



Impact of Performance Appraisal, Motivation, and Leadership on Employee Productivity in Select Research Institutes in Niger State, Nigeria

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ABSTRACT

Background: Worker productivity in Nigerian research institutes is suboptimal, undermining national development goals. Despite interventions like the Consolidated Research and Allied Institutions Salary Structure, challenges persist due to ineffective human resource practices.

Objectives: This study investigated the effect of performance appraisal, motivation, and leadership influence on workers' productivity at the National Cereals Research Institute (NCRI) Badeggi Niger State and the National Institute for Freshwater Fisheries Research (NIFFR) New Bussa Niger State.

Methods: A quantitative survey design was employed, sampling 405 employees from a population of 2,082 using stratified random sampling. Data were collected using a structured questionnaire and analysed using descriptive statistics, Spearman correlation, and multiple regression.

Results: The study found significant positive relationships between the independent variables and productivity. Leadership influence had the strongest effect ($\beta = 0.539$), followed by performance appraisal ($\beta = 0.335$) and motivation ($\beta = 0.273$). The regression model explained 95.1% of the variance in productivity ($RZ = 0.951$). Ineffective appraisal systems and poor motivation were identified as key barriers.

Conclusions: Performance appraisal, motivation, and leadership are critical drivers of productivity in research institutes. Management should implement transparent appraisal systems, improve welfare packages, and adopt transformational leadership styles to enhance institutional output.

Unique Contributions: This Study proposes an evidence-based reform that can strengthen institutional performance and contribute to Nigeria's broader goals in agriculture, aquaculture, and rural development and enhancing human resource practices which will not only improve staff morale and institutional output but also position these research institutes to better support national policy priorities.

Key recommendation: Organizations should strengthen transparent performance appraisal with clear feedback and incentives to enhance motivation and productivity. They should also invest in leadership development and adopt an integrated HR strategy that combines appraisal, motivation, and leadership initiatives with regular evaluation for sustainable outcomes.

Keywords: Human resource management, Public sector, Research institutions, Employee performance, Organisational behaviour.



INTRODUCTION

Employee productivity is a fundamental determinant of organisational success, particularly in research-intensive institutions where output directly influences national development objectives such as food security and scientific innovation. Productivity refers to the efficiency with which employees transform inputs into valuable outputs. In the context of global economic challenges, enhancing labour productivity has become a priority. While global labour productivity grew at 2.1% annually from 2010 to 2019, it has since slowed, with sub-Saharan Africa, including Nigeria, lagging behind due to underinvestment in human capital (International Labour Organization, 2023).

In Nigeria, the productivity of public sector institutions, particularly research institutes like the National Cereals Research Institute (NCRI), Badeggi, and the National Institute for Freshwater Fisheries Research (NIFFR), New Bussa, remains suboptimal. Challenges such as inadequate infrastructure, low morale, and weak leadership structures have hindered the capacity of these institutions to drive agricultural innovation (Rabiu, Mohammed, & Umar, 2024). Previous interventions, including the Consolidated Research and Allied Institutions Salary Structure (CONRAISS), aimed to improve staff welfare and retention. However, empirical evidence suggests that salary delays, poor working conditions, and ineffective performance management systems continue to stifle productivity (Mwasubila, Taifa, & Kundi, 2022; Aligwe et al., 2018).

Performance appraisal systems in Nigerian public institutions are frequently criticised for being opaque and inconsistent. Employees often perceive appraisals as subjective exercises unrelated to actual performance, leading to disengagement (Idemobi, 2010; Nwosu et al., 2018). Similarly, motivation encompassing both intrinsic and extrinsic factors remains low. Research indicates that a significant proportion of public sector employees feel underpaid and undervalued, correlating with declines in output (Okoro & Nwafor, 2015). Leadership style further complicates this dynamic; bureaucratic and authoritarian practices prevalent in public service often suppress the creativity and initiative required in research environments (Maiwada, & Suleiman, 2024; Nwafor et al., 2023).

This study draws upon Equity Theory and the Cobb-Douglas Production Function Theory to examine the interplay between human resource practices and productivity. While existing literature has explored these variables in isolation or within general public service contexts, there is a paucity of research focusing specifically on their combined effect within Nigerian agricultural research institutes. Consequently, this study aimed to evaluate the effect of performance appraisal, motivation, and leadership influence on workers' productivity at NCRI and NIFFR.



OBJECTIVES OF THE STUDY

The main objective of the study is to examine strategies for improving workers' productivity in National Cereals Research Institute, Badeggi and National Institute for Freshwater Fisheries Research New Bussa. The specific objectives of the study include:

- i. To evaluate the effect of performance appraisal on workers' productivity in National Cereals Research Institute, Badeggi and National Cereals Institute for Freshwater Fisheries Research New Bussa
- ii. To examine the influence of motivation on workers' productivity in National Cereals Research Institute, Badeggi and National Institute for Freshwater Fisheries Research New Bussa
- iii. To analyse the influence of leadership on workers' productivity in National Cereals Research Institute, Badeggi and National Institute for Freshwater Fisheries Research New Bussa

METHODS

This study adopted a descriptive survey research design, which is appropriate for describing the characteristics of a population and determining the relationship between variables. The study area comprised two major federal research institutes in Niger State, Nigeria: the National Cereals Research Institute (NCRI), Badeggi, and the National Institute for Freshwater Fisheries Research (NIFFR), New Bussa.

The target population consisted of 2,082 employees, comprising 1,340 staff from NCRI and 742 staff from NIFFR across various cadres and departments. To determine the sample size, Taro Yamane's formula was applied, resulting in a base sample of 352. To account for potential non-response, this was adjusted by 15%, yielding a final sample size of 405 respondents (260 from NCRI and 145 from NIFFR). A stratified random sampling technique was utilised to ensure adequate representation of all staff categories. Primary data were collected using a structured, self-administered questionnaire titled "Effect of Performance Appraisal, Motivation and Leadership on Productivity Questionnaire" (EPAMLPO). The instrument utilised a 5-point Likert scale ranging from Strongly Agree (5) to Strongly Disagree (1). The questionnaire was validated by experts in public administration, and reliability was established through a pilot study, yielding a Cronbach's Alpha coefficient above 0.7 for all constructs.

Data analysis was conducted using the Statistical Package for Social Sciences (SPSS) version 25. Descriptive statistics, including frequency distribution and percentages, were used to analyse demographic data. Hypotheses were tested using Spearman Rank Correlation and Multiple Linear Regression analysis at a 0.05 level of significance to determine the strength and direction of relationships between the independent and dependent variables.



RESULTS

Out of the 405 copies of questionnaire distributed, 388 were retrieved and found usable, representing a response rate of 95.8%. The demographic profile of respondents indicated a balanced distribution across gender, with a mix of junior, senior, and management staff represented.

The analysis of the relationship between the independent variables (Performance Appraisal, Motivation, Leadership Influence) and the dependent variable (Workers' Productivity) yielded significant findings. The correlation matrix is presented in Table I.

Table I: Spearman Correlation Analysis

Variables	Performance Appraisal	Motivation	Leadership Influence	Workers' Productivity
Performance Appraisal	1.000			
Motivation	0.812**	1.000		
Leadership Influence	0.845**	0.798**	1.000	
Workers' Productivity	0.898**	0.856**	0.945**	1.000

** Correlation is significant at the 0.01 level (2-tailed).

Table I shows strong positive correlations between all independent variables and workers' productivity. Leadership influence demonstrated the strongest relationship ($r = .945$), followed by performance appraisal ($r = .898$) and motivation ($r = .856$). This suggests that improvements in these areas are strongly associated with higher productivity levels.

To determine the predictive power of the variables, a multiple regression analysis was conducted. The model summary is presented in Table II.

Table II: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.975	0.951	0.948	0.124



The results in Table II indicate an R Square value of 0.951, implying that 95.1% of the variance in workers' productivity at NCRI and NIFFR can be explained by the combined influence of performance appraisal, motivation, and leadership. This leaves only 4.9% of the variance attributable to other factors not included in this model.

Table III presents the coefficients of the regression model, detailing the individual contribution of each variable.

Table III: Regression Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
(Constant)	0.412	0.089		4.629	0.000
Performance Appraisal	0.315	0.042	0.335	7.500	0.000
Motivation	0.289	0.038	0.273	7.605	0.000
Leadership Influence	0.512	0.045	0.539	11.377	0.000

The regression coefficients in Table III reveal that Leadership Influence makes the largest unique contribution to explaining productivity (Beta = 0.539, $p < .001$), followed by Performance Appraisal (Beta = 0.335, $p < .001$) and Motivation (Beta = 0.273, $p < .001$). All three predictors were statistically significant.

DISCUSSION

The study established that performance appraisal significantly affects workers' productivity. This aligns with findings by Bakare (2024) and Ajike, (2023), who noted that procedural and distributive justice in appraisal systems predict employee output. In the context of NCRI and NIFFR, the positive coefficient suggests that when appraisals are perceived as fair, regular, and transparent, productivity increases. However, the qualitative context implies that current systems often suffer from irregularity and subjectivity, which may explain existing productivity gaps.

Regarding motivation, the results confirm Herzberg's Two-Factor Theory, indicating that both hygiene factors (salary, working conditions) and motivators (recognition, growth) are essential (Herzberg, 1966). The significant relationship (Beta = 0.273) underscores that the current motivational structures, despite policies like CONRAISS, require strengthening. Specifically, delays in payments and inadequate research funding, as highlighted by Igiri et al. (2021), act as substantial demotivators in the Nigerian research sector.



Leadership influence emerged as the most critical predictor of productivity. This finding supports the work of Adenigbagbe (2025) on transformational leadership. The high beta value (0.539) suggests that leadership style—whether supportive or authoritarian—has a disproportionate impact on how resources are utilised and how staff engage with their work. In research institutes, where innovation depends on autonomy and intellectual freedom, leadership that fosters a supportive environment is paramount.

CONCLUSION

This study concludes that performance appraisal, motivation, and leadership are pivotal determinants of worker productivity in Nigerian agricultural research institutes. The current productivity challenges at NCRI and NIFFR are not merely result of resource scarcity but are significantly driven by human resource management deficiencies. The high explanatory power of the model (95.1%) indicates that addressing these three areas could lead to near-total transformation in institutional output.

Based on these findings, it is recommended that the management of NCRI and NIFFR should overhaul existing performance appraisal systems to ensure they are objective and linked to career progression. Furthermore, there is an urgent need to operationalise motivation beyond salary payments by institutionalising recognition awards and ensuring timely release of research grants (Yaga, Adamu, & Okon, 2025). Finally, leadership development programmes should be prioritised to transition current management styles towards more transformational and supportive approaches that nurture scientific inquiry and productivity.

Ethical Clearance

Ethical approval for this study was obtained from the Department of Public Administration, Ibrahim Badamasi Babangida University Lapai. Permission was also sought and granted by the management of both NCRI and NIFFR prior to data collection. Informed consent was obtained from all respondents, and confidentiality of data was guaranteed.

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Conflict of Interest

The authors declare that there is no conflict of interest regarding the publication of this paper.



Authors' Contributions

Blessing Ojone Enape conducted the literature review, data collection, and initial statistical analysis. Dr. Usman Musa provided supervisory guidance, refined the methodology, and contributed to the discussion and policy implications of the findings. Both authors reviewed and approved the final manuscript.

Data availability statement

The datasets on which conclusions were made for this study are available on reasonable request.

Citation

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