

THE INTEGRATION OF ARTIFICIAL INTELLIGENCE ON TRADITIONAL HUMAN RESOURCE FUNCTIONS IN TERTIARY INSTITUTIONS, CROSS RIVER STATE, NIGERIA

Ottoh, Emmanuel Okoi, Edodi, Hope Ukam, Enuoh, Rebecca Oliver, Inyang, Benjamin James, Obo, Ekpenyong Basse, Pepple, & Grace Jamie

ottohemmanuel@gmail.com¹, rebenuoh2@yahoo.com², Benji1955.unical@yahoo.co.uk³, ekpenyongobo70@gmail.com⁴, gpepple123@gmail.com⁵, hopeedodi@gmail.com⁶

Department of Business Management, University of Calabar, Calabar

Corresponding author: Enuoh, Rebecca O. rebenuoh2@yahoo.com, University of Calabar, Calabar. 08034719392

Abstract

As artificial intelligence systems increasingly automate routine administrative tasks, there is a risk that traditional human resource roles will disappear, resulting in job displacement for human resource professionals. This study investigated the effect of integrating Artificial Intelligence (AI) on traditional human resource functions in tertiary institutions, Cross River State, Nigeria. In order to achieve the objectives of this study, five objectives and hypotheses were formulated. Literatures were reviewed according to the variables identified. The study adopted survey research design. The sample size was 373 employees of public universities in Cross River State through stratified random sampling technique was used. Data were collected using Artificial Intelligence Scale developed by Vartak (2022) and Kok (2005) to evaluate Human Resource Practices. Results of the analysis using Simple Linear Regression test statistical technique reveal that, there is a significant effect of integration of AI on traditional human resource functions in terms of training and development, selection and recruitment, human resource planning, occupational health and safety and performance management. The study recommended amongst others that, organisations should consider incorporating AI into all phases of their training programmes, from onboarding to advanced skill development. Organisations should encourage collaboration between AI systems and human trainers. While AI can handle data analysis and personalised learning paths, human trainers can focus on mentoring, soft skill development, and emotional support, resulting in a more balanced and comprehensive training approach. (Word count: 228)

Keywords: Artificial intelligence, Training and development, Selection and recruitment, Human resource planning, Occupational health and safety.

Introduction

Artificial intelligence (AI) is a branch of computer science that focusses on developing systems capable of performing tasks that would normally require human intelligence, such as decision-making, problem solving, perception, and language comprehension. AI is built on algorithms that allow machines to learn from data and improve over time, a process known as machine learning. AI is broadly classified into two types: narrow AI, which is intended to perform specific tasks, and general AI, which could theoretically perform any intellectual task that a human can. AI has far-reaching implications across multiple industries. For example, in healthcare, AI systems help diagnose diseases through pattern recognition and data analysis, allowing for more accurate and timely medical decisions (Jiang et al., 2017). In the business sector, AI-powered technologies such as chatbots and customer service platforms improve user experiences by providing faster, more tailored responses (Huang & Rust, 2018). However, the rise of AI raises ethical concerns, particularly about privacy, decision-making bias, and job displacement (Binns, 2018).

The incorporation of artificial intelligence (AI) into human resource (HR) practices marks a significant shift in how businesses manage their workforce. Historically, HR functions have been labour-intensive, reliant on manual processes, and frequently prone to bias. For example, recruitment has traditionally required extensive paperwork, manual resume screening, and a significant time investment from HR professionals, making the process inefficient and error-prone (Stone et al., 2015). Performance management systems also relied heavily on periodic reviews, which were not only time consuming but frequently failed to capture an employee's real-time contributions and development

needs, resulting in inaccurate assessments and missed opportunities for growth (Cappelli & Tavis, 2016). Over the last few decades, the development and adoption of HR Information Systems (HRIS) marked the start of a technological shift in HR. These systems improved HR operations by streamlining administrative tasks, reducing paperwork, and centralising employee information (Bondarouk & Ruël, 2013). Despite these advancements, traditional HRIS systems lacked the ability to handle complex, unstructured data and provide predictive insights, highlighting the need for more advanced solutions. AI technologies have addressed these limitations by providing unprecedented capabilities for improving efficiency, decision-making, and employee experience (Stone et al., 2015).

The rapid development of AI technologies has transformed HR practices by automating routine tasks, providing predictive analytics, and allowing for more personalised employee interactions. AI-powered recruitment tools, for example, use machine learning algorithms to quickly screen thousands of resumes, identifying top candidates based on predefined criteria and improving candidate matching accuracy over time (Upadhyay and Khandelwal, 2018). This automation not only expedites the hiring process but also reduces human biases that can influence hiring decisions, resulting in a more diverse and inclusive workforce (Raghavan et al., 2020). Furthermore, AI chatbots and virtual assistants have transformed employee support by handling routine HR queries, assisting with onboarding processes, and providing 24/7 support, reducing HR professionals' workloads and ensuring timely responses to employee enquiries (Mijumbi et al., 2020). Another significant advancement brought about by AI is predictive analytics, which involves analysing large amounts of employee data to forecast future performance, potential turnover, and identify employees who may require additional training or support. This proactive approach enables organisations to make informed HR decisions, such as identifying high-potential employees and implementing retention strategies (Bhardwaj et al., 2020). Furthermore, AI tools assess employee sentiment via surveys, social media, and other digital interactions, assisting in gauging morale and identifying areas for improvement to foster a more engaged and productive workforce (Kumar, 2018). Continuous feedback systems powered by AI provide real-time insights into employee performance, identifying patterns and offering personalised development plans, thereby improving overall performance management and

aligning individual goals with organisational objectives (Aggarwal & Kapoor, 2012).

The implications of incorporating AI into HR practices are multifaceted, providing numerous benefits while also posing several challenges and ethical concerns. On the plus side, AI-driven automation increases efficiency and reduces costs by freeing HR professionals from administrative tasks and allowing them to focus on strategic initiatives like talent development and employee engagement (Huang & Rust, 2018). AI's data-driven insights improve the quality of HR decisions, allowing teams to anticipate and address challenges proactively, such as predicting and mitigating employee turnover, optimising talent acquisition strategies, and identifying workforce skill gaps (Guenole et al., 2017). Furthermore, when properly designed and monitored, AI systems can reduce biases in recruitment and performance evaluations. By analysing data objectively and consistently, AI can help ensure that decisions are based on merit rather than subjective judgements, promoting a more diverse and inclusive workplace. However, the use of AI in human resources raises significant ethical and practical concerns. Data privacy is a critical issue because AI systems frequently require access to large amounts of personal and sensitive employee information. Ensuring that this data is protected and used responsibly is critical to maintaining trust and compliance with privacy regulations (Floridi et al., 2018). Furthermore, the possibility of algorithmic biases remains a significant issue. While AI can reduce human biases, it can also perpetuate or worsen biases if the algorithms are not properly designed and monitored. Continuous monitoring and auditing of AI systems are required to ensure fairness and transparency in HR processes (Raghavan et al., 2020). Another major concern is the possible displacement of HR positions. While AI can automate many routine tasks, there is a risk that the growing reliance on technology will result in a reduction in HR staff. Organisations must balance AI adoption with strategies for reskilling and upskilling their workforce, ensuring that employees can transition into new roles that capitalise on human strengths such as empathy, critical thinking, and complex problem-solving (Jatobá et al. 2019).

AI has the potential to transform HR practices by increasing efficiency, improving decision-making, and creating a more engaging employee experience. For example, AI-powered tools can automate initial screenings, schedule interviews, and even conduct preliminary assessments using natural language processing and machine learning algorithms

(Upadhyay & Khandelwal, 2018). This not only saves time and money on hiring, but it also improves the quality of hires by ensuring that candidates are evaluated consistently and objectively. In terms of employee engagement, AI-powered platforms can analyse employee interactions and feedback in real time, providing insights into employee sentiment and detecting potential issues before they escalate. This enables HR teams to implement targeted interventions that boost morale and retention (Kumar, 2018). Furthermore, AI can help with personalised learning and development by recommending training programmes based on an employee's career goals, performance data, and skill gaps, encouraging continuous professional growth and aligning individual aspirations with organisational goals (Aggarwal & Kapoor, 2012). These advancements not only improve the overall effectiveness of human resource practices, but also help to create a more dynamic and responsive workplace in which employees feel valued and supported.

The future of AI in HR practices promises ongoing innovation and opportunities to improve workforce management. As AI technologies advance, their capabilities will expand, allowing for even more sophisticated applications in fields such as talent management, employee wellness, and organisational culture. AI, for example, could play an important role in identifying and mitigating workplace stress by analysing employee behaviour patterns and providing early interventions to support mental health and well-being (Jatobá et al., 2019). Furthermore, AI-driven analytics can provide deeper insights into organisational culture by analysing communication patterns, collaboration networks, and employee feedback, allowing leaders to make data-driven decisions that foster a positive and inclusive work environment (Kumar, 2018). To realise these benefits, organisations must continue to invest in AI research and development, foster a culture of continuous learning and adaptability among their workforce, and maintain a strong focus on ethical considerations and human-centric values (Floridi et al. 2018). The integration of AI in HR is about more than just technological advancement; it is also about reimagining how organisations can provide more meaningful and fulfilling work experiences to their employees. Against this background, the current study seeks to investigate the integration of AI on HR practices in modern organisations in Calabar, Nigeria.

This paper is divided into nine section sections. The first section presents the introduction or background

to the study, the second presents problem of the study, the third section presents objectives of the study, the fourth section presents literature review, the fifth section presents methodology, the sixth section presents result of findings, seventh section presents discussion of findings, the eight section presents conclusion and the last section presents recommendations.

Problem of the Study

The incorporation of AI into HR raises concerns about the potential displacement of HR roles. As AI systems increasingly automate routine administrative tasks, there is a risk that traditional HR roles will disappear, resulting in job displacement for HR professionals. This potential job loss may cause resistance to AI adoption within HR departments, as employees may be concerned about their job security. Furthermore, the transition to AI-driven HR practices necessitates new skills and competencies for HR professionals. There is an increasing need for HR professionals to understand and manage AI technologies, interpret data analytics, and address ethical concerns about AI use. Organisations must invest in reskilling and upskilling their HR workforce to ensure that they can effectively integrate and leverage AI technologies while maintaining professional relevance and job security. Beyond technical and operational challenges, the ethical implications of AI integration in HR must not be overlooked. The use of AI to monitor employee performance and behaviour raises concerns about surveillance and the balance of organisational interests versus individual privacy rights. Excessive monitoring can foster a culture of surveillance in which employees feel constantly watched and judged, potentially leading to increased stress and lower job satisfaction. Also the incorporation of AI into HR practices has enormous potential for improving efficiency, decision-making, and employee engagement. However, this transformation is accompanied by significant challenges in data privacy, algorithmic bias, transparency, and the potential displacement of HR roles. Addressing these issues necessitates a multifaceted approach that includes strong data governance, bias mitigation strategies, transparency and accountability mechanisms, and investments in reskilling and upskilling HR professionals. Furthermore, cultivating an ethical AI culture is critical to ensuring that AI technologies are used responsibly, respecting employee rights and promoting a fair and inclusive workplace. By successfully navigating these challenges, organisations can fully realise the benefits of AI in HR while maintaining employee trust and

acceptance and ensuring that AI integration supports the organization's overall goals of success and employee well-being.

Objective of the Study

The main aim of the study is to explore the integration of artificial intelligence on human resource functions and practices in tertiary institutions, Cross River State, Nigeria. Specifically, the study aims at:

- i. Analysing the impact of integration of AI on training and development
- ii. Exploring impact of integration of AI on selection and recruitment
- iii. Assessing the influence of integration of AI on human resource planning
- iv. Investigating the impact of integration of AI on occupational safety and health
- v. Examining the impact of integration of AI on business performance management

Literature review

Conceptual review

AI's most significant contribution to training and development is its ability to provide highly personalised learning environments. Traditional training programmes frequently use a one-size-fits-all approach, which may not address the diverse learning needs and paces of different employees. AI can analyse massive amounts of data, such as employees' past performance, learning preferences, and career goals, to tailor training programmes to individual needs (Zawacki-Richter et al., 2019). For example, AI-powered platforms can recommend specific courses or learning modules based on an employee's current skill set and future career goals, ensuring that training is relevant and engaging. This personalised approach improves learning outcomes because employees receive training that is directly relevant to their roles and career progression. AI is also used extensively in training program administration and management. AI-powered learning management systems (LMS) can automate a variety of administrative tasks, including training session scheduling, employee progress tracking, and training program effectiveness assessment (Chui et al., 2018). This automation alleviates the administrative burden on HR professionals, allowing them to concentrate on more strategic aspects of employee development. For example, AI can analyse training data to identify trends and patterns, such as which training modules are most effective or which employees require additional assistance. These insights enable HR professionals to make data-driven decisions about training and

development initiatives, thereby improving program quality and impact.

Furthermore, AI can help employees with continuous learning and development by offering just-in-time training and microlearning opportunities. In today's fast-paced work environment, employees frequently need to learn new skills or knowledge quickly in order to respond to emerging challenges or opportunities. AI can provide bite-sized learning modules that employees can access on demand, allowing them to learn exactly what they need, when they need it (Bersin, 2018). AI can assist employees in developing the skills required to thrive in a rapidly changing job market by providing personalised and adaptive learning experiences (Chui et al., 2018). This capability is especially important in the context of the Fourth Industrial Revolution, in which technological advancements transform industries and create new job opportunities and challenges. AI-powered training and development initiatives can support lifelong learning, keeping employees competitive and adaptable in the face of these changes. The use of AI in training and development raises issues of access and equity. AI-driven training programmes have the potential to exacerbate existing inequalities if access to these technologies is unevenly distributed (Eubanks, 2018).

Traditional recruitment methods frequently include manual resume screening, which is time-consuming and susceptible to human error and bias. AI-powered tools can quickly analyse large amounts of resumes, extracting relevant information and ranking candidates using predefined criteria. Machine learning algorithms, for example, can be trained to identify key skills, experiences, and qualifications that match job requirements, saving recruiters a significant amount of time on initial screenings (Upadhyay & Khandelwal, 2018). This automation enables HR professionals to concentrate on more strategic aspects of recruitment, such as connecting with top candidates and developing relationships. AI also improves the candidate experience by ensuring timely and personalised interactions. AI-powered chatbots and virtual assistants can answer routine questions, schedule interviews, and provide real-time updates on the status of candidates' applications. These tools ensure that candidates receive consistent communication throughout the recruitment process, lowering the risk of disengagement due to delays or a lack of information (Marr, 2019). Furthermore, AI can personalise the recruitment process by tailoring job recommendations based on a candidate's profile,

thereby improving the match between job seekers and open positions. AI also helps recruiters make more objective, data-driven decisions. Unconscious biases frequently influence traditional hiring practices, compromising the fairness and diversity of hiring outcomes. AI algorithms, when properly designed and implemented, can help to reduce these biases by focussing on objective data points rather than subjective judgement. For example, AI tools can anonymise resumes by removing personal information like names, genders, and ages, allowing recruiters to assess candidates solely on their qualifications and experiences (Raghavan et al., 2020). Furthermore, predictive analytics can assess candidate fit and performance by examining patterns in historical hiring data and employee performance metrics, resulting in more informed and reliable hiring decisions.

Blending AI tools with traditional recruitment methods can create a balanced approach that leverages the strengths of both human judgment and AI capabilities. The impact of AI on selection and recruitment also extends to broader organisational outcomes, such as workforce diversity and inclusion. By reducing human biases and promoting more objective decision-making, AI has the potential to enhance diversity in hiring. Diverse workforces bring a range of perspectives and ideas, contributing to innovation and improved business performance. However, achieving these outcomes requires careful design and implementation of AI systems to ensure they support diversity and inclusivity goals. Organisations must continuously evaluate and refine their AI tools to align with their diversity objectives and address any unintended biases that may arise (Raghavan et al., 2020). The use of AI in recruitment also has implications for employer branding and candidate perceptions. Organisations that effectively leverage AI technologies in their hiring processes can enhance their reputation as innovative and forward-thinking employers. Positive candidate experiences with AI-driven recruitment can lead to increased engagement and interest from top talent. Conversely, if AI systems are perceived as impersonal, biased, or unfair, they can damage the organisation's employer brand and deter potential candidates. Therefore, it is crucial for organisations to carefully design and communicate their AI recruitment strategies, ensuring they enhance the candidate experience and reinforce positive employer branding (Marr, 2019).

Traditional HR planning frequently relies on historical data and manual analysis, which is time-consuming and prone to errors. AI, on the other

hand, can quickly process large datasets from various sources, such as employee performance metrics, market trends, and organisational goals, in order to forecast future talent requirements. Predictive analytics, for example, can identify patterns and trends that indicate potential skill gaps, employee turnover rates, the need for new roles, or workforce size adjustments (Bessen, 2019). This allows organisations to plan their workforce strategies ahead of time, ensuring they have the right talent to meet future demands. AI can identify employees who are likely to leave and recommend targeted retention strategies such as personalised career development opportunities or job role changes that better match their skills and interests (Guenole et al., 2017). This personalised approach assists organisations in retaining top talent while also ensuring employee engagement and motivation, which contributes to overall workforce stability and productivity.

Despite these advantages, incorporating AI into HR planning involves a number of challenges and ethical considerations. One major concern is the possibility of bias in AI algorithms. While AI can help reduce human biases, it is not immune to biases in the data used to train it. If historical HR data reflects existing biases or inequalities, AI systems may inadvertently perpetuate them in their recommendations and decisions (Raghavan et al., 2020). For example, if previous hiring practices favoured specific demographics, the AI system may continue to recommend similar candidates, limiting diversity. To address this issue, training data must be carefully selected and prepared, and AI algorithms must be monitored and adjusted on a continuous basis to ensure fairness and inclusivity. AI involves collecting and analysing massive amounts of personal data, which raises concerns about how this data is stored, processed, and safeguarded. Employees may be wary of disclosing personal information if they believe it will be used against them or lead to unwanted surveillance. To build trust and comply with privacy regulations such as the General Data Protection Regulation (GDPR), organisations must implement strong data protection measures and transparent data usage policies (Floridi et al., 2018). Clear communication about how employee data will be used and protected is critical to ensuring trust and transparency in HR planning processes.

To ensure transparency and accountability in AI-driven HR planning, explainable AI models must be developed, as well as stakeholders provided with understandable insights into decision-making

processes (Guenole et al. 2017). Furthermore, the incorporation of AI into HR planning necessitates significant changes in HR roles and competencies. HR professionals must develop new skills in order to effectively manage and leverage AI technologies. This includes comprehending how AI algorithms operate, interpreting data analytics, and addressing ethical concerns about AI use. Organisations must invest in training and development programmes to provide HR staff with these skills, allowing them to navigate the complexities of AI-driven HR planning and make informed decisions (Huang & Rust, 2018). Furthermore, combining AI tools with traditional HR planning methods can result in a balanced approach that takes advantage of both human judgement and AI capabilities. AI's impact on HR planning extends to broader organisational outcomes like workforce diversity and inclusion. Artificial intelligence has the potential to improve workforce diversity by reducing human biases and encouraging more objective decision-making. Diverse workforces bring a wide range of perspectives and ideas, which helps to drive innovation and improve business performance. However, achieving these outcomes necessitates careful design and implementation of AI systems that support diversity and inclusivity objectives. Organisations must constantly evaluate and improve their AI tools to ensure they align with their diversity goals and address any unintended biases that may arise (Raghavan et al., 2020). In contrast, if AI systems are perceived as intrusive, biased, or unfair, they can harm an organisation's culture and undermine employee trust. As a result, organisations must carefully design and communicate their AI HR planning strategies to ensure they improve the employee experience and reinforce positive organisational culture. (Marr, 2019).

According to Xu et al. (2018), AI algorithms can forecast the likelihood of incidents by analysing historical accident data, environmental factors, and employee behaviour patterns, allowing for the implementation of preventative measures. This proactive approach not only lowers the likelihood of workplace accidents, but it also improves overall operational efficiency by reducing downtime and associated costs. Furthermore, AI-enabled wearables and sensors constantly monitor workers' health and environmental conditions, providing real-time feedback and notifications. Kawasaki et al. (2019) demonstrate how these devices can detect early signs of fatigue or exposure to harmful substances, allowing for timely interventions to protect workers' health and well-being. Companies that integrate AI into occupational safety and health can create a safer

and more responsive work environment that adapts to emerging risks and ensures compliance with safety regulations. For example, AI-powered drones can inspect hazardous areas such as construction sites or chemical plants, providing detailed data on potential risks without putting workers in danger (Choi et al., 2020).

Hence, AI-based software personalises safety training programmes by tailoring content to individual workers' needs and learning styles, ensuring that training is relevant and effective (Zhou et al., 2019). These systems not only improve workplace safety, but also streamline safety management processes, reducing administrative burdens and freeing up safety professionals to focus on strategic initiatives. The incorporation of AI into OSH represents a paradigm shift towards more efficient, accurate, and proactive safety management practices that prioritise worker well-being and operational sustainability. Furthermore, significant investments in technology and training are required to successfully implement AI systems. Chui et al. (2018) emphasise the importance of comprehensive training programmes that provide workers and safety professionals with the skills they need to effectively use AI tools while also understanding their limitations. Without adequate training and support, the adoption of AI in OSH may be hindered by a lack of understanding and acceptance among the workforce. Addressing these challenges is essential for harnessing the full potential of AI to create safer and more efficient working environments.

Looking ahead, the integration of AI into OSH is expected to accelerate further, owing to ongoing technological advancements and a growing emphasis on data-driven decision-making. One promising area of development is the improvement of AI algorithms to better handle complex and dynamic environments. According to LeCun et al. (2015), machine learning systems that adapt and improve in response to new data can provide more accurate and reliable safety predictions. Furthermore, advances in natural language processing (NLP) and computer vision are expected to improve AI's ability to interpret and analyse unstructured data, such as incident reports and video footage, thereby improving predictive and analytical capabilities (Esteva et al., 2019).

According to Chien and Chen (2020), AI-driven insights allow managers to identify performance trends and areas for improvement more precisely than traditional performance management methods. This shift towards data-driven performance

management not only improves the accuracy of performance evaluations but also mitigates the biases and subjectivity that frequently plague conventional appraisal process. Furthermore, AI systems can constantly monitor performance metrics in real time, enabling more timely and proactive interventions. For instance, AI algorithms can identify specific skill gaps and recommend targeted training programmes or learning resources to bridge them (Jiang et al., 2017). This level of personalisation not only boosts employee engagement and motivation, but it also ensures that development efforts are more in line with organisational objectives. Furthermore, AI-powered tools can provide employees with ongoing, personalised feedback and coaching, accelerating their development. Wilson et al. (2019) found that employees who receive regular, personalised feedback through AI platforms have higher levels of job satisfaction and performance improvement than those who rely on traditional feedback mechanisms. Organisations can foster a more engaged and skilled workforce by using AI to tailor development initiatives, resulting in improved overall organisational performance and success.

AI systems rely on massive amounts of personal and behavioural data to generate insights, raising questions about how this data is collected, stored, and used. According to Raghavan et al. (2020), organisations must implement strong data protection measures and transparent policies to protect employee information and maintain trust. Furthermore, deploying AI in performance management can exacerbate pre-existing biases if the algorithms are trained using biased data. Organisations must regularly audit and update their AI systems to ensure fairness and prevent discrimination. Another significant challenge is the potential for AI to undermine the human element of performance management. While AI can provide useful data-driven insights, interpreting and applying these insights still requires human judgement and empathy. As De Cremer and Kasparov (2021) point out, managers must strike a balance between leveraging AI's analytical capabilities and maintaining the human touch in performance management. This includes teaching managers how to use AI tools effectively while also encouraging open communication and trust among their employees. Finally, organisations must consider the ethical implications of AI in performance management, such as the possibility of increased surveillance and pressure on employees. It is critical to develop ethical guidelines that promote

responsible AI use while protecting employee well-being.

Empirical Review

Nawaz, Arunachalam, Pathi, and Gajenderan , (2024), study explores the impact of Artificial Intelligence (AI) on human resources management practices. By focusing on key outcomes such as accuracy, automation, computing power & capacity, real-time experience, personalization, and time-saving & cost saving. The research aims to identify the potential benefits of AI adoption. Data from 274 IT employees in Chennai City is Collected through a well-structured online questionnaire. Using IBM SPSS version 21 software and AMOS version 21 is used for analysis, the study proposes a novel research framework. The findings indicate that variables like accuracy, computing power & capacity, and personalization significantly influence time-saving & cost reduction, while automation and real-time experience do not. The novel contribution of this study lies in its exploration of the specific outcomes of utilizing AI technologies in human resources management practices. By focusing on key variables such as accuracy, automation, computing power & capacity, real-time experience, personalization, and time-saving & cost saving, the research provides a comprehensive understanding of the expected outcomes when implementing AI in human resources management and the relationship among those outcome variables.

Mer (2023), study elucidates the role of AI in facilitating seamless onboarding, diversity and inclusion (D&I), work engagement, emotional intelligence and employees' mental health. Thus, a conceptual model of recent trends in HRM in the context of AI and its organisational outcomes is proposed. A systematic review and meta-synthesis method are undertaken. A systematic literature review assisted in critically analysing, synthesising, and mapping the extant literature by identifying the broad themes. The findings of the study suggest that using natural language processing (NLP) and robots has eased the onboarding process. D&I is promoted using data analytics, big data, machine learning, predictive analysis and NLP. Furthermore, NLP and data analytics have proved to be highly effective in engaging employees. Emotional Intelligence is applied through AI simulation and intelligent robots. On the other hand, chatbots, employee pulse surveys, wearable technology, and intelligent robots have paved way for employees' mental health. The study also reveals that using AI in HRM leads to enhanced organisational performance, reduced cost and decreased intention to quit the organisation.

Thus, AI in HRM provides a competitive edge to organisations by enhancing the performance of the employees

Okeyika, Ibeto, Okere, & Umoh, (2023), study sought to analyse current challenges of human resource management practices, determine the current state of artificial intelligence in the recruitment process and to show the pros and cons of the use of artificial intelligence in human resource management using the grounded theory approach. The paper is entirely based on secondary data which were sourced from books, research papers and articles from internationally recognized journals. The study finds that; in terms of the current state of Artificial Intelligence in human resource management, while general-purpose Artificial Intelligence is still a long shot in any area of human activity, the advancement towards specialized AI-systems in health-care sector, automobile industry, social media, advertising and marketing is significant.

Kshetri, (2021), examine the use of artificial intelligence (AI) in human resource management (HRM) in the Global South. Design/methodology/approach: Multiple case studies of AI tools used in HRM in these countries in recruiting and selecting as well as developing, retaining and productively utilizing employees have been used. Findings: With AI deployment in HRM, organizations can enhance efficiency in recruitment and selection and gain access to a larger recruitment pool. With AI deployment in HRM, subjective criteria such as nepotism and favouritism are less likely to come into play in recruitment and selection of employees. AI deployment in HRM also has a potentially positive impact on the development, retainment and productive utilization of employees. Research limitations/implications: AI is an evolving

technology. Most HRM apps have not gained enough machine learning capabilities with real-world experience. Some of them lack a scientific basis. AI in HRM thus currently affects only a tiny proportion of the population in the GS. Practical implications: The paper explores the roles of AI in expanding recruitment pools. It also advances our understanding of how AI-based HIRM tools can help reduce biases in selecting candidates, which is especially important in the Global South. It also delves into various mechanisms by which AI helps in the development, retainment and productive utilization of employees. Originality/value: We provide details of various mechanisms by which AI brings input and output efficiencies in recruitment and selection in these countries.

Methodology

The study adopted survey design. Stratified random sampling technique was adopted. The sample of this study comprised 373 staff from a population that comprised all academic and non-academic staff of public tertiary institutions in Cross River State, Nigeria. The sample size was determined using Taro Yamane method. Data were collected using Artificial Intelligence Scale developed by Vartak (2022) and Kok (2005) to evaluate Human Resource Practices. The validity of the questionnaire was face and content validated. simple linear regression test statistic was adopted. The model specification of Simple Linear Regression Test Statistic are as follows:

$$Y = f(\beta_0 + \beta x + \epsilon)$$

Where:

Y = Integration of AI index

β_0 = Constant Term;

β = Beta coefficient;

X= Independent variable(s)

ϵ = Error term.

Result of the Findings

Hypothesis one:

There is no significant impact of AI integration on training and development.

Table 1

Coefficients^a

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	7.612	.587		12.975	.000
training and development	.490	.048	.474	10.172	.000

a. Dependent Variable: integration of artificial intelligence

The coefficient in table 1 shows that, a percentage increase in integration of training and development while other variables are held constant would lead to 49 percent increase on the training and development in tertiary institutions in Cross River State, Nigeria. The t-statistics in the table show that, the calculated t-value for

integration of artificial intelligence (10.172) is greater than the critical t-value of 1.968 at 0.05 level of significance with 357 degrees of freedom. This means that, the predictor (integration of artificial intelligence) has significant effect on the training and development in tertiary institutions in Cross River State, Nigeria. That is, the higher the level of integration of artificial intelligence, the higher the level of training and development in tertiary institutions in Cross River State, Nigeria and vice-versa.

Hypothesis two:

There is no significant impact of AI integration on selection and recruitment.

Table 2

Coefficients^a

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	6.919	.628		11.013	.000
selection and recruitment	.473	.045	.489	10.594	.000

a. Dependent Variable: integration of artificial intelligence

The coefficient in table 2 shows that, a percentage increase in integration of selection and recruitment while other variables are held constant would lead to 47.3 percent increase on the selection and recruitment in tertiary institutions in Cross River State, Nigeria. The t-statistics in the table show that, the calculated t-value for integration of artificial intelligence (10.594) is greater than the critical t-value of 1.968 at 0.05 level of significance with 357 degrees of freedom. This means that, the predictor (integration of artificial intelligence) has significant effect on the selection and recruitment in tertiary institutions in Cross River State, Nigeria. That is, the higher the level of integration of artificial intelligence, the higher the level of selection and recruitment in tertiary institutions in Cross River State, Nigeria and vice-versa.

Hypothesis Three:

There is no significant impact of AI integration on human resource planning.

Table 3

Coefficients^a

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	7.036	.766		9.182	.000
human resource planning	.454	.053	.410	8.505	.000

a. Dependent Variable: integration of artificial intelligence

The coefficient in table 3 shows that, a percentage increase in integration of human resource planning while other variables are held constant would lead to 45.4 percent increase on the human resource planning in tertiary institutions in Cross River State, Nigeria. The t-statistics in the table show that, the calculated t-value for integration of artificial intelligence (8.505) is greater than the critical t-value of 1.968 at 0.05 level of significance with 357 degrees of freedom. This means that, the predictor (integration of artificial intelligence) has significant effect on the human resource planning in tertiary institutions in Cross River State, Nigeria. That is, the higher the level of integration of artificial intelligence, the higher the level of human resource planning in tertiary institutions in Cross River State, Nigeria and vice-versa.

Hypothesis Four:

There is no significant impact of AI integration on occupational safety and health.

Table 4

Coefficients^a

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	8.300	.695		11.937	.000

occupational health and safety	.384	.051	.371	7.557	.000
--------------------------------	------	------	------	-------	------

a. Dependent Variable: integration of artificial intelligence

The coefficient in table 4 shows that, a percentage increase in integration of occupational health and safety while other variables are held constant would lead to 38.4 percent increase on the occupational health and safety in tertiary institutions in Cross River State, Nigeria. The t-statistics in the table show that, the calculated t-value for integration of artificial intelligence (7.557) is greater than the critical t-value of 1.968 at 0.05 level of significance with 357 degrees of freedom. This means that, the predictor (integration of artificial intelligence) has significant effect on the occupational health and safety in tertiary institutions in Cross River State, Nigeria. That is, the higher the level of integration of artificial intelligence, the higher the level of occupational health and safety in tertiary institutions in Cross River State, Nigeria and vice-versa.

Hypothesis Five:

There is no significant impact of AI integration on business performance management.

Table 5

Coefficients^a

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	6.413	.764		8.389	.000
performance management	.503	.054	.443	9.346	.000

a. Dependent Variable: integration of artificial intelligence

The coefficient in table 5 shows that, a percentage increase in integration of business performance management while other variables are held constant would lead to 50.3 percent increase on the business performance management in tertiary institutions in Cross River State, Nigeria. The t-statistics in the table show that, the calculated t-value for integration of artificial intelligence (9.346) is greater than the critical t-value of 1.968 at 0.05 level of significance with 357 degrees of freedom. This means that, the predictor (integration of artificial intelligence) has significant effect on the business performance management in tertiary institutions in Cross River State, Nigeria. That is, the higher the level of integration of artificial intelligence, the higher the level of business performance management in tertiary institutions in Cross River State, Nigeria and vice-versa.

Discussion of Findings

The results of first hypothesis revealed that integration of artificial intelligence has significant effect on the training and development in tertiary institutions in Cross River State, Nigeria. That is, the higher the level of integration of artificial intelligence, the higher the level of training and development in tertiary institutions in Cross River State, Nigeria and vice-versa. These findings are in line with Wilson and Daugherty (2018) who concluded that the use of AI in training and development may have an impact on the role of

human resources professionals. As AI takes over routine administrative tasks, HR professionals may need to learn new skills in order to manage and leverage AI technology effectively. This shift necessitates organisations investing in the reskilling and upskilling of HR personnel, ensuring that they can contribute strategically to the design and implementation of AI-driven initiatives.

The results of second hypothesis revealed that integration of artificial intelligence has significant effect on the selection and recruitment in tertiary institutions in Cross River State, Nigeria. That is, the higher the level of integration of artificial intelligence, the higher the level of selection and recruitment in tertiary institutions in Cross River State, Nigeria and vice-versa. These findings are in agreement with Upadhyay & Khandelwal, (2018), whose study concluded that AI's most significant impact on recruitment stems from its ability to automate and streamline various stages of the hiring process. Traditional recruitment methods frequently include manual resume screening, which is time-consuming and susceptible to human error and bias. AI-powered tools can quickly analyse large amounts of resumes, extracting relevant information and ranking candidates using predefined criteria. Machine learning algorithms, for example, can be trained to identify key skills, experiences, and qualifications that match job requirements, saving

recruiters a significant amount of time on initial screenings.

The results of the third hypothesis indicated that integration of artificial intelligence has significant effect on the human resource planning in tertiary institutions in Cross River State, Nigeria. That is, the higher the level of integration of artificial intelligence, the higher the level of human resource planning in tertiary institutions in Cross River State, Nigeria and vice-versa. These findings are in cognizance with Huang and Rusr (2018) who posited that AI-powered tools can continuously monitor workforce metrics and provide real-time updates on key indicators like employee engagement, productivity, and retention rates. This real-time monitoring enables HR teams to identify and address issues, such as low morale or high turnover, before they become critical.

The results of the fourth hypothesis show that integration of artificial intelligence has significant effect on the occupational health and safety in tertiary institutions in Cross River State, Nigeria. That is, the higher the level of integration of artificial intelligence, the higher the level of occupational health and safety in tertiary institutions in Cross River State, Nigeria and vice-versa. These findings are in line with Xu et al. (2018), who concluded that AI algorithms can forecast the likelihood of incidents by analysing historical accident data, environmental factors, and employee behaviour patterns, allowing for the implementation of preventative measures. This proactive approach not only lowers the likelihood of workplace accidents, but it also improves overall operational efficiency by reducing downtime and associated costs. Furthermore, AI-enabled wearables and sensors constantly monitor workers' health and environmental conditions, providing real-time feedback and notifications.

The results of the last hypothesis revealed that integration of artificial intelligence has significant effect on the business performance management in tertiary institutions in Cross River State, Nigeria. That is, the higher the level of integration of artificial intelligence, the higher the level of business performance management in tertiary institutions in Cross River State, Nigeria and vice-versa. These findings are in line with the Chien and Chen (2020), AI-driven insights allow managers to identify performance trends and areas for improvement more precisely than traditional performance management methods. This shift towards data-driven performance management not only improves the

accuracy of performance evaluations but also mitigates the biases and subjectivity that frequently plague conventional appraisal process. Furthermore, AI systems can constantly monitor performance metrics in real time, enabling more timely and proactive interventions.

Conclusion

Based on the research findings, the study concludes that there was a positive significant predictive effect of AI integration on human resource functions and practices in terms of training and development, selection and recruitment, human resource planning, occupational safety and health and performance management. That is the higher the level of AI integration, the higher the level of human resource functions and practices in terms of training and development, selection and recruitment, human resource planning, occupational safety and health and performance management.

Recommendations

Based on the findings of this study the following recommendations were made:

1. Organisations should consider incorporating AI into all phases of their training programmes, from onboarding to advanced skill development. Because AI has a significant impact, expanding its use may improve learning outcomes, increase efficiency, and tailor training experiences to individual needs. Encourage collaboration between AI systems and human trainers. While AI can handle data analysis and personalised learning paths, human trainers can focus on mentoring, soft skill development, and emotional support, resulting in a more balanced and comprehensive training approach.
2. Human resource managers should use AI-powered tools to conduct initial candidate screenings. These tools can quickly analyse large volumes of applications, identifying those that best meet the job requirements, saving time and reducing human bias during the early stages of recruitment. Train HR professionals on how to use AI tools effectively during the recruitment process. Understanding AI's capabilities and limitations will allow HR teams to make better decisions and integrate AI more effectively into their workflows.
3. Organisations should use AI-powered predictive analytics to forecast workforce requirements based on past data, business growth patterns, and market trends. This allows HR teams to more accurately plan for future hiring, training, and development needs, ensuring that the right talent is available when needed.

4. AI-driven predictive analytics can help organisations identify potential safety risks before accidents occur. By analysing historical data, AI can predict hazards and recommend preventive measures, significantly improving workplace safety.
5. Management should use AI tools to thoroughly analyse employee performance data, identifying trends, strengths, and opportunities for improvement. AI can provide insights into performance metrics that may be overlooked in traditional evaluations, resulting in more informed decision-making.

References

- Aggarwal, N., & Kapoor, M. (2012). *Human resource management: Principles and practice*. Delhi: PHI Learning Pvt. Ltd.
- Bersin, J. (2018). HR technology market 2019: Disruption ahead, *Deloitte Insights*, January.
- Bessen, J., Goos, M., Salomons, A., & Van den Berge, W. (2019). AI and jobs: Evidence from online vacancies. *NBER Working Paper No. 24208*. National Bureau of Economic Research.
- Bhardwaj, A., Jain, T., Jain, A., & Jain, R. (2020). Predictive analytics in human resource management using machine learning: A comprehensive survey. *IEEE Access*, 8, 148367-148392.
- Binns, R. (2018). Fairness in machine learning: Lessons from political philosophy. *Proceedings of the 2018 Conference on Fairness, Accountability, and Transparency*, 149-159. <https://doi.org/10.1145/3287560.3287600>
- Bondarouk, T., & Ruël, H. (2013). The strategic value of e-HRM: Results from an exploratory study in a governmental organization. *The International Journal of Human Resource Management*, 24 (2), 391-414.
- Cappelli, P., & Tavis, A. (2016). The performance management revolution. *Harvard Business Review*, 94 (10), 58-67.
- Chamorro-Premuzic, T., Winsborough, D., Sherman, R. A., & Hogan, R. (2016). New talent signals: shiny new objects or a brave new world?. *Industrial and Organizational Psychology*, 9 (3), 621-640.
- Chien, S. & Chen, L. (2020). AI-Driven performance management systems: A case study. *Journal of Business Research*, 112, 325-335.
- Choi, S., Kim, Y. & Lee, J. (2020). Application of drones in industrial safety monitoring. *Safety Science*, 123, p. 104577.
- Chui, M., Manyika, J. & Miremadi, M. (2018). *The Real Impact of Artificial Intelligence on Jobs and Skills*. McKinsey Quarterly, July.
- De Cremer, D. & Kasparov, G. (2021). AI in management: Harnessing the power of data-driven decision-making. *Harvard Business Review*, March-April.
- Esteva, A., Robicquet, A. & Ramsundar, B. (2019). A guide to deep learning in healthcare. *Nature Medicine*, 25 (1), 24-29.
- Eubanks, V. (2018). *Automating inequality: How high-tech tools profile, police, and punish the poor*. St. Martin's Press.
- Floridi, L., Cows, J., King, T. C. & Taddeo, M. (2018). How to design AI for social good: Seven essential factors. *Science and Engineering Ethics*, 26(3), 1771-1796
- Guenole, N., Ferrar, J., & Feinzig, S. (2017). *The power of people: Learn how successful organizations use workforce analytics to improve business performance*. FT Press.
- Guzman, A. L., & Anaya, M. S. (2020). Augmented reality in education: An overview of twenty-five years of research. *Education and Information Technologies*, 25(2), 1423-1442.
- Huang, M. H., & Rust, R. T. (2018). Artificial intelligence in service. *Journal of Service Research*, 21 (2), 155-172.
- Huang, M. H., & Rust, R. T. (2018). Artificial intelligence in service. *Journal of Service Research*. 21(2), 155-172. <https://doi.org/10.1177/1094670517752459>
- Jatobá, A., de Matos, E., & Varela, A. (2019). AI in human resource management: Challenges and future directions. *Journal of Human Resources*, 3 (1), 45-54.
- Jiang, F., Jiang, Y., Zhi, H., Dong, Y., Li, H., Ma, S., Wang, Y., Dong, Q., Shen, H., & Wang, Y. (2017). Artificial intelligence in healthcare: Past, present, and future. *Stroke and Vascular Neurology*, 2(4), 230-243. <https://doi.org/10.1136/svn-2017-000101>
- Jiang, K., Lepak, D.P., Hu, J. & Baer, J.C. (2017). How does human resource management influence organizational outcomes? A meta-analytic investigation of mediating mechanisms. *Academy of Management Journal*, 55 (6), 1264-1294.
- Kane, G. C., Palmer, D., Phillips, A. N., Kiron, D., & Buckley, N. (2015). Strategy, not technology, drives digital transformation: becoming a digitally mature enterprise. *MIT Sloan Management Review and Deloitte University Press*.
- Kawasaki, K., Miyamoto, H. & Nishimoto, Y. (2019). AI-Enabled wearable devices for

- occupational health monitoring. *IEEE Internet of Things Journal*, 6(3), pp. 4982-4991.
- Kshetri, N. (2021). Evolving Uses of Artificial Intelligence in Human Resource Management in Emerging Economies in the Global South: Some Preliminary Evidence. *Management Research Review*, <https://doi.org/10.1108/MRR-03-2020-0168>.
- Kumar, A. (2018). AI and employee engagement: A framework for the future. *Journal of Business and Management*, 24 (3), 112-124.
- LeCun, Y., Bengio, Y. & Hinton, G. (2015). Deep Learning, nature. *Journal of Business Studies* 521 (7553), 436-444.
- Manyika, J., Chui, M. & Bughin, J. (2011). *Big data: The next frontier for innovation, competition, and productivity*. McKinsey Global Institute, May.
- Marler, J. H., & Boudreau, J. W. (2017). An evidence-based review of HR Analytics. *International Journal of Human Resource Management*, 28(1), 3-26.
- Marr, B. (2019). *Artificial intelligence in practice: how 50 successful companies used AI and machine learning to solve problems*. Wiley.
- McCarthy, J. M., Cheng, B. H., Truxillo, D. M., & Wakefield, D. S. (2019). Affective responses to applicant reactions: The role of job and organizational characteristics. *Journal of Business and Psychology*, 34 (5), 621-640.
- Mer, A. (2023). Artificial Intelligence in Human Resource Management: Recent Trends and Research Agenda. *Contemporary Studies in Economic and Financial Analysis*, Vol. 111b, 31-55. doi:10.1108/s1569-37592023000111b003
- Mijumbi, R., Shkemi, E., & Singh, S. (2020). Chatbots and virtual assistants in HR: Benefits and challenges. *International Journal of Artificial Intelligence and Applications*, 11 (1), 33-47.
- Nawaz, N., Arunachalam, H., Pathi, B. K., & Gajenderan, V. (2024). The adoption of artificial intelligence in human resources management practices. *International Journal of Information Management Data Insights*, 4 (1), pp1-11
- Okeyika, K. O., Ibeto, V. C., Okere, A. I., & Umoh, B. (2023). The application of artificial intelligence in human resource management: current state of ai and its impact on the traditional recruiting process. *African Journal of Contemporary Research*, Vol. 4 No. 3: DOI: 10.13140/RG.2.2.25435.54567
- Raghavan, M., Barocas, S., Kleinberg, J. & Levy, K. (2020). Mitigating Bias in Algorithmic Hiring: Evaluating Claims and Practices. *Proceedings of the 2020 Conference on Fairness, Accountability, and Transparency*, pp. 469-481.
- Stone, D. L., Deadrick, D. L., Lukaszewski, K. M., & Johnson, R. (2015). The influence of technology on the future of human resource management. *Human Resource Management Review*, 25 (2), 216-231.
- Strohmeier, S., & Piazza, F. (2015). Artificial Intelligence techniques in human resource management: A conceptual exploration. *Intelligent Systems in Accounting, Finance and Management*, 22(3), 211-222.
- Tursunbayeva, A., Pagliari, C., & Angell, P. (2018). Electronic HRM: Four decades of research on adoption and consequences. *International Journal of Human Resource Management*, 29(1), 234-257.
- Upadhyay, A. K., & Khandelwal, K. (2018). Applying artificial intelligence: Implications for recruitment. *Strategic HR Review*, 17 (5), 255-258.
- Wilson, H.J., Daugherty, P.R. & Morini-Bianzino, N. (2019). The future of AI and performance management: realizing the full potential of data-driven insights. *MIT Sloan Management Review*, 60 (4), 45-54.
- Xu, D., Liao, S. & Shi, Z. (2018). Predictive analytics in workplace safety: A review and perspective. *Safety Science*, 110, 377-386.
- Zhou, Z., Sun, J. & Yang, Y. (2019). Personalized safety training using AI: Opportunities and challenges. *Journal of Safety Research*, 68. 103-115.