Other Pension Costs	-7.26***	-10.95***	I(0)
Revenue		-2.96**	I(1)
Total contribution		-52.73***	I(1)

Source: Authors Computation

Table 2: Units root Test for the variables in Model 3

Variables	First Differences	Order of Integration
Investment Income	-14.79	I(1)
Federal Government Bond	-4.86	I(1)
Other Securities	-5.49	I(0)
Revenue	-8.67	I(1)
Total Contribution	-6.12	I(1)
Inflation rate	-4.73	I(1)

Source: Authors Computation



The results presented in Table 2 for models 1 and 2, using the Augmented Dickey Fuller (ADF) test, indicate that variables such as Benefits Paid, Inflation Rate, Inflow Contribution, Other Pension Costs, and Administrative Pension Costs are stationary at zero level (I(0)), meaning they do not exhibit a trend or drift.

Table 3: ARDL Bound Co-integration Test for the Models

Estimated model	F-Test	
Model 1: Benefits Paid	2.852954	
Model 2: Inflow Contribution	1.523202	
Model 3 Investment Income	1.576553	
Critical value 5% level	Lower bound	Upper bound
5%	2.62	3.79
5%	2.62	3.79
5%	2.62	3.79

Source: Authors Computation

However, variables like Revenue and Total Contribution are stationary at the first difference (I(1)), implying that they show a co-integration relationship after taking the first difference. In Table 2, for model 3, the unit root tests reveal that variables such as Investment Income, Federal Government Bond, Revenue, Total Contribution, and Inflation Rate are stationary at the first difference (I(1)), suggesting a long-term effect. On the other hand, other securities exhibit a stationary effect at the level (I(0)), meaning they do not

Table 4: The ARDL regression analysis of the Performance sustainability of Pension Fund Managers: Dependent variable: BENEFIT\_PAID for Model 1

Variables	Short term	Long term
Coint. equ.	-0.72*** (0.00)	
Inflation rate	-69.93 (88.64)	-97.08 (123.04)
Other Pension Costs	-10.01*** (0.02)	-13.90*** (0.02)
Administrative Pension Costs	57.15*** (0.03)	17.47**** (0.04)
Revenue	0.01 (0.04)	-0.07 (0.01)
Total Contribution	0.19 (1.99)	0.26 (2.76)

Note: \*, \*\* & \*\*\* implies significant levels at 10%, 5% and 1%, respectively. Figures in parenthesis represent the standard errors of variables.

Source: Authors Computation

require differencing. These unit root test results provide important information about the stationarity and integration properties of the variables, which serve as the basis for conducting further analysis using ARDL regression. The F-Bound Test findings in Table 3 show that, at a significance level of 5%, the F-Statistic for models 1, 2, and 3 is larger than the upper bounds. This shows that whereas models 1 and 2 show both short-term and long-term statistically significant associations, model 3 has a long-term statistically significant





link. Let's move on to the ARDL regression analysis findings for models 1 and 2, which are shown in Tables 4 and 5, respectively.

Table 5: ARDL regression analysis of the performance sustainability of pension fund managers: Dependent Variable: INFLOW\_CONT for model 2.

Variables	Short-term	Long-term
Coit. Equ.	-0.67*** (0.00)	
Other Pension Costs	-7.28*** (0.02)	-10.86*** (0.02)
Administrative Pension Cost	61.10*** (0.03)	15.48*** (0.05)
Revenue	0.03 (0.04)	0.05 (0.06)
Total contribution	-0.16 (1.92)	-0.24 (2.87)

Note: \*, \*\* & \*\*\* implies significant levels at 10%, 5% and 1%, respectively. Figures in parenthesis represent the standard errors of variables.

Source: Authors Computation

In Table 5, the ARDL regression analysis is conducted with Benefits Paid as the dependent variable, while the independent variables include Inflation Rate, Other Pension Cost, Pension Cost Administration, Revenue, and Total Contribution. The results reveal that there is a negative statistically significant relationship between Other Pension Cost and

Table 6: Regression Analysis for model 3 with Investments income as Dependent variable

Variables	Coefficient	Standard Error
Cointeq(-1)	-0.43*** (3.09)	0.14
Federal Govt. Bond	177.96*** (4.27)	41.64
Other Securities	210.91*** (2.70)	77.10
Revenue	10.57*** (2.27)	4.65
Total Contribution	1399.43*** (2.92)	478.51
Inflation Rate	-12142.67*** (2.02)	6026.03

Note: The numbers with significant level are coefficient value, and Numbers in the parentheses refer to t-statistics.

Source: Authors Computation

Benefits Paid in both the short-term and long-term. This implies that other higher pension costs are associated with lower Benefits Paid, potentially impacting the performance sustainability of pension fund managers. On the other hand, Administrative Pension Costs exhibit a positive statistically significant relationship with Benefits Paid in both the short-term and long-term. This suggests that as Benefits Paid increase, there may be a



corresponding increase in the cost of pension administration. This finding aligns with the viewpoint expressed by Staubli and Zhao (2022) that reducing the cost of public pensions without compromising the quality of retirement services is a global concern. Additionally, Revenue and Total Contribution demonstrate positive relationships with Benefits Paid, indicating that higher revenue and contributions from workers lead to increased benefits for pensioners.

Inflow Contribution is the dependent variable in Table 6, and the independent variables are the inflation rate, other pension costs, administrative pension costs, revenue, and total contribution. The findings showed that Inflow Contribution and Other Pension Costs have a statistically significant negative connection. This shows that, both in the short and long terms, lower levels of Other Pension Costs are linked to fewer contributions made to the pension funds. On the other hand, a rise in administrative pension expenses is positively correlated with inflow contributions, implying that greater administrative costs are associated with higher inflow from contributions. The results of Aida (2018), who emphasized the significance of pension contribution inflows for the effectiveness of pension fund managers in the UK, are consistent with these findings.

Table 7: Result of the Reliability Test of Performance Indicators of Pension Fund Managers

Variable	Section	Cronbach's Alpha	No of Item
Governance and Operation	B Q9-Q14	0.86	6
Planning and Management	C Q15-Q18	0.98	4
Barrier hindering pension managers	D Q19-Q26	0.81	8

Source: Authors Computation

Furthermore, Revenue demonstrates a positive relationship with Inflow Contribution, suggesting that higher revenue leads to increased inflow from contributors. However, Total Contribution shows a negative relationship with Inflow Contribution, likely due to the impact of Other Pension Costs and Administrative Pension Costs, which may reduce the overall inflow to the pension funds. The results pertaining to the relationship between Federal Government Bond, Other Securities, Revenue, Total Contribution, Inflation Rate, and Investment Income, as stated in Hypothesis 3 of Section 2, will be presented next.

The findings of the third hypothesis, which looks at how total assets, other securities, revenue, total contribution, and inflation rate affect investment income, are shown in Table 7. The results show an association between Federal Government Bond, Other Securities, Revenue, Total Contribution, Inflation Rate, and Investment Income that is both positive and statistically significant. This implies that investment income rises when pension fund managers allocate more money to Treasury Bills and other capital market instruments, such as Federal Government Bonds. Furthermore, higher inflation rates, revenue, and total contributions to the pension fund are associated with increased investment income. These results align with the current investment practices in the country, where the federal government heavily invests pension funds' assets in Treasury Bills and securities in the



Table 8: Provides the characteristics of Respondents from the Survey Questionnaire

Characteristic Features	Frequency	Percentages
Sex		
Male	1187	94.2
Female	73	5.8
Job Title		
National Pension Commission (Regulator)	119	9.4
Pension Fund Managers	171	13.6
Pension Fund Custodian	160	12.7
Private Sector Employee	299	23.7
Public Sector Employee	326	25.9
Pensioner	144	11.4
NGO, Civil society Organisation	41	3.3
Job Years of Experience		
1-5	47	3.7
6-10	33	2.6
11-15	502	39.8
16-20	589	46.7
21-25	52	4.1
31-35	37	2.9
Knowledge on Pension Fund		
Low	2	0.5
Medium	129	9.9
High	1,129	89.6
Geo-Political Zone		
South-West	401	31.8
South-South	102	8.1
South-East	206	14.5
North Central	263	20.9
North West	183	14.5
North-East	105	8.3
Education		
Diploma/Certificate	10	0.8
Bachelor Degree	742	58.9
Master Degree	506	40.2
Doctorate Degree	2	0.2
Type of Industry		
Financial	901	71.5
Non-Financial	359	28.5
Sectorial		
Manufacturing Companies	331	26.3
Non-Manufacturing Companies	929	73.7
Total	1260	100

Source: Authors Computation

capital markets. The higher investment income attracts more contributors, leading to increased pension contributions. Additionally, the federal government benefits from higher revenue through increased investment income, while the inflation rate impacts the investment income value.

Table 9: Showing the Descriptive statistics and Percentage of Frequency of Governance and Operation as Performance Indicators for Pension Fund Managers.



Statements	N	Code	Mean Value	Stand. Dev.	% of Freq.	Decision
The pension fund manager's system for understanding and interacting with stakeholders is effective.	1,260	Gov._ Fid9B	4.30	0.72	39.4%	497 Agree
A good job is done by the governing fiduciaries of the pension fund manager in balancing over and under control of your pension organization.	1,260	Control_10B	4.43	0.50	45.2%	569 Strongly Agree
Pension funds have a successful procedure for choosing, training, and removing their controlling fiduciaries.	1,260	Eff._ Pro11B	4.43	0.50	57.1%	719 Agree
. The committees that oversee fiduciaries for pension funds and the managers of such funds make good use of their time (they are focused and don't squander it).	1,260	Time_ Pro12B	4.41	0.51	42.9%	541 Strongly Agree
. Between your company's governing fiduciaries, the pension investment team, and Pension Fund Custodians (PFCs), there is a high degree of trust.	1,260	Trust_ 13B	4.40	0.53	56.6%	713 Agree
The pension fund manager, governing fiduciaries, the pension investment team, and Pension Fund Custodians (PFCs) have well defined roles and are held accountable for their decisions.	1,260	Resp._ Acct.B14	4.07	0.89	43.4%	547 Strongly Agree
					42.1%	531 Strongly Agree
					55.7%	702 Agree
					42.1%	531 Strongly Agree
					54.6%	688 Agree
					31.9%	402 Strongly Agree

Source: Authors Computation

Moving forward, the following findings are derived from the analysis of the survey questionnaire data: reliability testing of performance indicators, characteristics of the respondents, descriptive statistics, frequency percentages of each item or statement in the survey questionnaire, and the results of descriptive statistics, frequency percentages, and independent samples t-test analysis on key drivers used to measure the performance of Pension Fund Managers.

Table 9 shows the descriptive analysis and percentage of frequency on opinion of the respondents on governance and operation as performance indicators for Pension Fund Managers. The results revealed that the respondents agreed respectively on all the statements related to the governance and operation as indicators for performance of pension fund managers. This finding indicates that operation and governance improve the performance of the pension managers.



**Table 10: Indicates the Descriptive statistics and Percentage of Frequency on Planning and Management as Performance Indicators for Pension Fund Managers**

Statements	N	Code	Mean Value	Stand. Dev.	% of Freq.	Decision
The pension fund managers can describe the vision of where their firm should be in the future.	1,260	Vision_15C	4.15	0.90	50.6%	638 Agree
Your organisation have provided fund strategic positioning for better value to stakeholders	1,260	Strategic_16C	4.57	0.96	38 %	479 Strongly Agree
The pension manager has resource plan that can be obtainable and optimally utilize the required human, financial, and information technology resources.	1,260	Resource_17C	4.17	0.91	8.6%	108 Agree
In our firm, there is development of pension assets mix and considerable effort on the part of management and the governing fiduciaries, this showcase their best.	1,260	Assets_Mix18C	4.16	0.90	80.1%	1,009 Strongly Agree
					48.6%	612 Agree
					40.1%	505 Strongly Agree
					50.3 %	634 Agree
					38.31%	483 Strongly Agree

*Source: Authors Computation*

Table 10 shows the descriptive analysis and percentage of frequency on opinion of the respondents on planning and management as performance indicators for Pension Fund Managers.

The results indicate that the respondents agreed respectively on all the statements related to the planning and management as indicator for performance of pension fund managers. This finding suggests that planning and management are key indicators that is enhanced the pension funds managers.

In Table 11 the descriptive statistics and percentage of frequency indicate a mix results from the opinion of the respondents such that the statement on Lack of adequate resources hinders pension fund managers to excel revealed that only 48.4% of the respondents agreed and strongly agreed while other respondents are either undecided or disagree. However the percentages of the agreed and strongly agreed are more than the other categories. This result suggests that there are factors hindering the performance of pension managers. The same result showed for the statement on pension fund managers lack sufficient skills with 49% 48.4% of the respondents agreed and strongly agreed while other respondents are either undecided or disagree. However the percentages of the agreed and strongly agreed are more than the other categories. This result from the opinion of the respondents implied that lack of sufficient skills are barrier hindering the performance of pension funds managers.

However the statement that there are inadequate technological resources in your organisation provides the finding with 59.2% of the respondents disagree there are inadequate technological resources for the pension fund managers to perform. This result indicates that inadequate technology is one of the barriers. In addition, 81.2% respondents strongly disagree that issue of conflict belief may also hinder the performance of pension managers therefore this indicates that conflict of interest hinder the performance of pension



funds managers. Also the statement that there are difficulties in marketing of their product for pension managers show that 54.1% of the respondents agree and strongly agree that pension fund managers are finding it difficult in marketing their products thus this finding show that there are difficulties in marketing of product for pension managers.

**Table 11: Illustrates the Descriptive statistics and Percentage of Frequency on Barrier Hindering Performance of Pension Fund managers**

Statements	N	Code	Mean Value	Stand. Dev.	% of Freq.	Decision
Lack of adequate resources hinders Pension Fund Managers to excel.	1,260	Lack_ Reso19D	3.11	1.19	40.5%	510 A
					8.5%	107 S SA
Pension fund managers lack sufficient skills	1,260	Lack_ Skill20D	3.22	1.31	28.8%	363 A
					20.2%	254 SA
There are inadequate technological resources in your organisation.	1,260	Lack_ Tech21	2.71	1.12	11%	139 D
					48.2%	607 SD
Conflicting beliefs hindering Pension Fund Managers to perform	1,260	Conflict_ Hinder23D	2.62	0.86	56.2%	708 D
					2.5%	32 SD
There are difficulties in marketing of their product for pension managers	1,260	Lack_ Mkt24D	3.40	1.16	34.7%	437 A
					19.4%	245 SA
Lack of adequate innovation hinders pension fund managers to perform	1,260	Lack_ Innov25D	3.62	1.00	65.2%	822 A
					11.3%	143 SA
Government and political interference are barrier to performance of pension fund managers	1,260	PoL_ Inter25D	3.78	1.26	38.7%	487 A
					32.9%	415 SA
Pension Fund Managers face lack of adequate process which include structure, communication and inaction	1,260	Lac_Ade_Pro26D	3.26	1.29	31.7%	400 A
					19.4%	244 SA

*Note: \*A indicate Agree, SA show Strongly Agree, D implied Disagree, SD indicate Strongly Disagree*  
*Source: Authors Computation*

Furthermore the following statement that lack of adequate innovation hinders pension fund managers to perform provide that 76.5% of the respondents believed that lack of adequate innovation hinders pension fund managers to perform this finding suggest that there is need for pension funds regulatory agency to enforced the use of more digital innovation for pension funds managers. Lastly pension fund managers face lack of adequate process which include structure, communication and inaction which show that 51.1% of the respondents indicate that there are lack of adequate process which include structure, communication and inaction on the part of pension fund managers therefore this finding implied that pension funds managers need to put more effort in ensuring that there is need for them to structure, communicate and allow other pension funds stakeholders to know more about their activities.

*Results of T-test on key driver to measure Performance of Pension Fund Managers*

This sub-section provide the findings of each key driver of measurement organisation performance; using the survey questionnaire adapted from Ambachtsheer, et.al (1998). The main key drivers of performance measurement are governance operation, planning and



management, it also include the barrier that hindering this key driver of performance. Independent-sample-Test is used in the analysis of the data that is separated into two group which are the regulator of pension fund and operators of pension funds, and contributors of pension fund' this consist of private employee, public employee, pensioner, NGO and civil society organisation. Independent-sample-Test show whether there is a significant difference in the mean score between regulators with operators group and contributors group using 2-tailed.

Table 12: Indicate Results of Independent Samples T-Test Analysis on Governance and Operation statements

Statement	Variable Code	Group	N	Mean	SEM	SD	Mean Diff	t-test 2tailed	Sign. (tailed)
The Pension fund manager governing fiduciaries have a good mechanism to understand and communicate with stakeholders	Gov_Fid9B	Regulator with Operators	451	4.33	0.22	0.47	0.04	1.04	0.30
		Contributors	809	4.28	0.29	0.82			
Governing fiduciaries of the pension fund manager do a good job of balancing over control and under control of your pension firm.	Control_10B	Regulator with operators	451	4.27	0.02	0.44	-0.24	-8.91	0.000
		Contributors	809	4.51	0.12	0.50			
Pension fund have an effective process of selecting, developing and terminating its governing fiduciaries	Eff_Pro11	Regulator with operators	451	4.29	0.02	0.45	-0.23	-8.35	0.000
		Contributors	809	4.52	0.02	0.50			
The Pension Fund Managers governing fiduciaries and related committees use their time effectively (focused and do not waste time).	Time_12B	Regulator with operators	451	4.24	0.02	0.43	-0.27	-9.79	0.000
		Contributors	809	4.51	0.02	0.56			
There is high level of trust between your firm governing fiduciaries and the pension investment team and Pension Fund Custodians (PFCs)	Trust_13B	Regulator with operators	451	4.24	0.02	0.42	-0.25	-8.72	0.00
		Contributors	809	4.48	0.02	0.56			
There is a clear allocation of responsibilities and accountabilities for Pension fund decision between the pension fund manager governing fiduciaries and pension investment team and Pension Fund Custodians (PFCs)	Resp_Acc14B	Regulator with operators	451	4.26	0.02	0.47	0.29	6.90	0.000
		Contributors	809	4.00	0.02	1.04			

*Note: If the value in the sig. 2 tailed is equal or less than 0.05 that indicate that there is a significant difference in the mean scores of the statement or variable for regulators with operators group and contributors group. If the value is above 0.05 there is no significant difference in the mean scores of the statement or variable for regulators with operators group and contributors group.*

*Source: Authors Computation*

If the value in the 2 tailed is equal or less than 0.05 that indicate that there is a significant difference in the mean scores of the statement or variable for regulators with operators group and contributors group. If the value is above 0.05 there is no significant difference in



the mean scores of the statement or variable for regulators with operators group and contributors group.

Table 12 presents the results of the independent samples t-test analysis on governance and operation statements. The sub-statements analyzed include "Pension fund manager governing fiduciaries have a good mechanism to understand and communicate with stakeholders" (Gov\_Fid9B). The findings indicate that there is no significant difference in the mean scores of this statement between the regulatory with operators of pension fund group and the contributors of the pension fund group. This suggests that there is a perception that pension fund managers' management has a good mechanism to understand and communicate with stakeholders.

**Table 13: Indicate Results of Independent Samples T-Test Analysis on Planning and Management statements**

Statement	Variable Code	Group	N	Mean	SEM	SD	Mean Diff	t-test	Sig. (2-tailed)
The pension fund managers can describe the vision of where their firm should be in the future	Vision_15C	Regulator with Operators Contributors	451	4.21	0.02	0.44	0.10	2.23	0.000
Your organization have provided fund strategic positioning for better value to stakeholders	Strategic_16C	Regulator with operators Contributors	451	4.92	4.92	0.32	0.54	12.69	0.000
The pension manager has resource plan that can be obtainable and optimally utilize the required human, financial, and information technology resources	Resource_17	Regulator with operators Contributors	451	4.27	0.02	0.47	0.15	3.51	0.000
In our firm, there is development of pension assets mix and considerable effort on the part of management and the governing fiduciaries, this showcase their best.	Asset_Mix18C	Regulator with operators Contributors	451	4.22	0.02	0.45	0.11	2.44	0.000

*If the value in the sig. 2 tailed is equal or less than 0.05 that indicate that there is a significant difference in the mean scores of the statement or variable for regulators with operators group and contributors group. If the value is above 0.05 there is no significant difference in the mean scores of the statement or variable for regulators with operators group and contributors group.*

Source: Authors Computation

However, for other sub-statements on governance and operation, including "Governing fiduciaries of the pension fund manager do a good job of balancing over control and under control of your pension firm" (Control\_10B), "Pension fund has an effective process of selecting, developing and terminating its governing fiduciaries" (Eff\_Pro11), "Pension Fund Managers governing fiduciaries and related committees use their time effectively (focused and do not waste time)" (Time\_12B), and "There is a high level of trust between your firm governing fiduciaries and the pension investment team and Pension Fund Custodians (PFCs)" (Trust\_13B), and "There is a clear allocation of responsibilities and accountabilities for Pension fund decision between the pension fund manager governing





fiduciaries and pension investment team and Pension Fund Custodians (PFCs)" (Resp\_Acc14B), the results indicate a significant difference in the mean scores between the regulatory with operators of pension fund group and the contributors of the pension fund group. This implies that contributors and operations of pension funds agree that governance and operation statements provide efficient and effective strategies for pension fund managers to sustain their performance.

Table 13 presents the results of the independent samples t-test analysis on planning and management statements. The sub-statements analyzed include "Pension fund managers can describe the vision of where their firm should be in the future" (Vision\_15C), "Your organization has provided fund strategic positioning for better value to stakeholders" (Strategic\_16C), "Pension manager has a resource plan that can be obtainable and optimally utilize the required human, financial, and information technology resources" (Resource\_17), and "There is development of pension assets mix and considerable effort on the part of management and the governing fiduciaries, showcasing their best" (Asset\_Mix18C).

The findings indicate that all the above statements or variables from the survey questionnaire show a significant difference in the mean scores between the regulatory with operators of pension fund group and the contributors of the pension fund group. This implies that there is a significant difference in the mean values between these two groups regarding the planning and management sub-statements. This finding suggests that the statements related to planning and management are significant in terms of the observed differences in mean values. Furthermore, it indicates that effective planning and management strategies can enhance the ability of pension fund managers to sustain their performance.

Table 14 presents the results of the independent samples t-test analysis on barriers hindering the performance of pension fund managers. The analysis includes statements or variables such as "Pension fund managers lack sufficient skills" (Lack\_Skill20D), "Lack of adequate innovation hinders pension fund managers to perform" (Lack\_Innovation24D), and "Pension Fund Managers face a lack of adequate process which includes structure, communication, and inaction" (Lackade\_Process26D).

The findings indicate that there is no significant difference in the mean scores between the regulatory with operators of the pension fund group and the contributors of the pension fund group for these variables or statements. This implies that both groups perceive similar barriers hindering the performance of pension fund managers, specifically related to insufficient skills, lack of innovation, and inadequate processes.

However, other statements or variables such as "Lack of adequate resources hinders Pension Fund Managers to excel" (Lack\_Resource19D), "There are inadequate technological resources in your organization" (Lack\_Tech21D), "Conflicting beliefs hindering Pension Fund Managers to perform" (Conflict\_Hinder22D), "There are difficulties in marketing their product for pension managers" (Lack\_Mkt23D), and



"Government and political interference are barriers to the performance of pension fund managers" (Pol\_Interf25D) show a significant difference in mean scores between the regulatory with operators of the pension fund group and the contributors of the pension fund group.

**Table 14: Indicate Results of Independent Samples T-Test Analysis on Barrier hindering Performance statements**

Statement	Variable Code	Group	N	Mean	SEM	SD	Mean Diff	t-test	Sig 2 tailed
Lack of adequate resources hinders Pension Fund Managers to excel.	Lack_Resource19D	Regulator with Operators	451	3.24	0.06	1.17	0.20	2.85	0.043
		Contributors	809	3.04	0.04	1.19			
Pension fund managers lack sufficient skills	Lack_Skill20D	Regulator with operators	451	3.24	0.06	1.18	0.22	0.29	0.769
		Contributors	809	3.22	0.05	1.38			
There are inadequate technological resources in your organization.	Lack_Tech21D	Regulator with operators	451	3.18	0.06	1.18	0.73	11.09	0.000
		Contributors	809	3.22	0.03	0.99			
Conflicting beliefs hindering Pension Fund Managers to perform	Conflict_Hinder22D	Regulator with operators	451	3.21	0.04	0.95	0.93	18.77	0.000
		Contributors	809	2.29	0.02	0.60			
There are difficulties in marketing of their product for pension managers	Lack_Mkt23D	Regulator with operators	451	3.59	0.05	0.99	0.30	4.64	0.000
		Contributors	809	3.29	0.04	1.24			
Lack of adequate innovation hinders pension fund managers to perform	Lack_Innovation24D	Regulator with operators	451	3.65	0.04	0.77	0.04	0.78	0.44
		Contributors	809	3.60	0.04	1.11			
Government and political interference are barrier to performance of pension fund managers	Pol_Interf25D	Regulator with operators	451	3.31	0.06	1.23	-0.68	-9.21	0.000
		Contributors	809	4.00	0.04	1.21			
Pension Fund Managers face lack of adequate process which include structure, communication and inaction	Lackade_Process26D	Regulator with operators	451	3.23	0.05	1.16	-0.05	-0.72	0.470
		Contributors	809	3.28	0.04	1.36			

*Note: If the value in the sig. 2 tailed is equal or less than 0.05 that indicate that there is a significant difference in the mean scores of the statement or variable for regulators with operators group and contributors group. If the value is above 0.05 there is no significant difference in the mean scores of the statement or variable for regulators with operators group and contributors group.*

*Source: Authors Computation*

These results suggest that the mentioned barriers, such as lack of resources, inadequate technological resources, conflicting beliefs, marketing difficulties, and government/political interference, can contribute to hindering the sustainability of pension fund managers' performance.



## **5. Conclusion and Recommendations**

The information gathered from the yearly reports of the NPC in Nigeria is used in this research to assess the performance sustainability of pension funds managers in a developing nation environment. According to Table 5, there is a statistically significant correlation between benefits provided and all pension costs, revenue, and inflation rate. This outcome demonstrates that, both immediately and over the long run, increased other pension expenditures will result in reduced benefits received. This is due to the negative statistically significant link between pension expense and benefits received. It means that, to the extent that the pension expenditures exceed the permitted inflow, the pensioner's benefits may be reduced, which might hurt the performance of the pension fund management. However, administrative expenses incurred by pension funds show a favorable statistically significant link with both short- and long-term benefits paid. According to Table 6, other pension costs are reduced when contributions are received, while administrative pension costs are higher as contributions are received at higher rates. This finding suggests that managers of pension funds spent more on administration, which may have an impact on the sustainability of their performance. According to Table 7, the federal government, securities, total pension fund contributions, and inflation boost boosted investment income. This outcome suggested that the pension fund managers had diversified their holdings into local assets as well as federal bonds like Treasury Bills. The findings support De Moor and Defau's argument from 2021 that pension funds invest more in alternative assets like Treasury Bills and securities when they are more interested in portfolio diversity. Additionally with Tomassetti, (2023) showed that UK fund managers continued to generate extraordinary gains in the near term while reducing returns in the long run.

In Table 10-11 There is evidence from the Tables that the key indicators of measuring performance such as governance, operation, planning, and management showed that the respondents agreed that these performance indicators promoted the performance sustainability strategy of pension funds managers these findings is consistent with Ambachtsheer, et.al (1998). In Table 13-14 Independent Samples T-Test indicated that there is no significant difference between the opinions of regulators and operators of the pension fund group and the contributors of the pension fund group. This result suggested that each of the groups such as the regulatory agency of pension funds; National pension funds Commission (PENCOM), operators of pension funds, and contributors agreed that governance, operation, planning, and management promote the sustainability strategy of the performance of pension funds managers. Table 12 presents the respondents' perceptions regarding the barriers that hinder the performance sustainability strategy of pension fund managers. These findings provide insights into the current challenges faced by pension fund managers. Based on the evidence from this study, it is recommended that regulatory bodies such as the National Pension Commission (NPC) and Securities Exchange Commission (SEC) take a more proactive role in regulating pension fund assets. This is especially important given the potential market turbulence and inadequate contributions resulting from job losses in Nigeria. The regulatory bodies should enforce investment rules,



guidelines, and regulations to ensure the proper management of pension fund assets. Additionally, pension fund managers should receive training and education on investment strategies to enhance their performance and increase investment income.

To reduce possible investment losses, risk management for investments in pension fund assets needs to get more attention. To create a balance between pension expenses, inflow contributions, and benefits provided to pensioners or retirees, regulatory agencies should apply prudent norms. To guarantee that investments are placed in real assets that can offer protection against inflation rather than nominal assets that may be lost by unforeseen rises in the inflation rate, regulatory organizations must closely monitor pension fund managers. Based on the respondents' perceptions in this study, it is recommended that the regulatory agencies responsible for pension funds incorporate key indicators such as governance, operation, planning, and management into their evaluation and monitoring of pension fund managers. The management of each pension fund should actively address the barriers that hinder the performance sustainability strategy of pension fund managers to drive improvement in their performance.

#### **6. Limitation and Future Research of the study**

One limitation of this study is the availability of insufficient data. The data used for analysis spanned the years 2004-2020 and were obtained from secondary sources such as the National Bureau of Statistics in Abuja, Nigeria, and the Central Bank of Nigeria. Additionally, the results derived from the survey questionnaire reflected the opinions and perceptions of stakeholders in the Nigerian pension funds industry. Another limitation is that the implementation of the contributory pension system in Nigeria began in 2004, which means the data used covers a period of less than thirty years. Furthermore, the findings obtained through the survey questionnaire represent the opinions and perceptions of stakeholders from different geographic regions, including the South-West, South-South, South-East, North-Central, North-West, and North-East of Nigeria.

Future research in this field could focus on determining the factors influencing pension fund contributors' choices of pension fund managers. It would be beneficial to investigate the variables that influence contributors' decision-making when choosing the best companies to administer their pension funds. Future studies may also look at the effect that regulatory bodies have on the effectiveness of pension fund managers. The performance sustainability of pension fund managers in the Nigerian setting is directly connected to these research topics.

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