AI-Based Performance Management System (PMS) and Employee Performance Appraisal: A Critical Assessment of Annual Performance Evaluations in Tertiary Institutions in Chukwuemeka Odumegwu Ojukwu University, Anambra State

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ABSTRACT

The integration of AI-Based Performance management system (PMS) in employee performance appraisal represents a significant advancement in the management of human resources improvement within tertiary institutions as higher education faces increasing demands for transparency, accountability and performance optimization, AI-based PMS offers innovative solutions for assessing academic and administrative staff. This paper examines the role of AI-based PMS in enhancing the effectiveness, fairness, and efficiency of employee evaluations in Chukwuemeka Odumegwu Ojukwu University, with a total population of 2,570, however, a sample size of 651 was extracted from the population using Borg and Gall (1979 formular in determining a finite population. The study adopted correlation survey research design in examining the utilization of AI-Based PMS as it relates to employee performance appraisal. It explores the integration of the role of AI in redefining employees' performance appraisal and management systems, which is one of the vital consequentiality of Human Resource (HR) in today's digital era. Additionally, the study discusses the benefits of AI-driven systems, including objectivity, scalability, and real-time feedback, while addressing key challenges such as data privacy, algorithmic bias, and ethical concerns. The paper concludes by highlighting best practices for the responsible implementation of AI-based PMS in performance evaluation, emphasizing the need for a balanced approach that combines technological innovation with human oversight. The findings showed that inaccuracies in evaluation, such as favouritism, lack of proper feedback, or subjective ratings, tend to demoralize staff, leading to reduced commitment, inefficiency, and in some cases resistance to institutional policies. The following recommendations where made from the findings; integrating qualitative measures and periodic algorithmic audits to preserve holistic appraisal, producing interpretable models that can produce human-readable justifications for recommendations, publishing the appraisal criteria, data sources, weighting scheme, and appeal procedures in applicable, and finally establish a centralized AI data management and governance framework.

Keywords: *Artificial Intelligence (AI), Employee Evaluation, Performance Appraisal, Data-driven Evaluation, Institutional Effectiveness, Algorithm Bias and Human Resource Management*

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INTRODUCTION

In the rapidly evolving landscape of higher education, tertiary institutions are increasingly seeking innovative approaches to enhance organizational efficiency, accountability and objectivity in employee performance appraisal system. Among these innovations, AI-Based Performance management system (PMS) has emerged as a powerful tool with potential to revolutionize various administrative and academic processes, including employee appraisal system, it involves using artificial intelligence to automate, analyze, and enhance the process of evaluating employee performance, (Nwafor & Ezeugo, 2025). Traditionally, employee assessments in universities and colleges have relied on manual reviews, peer evaluations and students feedback-methods that, while the process are time-consuming, subjective and inconsistent. It is pertinent to understand the trend and efficacies of AI-Based Performance management system and how it will be impactful in tertiary institutions as the world today are embracing E-governance, E-administration, E-banking, E-commerce etc, hence, it is imperative for tertiary institution to inculcate this development most especially on the aspect of employee performance appraisal as it involves a systematic process that has to do with individual employee performance, which can be subjected to bias, inconsistent and subjectivity when being carried out by human effort. (Aleru, 2023).

However, the integration of AI-based performance management system (PMS) in employee performance appraisal systems offers a transformative shift towards data-driven, transparent, and consistent result, (Amadi-Iwai, Ubolum, & Okiridu, 2024). AI-Based Performance management system (PMS) is becoming more and more essential in performance evaluation, changing the way we work and powering things in an organizational settings. Chukwuka and Dibie (2024) argued that through advanced algorithms, machine learning models, and data analytics, AI-based PMS can process vast amounts of information, identify performance trends, detect potential biases, and provide actionable insights. Almost all industries, including banking, retails, academia, and health sectors employ AI-Based Performance management system (PMS) and machine learning algorithms to develop models and accomplish goals by gathering data from historical records, these capabilities not only enhance the accuracy of evaluations but also support informed decision-making in areas such as promotions, professional development, and resource allocation. AI-Based Performance management system is rapidly reshaping various sectors, including education, where its integration into management processes is driving significant improvements in administrative effectiveness and efficiency. (Jamaica & Tagbo, 2025).

Administrative efficiency is another aspect that can inculcate the utilization of AI-Based Performance management system. Management often contend with time-consuming administrative tasks from paperwork to scheduling, while AI-driven system can handle these processes, giving the management time to focus on more strategic and high-value activities. Aleru (2023) opined that with the utilization of AI-Based Performance management system in administration, mostly on the area of performance appraisal, the rate of human error will drastically reduce to the barest minimum, thereby giving room for efficiency, accountability, consistency and objectivity in administering employee performance appraisal in tertiary institutions.

As tertiary institutions face growing demands for accountability and excellence in employee appraisal system, the utilization of AI-Based Performance management system in performance appraisal of both academic and non-academic staff becomes essential (Eze, 2024). However, this paper explores the potential applications, benefits, challenges, and ethical considerations associated with deploying AI-powered performance appraisal systems in higher education settings. According to Anekwe, Onuigbo and Okeke (2025) AI-Based Performance management system offers tertiary institutions the ability to automate routine tasks, optimize resource allocation, and enhance decision-making, which invariably promotes operational efficiency. In other words, it has been deduced that employees have suffered a simultaneous, and continuous setback in performance appraisal as a result of the bias and inconsistent nature of human decisions and input in tertiary institutions. Employee performance appraisal involves a systematic evaluation of individual employees' job performance and productivity in relation to certain pre-established criteria and organizational objectives. However, human conducted performance appraisal system are subjected to bias, subjectivity, inconsistence and lack of standardized criteria. The integration of AI-Based Performance management system analytics with managerial insights leads to more effective performance evaluations and fosters a balanced approach between automation and human oversight. Chuchu and Kyongo (2025). Considering the current trends of E-administration, E-governance, E-banking, and E-commerce around the globe, tertiary institutions are yet to embrace the integration of AI-Based Performance management system in employee performance appraisal system irrespective of the efficacies of AI-Based Performance management system.

The traditional methods of employee performance appraisal often suffer from subjectivity, inaccuracy, bias, time consuming and inconsistency in evaluation criteria. This challenges can result in employee dissatisfaction, reduced motivation, and inaccurate assessments that hinder employee performance and growth. However, with the increasing demand for data-driven decision making,

and AI-based performance appraisal system, organizations are exploring the integration of AI-Based Performance management system (AI) to enhance the fairness , accuracy and efficiency of performance appraisal in an organization, and tertiary institutions will not be an exception (Chukwuka et al. 2024).

Notwithstanding, tertiary institutions today have been suffering from a myopic understanding of AI-based performance appraisal, as a result of lack of awareness, and readiness in integration of AI-Based Performance management system in employee performance appraisal system (Nwafor, et al. 2025). However, there are some other areas in tertiary institution that needed attention, but will be treated as an area of further research which include; computation of results, generation of students transcripts, and students' collection of certificates, which students are supposed to have access to shortly after their graduation, but reverse is the case in most tertiary institutions in Nigeria today, as a result of redundancy, and myopic understanding of AI utilization in tertiary institutions.

Challenges such as lack of technical expertise, ethical concerns about data privacy, fear of job displacement, and resistance to change continue to hinder effective utilization of AI-Based Performance management system (AI) in this context. Moreover, there is a knowledge gap in understanding how AI can be customized to suit the unique cultural, academic, and administrative environments of tertiary institutions. It is in the light of this problems that this study seeks to investigate the extent to which AI-Based Performance management system (AI) can be utilized in ensuring transparent, accountable and objective performance appraisals in tertiary institutions, identify the challenges limiting its adoption, and evaluate its effectiveness compared to traditional appraisal system.

Objectives of the Study

The primary objective of this study is to analyze the impact of AI-Based Performance management system utilization and Employee Performance Appraisal in Tertiary Institutions. However, the study specifically aimed to determine the following:

(i) The extent to which accuracy of performance evaluation is associated with Employee's output in Chukwuemeka Odumegwu Ojukwu University

(ii) The extent to which AI-driven appraisal relate to institutional effectiveness in Chukwuemeka Odumegwu Ojukwu University

Research Questions

The following research questions guided the study:

(I) To what extent has accuracy of performance evaluation relate to Employee's output in Chukwuemeka Odumegwu Ojukwu University?

(ii) To what magnitude does AI-Driven appraisal relate to institutional effectiveness in Chukwuemeka Odumegwu Ojukwu University?

Hypotheses

Ho1: Accuracy of performance evaluation does not significantly relate to Employees' output in Chukwuemeka Odumegwu Ojukwu University

H02: AI-Driven appraisal does not significantly relate to institutional effectiveness in Chukwuemeka Odumegwu Ojukwu University

Literature Review

AI-Based Performance management system

AI-Based Performance management system (PMS) refers to technology-driven approach that utilizes artificial intelligence (AI) to plan, monitor, analyze, and improve employee performance in organizations. It involves the ability of digital computer, computer-controlled machine or robot to perform tasks commonly associated with intelligence beings like human. (Robinson, 2018). Dauda, Daku and Musa (2025) further contributed that AI-based performance management system is the simulation of human intelligence in machines or artificial systems that are programmed to solve problems in the way and manner that humans would whether in their simplest or most complex forms. In this regards, AI-Based Performance management system are becoming adopted and its implication is racing fast in teaching and learning processes.

AI-Based Performance management system in Human Resource Management

AI-Based Performance management system (AI) has become a transformative force in Human Resource Management (HRM), particularly in the area of performance appraisal. According to Sheikh (2023) AI enables HR professionals to analyze large datasets objectively, identify performance trends, and make informed decisions. AI-driven tools can automate routine tasks such as performance tracking, allowing HR personnel to focus on strategic functions. Many literature abounds on the meaning of AI-Based Performance management system. AI-Based Performance management system (AI) entails the tangible real-world capabilities of non-human machines or artificial, entities to perform, task, solve, communicate, interact, and act

logically as it occurs with biological humans. It refers to the simulation of human intelligence in machines that are programmed to think, learn and make decisions (Akinola, 2023). It was further defined by Nwosu as the capability of a machine to imitate human behavior and perform tasks such as reasoning, problem-solving, and learning.

However, AI-Based Performance management system in Human Resource Management (HRM) refers to the use of AI technologies and tools to automate, optimize, and enhance HR processes, such as performance appraisal, recruitment, onboarding, employee management and decision-making. As work place becomes more digital and data-driven, HR departments are leveraging AI to enhance efficiency, reduce bias, and make more strategic decisions.

Employee Performance Appraisal: Traditional vs AI-Based Methods

Employee performance appraisal is a critical aspect of Human Resource Management (HRM), aimed at evaluating an employee's job performance and contributions to organizational goals and objectives. Over time, the methods for conducting appraisals have evolve from traditional manual approach to a more advanced, technology-driven systems leveraging AI-Based Performance management system (AI).

Traditional Performance Appraisal Methods

Traditional appraisal system often suffer from subjectivity, bias, and inconsistency, these methods include rating scales, 360-degree feedback, and supervisor assessments. However, with the utilization of AI in employee performance appraisals, appraisal can become more data-driven, reducing bias, enhancing fairness, and minimizes human errors (Miller, 2022). AI algorithms can analyze large volumes of employee data-attendance records, productivity metrics, and peer reviews, to offer more objective evaluations. The traditional performance appraisal methods have long been in use in public and private organizations, especially in educational sectors like tertiary institutions. But as a result of the deliberate weakness of the traditional appraisal method to promote objective, consistent, un-bias, and error-free performance appraisal, the utilization of AI becomes imminent to fill the gap in the appraisal process.

AI-Based Performance Appraisal Methods

With the advent of AI, performance appraisal is undergoing significant transformation. AI-based methods incorporate algorithms, data analyses, and machine learning models to assess employee performance using real-time data. These methods can analyze vast amounts of data to identify patterns, provide real-time feedback, and personalize development plans for employees. The emergence of digital era has transformed the workplace dynamics, with the involvement of AI in performance appraisal system which has streamlined the performance management system. Agrawal, Pandey, and Sharma (2025). Nevertheless, the need and aspirations of today's workforce have revamped the organizational culture and HR practices over a period of time, particularly with the significant changes in digital era. (Uzo, Emenike & Nwosu, 2023).

AI's influence on employee engagement is evident through its role in enhancing transparent, timely, and consistent performance evaluation, and reducing bias and human errors to the barest minimum. According to Edem, Unwana, and Emem (2024) the integration of AI in performance appraisal has the potential to revolutionize the organizations evaluate and improve employee's performance with the capacity to produce a reliable data, transparent and consistent employee evaluations.

Role of AI-Based Performance Management System in Enhancing Employees' Performance Appraisals in Tertiary Institutions

Performance appraisal systems are critical for evaluating employee productivity, identifying training needs, and guiding organizational development. Traditionally, these systems have been manual, subjective, and often inefficient. However, with the advent of AI-Based Performance management system (AI), there is a paradigm shift in how performance management is conceptualized and implemented. This literature review explores the current state of research on the integration of AI into performance appraisal system within tertiary institutions, highlighting the benefits, challenges, and emerging trends.

Tertiary institutions are increasingly embracing digital transformation in administrative academic operations. One significant area seeing innovation is performance appraisal – a critical process for evaluating academic and non-academic staff. Traditional methods often suffer from bias, inefficiency, and a lack of real-time feedback. According to Mendonca and Kanungo (2024) Traditional appraisal system in academic settings have been suffering from favoritism, lack of standardization, and unclear metrics. But AI-Based Performance management system (AI) offers a promising solution to address these challenges by introducing data-driven, objective, and scalable systems. AI in employee performance appraisals, appraisal can become more data-driven, reducing bias, enhancing fairness, and minimizes human errors (Miller, 2022). However, AI can significantly enhance the performance appraisal systems in tertiary institutions by bringing more objectivity, efficiency, and insight to the process. More so, a data-driven appraisal system paves way for bias reduction, objective evaluations, predictive

analytics, enhanced accountability and transparency and streamlined appraisal process. AI has revolutionized the automation of performance appraisals. According to Sharma and Sharma (2020), AI technologies can automate repetitive tasks such as data gathering, performance tracking, and preliminary analysis, freeing human resource management (HRM) to focus on strategic decision-making that are vital for the growth and visibility of the institution. Automation not only speeds up the appraisal process but also ensures that it is systematic, consistent, and transparent rather than periodic. However, one of the most vital role of AI in performance appraisal is the mitigation of bias. The traditional appraisal systems are often influenced by personal perceptions, leading to unfair evaluations and human errors. As opined by Mensah (2022), AI systems use algorithms based on quantifiable metrics, which help reduce human biases related to gender favoritism, ethnic and relationship affiliations and personal sentiments. Furthermore, AI tools like machine learning models can learn from vast datasets to deliver consistent evaluations across different employee groups.

Data-Driven Decision Making in Employees' Performance Appraisal

Decision-making is a vital and critical process for every organization and institutions to achieve a competitive advantage. For this decision to meet optimum utilization of organizational or institutional needs, it has to sail beyond human efforts, which is data-driven decision. AI facilitates the aggregation and analysis of large volume of performance-related data. As observed by Uzor, Emenike, & Nwosu (2023), AI can draw insights from diverse sources such as work outputs, peer reviews and task completion times. These insights support more informed and data-driven decisions about promotions, recognitions, and developmental needs, enhancing the overall fairness and credibility of the appraisal process. However, data-drive performance appraisal ensures the use of objective, measurable information (rather than just personal or gut feelings) to evaluate how well employees are performing. Using quantifiable data and analytics to assess employee performance rather than relying solely on subjective observations.

Data-driven decision making focuses on how objective data and analytics can improve the fairness, accuracy, and strategic alignment of employee evaluations, it helps in reducing subjectivity, and bias in performance appraisal by relying on quantifiable metrics. According to Akaegbobi, Akam and Mbah (2024) ability to make an informed decision based on data enhances competitive advantage in every organization, they further contributed that data-driven decision making reduces human error, bias, and inconsistency that may occur when carried out by human effort.

Performance Appraisal

Performance appraisal is a systematic, annual and timely evaluation of an employee's job performance relative to the established organizational standard. It's a key element of performance management that seeks to assess, guide and improve employee contributions within an organization, which is a key indicator to human capital development, (Anaekwe, et al. 2025). Performance appraisal has proven to be an effective instrument that helps institutions improve employee productivity. Performance appraisal has to do with the performance review, performance evaluation, career development, or employee appraisal. It is a periodic and systemic process whereby the job performance of an individual employee is documented and evaluated, it is an integral part of employee evaluation, (Aminu & Muftiat, 2024). Nwosu, Obalum, and Ananti (2024) opined that performance appraisal is a systematic evaluation of the performance of employees and to understand the abilities of a person for further growth and development. It generally includes setting objectives, assessing performance, providing feedback, and designing development plans. Notwithstanding, appraisal also serve as an instrument of evaluating task performance of an individual employee, as task performance encapsulates the essential job responsibilities expected of an employee, often referred to as "in-role prescribed behavior" (Kalia & Bhardwaj, 2019) as cited by Anekwe, et al. (2025).

However, employee appraisal in tertiary institutions serve several important purposes for organizational productivity and development, these purposes are essential considerations employee appraisal remains a vital and important administrative exercise in tertiary institutions, and they include the under-listed;

Administrative Decisions: One of the major purpose of a performance appraisal system is to provide reliable and objective information to support administrative decision within an organization. Administrative decisions involve managing the workforce through actions that affect an employee's status, compensation, and career trajectory.

Employee Training and Development: while decision making are important, a growing focus in modern organization is using performance appraisals to support employee training and development. Employee training and development refers to activities that improve skills, knowledge, abilities, and competence to help individuals grow in their current roles or prepare for future responsibilities.

Organizational Planning: Organizational planning involves preparing the institutions or organization for future challenges, growth, and challenges by aligning workforce capabilities with strategic goals. However, performance

appraisal are not only tools for managing individuals, but also provide a valuable data for organizational planning for future growth, development and challenges. (Onuigbo, & Soba, 2025)

Motivation and Engagement: Performance appraisal play a significant role in motivating employees and enhancing their engagement within the organization. Motivation refers to the internal drive to perform optimally, while engagement refers to the level of enthusiasm and emotional investment an employee has towards their job. A well planned executed appraisal serves as an instrument of motivation and engagement to employees to be at their best performance by providing constructive feedback, recognition, and opportunities for growth.

Performance Evaluation: Performance evaluation in tertiary institutions refers to the systematic assessment of staff, particularly academic and administrative employees, based on how effectively they perform their academic obligations. This process is essential for maintaining high standards and ensuring that the institution fulfills its educational, research, and community service mandate.

Promotion and Career Advancement: Promotion and career advancement are the key components of human capital development. Onuigbo, *et al*. They serve as recognition of an employee's contributions and a means to encourage continued excellence in teaching, research and service to the institution.

Theoretical Exposition

Although so many theories abound on this topic as it tries to solve a contemporary problems mitigating against the productivity and optimum performance of organization. However, Socio-technical Systems (STS) theory was adopted for this topic. The theory emphasized on the organizational theory that conceptualizes a given work or other systems in view of its constituent social and technical subsystems, with the goal of achieving system success through joint optimization. This theory was propounded by Trist and Bamforth (1951) and Emery (1993). However, the fundamental assumption of this theory has it that the core design and performance of any organizational system can only be understood and improved if both 'socio' and 'technical' aspects of an organization are brought together and treated as interdependent parts for a complex system. It further contributed that organizational change programs often fail because they are too focused on one aspect of the system, commonly technology, and fail to analyze and understand the complex interdependencies that exist within the organization.

Empirical Review

Chukwuka *et al.* (2024) conducted a study on "Strategic Role of AI-Based Performance management system (AI) on Human Resource Management (HRM) Employee Performance Evaluation Function". The purpose of the research aims to create a realistic understanding of the favorable and unfavorable experiences that employees have as a result of adopting AI-Based Performance management system (AI or resorting for old manual HR methods. It explains the difficulties and the benefits associated with the integration of AI-Based Performance management system or the old manual HR methods. The method adopted for the research was qualitative and exploratory research methodology, and secondary sources of data was used for data collection.

Jamaica *et al.* (2025) AI-Based Performance management system (AI) in Educational Management for Enhanced Administrative Effectiveness in Rivers State University; the study examines the role of AI in enhancing administrative effectiveness within Rivers state universities. The study had three objectives, three research questions and three hypothesis. A descriptive survey design was adopted. The population of the study was 48 educational management administrators from two Rivers state-owned universities (Rivers State University (RSU) and Ignatus Ajuru University of Education, IAUE). The sample size of the study was 48 which comprises of 19 male and 29 female administrators. Data was collected through a structured questionnaire, rated on a 5-point likert scale. The instrument's reliability was confirmed with a cronbach alpha coefficient of 0.91. Responses were analyzed using mean and standard deviation for research questions, while z-tests were applied to test hypothesis at 0.05 significant level.

Amadi-Iwai, Ubolum, and Okiridu, (2024) conducted a research on "Awareness, competence and utilization of AI-Based Performance management system for improved job performance by business sectors in Universities in South-South Nigeria', which was geared to ascertain the level of awareness, competence and AI-Based Performance management system utilization in business sectors in universities. Three research objectives, three research questions and three research hypotheses guided the study. The study adopted descriptive survey design. The population was comprised of 149 lecturers of business education in the universities south-south geopolitical zone of Nigeria. The findings of the study revealed that there is low level of awareness of AI-Based Performance management system. The study also showed that business educators do not have adequate competence on how to utilize AI-Based Performance management system in teaching techniques. Therefore, the study recommended among others that there should be adequate provision of AI-Based Performance management system tools in universities for effective teaching and learning of business contents.

Nwafor *et al.* (2025) the study examined the roles of AI-powered assessments in enhancing the professional development of academic staff in public universities in

Rivers state. Three objectives, three research questions and three hypotheses guided the study. The study adopted a descriptive research design. Population of the study was drawn from 2,849 male and female lecturers in three public universities in Rivers. The sample size of the study was 360 respondents. The finding for the study revealed among others that AI-powered assessments provide timely and actionable feedback that improves teachers' teaching practices, the use of AI-powered assessments has significantly enhances teachers' ability to identify areas for professional growth. Based on the findings, it was recommended that teachers in public universities in Rivers state should prioritize the adoption of AI-powered assessment tools as part of their professional development programs.

Roma Kumari Gupta and Chandrabhan M. Tembhurnekar (2024) studied on AI-Driven performance appraisal systems; a critical issues emerging problems and challenges. The findings shows that AI can enhance objectivity and efficiency in performance appraisal. Challenges included the algorithm bias, lack of transparency, privacy concerns, and employee resistance. The study recommended that there should be an established strong governance frameworks to oversee AI implementation, develop ethically sound AI systems, and engage in change management practices to address employee concerns.

MATERIALS AND METHOD

The study adopted correlation survey research design. The rationale for adopting this design was to examine the AI-Based Performance management system utilization relates to employee performance appraisal in Chukwuemeka Odumegwu Ojukwu University. The study was carried out in Chukwuemeka Odumegwu Ojukwu University, Anambra state. The population of the study consists of seven (7) cadre of the non-academic staff of the institution (Clerical, Security, Executive, Administrative, Bursary, Secretarial and Technologist) working within the three (3) campuses under Chukwuemeka Odumegwu Ojukwu University as listed in the (Table 1). The justification for focusing only of non-academic staff was as a result of the streamlined nature of the appraisal process of the academic staff in tertiary institutions which is usually based on number of publications, citations and contributions to the institution. However, the sample size for this study was statistically determined using Borg and Gall (1979) formula for determining a finite population which is commonly used in social science research to determine the sample size of a finite population. Thus, Borg and Gall formula for infinite population is represented as

$$\boldsymbol{n} = \frac{\mathbf{N}}{\mathbf{1+N(e)^2}}$$

Where:

n= the number of samples (?)
N= the total population (finite) which is given as (2570).
e= level of significance at 0.05 or 5%

Therefore: $n = \frac{1570}{1+1570(0.05)^2}$

$n =$ \ Frac {1570}{1+1570(0.0025)}

$n = \frac{1570}{1+1.41}$

$n = \frac{2570}{2.41} = 651.45$

n = 651.45 approximately 651

n = 651 Thus, the sample size to be considered for this study will be 651.

A probabilistic sampling method known as stratified random sampling was employed in selecting the units of observation. Having determined the sample size and the proportion of each category of the staff in the sample, sampling units that could easily be accessed and adequately located were selected using the sample frame (nominal roll of all the staff). This method was adopted in preference to random sampling, as the possibility of administering all the staff is very difficult because most of them either did not come to work or may be on annual leave (Table 1). The instrument for data collection was the structured questionnaire titled: "AI-Based Performance Management System (PMS) and Employee's Performance Appraisal questionnaire". The instruments were subjected to face validity by an experts in measurements & evaluation to ensure that the instruments contains all the aspect of the subject matter. The instruments were trial-tested using a single administration in a representative sample of 20 employees randomly selected from other universities that was not part of our study area. The responses of the employees were collected to determine the internal consistency of the items in each of the instrument. This was done using Cronbach Alpha reliability coefficient. The instruments were administered to the respondents by the researcher with the help of two research assistants. However, the process was on the spot-hand delivery for the administration and collection of the instrument from the respondents, while the researcher waited for the respondents to fill the questionnaire and retrieve them back afterwards. Pearson Product Correlation was used for the study and the hypothesis was tested at 0.05 level of significance. The Statistical Package for Social Science (SPSS) version 2.5 was utilized for the decision rule, Nworgu's (2025) guidelines were used to describe the magnitude and direction of correlation between two variables.

Correlation (r) of +/-0.00 to 0.19 = Very Low Relationship
Correlation (r) of +/-0.20 to 0.39 = Low Relationship
Correlation (r) of +/-0.40 to 0.59 = Moderate Relationship
Correlation (r) of +/-0.60 to 0.79 = High Relationship
Correlation (r) of +/-0.80 and Above = Very High Relationship

Table 1: Population and Sample Proportion for Different Cadres.

Cadre	Population	Sample Proportion	Percentage
Clerical	117	81	13
Security	62	27	17
Executive	305	175	08
Administrative	530	185	08
Secretarial	47	21	24
Bursary	431	130	18
Technologist	78	32	12
Total	1,570	651	100%

Table 2: Questionnaire Distribution Analysis.

Category	Participants	Percentage
Questionnaire Returned	627	98
Questionnaire nor Returned	24	2
Total	651	100

Source: Field Survey (2025)

Table 3: Summary of Pearson Product-Moment Correlation on the extent Accuracy of performance evaluation relate to Employee's Output in Chukwuemeka Odumegwu Ojukwu University.

Variables		N	r	r^2	Remark
Accuracy of Performance Evaluation		627			
			0.54	0.67	High Positive Relationship
Employee's Output	**Task**	627			

Where the negative coefficient indicates a negative relationship or correlation between variables, positive coefficient indicates positive relationship or correlation between variables. To ascertain whether the correlation was significant, if probability value (p-value) is equal to or less than 0.05 level of significance, the null hypotheses was rejected which indicates that the relationship was significant. Where it was greater than 0.05 level of significance, the null hypotheses was not rejected.

RESULTS

Analysis in (Table 2) revealed that out of six hundred and fifty-one (651) questionnaire distributed, six hundred and twenty-seven (627) were completed and retrieved, thus showing 98% response rate, while twenty-four (24) showing 2% response was either not retrieved or wrongly filled.

Analysis of Research Question

Research Question One

To what extent has accuracy of performance evaluation relate to Employee's output in Chukwuemeka Odumegwu Ojukwu University?

The summary result of Person Product-Moment Correlation Coefficient in (Table 3) showed that accuracy of performance evaluation is positively related to employee's output in Chukwuemeka Odumegwu Ojukwu University with: r = 0.54, r^2 = 0.67. The Pearson "r" revealed a positive correlation coefficient value of 0.54 which implied that a unit increase in the accuracy of performance evaluation leads to 0.54 (54%) increase in employee's output in Chukwuemeka Odumegwu Ojukwu University and vice versa. The coefficient of determination (r^2) which was valued at 0.67 showed that explanatory power of the variable was highly strong. This implies that 76% of the variations in employee's output in Chukwuemeka Odumegwu Ojukwu Universitywere accounted for by the variations in the accuracy of performance evaluation.

Research Question Two

To what magnitude does AI-Driven appraisal relate to institutional effectiveness in Chukwuemeka Odumegwu Ojukwu University?

The summary result of Person Product-Moment Correlation Coefficient in (Table 4) showed that AI-Driven appraisal is positively related to institutional effectiveness in Chukwuemeka Odumegwu Ojukwu University with: r = 0.47, r^2 = 0.53. The Pearson "r" revealed a positive correlation coefficient value of 0.47 which implied that a unit increase in the accuracy of performance evaluation leads to 0.47 (47%) increase in employee's output in Chukwuemeka Odumegwu Ojukwu University and vice versa. The coefficient of determination (r^2) which was valued at 0.53 showed that explanatory power of the variable was highly strong. This implies that 73% of the

Table 4: Summary of Pearson Product-Moment Correlation on the magnitude AI-Driven appraisal relate to institutional effectiveness in Chukwuemeka Odumegwu Ojukwu University

Variables	N	R	r²	Remark
AI-Driven Appraisal	627			
		0.47	0.53	High Positive Relationship
Institutional Effectiveness Task	627			

***Significance at p < 0.05*

Table 5: Summary of Pearson Product-Moment Correlation on the significant correlation between Accuracy of Performance Evaluation and Employee's output in Chukwuemeka Odumegwu Ojukwu University.

Variables	N	R	r²	p-value	Remark
Accuracy of Performance Evaluation	627				
		0.54	0.67	0.00	Significant
Employee's Output	627				

***Significant at p < 0.05*

Table 6: Summary of Pearson Product-Moment Correlation on the significant correlation between AI-Driven appraisal and Institutional Effectiveness in Chukwuemeka Odumegwu Ojukwu University.

Variables	N	R	r²	p-value	Remark
AI-Driven Appraisal	627				
		0.47	0.53	0.00	Significant
Institutional Effectiveness	627				

***Significant at p < 0.05*

variations in institutional effectiveness in Chukwuemeka Odumegwu Ojukwu University were accounted for by the variations in the AI-Driven appraisal.

Test of Hypotheses

Test of Hypotheses One

HO1: Accuracy of performance evaluation does not significantly relate to Employees' output in Chukwuemeka Odumegwu Ojukwu University

The summary of result of Pearson Product-Moment Correlation Coefficient (Table 5) showed the significant relationship between accuracy of performance evaluation and employee's output in Chukwuemeka Odumegwu Ojukwu University with p-value = 0.00. Since p-value (0.00) is less than 0.05, the study rejected the null hypotheses that Accuracy of performance evaluation does not significantly relate to Employees' output in Chukwuemeka Odumegwu Ojukwu University and accepted the alternative hypotheses that Accuracy of performance evaluation significantly relate to Employees' output in Chukwuemeka Odumegwu Ojukwu University.

Test of Hypotheses Two

HO2: AI-Driven appraisal does not significantly relate to institutional effectiveness in Chukwuemeka Odumegwu Ojukwu University

The summary of result of Pearson Product-Moment Correlation Coefficient (Table 6) showed the significant relationship between AI-Driven Appraisal and Institutional Effectiveness in Chukwuemeka Odumegwu Ojukwu University with p-value = 0.00. Since p-value (0.00) is less than 0.05, the study rejected the null hypotheses that AI-Driven appraisal does not significantly relate to institutional effectiveness in Chukwuemeka Odumegwu Ojukwu University and accepted the alternative hypotheses that AI-Driven appraisal significantly relate to institutional effectiveness in Chukwuemeka Odumegwu Ojukwu University.

DISCUSSION

Accuracy of Performance Evaluation and Employee's Output in Chukwuemeka Odumegwu Ojukwu University

The study investigated the relationship between the accuracy of performance evaluation and employee's output in Chukwuemeka Odumegwu Ojukwu University. Findings revealed that the degree of fairness, objectivity, and transparency in performance appraisal significantly influences the quality and quantity of employee output. Many respondents indicated that when performance evaluations are carried out based on clear criteria,

measurable indicators, and unbiased assessment, employees are more motivated to increase productivity. The findings further showed that inaccuracies in evaluation, such as favouritism, lack of proper feedback, or subjective ratings, tend to demoralize staff, leading to reduced commitment, inefficiency, and in some cases resistance to institutional policies, (Onuigbo, & Umetiti, 2025). This suggests that employees are more likely to put their best efforts when they are assured that their performance will be fairly appraised and duly rewarded. The results however align with the organizational behavior theories that emphasize fairness and equity in workplace assessments as key drivers of motivation and productivity.

AI-Based Appraisal and Institutional Effectiveness in Chukwuemeka Odumegwu Ojukwu University

This study explores AI-Based Appraisal and Institutional Effectiveness in Chukwuemeka Odumegwu Ojukwu University. The findings of this study reveals that AI-based Performance Appraisal is yet to be implemented in Chukwuemeka Odumegwu Ojukwu University, likewise in most other tertiary institutions in Nigeria University. It is evident that while traditional appraisals have already proven beneficial in improving staff productivity, leveraging AI-based appraisal can further improve productivity and efficiency in evaluations due to its ability to reduce bias, subjectivity, and inconsistencies, enhance feedback mechanisms through data-driven insights, and predict performance trends for proactive decision-making. However, COOU has demonstrated the effectiveness of appraisal systems in boosting productivity, even though AI-based appraisal hasn't been formally introduced to the system, but ongoing efforts like AI integration in educational management, leadership, and student training has created foundation for future development in AI-enhanced institutional appraisal mechanisms.

Conclusion

The integration of an AI-Based Performance Management System (PMS) presents a strategic opportunity for Chukwuemeka Odumegwu Ojukwu University (COOU) to strengthen institutional effectiveness. While the university currently relies on traditional appraisal systems, which have shown a positive impact on productivity, AI offers the potential to enhance transparency, accuracy, efficiency in performance evaluations, Anaekwe et al. (2025). Although there's no documented evidence of a fully implemented AI-Based PMS at Chukwuemeka Odumegwu Ojukwu University, the university has demonstrated readiness through various initiatives, including AI-focused research, staff training partnerships, and efforts to incorporate digital tools into educational management. By leveraging AI-Based PMS, Chukwuemeka Odumegwu Ojukwu University can Automate data collection and analysis for decision-making, reduce human bias in appraisals, promote transparency and accuracy and achieve consistency in appraisal. Conclusively, embracing AI in performance management is not only a forward-thinking move for Chukwuemeka Odumegwu Ojukwu University, but also a necessary step towards achieving greater accountability, productivity, and strategic growth in the face of evolving educational demands.

Recommendations

The study recommends that for Chukwuemeka Odumegwu Ojukwu University to promote accuracy, consistency, and unbiased appraisal, there is need to institutionalize the use of AI-Based appraisal, which will eventually eliminate inconsistencies and promote data-driven results. This can be achieved by integrating qualitative measures and periodic algorithmic audits to preserve holistic appraisal.

Secondly, there is need to build a transparent, explainable AI models and comprehensive training for staff, to ensure that both management and staff of the institution are aimed in the same direction. However, this can be achieved by producing interpretable models that can produce human-readable justifications for recommendations, publishing the appraisal criteria, data sources, weighting scheme, and appeal procedures in applicable.

Finally, Chukwuemeka Odumegwu Ojukwu should establish a centralized AI data management and governance framework. This can be achieved by creating a data governance committee composed of representatives from ICT, HR, and Academic Planning Unit to oversee all AI-related data use, then develop standardized data collection, storage and validation protocols across departments, enforce compliance with Nigeria Data Protection Act (NDPA), introduce periodic auditing and ensure continuous updating of datasets.

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