

Effect of Artificial Intelligence on Human Resource Management Practices in the Public Sector of Anambra State Ministry of Health

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Abstract

The study examined the Effect of Artificial Intelligence on Human Resource Management Practices in the Public Sector of Anambra State Ministry of Health. The specific objectives are to: Examine the effect of Artificial Intelligence (AI)-based recruitment systems on employee selection efficiency and determine the influence of Artificial Intelligence-driven performance appraisal systems on staff performance evaluation in the Anambra State Ministry of Health. The study used the descriptive survey design approach. The primary source of data was the administration of questionnaire. The population of the study consisted of two hundred and sixty-seven (267) staff. Two hundred and fourteen (214) staff returned the questionnaire and accurately filled. The validity of the instrument was tested using content analysis and the result was good. The reliability was tested using the Pearson correlation coefficient (r). It gave a reliability co-efficient of 0.830 which was also good. Data was presented and analyzed by mean score and standard deviation. The hypotheses were analyzed using Z - test statistic tool. The findings indicated that Artificial Intelligence (AI)-based recruitment systems had a significant positive effect on employee selection efficiency, $Z = 7.827$, $p < .05$, and Artificial Intelligence-driven performance appraisal systems had a significant positive influence on staff performance evaluation in the Anambra State Ministry of Health = 7.485, $p < .05$. The study concluded that Artificial Intelligence (AI)-based recruitment and driven performance appraisal systems had a significant positive effect on employee selection efficiency and staff performance evaluation in the Anambra State Ministry of Health. The study recommended among others that the Anambra State Ministry of Health should strengthen the adoption and continuous upgrading of AI-based recruitment systems and provide regular training for HR personnel to ensure efficient, transparent, and merit-based employee selection.

Keywords: Artificial Intelligence, AI-Based Recruitment Systems, Employee Selection Efficiency, AI-Driven Performance Appraisal Systems, Staff Performance Evaluation.

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Introduction

Historically, human resource management has evolved from traditional personnel administration to a more strategic and technology-driven function. Early HR practices focused mainly on record keeping, recruitment, and employee welfare, but the advent of information technology and later artificial intelligence has significantly transformed these functions. The emergence of AI, especially since the Fourth Industrial Revolution (4IR), has introduced automation, machine learning, and data analytics into HR processes, enabling organizations to make data-driven decisions and improve efficiency. AI systems now support recruitment, performance management, training, and employee engagement, marking a shift from manual to intelligent HR systems. Studies show that AI is increasingly being integrated into all stages of employee lifecycle management, including recruitment, onboarding, retention, and exit processes (Nosratabadi et al., 2022).

Globally, the adoption of AI in HRM has gained momentum due to globalization, digital transformation, and the need for efficiency in organizational processes. AI technologies such as natural language processing, robotics, and predictive analytics are being utilized to streamline HR functions and enhance decision-making. According to Shaikh et al. (2024), organizations across the world are integrating AI into HR systems to improve operational performance and support strategic decision-making. Similarly, global public sector institutions are increasingly leveraging AI to enhance service delivery, reduce costs, and improve workforce management. However, the adoption of AI also raises concerns regarding ethics, transparency, and bias in decision-making processes, which remain critical issues in global discourse (Jobin et al., 2019).

In the context of the public sector, AI has become a key driver of administrative reforms and innovation. Governments worldwide are adopting AI to improve efficiency and policy implementation, although challenges such as data privacy, institutional capacity, and resistance to change persist (Mikhaylov et al., 2018). In particular, public sector HRM is undergoing significant transformation as AI tools assist in workforce planning, recruitment automation, and performance evaluation. Research in developing countries, such as South Africa, indicates that AI offers opportunities for improving HR efficiency but also presents challenges related to skills gaps, infrastructure, and governance (Chilunjika et al., 2022).

At the national level in Nigeria, the integration of AI into HRM is still emerging but gaining attention, especially in the public sector. Nigerian public institutions are gradually adopting digital technologies to improve administrative processes, including HR functions. Chima (2022) observes that AI is beginning to take over certain HR functions in the Nigerian public sector, although its adoption is still limited and not fully reflected in organizational structures and financial reporting. Additionally, studies highlight that the use of AI in HRM in Nigeria is constrained by inadequate infrastructure, limited technical expertise, and resistance to technological change (Okolie & Egbon, 2023). Despite these challenges, there is growing recognition of AI's potential to enhance efficiency, transparency, and service delivery in public sector HRM.

Locally, in Anambra State, particularly within the Ministry of Health, the adoption of AI in HRM practices is still at a developmental stage. The healthcare sector, which is highly dependent on human resources, stands to benefit significantly from AI-driven HR systems in areas such as staff recruitment, deployment, performance monitoring, and training. However, like many public institutions in Nigeria, the Ministry faces challenges such as limited digital infrastructure, inadequate funding, and lack of skilled personnel to implement AI technologies effectively. The need to improve healthcare service delivery and workforce efficiency makes the integration of AI into HRM practices particularly relevant in this context.

In summary, the evolution of HRM from traditional practices to AI-driven systems reflects a broader global trend influenced by technological advancements and the demands of modern organizations. While developed countries have made significant progress in adopting AI in HRM, developing countries like Nigeria, and specifically institutions such as the Anambra State Ministry of Health, are still in the early stages of adoption. This gap underscores the importance of examining the effect of AI on HRM practices in the public sector, as it provides insights into the opportunities and challenges associated with technological transformation in human resource management.

Statement of the Problem

The ideal situation in modern public sector organizations is one in which human resource management (HRM) practices are efficient, transparent, data-driven, and capable of supporting overall organizational performance. With the advancement of artificial intelligence (AI), HRM is expected to leverage intelligent systems to enhance recruitment accuracy, streamline administrative processes, improve employee performance management, and support strategic decision-making. Ideally, in a public health institution such as the Anambra State Ministry of Health, AI-driven HRM systems would facilitate timely workforce planning, eliminate bureaucratic delays, reduce human bias in recruitment and promotion, and ensure optimal deployment of healthcare personnel to improve service delivery.

However, despite the recognized benefits of AI, there appears to be a significant gap between this ideal and the current reality within many public sector institutions in Nigeria, including the Anambra State Ministry of Health. HRM practices in these institutions are still largely manual, time-consuming, and prone to inefficiencies such as poor record management, delays in recruitment and promotion processes, and lack of real-time data for decision-making. The adoption and integration of AI technologies into HRM remain limited due to challenges such as inadequate technological infrastructure, insufficient funding, lack of technical expertise, and resistance to change among staff. Furthermore, there is limited empirical evidence on how AI is currently influencing HRM practices in the Ministry, creating a knowledge gap that necessitates systematic investigation.

If these problems persist, several negative consequences may arise. Inefficient HRM practices may continue to hinder effective workforce management, leading to staff shortages or misallocation of personnel within the healthcare system. This can adversely affect the quality and timeliness of healthcare service delivery to the public. Additionally, the continued reliance on manual systems increases the likelihood of errors, lack of accountability, and potential bias in HR decisions, which may result in decreased employee morale and productivity. Over time, the inability to adopt modern AI-driven HRM practices may cause the Ministry to lag behind in organizational performance and innovation, limiting its capacity to meet the growing healthcare demands of the population. Therefore, addressing the gap between the ideal AI-enabled HRM system and the current state of practice is critical for improving efficiency, transparency, and overall service delivery in the Anambra State Ministry of Health.

Objective of the Study

The main objective of the study was to examine the Effect of Artificial Intelligence on Human Resource Management Practices in the Public Sector of Anambra State Ministry of Health. The specific objectives are to:

- i. Examine the effect of Artificial Intelligence (AI)-based recruitment systems on employee selection efficiency in the Anambra State Ministry of Health.
- ii. Determine the influence of Artificial Intelligence-driven performance appraisal systems on staff performance evaluation in the Anambra State Ministry of Health.

Research Questions

The following research questions guide the study:

- i. What is the effect of Artificial Intelligence (AI)-based recruitment systems on employee selection efficiency in the Anambra State Ministry of Health?
- ii. What is the influence of Artificial Intelligence-driven performance appraisal systems on staff performance evaluation in the Anambra State Ministry of Health?

Statement of Research Hypothesis

The following hypotheses guide the study:

- i. Artificial Intelligence (AI)-based recruitment systems has no effect on employee selection efficiency in the Anambra State Ministry of Health.
- ii. Artificial Intelligence-driven performance appraisal systems has no influence on staff performance evaluation in the Anambra State Ministry of Health.

Review of Related Literature

Conceptual Review

Artificial

Artificial intelligence (AI) in the public sector of a Ministry of Health can be defined from both technological and administrative perspectives, particularly as it relates to improving governance, healthcare delivery, and human resource management. Artificial intelligence generally refers to computer systems or machines that are capable of performing tasks that normally require human intelligence, such as learning, reasoning, problem-solving, and decision-making. According to recent public sector literature, AI involves systems that analyze their environment and take actions with some degree of autonomy to achieve specific goals (European Commission, 2019, as cited in Mikhaylov et al., 2023). Shepley and Gill (2023) describe AI as computer systems that can perform tasks that typically require human intelligence, emphasizing key features such as autonomy and adaptivity. In the context of public health, AI is also seen as a branch of computer science that develops tools capable of mimicking human cognitive functions and completing intellectual tasks (Sreya, 2026).

Intelligence

The concept of intelligence has been widely studied across disciplines such as psychology, education, and computer science, and it generally refers to the capacity of an individual or system to acquire knowledge, think rationally, learn from experience, and adapt effectively to the environment. Robert Sternberg conceptualized intelligence through his triarchic theory, which includes analytical intelligence (problem-solving abilities), creative intelligence (ability to deal with novel situations), and practical intelligence (ability to adapt to everyday life). This perspective emphasizes that intelligence is not a single ability but a combination of different cognitive skills that enable effective functioning in diverse contexts. Legg and Hutter (2018), intelligence can be seen as the ability of an agent to achieve goals in a wide range of environments, emphasizing adaptability and goal-oriented behavior.

Artificial Intelligence

Artificial intelligence is generally defined as systems that can interpret data, learn from it, and use that knowledge to make decisions or predictions (Kaplan & Haenlein, 2019). Within a Ministry of Health, this definition takes on a more practical orientation, where AI is used to enhance decision-making, automate routine processes, and improve efficiency in both clinical and non-clinical operations. According to Mikhaylov et al. (2018), AI in the public sector involves the use of intelligent systems to support governance functions, improve service delivery, and optimize resource allocation.

In the specific context of a Ministry of Health, AI can be defined as the integration of technologies such as machine learning, natural language processing, and predictive analytics into health sector operations to support planning, management, and service provision. For example, AI can be used to analyze large volumes of health data to detect disease patterns, forecast outbreaks, and guide policy decisions. It can also support human resource management by improving recruitment processes, staff deployment, performance evaluation, and training needs assessment. This aligns with the view of Davenport and Ronanki (2018), who emphasize that AI is primarily used in organizations for process automation, cognitive insight, and decision support.

Components of Artificial Intelligence

The following are components of Artificial Intelligence (AI): machine learning (ML), natural language processing (NLP), Computer vision, knowledge representation and reasoning, Robotics, expert systems, deep learning, Artificial Intelligence (AI)-based recruitment systems, Artificial Intelligence-driven performance appraisal systems, automation and decision support systems according to the following authors (Davenport, & Ronanki, 2018; Durkin, 2018; Esteva, et al. (2019; Jurafsky & Martin, 2021; LeCun, Bengio & Hinton, 2018; Russell, & Norvig, 2021)

Components of Artificial Intelligence that formed part of the objectives

Artificial Intelligence (AI)-based recruitment systems

AI-based recruitment systems can be defined as digital platforms or tools that leverage algorithms to analyze large volumes of applicant data, identify suitable candidates, and make predictive hiring decisions with minimal human intervention. According to Upadhyay and Khandelwal (2018), AI in recruitment involves the use of intelligent algorithms to improve hiring efficiency, reduce time-to-hire, and enhance the quality of candidate selection. Similarly, Black and van Esch (2020) describe AI recruitment systems as technologies that automate repetitive hiring tasks while enabling more data-driven and objective decision-making.

Artificial Intelligence-driven performance appraisal systems

AI-driven performance appraisal systems can be defined as digital tools that utilize artificial intelligence to continuously track employee activities, measure key performance indicators (KPIs), and provide real-time or periodic evaluations with minimal human bias. Unlike traditional appraisal methods, which often rely on subjective judgments and infrequent reviews, AI-based systems use large datasets and predefined metrics to ensure consistency, accuracy, and fairness in evaluating employee performance. According to Jarrahi (2018), AI enhances human decision-making by providing analytical support, thereby improving the quality and objectivity of performance assessments. Similarly, Minbaeva (2021) notes that AI-driven HR systems enable evidence-based evaluation of employees by leveraging data from multiple sources.

Human Resource

Human resource refers to the people working in an organization and the strategic approach to managing them in ways that help the organization achieve competitive advantage. This definition emphasizes that employees are not just operational units but strategic partners in organizational success, Armstrong and Taylor (2020). Similarly, Dessler (2020) defines human resource management as the process of acquiring, training, appraising, and compensating employees, and attending to their labor relations, health, and safety concerns. Human resources can also be understood as the total stock of knowledge, skills, abilities, experience, and potential possessed by individuals within an organization. Boxall and Purcell (2018) describe human resources as the collective capabilities of employees that can be developed and harnessed to create value for organizations.

Management

Management is defined as “the process of coordinating work activities so that they are completed efficiently and effectively with and through other people, Robbins and Coulter (2021).” This definition emphasizes two key concepts: efficiency (doing things correctly with minimal waste of resources) and effectiveness (doing the right things to achieve organizational goals). It highlights that management is fundamentally about achieving results through people. Management can also be described as a continuous process that involves decision-making, leadership, and coordination of resources to achieve organizational goals. Griffin (2020), management is a set of activities including planning and decision-making, organizing, leading, and controlling directed at organizational resources to achieve goals efficiently and effectively.

Practices

Practices refer to the actual actions, methods, procedures, routines, and ways of doing things that individuals or organizations consistently apply in carrying out specific tasks or functions. In an organizational context, practices represent the how of operations how policies are implemented, how decisions are executed, and how day-to-day activities are managed to achieve set objectives. According to Armstrong and Taylor (2020), practices in management refer to the established methods and approaches used by organizations to carry out human resource and administrative functions effectively. These include recruitment procedures, performance appraisal systems, training methods, communication processes, and employee engagement strategies. In this sense, practices are the operational expressions of organizational policies. Boxall and Purcell (2018) describe organizational practices as the patterns of activity that shape how work is actually done within an institution. They emphasize that practices are not just formal rules but also informal routines and behaviors that develop over time and influence organizational performance. This means that practices are both structured and behavioral in nature.

Human Resource Management Practices

Human Resource Management (HRM) practices refer to the set of structured activities, policies, and procedures that organizations use to manage their employees effectively in order to achieve organizational goals. These practices cover the entire employee lifecycle, including recruitment, selection, training and development, performance management, compensation, employee relations, and retention strategies. According to Armstrong and Taylor (2020), HRM practices are the formal systems designed and implemented by organizations to ensure that human resources are effectively acquired, developed, motivated, and retained. These practices are considered strategic because they directly influence organizational performance and competitiveness. Similarly, Noe et al. (2021) describe HRM practices as the specific activities used to manage people within organizations, including staffing, training, compensation, performance appraisal, and employee relations.

Components of Human Resource Management Practices that formed part of the objectives

Employee selection efficiency

Employee selection efficiency in the public sector of the Ministry of Health refers to the effectiveness and adequacy of recruitment and selection processes used to appoint qualified health personnel in a timely, cost-effective, transparent, and merit-based manner. It focuses on ensuring that the right individuals are selected for the right jobs using procedures that minimize waste of resources while maximizing the quality of hire. In human resource management, selection efficiency is considered a key determinant of organizational performance, especially in critical sectors such as healthcare (Armstrong, 2020).

Staff performance evaluation

Staff performance evaluation is a systematic process of assessing and reviewing an employee's job performance over a specific period based on set standards, objectives, and organizational expectations. It is a key function of human resource management used to determine how well employees are carrying out their duties and contributing to the achievement of organizational goals. In essence, staff performance evaluation involves comparing actual employee performance with predetermined performance standards. It helps organizations identify strengths, weaknesses, and areas that require improvement. Armstrong (2020), performance evaluation is not only a judgmental tool but also a developmental process aimed at improving future performance through feedback and guidance.

In the public sector, especially in institutions like the Ministry of Health, staff performance evaluation is crucial because the quality of healthcare delivery depends heavily on employee effectiveness. Health workers such as doctors, nurses, and laboratory technicians must consistently meet professional standards to ensure patient safety and quality care. Dessler (2020) notes that performance evaluation systems help organizations ensure accountability, improve productivity, and align individual performance with organizational objectives. The process of staff performance evaluation typically involves several stages. First, performance standards are established based on job descriptions and organizational goals. Second, employee performance is monitored over time through observation, reports, and supervision. Third, performance is measured using various tools such as rating scales, checklists, or key performance indicators (KPIs). Finally, feedback is provided to employees, highlighting areas of strength and areas that require improvement.

Theoretical Framework

Technology Acceptance Model (TAM)

The Technology Acceptance Model (TAM), developed by Davis (1989), explains how users come to accept and use new technologies. The theory suggests that an individual's intention to use technology is mainly influenced by two factors: perceived usefulness and perceived ease of use.

Perceived usefulness refers to the extent to which employees believe that Artificial Intelligence (AI) will improve their job performance in Human Resource Management (HRM) practices such as recruitment, performance appraisal, and employee record management.

Perceived ease of use refers to the degree to which HR staff believe that AI systems are easy to understand and operate without excessive effort.

In the context of the Anambra State Ministry of Health, TAM helps explain whether HR officers are likely to adopt AI tools in managing HR functions. If AI is perceived as useful and easy to use, it is more likely to be accepted and integrated into HRM practices such as staff selection, training, and performance evaluation.

Resource-Based View (RBV) Theory

The Resource-Based View (RBV), developed by Barney (1991), argues that organizations gain competitive advantage by effectively utilizing valuable, rare, inimitable, and non-substitutable resources. Human resources and technological capabilities are considered strategic assets under this theory.

In relation to this study, Artificial Intelligence represents a strategic technological resource that can enhance Human Resource Management practices in the public sector. When effectively applied, AI can improve recruitment accuracy, enhance employee performance evaluation, reduce administrative workload, and support decision-making in the Ministry of Health. RBV suggests that organizations like the Anambra State Ministry of Health can achieve improved efficiency and service delivery if they successfully integrate AI into HRM practices in a way that is difficult for others to replicate.

Empirical Review

Artificial Intelligence (AI)-based recruitment systems on employee selection efficiency

Alnsour et al. (2024) conducted a quantitative study on the impact of Artificial Intelligence in recruitment on human resource management efficiency in commercial banks. The study used structured questionnaires administered to HR managers and recruitment officers. Data were analyzed using regression techniques. Findings revealed that AI-based recruitment systems significantly improve speed of hiring, accuracy in candidate selection, and reduction of recruitment costs. The study concluded that AI enhances employee selection efficiency by minimizing human error and improving decision-making quality in recruitment processes.

Nwambuko (2025) examined AI adoption in human resource management across Nigerian public and private sectors using a survey of 400 HR practitioners. The study employed correlation and regression analysis. The study found that AI significantly enhances recruitment fairness, efficiency, and decision accuracy, but adoption in public sector organizations remains limited due to infrastructural and technical challenges.

Onuigbo, Mbuba & Ike (2026) conducted study on AI-Based Performance Management in Anambra State. This empirical study was conducted within tertiary institutions in Anambra State to examine how Artificial Intelligence-based performance management systems influence employee appraisal outcomes. The researchers adopted a descriptive survey research design, collecting data from academic and administrative staff using structured questionnaires. Data were analyzed using regression and correlation techniques to determine relationships between AI adoption and appraisal outcomes. The study found that AI-driven appraisal systems significantly improve objectivity, consistency, and transparency in staff performance evaluation. Unlike traditional appraisal systems, which are often influenced by supervisor bias and personal judgment, AI systems use data-driven indicators such as attendance records, task completion rates, and productivity metrics to evaluate staff performance.

Gupta & Tembhurnekar (2024) conducted study AI-Driven Performance Appraisal Systems. This study conducted a systematic literature review of existing empirical research on AI-driven performance appraisal systems across various industries globally. The researchers analyzed peer-reviewed journal articles focusing on HRM digital transformation. The findings revealed that AI-based appraisal systems enhance performance evaluation accuracy, consistency, and efficiency by automating data collection and analysis processes. AI tools such as machine learning

algorithms and predictive analytics were found to improve the identification of high-performing employees and reduce human error in evaluation.

Iftikhar & Imtiaz (2025) this empirical study investigated the impact of Artificial Intelligence integration into performance management systems using a quantitative survey design. The study collected data from HR professionals and managers across multiple organizations and analyzed it using statistical modeling techniques. Findings showed that AI significantly improves real-time performance tracking, feedback accuracy, and appraisal efficiency. Unlike traditional systems that rely on annual performance reviews, AI systems enable continuous monitoring of employee performance through digital dashboards and automated reporting tools. The study also found that AI reduces administrative workload for HR departments and increases the speed of decision-making in performance evaluations.

Naoum, Szakadáti & Balogh (2026) examined AI in HRM Performance Evaluation Systems. This study conducted a systematic review of 43 empirical studies on Artificial Intelligence in human resource management, with a focus on performance appraisal systems. The researchers synthesized findings from multiple industries, including healthcare, finance, and public administration. The study found that AI improves standardization, fairness, and data-driven decision-making in employee performance evaluation. AI systems were particularly effective in reducing inconsistencies between different supervisors' evaluations, ensuring more uniform assessment criteria across organizations.

Artificial Intelligence-driven performance appraisal systems on staff performance evaluation

Onuigbo et al (2026). Conducted a study on AI-Based Performance Management System (PMS) and Employee Performance Appraisal: The study adopted correlation survey research design in examining the utilization of AI-Based PMS as it relates to employee performance appraisal. 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.

Roma & Chandrabhan (2025). Artificial Intelligence and Employee Performance Evaluation in Indian Enterprises: An Empirical Study. Primary data (managers and employees) were collected by means of structured questionnaires, and the evaluation of the data was carried out through the use of statistical analysis (descriptive analysis, correlation, and regression), to identify the relationship between the implementation of AI and the performance outcomes of employees. It can be concluded that AI-based assessment systems increase the objectivity, reduce the managerial bias, and provide the updated data on the performance, thus, enhancing the decision-making process and productivity after that. However, aspects that have been projected include data privacy, algorithm bias, and opposition of the employees.

Nath et al (2025) AI in Performance Management: A Study on Employee Perceptions and Organizational Outcomes. This study examines how employees perceive AI-based performance evaluations and how these perceptions influence job satisfaction, motivation, and overall organizational outcomes. The research employs a qualitative approach, utilizing semi-structured interviews with employees from various Bangladeshi organizations that have implemented AI-driven performance management systems. The findings indicate that while AI enhances transparency, fairness, and efficiency, employees remain concerned about the lack of human involvement, potential biases in AI algorithms, and data privacy issues.

Artificial Intelligence in Employee Performance Evaluation and Its Managerial Implication. (2024). The paper focuses on the perspective of relying on AI/ML in the process of employee performance management framing Artificial Intelligence performance measurement system integration using learning algorithms to make the evaluation a real-

time process much easier, accurate, unbiased and fair. The managerial outlook of AI integrated performance appraisal results in strategic decision making, enhance levels of employee performance, employee commitment, satisfaction and reduced employee turnover behavior.

Novrianto et al (2025). AI-Powered Performance Appraisal: Balancing Automation with Human Judgment in Performance Management Systems. The findings indicate that although AI enhances consistency and efficiency, qualitative dimensions such as leadership, collaboration, and cultural alignment still require human interpretation. The study also introduces a hybrid appraisal model that combines AI and human scores, adjusted by an ethical risk coefficient. These results contribute empirical insights into contemporary appraisal practices and emphasize the importance of algorithmic transparency and ethical sensitivity in the implementation of AI-based systems within human resource management.

Summary of Empirical Review

The empirical studies reviewed indicate that artificial intelligence (AI) has a significant positive influence on human resource management practices by improving recruitment, employee selection, training and development, performance appraisal, workforce planning, and decision-making in both public and private organizations. The studies consistently reported that AI enhances efficiency, transparency, and productivity while reducing administrative costs and human errors. However, the findings also identified challenges such as inadequate digital infrastructure, shortage of technical skills, data privacy concerns, ethical issues, and resistance to change, particularly in public sector institutions. Overall, the reviewed literature suggests that effective AI adoption can strengthen human resource management practices in the Anambra State Ministry of Health, provided that adequate investment in technology, employee training, and supportive policies is ensured.

Methodology

The area of the study was Anambra State, Nigeria. The study adopted a survey research design. The primary source of data was the administration of questionnaire. The study was conducted at the Anambra State Ministry of Health Headquarters, Jerome Udoji Secretariat Complex, Awka, Anambra State, Nigeria. The population of the study consisted of two hundred and sixty-seven (267) staff. Two hundred and fourteen (214) staff returned the questionnaire and accurately filled. The validity of the instrument was tested using content analysis and the result was good. The reliability was tested using the Pearson correlation coefficient (r). It gave a reliability co-efficient of 0.830 which was also good. Data was presented and analyzed by mean score and standard deviation. The hypotheses were analyzed using Z - test statistic tool.

Data Presentation

The effect of Artificial Intelligence (AI)-based recruitment systems on employee selection efficiency in the Anambra State Ministry of Health

Table 4.1.1: Responses on the effect of Artificial Intelligence (AI)-based recruitment systems on employee selection efficiency in the Anambra State Ministry of Health

	5	4	3	2	1	ΣFX	-	SD	Decisio
	SA	A	N	DA	SD		X		n

1	Artificial Intelligence (AI)-based recruitment systems significantly improve employee selection efficiency in the Anambra State Ministry of Health by automating candidate screening and shortlisting processes.	490	248	51	32	21	842			Agree
		98	62	17	16	21	214			
		45.8	29.0	7.9	7.5	9.8	100%	3.93	1.313	
2	(AI)-based recruitment systems enhance accuracy in identifying qualified candidates, reducing human bias and improving the quality of selection decisions.	475	248	51	48	16	838			Agree
		95	62	17	24	16	214	3.92	1.283	
		44.4	29.0	7.9	11.2	7.5	100%			
3	AI tools speed up recruitment timelines by quickly analyzing large volumes of applications, leading to faster hiring processes.	505	248	51	34	17	855			Agree
		101	62	17	17	17	214	4.00	1.262	
		47.2	29.0	7.9	7.9	7.9	100%			
4	The use of AI-based systems improves consistency and fairness in evaluation, ensuring that candidates are assessed based on objective criteria.	505	248	51	34	17	855			Agree
		101	62	17	17	17	214	4.00	1.262	
		47.2	29.0	7.9	7.9	7.9	100%			
5	AI-driven recruitment enhances efficiency by reducing workload, saving time, and improving the effectiveness of employee selection.	500	248	51	32	19	850			Agree
		100	62	17	16	19	214	3.97	1.285	
		46.7	29.0	7.9	7.5	8.9	100%			
Total Grand mean and standard deviation								3.964	1.281	

Source: Field Survey, 2026

Table 4.1.1, 160 respondents out of 214 representing 74.8 percent agreed that Artificial Intelligence (AI)-based recruitment systems significantly improve employee selection efficiency in the Anambra State Ministry of Health by automating candidate screening and short listing processes with mean score of 3.93 and standard deviation of 1.313. (AI)-based recruitment systems enhance accuracy in identifying qualified candidates, reducing human bias and improving the quality of selection decisions 157 respondents representing 73.4 percent agreed with mean score of 3.92 and standard deviation of 1.283. AI tools speed up recruitment timelines by quickly analyzing large volumes of applications, leading to faster hiring processes 163 respondents representing 76.2 percent agreed with mean score of 4.00 and standard deviation of 1.262. The use of AI-based systems improves consistency and fairness in evaluation, ensuring that candidates are assessed based on objective criteria 163 respondents representing 76.2 percent agreed with mean score of 4.00 and 1.262. AI-driven recruitment enhances efficiency by reducing workload,

saving time, and improving the effectiveness of employee selection 162 respondents representing 75.7 percent agreed with a mean score of 3.97 and standard deviation 1.285.

The influence of Artificial Intelligence-driven performance appraisal systems on staff performance evaluation in the Anambra State Ministry of Health.

Table 4.2.1: Responses on the influence of Artificial Intelligence-driven performance appraisal systems on staff performance evaluation in the Anambra State Ministry of Health.

			5	4	3	2	1	ΣFX	-	SD	Decision
			SA	A	N	DA	SD		X		
1	Artificial Intelligence-driven performance appraisal systems enhance staff performance evaluation in the Anambra State Ministry of Health by providing accurate and data-driven assessments.		530	248	51	32	13	874			Agree
			106	62	17	16	13	214			
			49.5	29.0	7.9	7.5	6.1	100%	4.08	1.192	
2	These systems improve objectivity by minimizing human bias, ensuring fair and consistent evaluation of employees.		490	224	51	54	16	835			Agree
			98	56	17	27	16	214	3.90	1.309	
			45.8	26.2	7.9	12.6	7.5	100%			
3	AI-based appraisal tools enable real-time performance tracking, helping managers make timely and informed decisions.		525	224	51	44	17	861			Agree
			102	56	17	22	17	214	3.95	1.299	
			62.0	26.2	7.9	10.3	7.9	100%			
4	They provide detailed feedback and analytics, which support employee development and improved performance outcomes.		465	224	51	60	18	818			Agree
			93	56	17	30	18	214	3.82	1.345	
			43.5	26.2	7.9	14.0	8.4	100%			
5	AI-driven performance appraisal systems positively influence evaluation processes by increasing efficiency, transparency, and accountability.		485	224	51	58	15	833			Agree
			97	56	17	29	15	214	3.89	1.305	
			45.3	26.2	7.9	13.6	7.0	100%			
Total Grand mean and standard deviation									3.928	1.29	

Source: Field Survey, 2026

Table 4.2.1, 168 respondents out of 214 representing 78.5 percent agreed that Artificial Intelligence-driven performance appraisal systems enhance staff performance evaluation in the Anambra State Ministry of Health by providing accurate and data-driven assessments with mean score of 4.08 and standard deviation of 1.192. These systems improve objectivity by minimizing human bias, ensuring fair and consistent evaluation of employees 154 respondents representing 72.0 percent agreed with mean score of 3.90 and standard deviation of 1.309. AI-based appraisal tools enable real-time performance tracking, helping managers make timely and informed decisions 158 respondents representing 88.2 percent agreed with mean score of 3.95 and standard deviation of 1.299. They provide detailed feedback and analytics, which support employee development and improved performance outcomes 149 respondents representing 69.7 percent agreed with mean score of 3.82 and 1.345. AI-driven performance appraisal systems positively influence evaluation processes by increasing efficiency, transparency, and accountability 153 respondents representing 71.5 percent agreed with a mean score of 3.89 and standard deviation 1.305.

Tests of Hypotheses

Tests of Hypotheses One: Artificial Intelligence (AI)-based recruitment systems has no effect on employee selection efficiency in the Anambra State Ministry of Health

One-Sample Kolmogorov-Smirnov Test

	Artificial Intelligence-driven performance appraisal systems enhance staff performance evaluation in the Anambra State Ministry of Health by providing accurate and data-driven assessments.	These systems improve objectivity by minimizing human bias, ensuring fair and consistent evaluation of employees.	AI-based appraisal tools enable real-time performance tracking, helping managers make timely and informed decisions.	They provide detailed feedback and analytics, which support employee development and improved performance outcomes.	AI-driven performance appraisal systems positively influence evaluation processes by increasing efficiency, transparency, and accountability.
N	214	214	214	214	214
Minimum	1	1	1	1	1
Maximum	5	5	5	5	5
Absolute	.535	.470	.488	.446	.465
Positive	.061	.075	.079	.084	.070

Difference Negative	-.535	-.470	-.488	-.446	-.465
Kolmogorov-Smirnov Z	7.827	6.870	7.143	6.528	6.802
Asymp. Sig. (2-tailed)	.000	.000	.000	.000	.000

a. Test distribution is Uniform.

b. Calculated from data.

Decision Rule:

Since the calculated z-value (9.519) > critical z-value (.000) at the 5% significance level, we reject the null hypothesis (H_{01}).

Decision:

Furthermore, comparing the calculated Z- value ranges from $6.528 < 7.827$ against the critical Z- value of .000 (2-tailed test at 95percent level of confidence) the null hypothesis were rejected. Thus the alternative hypothesis was accepted which states that Artificial Intelligence (AI)-based recruitment systems had significant positive effect on employee selection efficiency in the Anambra State Ministry of Health.

Tests of Hypotheses Two: Artificial Intelligence-driven performance appraisal systems has no influence on staff performance evaluation in the Anambra State Ministry of Health.

One-Sample Kolmogorov-Smirnov Test

	Artificial Intelligence (AI)-based recruitment systems significantly improve employee selection efficiency in the Anambra State Ministry of Health by automating candidate screening and shortlisting processes.	(AI)-based recruitment systems enhance accuracy in identifying qualified candidates, reducing human bias and improving the quality of selection decisions.	AI tools speed up recruitment timelines by quickly analyzing large volumes of applications, leading to faster hiring processes.	The use of AI-based systems improves consistency and fairness in evaluation, ensuring that candidates are assessed based on objective criteria.	AI-driven recruitment enhances efficiency by reducing workload, saving time, and improving the effectiveness of employee selection.
N	214	214	214	214	214
Minimum	1	1	1	1	1

Uniform Parameters ^{a,b}	Maximum	5	5	5	5	5
Most Extreme Difference s	Absolute	.498	.484	.512	.512	.507
	Positive	.098	.075	.079	.079	.089
	Negative	-.498	-.484	-.512	-.512	-.507
Kolmogorov- Smirnov Z		7.280	7.075	7.485	7.485	7.417
Asymp. Sig. (2- tailed)		.000	.000	.000	.000	.000

a. Test distribution is Uniform.

b. Calculated from data.

Decision Rule:

Since the calculated z-value (7.485) > critical z-value (.000) at the 5% significance level, we reject the null hypothesis (H_{01}).

Decision:

Furthermore, comparing the calculated Z- value ranges from $7.075 < 7.485$ against the critical Z- value of .000 (2-tailed test at 95percent level of confidence) the null hypothesis were rejected. Thus the alternative hypothesis was accepted which states that Artificial Intelligence-driven performance appraisal systems had significant positive influence on staff performance evaluation in the Anambra State Ministry of Health.

Discussion of Findings

From the result of hypotheses one, the calculated Z- value ranges from $6.528 < 7.827$ against the critical Z- value of .000 which implies that Artificial Intelligence (AI)-based recruitment systems had significant positive effect on employee selection efficiency in the Anambra State Ministry of Health. In support of the result in the literature review, Iftikhar & Imtiaz (2025) this empirical study investigated the impact of Artificial Intelligence integration into performance management systems using a quantitative survey design. Findings showed that AI significantly improves real-time performance tracking, feedback accuracy, and appraisal efficiency. Unlike traditional systems that rely on annual performance reviews, AI systems enable continuous monitoring of employee performance through digital dashboards and automated reporting tools. Naoum, et al., (2026) examined AI in HRM Performance Evaluation Systems. The study found that AI improves standardization, fairness, and data-driven decision-making in employee performance evaluation. AI systems were particularly effective in reducing inconsistencies between different supervisors' evaluations, ensuring more uniform assessment criteria across organizations.

From the result of hypotheses two, the calculated Z- value ranges from $7.075 < 7.485$ against the critical Z- value of .000 which implies that Artificial Intelligence-driven performance appraisal systems had significant positive influence on staff performance evaluation in the Anambra State Ministry of Health. In support of the result in the literature

review, Onuigbo et al (2026). Conducted a study on AI-Based Performance Management System (PMS) and Employee Performance Appraisal: 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. Roma & Chandrabhan (2025). Artificial Intelligence and Employee Performance Evaluation in Indian Enterprises: An Empirical Study. It can be concluded that AI-based assessment systems increase the objectivity, reduce the managerial bias, and provide the updated data on the performance, thus, enhancing the decision-making process and productivity after that. Nath et al (2025) AI in Performance Management: A Study on Employee Perceptions and Organizational Outcomes. The findings indicate that while AI enhances transparency, fairness, and efficiency, employees remain concerned about the lack of human involvement, potential biases in AI algorithms, and data privacy issues.

Summary of Findings, Conclusion and Recommendations

Summary of Findings

- i. Artificial Intelligence (AI)-based recruitment systems had a significant positive effect on employee selection efficiency in the Anambra State Ministry of Health, $Z = 7.827$, $p < .05$. This indicates that the adoption of AI-based recruitment systems enhances the speed, accuracy, transparency, and fairness of employee selection by identifying qualified candidates more effectively while reducing human bias and recruitment errors.
- ii. Artificial Intelligence-driven performance appraisal systems had a significant positive influence on staff performance evaluation in the Anambra State Ministry of Health = 7.485, $p < .05$. This indicates that AI-driven performance appraisal systems improve the objectivity, consistency, and accuracy of staff evaluations, thereby supporting informed decision-making regarding employee development, promotions, and performance improvement.

Conclusion

The study concluded that Artificial Intelligence (AI)-based recruitment and driven performance appraisal systems had a significant positive effect on employee selection efficiency and staff performance evaluation in the Anambra State Ministry of Health. Specifically, AI-based recruitment systems improve employee selection efficiency, while AI-driven performance appraisal systems enhance the accuracy and effectiveness of staff performance evaluation, thereby contributing to improved organizational performance.

Recommendations

- i. The Anambra State Ministry of Health should strengthen the adoption and continuous upgrading of AI-based recruitment systems and provide regular training for HR personnel to ensure efficient, transparent, and merit-based employee selection.
- ii. The Ministry should fully integrate AI-driven performance appraisal systems into its human resource management practices and periodically update the systems while training supervisors to ensure fair, reliable, and data-driven staff performance evaluations.

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