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Performance Appraisal Interface with Productivity in Selected Nigerian Public Enterprises

Dr. Tejumade O. Siyanbola

Associate Professor, Department of Management and Accounting,
Obafemi Awolowo University, Nigeria

Dr. Bolanle W. Shiyanbade

Senior Lecturer, Department of Public Administration,
Obafemi Awolowo University, Nigeria

Dr. Idowu E. Olubodun

Lecturer, Department of Management and Accounting,
Obafemi Awolowo University, Nigeria

Abstract:

In this research, the interconnection between Performance Appraisal (PA), its methods, and efficiency in two selected Nigerian public sector enterprises was appraised to identify the PA methods adopted and evaluate how such methods influence the enterprises' overall performance for their sustainability.

Data was sourced from varied employee categories (277) of the enterprises sampled using a structured quantitative survey questionnaire. Analysis was done quantitatively with descriptive (e.g., cross-tabulations, means, and standard deviations) and inferential (e.g., Categorical Regression [CATREG] analysis) statistics.

From the findings, the model for individual employee productivity explained about 69% of the variation in their output (Adjusted $R^2=68.9\%$), while that for overall organisational productivity explained 70.8% of the changes in the enterprises' output. More specifically, only two of the eight PA methods adopted by the enterprises were significant in explaining the changes in both employees and organisational performance. In descending order of importance, the PA methods are Management By Objectives [MBO] $F=13.715$ and $F=94.900$, respectively, and Behavioural Rating Scale $F=5.837$ and $F=7.344$ respectively; all four results at $p<0.05$. The other three PA-related issues impact employees' performance. In addition, in descending order, are employees' belief that PA outcomes influence their ultimate productivity ($F = 47.581$), clarity in explaining the PA standards to employees ($F=4.778$), and employees' belief in the adopted PA system's validity ($F=3.342$) all at $p<0.05$. As for the organisations' productivity, six additional issues influence this; in descending order, they are employees' belief of PA linked to improved organisational performance ($F=180.406$), their promotion ($F=48.202$), improved salary ($F=34.204$), opportunities for training and development ($F=12.720$), better people management from supervisors ($F=5.150$) and the importance of rating employees in line with their individual responsibilities ($F=4.613$).

The study concluded that an effective PA system that employees and management believe in can enhance employees' productivity and boost the public enterprise's bottom line.

Keywords: Performance appraisal, productivity, public enterprises, Nigeria

1. Introduction

Pujiarti et. al. (2021, p. 2) define Performance Appraisal (PA) as:

"...method of evaluating and rewarding employee performance. Performance appraisal focuses on appraisal as a process of measuring the extent to which an employee or group of employees can benefit the organisation to achieve the goals set."

The authors further explain that an individual employee's performance is connected to his/her job satisfaction, and such job satisfaction is influenced by how such an individual feels about the job. As a planned process, it is a periodical exercise that measures the progress of employees and the success of policies connected to employees and the whole organisation (Pujiarti et al., 2021). According to the description by Al-Jedala and Mehrez (2020), PA is a formal system adopted to review and evaluate an individual employee or a team regarding the performance of assigned tasks. This simply means that it is an assignment or a role that is delegated; such role or assignment then needs to exist for there to be an appraisal, so appraisal cannot occur in a vacuum.

In carrying out Performance Appraisal (PA), an organisation intends to evaluate the current productivity and skills status of its existing workforce for optimising their efficiency and effectiveness and those of the businesses (Shaout & Yousif, 2014). In line with the research conducted by Pujiarti et al. (2021), PA has been shown to influence employees' performance directly or with motivation as an intervening variable. While Armstrong (2011) defines PA as the process by which

managers/supervisors formally assess and rate their employees. Robbins, Bergman, Stag and Coulter (2014) define PA as the manner in which management evaluates individual employees' performance to make personnel-related decisions. It is basically a process situated within an organisation's performance management process (Dowling, 2008).

Dating back to the 1970s, PA research was prominent in many journals as the articles looked into its role in managing the accomplishment of employees (Denisi & Murphy, 2017) against certain set criteria within each organisation. In their 2017 review article that chatted about the historical development of Performance Appraisal research, Denisi and Murphy list *scale formats*, *evaluating ratings* and *cognitive processes* assessment as commonly adopted among other measures between the 70s and 2000. In recent periods, the Performance Appraisal (PA) system has become better known and widely accepted by many researchers, practitioners, employers and employees as a useful tool to measure organisations' and their employees' cost-effectiveness (Islami et al., 2019). PA is believed to enhance employees' job performance potential and ability to communicate to achieve organisational goals, among other necessities (Aggarwal & Thakur, 2013); this position supports Pujiarti et al.'s (2021) position about the link between performance appraisal and productivity in organisation. As a process captured in organisations' overall performance management process, it formally assists supervisors and managers in assessing and rating individual employees (Armstrong, 2011). When PA is activated and performed, it enhances improved performance from employees with a bias towards broader organisational goals and specific objectives, including those relating to personnel policies (Robbins, Bergman, Stagg & Coulter, 2014). Research shows that when employees perceive their PA positively, it positively impacts their commitment to the organisation and their eventual work performance (Bekele, Shigutu, & Tensay, 2014). In turn, a committed employee tends to be satisfied, thus exhibiting a lower potential to exit the organisation (Fakhimi & Raisy, 2013).

Often used interchangeably with efficiency, Plag describes productivity as from the way some definitions were crafted; those definitions "...may suggest that productivity is an all-or-nothing property..." (2020, p. 539), suggesting that productivity is a combination of *availability and profitability*. In the context of this definition, Plag appears to be placing emphasis on an analogy that for productivity to occur, an employee needs to not only be available to work but he/she also needs to put up actions that lead to profitability for productivity to be achieved. The concept has also been defined by Hernandez-Lopez, Colomo-Palacios, and Garcia-Crespo on the other (2012) in relation to the inputted resources and the outputs that process. In the case of the three latter researchers, productivity is pictured from the three measurement levels: organisation, project type and workers, compared with the organisation's own criteria. The depiction of productivity by Mankins and Garton (2017) in Harvard Business Review is from the labour angle; the author describes productivity thus: "...the ratio of the output of goods and services to the labor hours devoted to the production of that output... typically measured by comparing the number of goods and services produced with the inputs used in production" (p.3). In essence, Mankins's depiction bears semblance to doing more with the same or less input; this latter description is similar to describing the 'efficiency' construct in many academic literature.

Literature on a section of Finland's local governments by Kork, Manttari and Vakkuri (2015) shows that attempts to define and measure productivity, particularly within the public sector, get complex because of tension between the policy principles, their interpretations for improvement by employees, and actual applications for final outcomes. This is an area of management that the authors pay special attention to. Extant literature has identified connections between productivity in the Nigerian public sector and factors such as investment or lack of it in public sector human capital development (Igbaekemen & Odivwri, 2014), governance and employee engagement.

1.1. Objective of the Paper

The broad objective of this paper is to examine the nexus between performance appraisal systems in selected Nigerian public sector enterprises and productivity within such organisations. More specifically, there was the intent to disaggregate the data on the predictor variable (*performance appraisal*) to assess which of them, if any, is most influential in impacting productivity in the enterprises sampled.

1.2. Research Hypothesis

The assumption for this research is that performance appraisal carried out in the public organisations sampled does not influence productivity in those organisations.

1.3. Conceptual Framework for the Study

The constructs espoused in this paper to measure Performance Appraisal (PA) were based mainly on the studies by Lunenburg (2012); the author adopted some of the exact constructs or those similar to at least six of the eight adopted in this paper, namely: *graphical rating scales*, *forced distribution*, *checklist*, *essay*, *critical incident*, and *behavioural anchored rating scale*. Other constructs used by existing authors are: *Management by Objectives (MBO)* by two sets of authors: Islami, Mulolli and Mustafa (2018) and Lindberg and Wilson (2011); in addition, *the mixed rating* is by Aggarwal and Thakur (2013).

2. Methodology

The research adopted quantitative methods for data collection and analysis. The population for the study was comprised of members of senior staff of the Federal Ministry of Mines and Steel (FMMS) and the Nigerian National Petroleum Corporation (NNPC); both organisations are part of Nigerian public service organisations. Two-stage sampling and stratified methods were adopted to identify those to be sampled, including managerial and non-managerial cadres. In the first stage, the human resource departments of both organisations were approached for their total records of employees. From that register, stratification was used to identify employees at the senior levels; it was observed at this stage that both

organisations had a combined total of 309 senior members. This was the focus of stage two. The senior staff were targeted because of the a-priori assumption that such employees would have had previous experiences from being assessed in the public service and might provide richer information on being appraised in the past. Since the whole population was just over 300, an attempt was made to sample all of them, and, of the total, 277 (89.6%) questionnaires were returned in analysable format.

The data collected was quantitatively analysed using descriptive (arithmetic means, Standard Deviation [SD], correlations) and inferential (Categorical Regression [CATREG]) statistics. CATREG makes it possible to *transform* all of the original variables (in particular the non-quantifiable ones) into quantifiable items for more advanced analysis [e.g. inferential statistics] (Siyanbola, Ologunde & Agboola, 2016). It is these transformed variables that are then loaded into the regression model; *Quantification* indicates that they have been converted into measurable/quantifiable units for more in-depth analysis.

3. Research Findings

After presenting the reliability statistics for all the constructs loaded into the model, the findings for this study were reported under the following sub-headings: correlation of Independent Variables (to identify multicollinearity and items that might not particularly add value to the results of the investigation), and Categorical Regression Analysis (CATREG) to indicate which of the final constructs that measure performance Appraisal impact employees' and organisation's productivity in the two organisations sampled.

3.1. Reliability Statistics for the Predictor Variables

At the initial stage, the reliability of each of the contents of the research instrument was assessed using Cronbach's Alpha Coefficient. Results showed that none of the reliability statistics for each of the constructs measuring productivity was less than the 0.7 Cronbach's Alpha Coefficient, a value that is the minimum commonly acceptable. As indicated in table 1, *the least coefficient is .737*, indicating that the final constructs measuring performance appraisal that were loaded into the model were reliable predictors of productivity.

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
Effective performance appraisal leads to an increase in employees' salary [EMP.PRODUCTIV.]	106.87	44.116	.036	.	.769
Positive performance appraisal influences employee promotion [EMP.PRODUCTIV.]	107.52	43.830	.053	.	.770
The criteria for the appraisal system are not valid [ORG.PRODUCTIV.]	107.10	41.040	.489	.	.746
Results of the evaluation are not discussed with the employee concerned [EMP.PRODUCTIV.]	107.36	40.920	.470	.	.746
Employees are not involved in formulating the evaluation tool [EMP.PRODUCTIV.]	106.57	42.427	.326	.	.754
The criteria for the appraisal system are not accurate [ORG.PRODUCTIV.]	107.31	41.079	.390	.	.749
The performance appraisal system is ineffective [ORG.PRODUCTIV.]	107.12	42.617	.206	.	.760
Employees are not rated according to the nature of their job and Responsibilities [EMP.PRODUCTIV.]	107.02	43.380	.145	.	.762
The appraisal system of the company is not relevant to employees' personal development [EMP.PRODUCTIV.]	107.36	40.834	.481	.	.745
There is no commensurate reward system after appraisal within the corporation [EMP.PRODUCTIV.]	106.57	42.347	.333	.	.754
The performance standards are not clearly explained to the employees [EMP.PRODUCTIV.]	107.33	41.040	.381	.	.750

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
The current appraisal does not consider the extra work employees put in [EMP.PRODUCTIV.]	107.18	39.786	.616	.	.738
Performance appraisal results help supervisors manage people better [ORG.PRODUCTIV.]	108.08	44.534	-.030	.	.777
Performance appraisal process encourages team spirit [ORG.PRODUCTIV.]	107.34	43.753	.061	.	.769
Performance appraisal positively impacts individual performance [EMP.PRODUCTIV.]	109.95	44.918	-.025	.	.765
Performance appraisal helps employees understand the organisation's strategic priorities [EMP.PRODUCTIV.]	107.04	44.093	.047	.	.768
Feedback from performance appraisal plays a significant role in my professional development [EMP.PRODUCTIV.]	106.93	44.586	-.013	.	.771
Results from performance appraisal help organisations determine employees' training and development needs [ORG.PRODUCTIV.]	107.00	43.707	.047	.	.772
Performance appraisal results are linked to the profitability of the corporation [ORG.PRODUCTIV.]	109.88	45.137	-.075	.	.767
Performance Appraisal is structured to address employees' weaknesses [EMP.PRODUCTIV.]	107.12	42.533	.214	.	.759
Key performance criteria (i.e. competencies, behaviours, outcomes) have been clearly identified [ORG.PRODUCTIV.]	107.02	43.289	.158	.	.762
Graphical Rating Scale (TRAD.)	107.09	41.271	.485	.	.746
Mixed Rating Scale (TRAD.)	107.19	39.624	.626	.	.737
Behavioural Checklist Method (MOD.)	107.36	40.920	.470	.	.746
The Forced Choice Method (TRAD.)	106.57	42.427	.326	.	.754
Management By Objectives (MBO) [MOD.]	107.31	41.079	.390	.	.749
Critical Incident Method (TRAD.)	107.37	40.755	.485	.	.745
Essay Method (TRAD.)	106.57	42.427	.326	.	.754
Behavioral Rating Scale Method (MOD.)	107.32	40.993	.400	.	.749
The result of the evaluation is not reliable [ORG.PRODUCTIV.]	107.18	39.701	.625	.	.737

Table 1: Item-Total Statistics Indicating

Source: Field Study 2023

Notes: MOD means Modern method, while TRAD means Traditional method

3.2. Correlation of Independent Variables

Correlations between the Independent Variables (IVs) were relatively moderate, hovering around 0.3, the generally allowable threshold. Very few were slightly above 0.3, meaning there was less problem with collinearity. Much higher collinearity values would have meant that some of the items that paired at such high correlation coefficient values would have had to have one of the pairs removed to reduce noise in the regression model.

3.3. Descriptive Statistics Showing the Strength of Each of the Predictors

Table 2 presents the descriptive statistics for each of the PA constructs (predictors). With reference to the item's Means and Standard Deviations, the results imply that the Forced Choice Method and Essay Method were the strongest methods, followed by the Graphical Rating Scale, Mixed Rating Scale, and Management by Objectives (MBOs). Behavioural

Checklist method is the weakest of the items. The result means that the strongest of the items would likely impact productivity more than the weakest.

	N	Minimum	Maximum	Mean	Std. Deviation
Graphical Rating Scale (TRAD.)	277	3	5	3.93	.537
Mixed Rating Scale (TRAD.)	277	2	5	3.83	.621
Behavioural Checklist Method (MOD.)	277	2	5	3.66	.602
The Forced Choice Method (TRAD.)	277	3	5	4.45	.520
Management By Objectives (MBO) [MOD.]	277	2	5	3.71	.674
Critical Incident Method (TRAD.)	277	2	5	3.65	.610
Essay Method (TRAD.)	277	3	5	4.45	.520
Behavioral Rating Scale Method (MOD.)	277	2	5	3.70	.675
Valid N (listwise)	277				

Table 2: Descriptive Statistics for Types of PAs Adopted in the Nigerian Public Sector

Source: Field Study 2023

3.4. The Influence of Performance Appraisal on Employees' Productivity in NNPC and Federal Ministry of Mines and Steel, Nigeria

In order to assess the influence of performance appraisal on the organisations' productivity, Categorical Regression (CATREG) Analysis was obtained rather than linear regression. CATREG is suitable in situations where the variables to be measured, i.e. criterion and predictors, are not in the same units of measurement, and while the former is in scale, the latter may be ordinal or ranked and vice versa (Cilan & Can, 2014). In such a situation, CATREG allows all the variables to first be converted to quantifiable units for ease of further in-depth analysis; this process is sometimes referred to as optimisation using the optimal scaling method. This makes the items standardised for later use.

In table 3, which presents the model summary, it can be shown that the predictor items representing performance appraisal predicted 77% of the changes that occurred in the productivity of employees in the Nigerian National Petroleum Corporation and Federal Ministry of Mines and Steel with R Square = .770. Even when the results were adjusted for errors that could have occurred within the model, performance appraisal still predicted about 69% changes in employees' productivity with *Adjusted R²* = .689. Although the Adjusted R² value may be slightly lower than the usually presented .7, the value is still within the acceptable limit, and since several issues, such as sample size or the number of variables, may cause low alpha coefficient values, it is undesirable to throw data away (Helms, Henze, Sass, & Mifsud, 2006; Onwuegbuzie & Daniel, 2002).

	Multiple R	R Square	Adjusted R Square	Apparent Prediction Error
Standardised Data	.878	.770	.689	.230

Source: Field Study 2023

Table 3: Model Summary for Performance Appraisal and Employee Productivity

Dependent Variable: Employee Productivity

Predictors: Graphical Rating Scale (TRAD.) Mixed Rating Scale (TRAD.), Behavioural Checklist Method (MOD.), The Forced Choice Method (TRAD.), Management By Objectives (MBO) [MOD.] Critical Incident Method (TRAD.) Essay Method (TRAD.) Behavioral Rating Scale Method (MOD.) Performance Appraisal is structured to address employees' weaknesses [EMP.PRODUCTIV.] Key performance criteria (i.e. competencies, behaviours, outcomes) have been clearly identified [ORG.PRODUCTIV.] The criteria for the appraisal system are not valid [ORG.PRODUCTIV.] The result of the evaluation is not reliable [ORG.PRODUCTIV.] Results of the evaluation are not discussed with the employee concerned [EMP.PRODUCTIV.] Employees are not involved in formulating the evaluation tool [EMP.PRODUCTIV.] The criteria for the appraisal system are not accurate [ORG.PRODUCTIV.] The performance appraisal system is ineffective [ORG.PRODUCTIV.] Employees are not rated according to the nature of their job and Responsibilities [EMP.PRODUCTIV.] The appraisal system of the company is not relevant to employees' personal development [EMP.PRODUCTIV.] There is no commensurate reward system after appraisal within the corporation [EMP.PRODUCTIV.] The performance standards are not clearly explained to the employees [EMP.PRODUCTIV.] The current appraisal does not consider the extra work employees put in [EMP.PRODUCTIV.] Performance appraisal results help supervisor manage people better [ORG.PRODUCTIV.] Performance appraisal process encourages team spirit [ORG.PRODUCTIV.] Performance appraisal positively impact individual performance [EMP.PRODUCTIV.] Performance appraisal helps employees understand the organisation's strategic priorities [EMP.PRODUCTIV.] Feedback from performance appraisal plays significant role in my professional development [EMP.PRODUCTIV.] Results from performance appraisal helps organisation determine employees' training and development needs [ORG.PRODUCTIV.] Effective performance appraisal leads to increase in employees' salary [EMP.PRODUCTIV.] Positive performance appraisal influences employee promotion [EMP.PRODUCTIV.] Performance appraisal results are linked to the profitability of the corporation [ORG.PRODUCTIV.]

3.5. Analysis of the Variance in NNPC and Federal Ministry of Mines and Steel Employees' Productivity and Its Link to Performance Appraisal

Table 4 presents the results of the analysis that revealed a significant relationship between the PA processes in the two organisations and their employees' performance at $F = 9.534$, $p < 0.05$. This combined effect of all predictors can be interpreted to mean that those organisations need to take performance appraisal very seriously as its successful implementation could improve their employees' performance, while the reverse may be so in the case of a wrongly implemented PA process.

	Sum of Squares	Df	Mean Square	F	Sig.
Regression	214.071	72	2.973	9.534	.000
Residual	63.929	205	.312		
Total	278.000	277			

Source: Field Study 2023

Table 4: ANOVA for Employee Productivity
Dependent Variable: Employee Productivity
Predictors: As for Table 3

3.6. Coefficients of Each Predictor Variable Showing Their Individual Effects on the Outcome Variable (Employees' Productivity)

In table 5, a segregated result to evaluate the effects of individual predictors indicated that two of the PA methods, were significant in measuring employee productivity: Management by Objectives (MBO) at $F = 13.715$, $p < 0.05$ and Behavioural Rating Scale Method at $F = 5.837$, $p < 0.05$. Among all the other predictor items in the model, only three were significant enough to explain the changes in employee productivity; these include *employees' perception that previous experience with the PA exercise positively impacted their performance* at $F = 47.581$, $p < 0.05$, *management's ability to explain performance standards to their employees* at $F = 4.778$, $p < 0.05$, and *validity of the PA criteria system adopted by each of the companies* at $F = 3.342$, $p < 0.05$.

With these findings, it would be prudent for the management of both public sector organisations to focus on the usage of the two PA methods that could deliver better results for them with regards to understanding their employees' performance rather than adopting too many that could be of little value to achieving the objectives carrying out the process in the first instance. Secondly, management must necessarily ensure that employees' experiences of going through the PA are positive to prevent an unhelpful attitude towards the exercise; if employees have the wrong perception, the attitude towards it may be native, thus creating apathy towards the exercise. In addition, the expected standards must be clear-cut and similarly explained to all the employees, ab initio, such that a level playing field for all is created for equity's sake. Lastly, the criteria system adopted must be seen by all stakeholders to be valid in accordance with each of the companies' review policies and processes; the absence of this could nullify the whole exercise and relegate it to wastage.

	Standardised Coefficients		Df	F	Sig.
	Beta	Bootstrap (1000) Estimate of Std. Error			
Graphical Rating Scale (TRAD.)	-.060	.051	3	1.367	.254
Mixed Rating Scale (TRAD) ^a	.206	.	3	.	.
Behavioural Checklist Method (MOD) ^a	-.021	.	4	.	.
The Forced Choice Method (TRAD) ^a	.011	.	3	.	.
Management By Objectives (MBO) [MOD.]	.028	.008	4	13.715	.000
Critical Incident Method (TRAD) ^a	.116	.	2	.	.
Essay Method (TRAD) ^a	.011	.	3	.	.
Behavioral Rating Scale Method (MOD.)	.320	.132	4	5.837	.000
Performance Appraisal is structured to address employees' weaknesses [EMP.PRODUCTIV.]	-.085	.079	2	1.158	.316
Key performance criteria (i.e. competencies, behaviours, outcomes) have been clearly identified [ORG.PRODUCTIV.]	.086	.088	3	.949	.418
The criteria for the appraisal system are not valid [ORG.PRODUCTIV.]	.074	.040	2	3.342	.037
The result of the evaluation is not reliable [ORG.PRODUCTIV.] ^a	-.255	.	3	.	.
Results of the evaluation are not discussed with the employee concerned [EMP.PRODUCTIV.] ^a	.058	.	4	.	.
Employees are not involved in formulating the evaluation tool [EMP.PRODUCTIV.] ^a	-.085	.	2	.	.
The criteria for the appraisal system are not accurate [ORG.PRODUCTIV.]	-.039	.045	4	.769	.546
The performance appraisal system is ineffective [ORG.PRODUCTIV.]	.057	.072	2	.632	.533

	Standardised Coefficients		Df	F	Sig.
	Beta	Bootstrap (1000) Estimate of Std. Error			
Employees are not rated according to the nature of their job and Responsibilities [EMP.PRODUCTIV.]	-.034	.070	1	.237	.627
The appraisal system of the company is not relevant to employees' personal development [EMP.PRODUCTIV] ^a	-.053	.	4	.	.
There is no commensurate reward system after appraisal within the corporation [EMP.PRODUCTIV.] ^a	.024	.	1	.	.
The performance standards are not clearly explained to the employees [EMP.PRODUCTIV.]	-.289	.132	4	4.778	.001
The current appraisal does not consider the extra work employees put in [EMP.PRODUCTIV.] ^a	-.002	.	1	.	.
Performance appraisal results help supervisors manage people better [ORG.PRODUCTIV.]	.058	.060	1	.934	.335
Performance appraisal process encourages team spirit [ORG.PRODUCTIV.]	-.066	.054	2	1.521	.221
Performance appraisal positively impacts individual performance [EMP.PRODUCTIV.]	-.735	.107	1	47.581	.000
Performance appraisal helps employees understand the organisation's strategic priorities [EMP.PRODUCTIV.]	.041	.101	1	.167	.683
Feedback from performance appraisal plays a significant role in my professional development [EMP.PRODUCTIV.]	.096	.073	1	1.738	.189
Results from performance appraisal help organisations determine employees' training and development needs [ORG.PRODUCTIV.]	.206	.176	2	1.364	.258
Effective performance appraisal leads to an increase in employees' salary [EMP.PRODUCTIV.]	-.143	.123	1	1.357	.245
Positive performance appraisal influences employee promotion [EMP.PRODUCTIV.]	-.055	.059	2	.888	.413
Performance appraisal results are linked to the profitability of the corporation [ORG.PRODUCTIV.]	-.004	.037	2	.011	.989
Source: Field Study 2023					
Dependent Variable: Z-score: Performance appraisal positively impacts individual performance [EMP.PRODUCTIV.]					
a. The tolerance for this variable is lower than 0.0001.					

Table 5: Coefficients of Performance Appraisal Methods (Independent Variables) as They Affect Employees' Productivity

3.7. The Influence of Performance Appraisal (PA) on Overall Productivity of NNPC and Federal Ministry of Mines and Steel, Nigeria

This section presents the results of the assessment of the effects of PA on productivity in both public corporations investigated in this study. Table 6 revealed an appropriate model-data-fit. It also indicated that PA explained about 79% of the changes in the corporations' performance with $R^2 = .791$. Even when the results were adjusted for errors, PA still predicted approximately 71% of the changes that occur in NNPC and Ministry of Mines and Steel productivity with Adjusted $R^2 = .708$.

	Multiple R	R Square	Adjusted R Square	Apparent Prediction Error
Standardised Data	.889	.791	.708	.209

Table 6: Model Summary for Performance Appraisal and the Organisations' Productivity

Source: Field Study 2023

Dependent Variable: Z-score: Performance Appraisal Results Are Linked to the Profitability of the Corporation [ORG.PRODUCTIV.]

Predictors: As for Table 3

3.8. Analysis of the Variance in NNPC and Federal Ministry of Mines and Steel (Organisations) Productivity and Its Link to Performance Appraisal

The result in table 7 indicates a significant link between the performance of both corporations and the PA system that those corporations adopt. The link is significant at $F = 9.599$, $p < 0.05$. By implication, management of the organisations

needs to take cognizance of the appraisal systems used and the forms they take and identify the best practices available to benchmark on while also noting those types that each of the organisation is easily adaptable to with value addition paramount to those in charge.

	Sum of Squares	df	Mean Square	F	Sig.
Regression	219.068	78	2.809	9.599	.000
Residual	57.932	198	.293		
Total	277.000	276			

Table 7: ANOVA for the Organisations' Productivity

Source: Field Study 2023

Dependent Variable: Z-score: Performance Appraisal Results Are Linked to the Profitability of the Corporation [ORG.PRODUCTIV.]

Predictors: As for Table 3

3.9. Coefficients of Each Predictor Variable Showing Their Individual Effects on the Outcome Variable (Organisations' Productivity)

Once the independent variables were disaggregated, table 8 reflects the outcome, showing which of the variables measuring PA actually affects the organisations' performance. Interestingly, the same two forms of PA that impacted employee performance are also reflected in organisational productivity. So, Management by Objectives (MBOs) and Behavioural Rating Scale were significant in influencing the organisations' performance respectively at $F = 94.900$, $p < 0.05$, and $F = 7.344$, $p < 0.05$. This simply implies that the two corporations need to keep vigilance on the adoption of both types for improved service delivery. Other issues affecting productivity are: *The understanding that the appraisal and organisations' profitability are linked at $F = 180.406$, $p < 0.05$. The perception by employees that PA automatically leads to promotion at $F = 48.202$, $p < 0.05$, the perception by employees that PA would automatically lead to salary increase at $F = 34.204$, $p < 0.05$. accuracy of the criteria for appraisal at $F = 14.251$, $p < 0.05$, the potential for the review process to assist the corporation in identifying employees' training needs at $F = 12.720$, $p < 0.05$, inability to rate employees based on the nature of job and responsibility at $F = 4.163$, $p < 0.05$, the potential for the PA system to help supervisor manage people at $F = 5.150$, $p < 0.05$.* All of these are expected to be issues of concern to the corporations if they are to make headway to help their businesses grow and sustain.

	Standardised Coefficients		Df	F	Sig.
	Beta	Bootstrap (1000) Estimate of Std. Error			
Graphical Rating Scale (TRAD.)	-.028	.048	2	.349	.706
Mixed Rating Scale (TRAD.) ^a	.354	.	4	.	.
Behavioural Checklist Method (MOD.) ^a	.059	.	4	.	.
The Forced Choice Method (TRAD.) ^a	.092	.	3	.	.
Management By Objectives (MBO) [MOD.]	.070	.007	4	94.900	.000
Critical Incident Method (TRAD.) ^a	-.186	.	4	.	.
Essay Method (TRAD.) ^a	.093	.	3	.	.
Behavioral Rating Scale Method (MOD.)	-.250	.092	4	7.344	.000
Performance Appraisal is structured to address employees' weaknesses [EMP.PRODUCTIV.] ^a	.043	.087	2	.244	.783
Key performance criteria (i.e. competencies, behaviours, outcomes) have been clearly identified [ORG.PRODUCTIV.]	-.050	.045	3	1.209	.308
The criteria for the appraisal system are not valid [ORG.PRODUCTIV.]	.051	.034	4	2.298	.060
The result of the evaluation is not reliable [ORG.PRODUCTIV.] ^a	-.457	.	3	.	.
Results of the evaluation are not discussed with the employee concerned [EMP.PRODUCTIV.] ^a	.069	.	4	.	.
Employees are not involved in formulating the evaluation tool [EMP.PRODUCTIV.] ^a	.089	.	2	.	.
The criteria for the appraisal system are not accurate [ORG.PRODUCTIV.]	.057	.015	4	14.251	.000
The performance appraisal system is ineffective [ORG.PRODUCTIV.] ^a	.010	.070	2	.020	.980
Employees are not rated according to the nature of their job and Responsibilities [EMP.PRODUCTIV.]	.032	.016	2	4.163	.017
The appraisal system of the company is not relevant to employees' personal development [EMP.PRODUCTIV.] ^a	.044	.	3	.	.

	Standardised Coefficients		Df	F	Sig.
	Beta	Bootstrap (1000) Estimate of Std. Error			
There is no commensurate reward system after appraisal within the corporation [EMP.PRODUCTIV.] ^a	-.283	.	3	.	.
The performance standards are not clearly explained to the employees [EMP.PRODUCTIV.]	.140	.105	2	1.781	.171
The current appraisal does not consider the extra work employees put in [EMP.PRODUCTIV.] ^a	.074	.	3	.	.
Performance appraisal results help supervisors manage people better [ORG.PRODUCTIV.]	-.098	.043	2	5.150	.007
Performance appraisal process encourages team spirit [ORG.PRODUCTIV.]	-.048	.066	1	.520	.472
Performance appraisal positively impacts individual performance [EMP.PRODUCTIV.]	.013	.048	1	.075	.784
Performance appraisal helps employees understand the organisation's strategic priorities [EMP.PRODUCTIV.]	.110	.173	1	.402	.527
Feedback from performance appraisal plays a significant role in my professional development [EMP.PRODUCTIV.]	-.088	.095	1	.857	.356
Results from performance appraisal help organisations determine employees' training and development needs [ORG.PRODUCTIV.]	.307	.086	2	12.720	.000
Effective performance appraisal leads to an increase in employees' salary [EMP.PRODUCTIV.]	-.346	.059	2	34.204	.000
Positive performance appraisal influences employee promotion [EMP.PRODUCTIV.]	.290	.042	1	48.202	.000
Performance appraisal results are linked to the profitability of the corporation [ORG.PRODUCTIV.]	-.682	.051	2	180.406	.000

Table 8: Coefficients of the Predictor Variables (Performance Appraisal) Determining Organisations' Productivity

Source: Field Study 2023

Dependent Variable: Z-score: Performance Appraisal Results Are Linked to the Profitability of the Corporation [ORG.PRODUCTIV.]

a. The Tolerance for This Variable Is Lower Than 0.0001

4. Conclusion

The conclusion from the study indicates that some form of appraisal methods are very valuable in motivating employees, who are key stakeholders, to probably exhibit Organisational Citizenship Behaviour if they perceive that the appraisal methods being used by their employer are fair to them; in other words, employees perceive equity in employers' behaviours. Therefore, management needs to focus on employees' review methods that are not only efficient but also effective in achieving the main goal of the appraisal method. An effective PA system that employees and management believe in can enhance employees' productivity and boost the public enterprise's bottom line.

5. Implications for Practice and Research

There are a number of inferences that can be drawn from this research results:

- Firstly, the results would be invaluable to management in that once workable employee appraisal methods are identified, the focus should be on the application of those to achieve cost-effectiveness.
- Secondly, on the part of the employees, knowing the type of appraisal methods used by their organisations and being aware of their workings may create an atmosphere of trust between them and their employers, and this can motivate them further.

6. Suggestion for Relevant Future Studies

Future researchers may apply similar methodologies to private sector organisations for possible comparisons with these results. In addition, a multi-method approach like triangulation can be tried to carry out similar research; in that case, it will be a mixed methodology that combines quantitative methodology with a qualitative approach for an in-depth knowledge of the subject matter that can be made possible by the richness of data to be collected and analysed.

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