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Article

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ARTIFICIAL INTELLIGENCE AND DIGITAL TRANSFORMATION AS PREDICTORS OF HUMAN RESOURCE MANAGEMENT EFFECTIVENESS IN THE 21ST CENTURY WORKPLACE

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Abstract.

The growing integration of artificial intelligence and digital technologies into workplace management systems tend to face persistent challenges in human resource management in modern organizations. This study therefore examined artificial intelligence and digital transformation as predictors of human resource management effectiveness in the 21st century workplace. A correlational research design was adopted for the study. The population comprised 1,250 respondents drawn from selected public and private organizations. A sample size of 420 respondents was selected using stratified and simple random sampling techniques. Data were collected using a structured questionnaire titled "Artificial Intelligence and Digital Transformation in Human Resource Management Questionnaire (AIDTHRMQ)." The instrument was validated by experts, while reliability was established using Cronbach Alpha reliability method. Mean and standard deviation were used to answer the research questions. The findings revealed that artificial intelligence significantly influences recruitment and selection effectiveness in the workplace. The study also found that digital transformation significantly affects employee performance management and strongly predicted human resource management effectiveness. The study concluded that organizations that effectively integrate artificial intelligence and digital transformation technologies into their HR systems are more likely to achieve improved workforce productivity, enhanced operational efficiency, and sustainable organizational competitiveness. The study recommended that organizations should adopt AI-driven recruitment systems, invest in digital HR infrastructure, and provide continuous digital skills training for HR personnel.

Keywords: Artificial Intelligence, Digital Transformation, Human Resource Management, Workforce Productivity, 21st Century Workplace.

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Introduction

The 21st century workplace has undergone profound transformation driven by globalization, rapid technological advancement, and increasingly competitive business environments. According to Tambe *et al.*, (2019), organizations have transitioned from traditional administrative workplaces to digitally driven ecosystems where efficiency, innovation, and rapid decision-making are paramount. This shift has placed immense pressure on human resource (HR) departments to align workforce management strategies with broader organizational goals, necessitating a fundamental rethinking of how human capital is managed. The field of HR has evolved significantly from conventional personnel management to strategic human resource management (SHRM). Budhwar *et al.*, (2023) emphasized that HR managers now bear responsibilities extending far beyond recruitment and payroll administration, encompassing data-driven decision-making, talent analytics, and strategic workforce planning. This evolution reflects the growing recognition that human capital is a critical source of competitive advantage. However, HR units face persistent challenges in managing large and diverse workforces, particularly in navigating the complexities of digital transformation. Artificial intelligence has expanded across sectors, fundamentally reshaping HR functions including recruitment, employee selection, training, performance appraisal, and employee engagement. Chowdhury *et al.* (2023) argued that AI-driven automation reduces repetitive HR tasks while improving operational speed and accuracy. For instance, AI-powered systems can screen resumes, schedule interviews, and assess candidate skills with remarkable efficiency. Nevertheless, concerns regarding job displacement, ethical considerations, privacy issues, and the dynamics of human-AI collaboration remain significant barriers to widespread adoption. Organizations are increasingly moving toward cloud systems, digital communication platforms, virtual workspaces, and automated databases. Zhang and Chen (2024) observed that digital transformation profoundly influences organizational culture and workflow processes, requiring HR departments to adapt to entirely new digital ecosystems. This restructuring demands that HR professionals develop competencies in managing digital tools and platforms while fostering organizational agility.

AI and digital systems contribute substantially to productivity, accuracy, transparency, and efficiency in HR functions. According to *et al.*, (2023), these technologies improve talent acquisition, employee retention, workforce analytics, and performance monitoring. Predictive technologies enhance managerial decision-making by providing data-driven insights. However, effective implementation remains challenging, especially in developing economies where infrastructure and skills gaps persist. Despite technological advances, HR departments continue to grapple with delays in recruitment and administrative processes, poor employee data management, and ineffective performance evaluation systems. Stone *et al.*, (2024) noted that inadequate technological infrastructure and resistance to innovation further compound these challenges. Additionally, a significant skills gap exists among HR personnel in adapting to digital tools, limiting the potential benefits of technological integration. The adoption of AI and digital technologies in developing countries remains uneven. Ojogiwa and Nhari (2024) highlighted that organizations in Nigeria face infrastructure limitations including unreliable internet connectivity, inadequate funding, and electricity challenges. Limited digital competencies among employees and HR professionals further hinder effective technology adoption. These contextual realities underscore the urgent need for organizational transformation to remain globally competitive. Given the transformative potential of AI and digital technologies in reshaping HR practices, examining

their predictive role in HRM effectiveness within the 21st century workplace is both timely and essential. This study is justified by the growing imperative for organizations to leverage technological innovations in managing human capital, particularly in contexts where traditional HR approaches have proven insufficient for addressing contemporary workforce challenges.

Statement of the Problem

Despite the increasing adoption of artificial intelligence and digital transformation initiatives across modern organizations, many workplaces in the 21st century still experience persistent human resource management challenges such as inefficient recruitment processes, poor employee performance monitoring, ineffective communication systems, low workforce productivity, and inadequate data management. Although organizations are investing heavily in digital technologies to improve operational efficiency, evidence suggests that the expected improvement in human resource management effectiveness has not been fully realized, particularly in developing economies where infrastructural limitations, inadequate digital competencies, resistance to technological change, and insufficient organizational support hinder successful implementation. Furthermore, existing studies have largely focused on the technological benefits of artificial intelligence without adequately examining how artificial intelligence and digital transformation jointly predict human resource management effectiveness in contemporary workplaces. This gap in knowledge has created uncertainty regarding the extent to which these technological innovations contribute to effective workforce management, employee performance, and organizational productivity. It is against this backdrop that this study sought to investigate artificial intelligence and digital transformation as predictors of human resource management effectiveness in the 21st century workplace.

Objectives of the Study

The main objective of this study was to examine artificial intelligence and digital transformation as predictors of human resource management effectiveness in the 21st century workplace. Specifically, the study sought to:

- i. determine the influence of artificial intelligence on recruitment and selection effectiveness in the workplace.
- ii. examine the effect of digital transformation on employee performance management in organizations.
- iii. determine the extent to which digital transformation predicts overall human resource management effectiveness.
- iv. assess the relationship between artificial intelligence and workforce productivity in the 21st century workplace.

Research Questions

The following research questions guided the study:

- i. What is the influence of artificial intelligence on recruitment and selection effectiveness in the workplace?
- ii. What effect does digital transformation have on employee performance management in organizations?
- iii. To what extent does digital transformation predict human resource management effectiveness?
- iv. What is the relationship between artificial intelligence and workforce productivity in the 21st century workplace?

Literature Review

Theoretical Framework: The present study is anchored on three complementary theoretical perspectives. The Technology Acceptance Model (TAM), originally developed by Davis (1989), provides a foundational lens for understanding how employees and HR professionals perceive and adopt AI-driven technologies in the workplace. According to Chowdhury et al. (2023), TAM's core constructs—perceived usefulness and perceived ease of use—remain critical determinants of technology acceptance in HRM contexts. The Diffusion of Innovation Theory, introduced by Rogers (2003), explains how innovations spread within social systems, with its five perceived attributes (relative advantage, compatibility, complexity, trialability, and observability) offering valuable insights into the adoption of digital HR systems. Recent systematic reviews confirm that this theory remains highly relevant in explaining digital transformation processes across organizational contexts. The Resource-Based View (RBV) theory propounded by Edith Penrose (1959) and later formalized as a strategic framework by Birger Wernerfelt (1984), it complements these perspectives by emphasizing that internal resources and capabilities, including digital transformation capabilities, serve as essential elements for establishing lasting competitive advantage. Together, these theories provide a robust framework for examining how AI and digital transformation predict HRM effectiveness in the 21st century workplace.

Conceptual Review

Artificial intelligence in workplace management refers to the application of machine learning, natural language processing, and predictive analytics to automate and enhance HR functions. According to Budhwar *et al.*, (2022), AI technologies are increasingly being deployed for recruitment, performance evaluation, training, and workforce planning. Digital transformation in organizations encompasses the integration of cloud systems, digital communication platforms, and automated databases that fundamentally reshape organizational culture and workflow processes. HRM effectiveness in the 21st century is characterized by data-driven decision-making, strategic workforce planning, and the ability to align human capital with organizational goals. The relationship between AI, digital transformation, and HRM effectiveness is synergistic: AI enhances the precision and speed of HR functions, while digital transformation provides the infrastructural backbone for these technologies to operate effectively.

Dimensions/Variables of the Study: The study examines several key dimensions. Artificial intelligence and recruitment effectiveness are linked through AI-powered resume screening, candidate-job matching algorithms, and predictive hiring analytics. Chheda et al. (2025) found that AI significantly reduces recruitment time while enhancing candidate-job fit scores. Artificial intelligence and employee performance management are connected through continuous feedback mechanisms, personalized development plans, and data-driven performance evaluations. Digital transformation and workforce productivity are examined through the adoption of digital platforms that streamline communication and collaboration. Digital transformation and organizational efficiency are assessed through the implementation of cloud-based HR information systems and automated administrative processes. Technology adoption and employee engagement are explored through the lens of digital tools to assess employee satisfaction, trust, and behavioral intention to use AI-enabled systems.

Artificial Intelligence and Recruitment and Selection Effectiveness in the Workplace: Artificial intelligence has transformed recruitment and selection processes by improving the

speed, accuracy, and efficiency of identifying suitable candidates. AI-based recruitment systems use machine learning, predictive analytics, and automated screening tools to analyze applicants' qualifications, match candidates with job requirements, and reduce administrative workload. Tambe *et al.*, (2019) argue that AI enhances HR decision-making by providing data-driven insights that improve talent acquisition processes. AI also promotes more objective recruitment decisions by applying standardized assessment criteria and reducing dependence on subjective judgments. However, scholars note that AI systems may reproduce existing biases if they are developed using biased historical data. Köchling and Wehner (2020) emphasize the need for ethical monitoring, transparency, and human oversight to ensure fairness in AI-based recruitment. Therefore, while AI improves recruitment effectiveness, organizations must combine technological capabilities with responsible management practices.

Digital Transformation and Employee Performance Management in Organizations: Digital transformation has changed employee performance management by introducing continuous monitoring, real-time feedback, and technology-supported evaluation systems. Unlike traditional approaches that rely on periodic assessments, digital platforms allow organizations to track employee performance, identify development needs, and improve communication between managers and employees. Verhoef *et al.* (2021) explain that digital transformation enhances organizational processes through the effective integration of digital technologies. Digital HR systems also support employee development by providing data for identifying skills gaps and designing targeted training programmes. According to Tursunbayeva *et al.*, (2018), HR analytics enables organizations to use workforce data to improve decision-making and employee outcomes. However, successful implementation requires employee digital skills, organizational readiness, and effective change management. Thus, digital transformation strengthens performance management by improving evaluation, feedback, and employee development processes.

Digital Transformation as a Predictor of Human Resource Management Effectiveness: Digital transformation has become an important predictor of HR management effectiveness by improving the efficiency and strategic capacity of HR departments. Technologies such as HR information systems, automation tools, and workforce analytics enable organizations to manage recruitment, employee records, training, and workforce planning more effectively. Bondarouk and Brewster (2016) highlight that electronic HR systems improve information accessibility and support strategic HR functions. Digital transformation enhances HR decision-making by providing accurate workforce data for planning and organizational development. It also reduces administrative burdens by automating routine HR activities, allowing professionals to focus on strategic responsibilities. Marler and Boudreau (2017) note that HR analytics improves evidence-based decision-making and strengthens HR contributions to organizational performance. However, digital transformation requires more than technology adoption. Organizations need supportive leadership, skilled employees, and appropriate infrastructure to achieve meaningful outcomes. Vial (2019) argues that successful digital transformation involves organizational and cultural changes alongside technological implementation. Therefore, digital transformation improves HR effectiveness when technology is effectively integrated with human capabilities.

Artificial Intelligence and Workforce Productivity in the 21st Century Workplace: Artificial intelligence has become a major contributor to workforce productivity by improving efficiency, accuracy, and decision-making. AI technologies support employees by automating

repetitive tasks, analyzing complex information, and providing decision-support systems. Brynjolfsson and McAfee (2014) argue that productivity gains occur when humans and technology work together, allowing employees to focus on higher-value activities. AI also enhances workplace performance by improving workflow management, reducing errors, and supporting organizational planning. Raisch and Krakowski (2021) emphasize that human–AI collaboration enables organizations to achieve greater productivity by combining technological capabilities with human expertise. However, effective AI adoption requires employee training and adaptation because technological changes may create concerns regarding job displacement and skill requirements.

Empirical Review

Empirical studies on AI and HRM effectiveness have proliferated in recent years. Chowdhury *et al.*, (2023) conducted a systematic review revealing that AI facilitates continuous feedback, reduces evaluation biases, and enables personalized employee development. Pan *et al.* (2022) examined the adoption of AI in employee recruitment across multiple contexts, finding that contextual factors significantly influence implementation success. Studies on digital transformation and organizational performance have demonstrated positive correlations. For instance, research on high-tech firms in China's Yangtze River Delta found that digital transformation capability directly enhances firm performance through improved operational efficiency and innovation. Studies on AI-driven recruitment and employee productivity consistently show that algorithmic tools reduce hiring time while improving candidate quality. However, studies on digital workplace transformation in developing economies remain limited, with most research concentrated in technologically advanced regions. William and Singh (2023) conducted an empirical study of multinational companies in Ghana, finding that digital HRM tools significantly impact organizational effectiveness, though infrastructure limitations persist. The similarities across studies include the consensus that AI and digital transformation enhance HR efficiency; the differences lie in the magnitude of impact across contexts; and the gaps include limited research on developing country contexts and longitudinal studies tracking implementation outcomes over time.

Summary of Reviewed Literature: The reviewed literature reveals several identified gaps. First, most empirical studies on AI in HRM have been conducted in developed economies, leaving a significant void in understanding how these technologies function in developing country contexts such as Nigeria. Second, longitudinal studies examining the sustained impact of AI and digital transformation on HRM effectiveness remain scarce. Third, integrated frameworks that simultaneously examine AI, digital transformation, and HRM effectiveness as interrelated predictors are underdeveloped. These gaps justify the present study's focus on examining AI and digital transformation as predictors of HRM effectiveness in the 21st century workplace.

Methodology

The study adopted a correlational research design to examine artificial intelligence and digital transformation as predictors of human resource management effectiveness in the 21st century workplace. The study was conducted among staff of selected public and private organizations. The population of the study comprised 1,250 respondents, distributed as 180 Human Resource Managers, 320 Administrative Staff, 450 Senior Staff, and 300 Junior Staff across the selected organizations. A sample size of 420 respondents was drawn using Taro Yamane formula. Stratified random sampling technique was used to categorize the respondents into their respective groups, while simple random sampling technique was

employed to select participants proportionately from each stratum to ensure fair representation. Data for the study were collected using a structured questionnaire titled "Artificial Intelligence and Digital Transformation in Human Resource Management Questionnaire (AIDTHRMQ)." The instrument was structured on a five-point Likert scale and designed to obtain information on artificial intelligence adoption, digital transformation practices, recruitment effectiveness, employee performance management, workforce productivity, and overall human resource management effectiveness. The instrument was validated by experts in Human Resource Management and Measurement and Evaluation to ensure face and content validity. A pilot study was conducted outside the study area to determine the reliability of the instrument using Cronbach Alpha reliability method, which yielded reliability coefficients considered adequate for the study. Data collected were analyzed using mean and standard deviation to answer the research questions.

Results

Influence of Artificial Intelligence on Recruitment and Selection Effectiveness in the Workplace

Table 1: Mean Rating and Standard Deviation on the Influence of Artificial Intelligence on Recruitment and Selection Effectiveness (N = 420)

S/N	Influence of Artificial Intelligence on Recruitment and Selection	Mean	SD	Decision
1	AI improves the speed of recruitment processes	3.82	0.76	Agreed
2	AI enhances accuracy in employee selection	3.95	0.81	Agreed
3	AI reduces bias in recruitment procedures	3.61	0.88	Agreed
4	AI assists organizations in identifying qualified candidates	4.02	0.73	Agreed
5	AI improves efficiency in HR recruitment activities	3.89	0.79	Agreed
	Grand Mean	3.86	0.79	Agreed

Table 1: revealed a grand mean of 3.86 and a grand standard deviation of 0.79, indicating that respondents agreed that artificial intelligence positively influences recruitment effectiveness in the 21st-century workplace. Specifically, respondents agreed that AI improves the speed of recruitment processes (M = 3.82, SD = 0.76), enhances accuracy in employee selection (M = 3.95, SD = 0.81), reduces bias in recruitment procedures (M = 3.61, SD = 0.88), assists organizations in identifying qualified candidates (M = 4.02, SD = 0.73), and improves efficiency in HR recruitment activities (M = 3.89, SD = 0.79). The relatively low standard deviation values indicate that respondents' opinions were fairly homogeneous. Based on the grand mean, it was concluded that artificial intelligence influences recruitment effectiveness to a high extent in the organizations studied.

Effect of Digital Transformation on Employee Performance Management in Organization

Table 2: Mean Rating and Standard Deviation on the Effect of Digital Transformation on Employee Performance Management (N = 420)

S/N	Effect of Digital Transformation on Employee Performance Management	Mean	SD	Decision
1	Digital systems improve employee performance monitoring	3.77	0.84	Agreed
2	Digital transformation enhances communication between management and staff	3.91	0.80	Agreed
3	Digital tools support effective employee appraisal systems	3.86	0.75	Agreed
4	Digital transformation promotes timely feedback to employees	3.72	0.89	Agreed
5	Digital technologies improve organizational productivity	4.01	0.71	Agreed
	Grand Mean	3.85	0.80	Agreed

Table 2: revealed a grand mean of 3.85 and a grand standard deviation of 0.80, indicating that respondents agreed that digital transformation positively influences employee performance management in the 21st-century workplace. Specifically, respondents agreed that digital systems improve employee performance monitoring ($M = 3.77$, $SD = 0.84$), digital transformation enhances communication between management and staff ($M = 3.91$, $SD = 0.80$), digital tools support effective employee appraisal systems ($M = 3.86$, $SD = 0.75$), digital transformation promotes timely feedback to employees ($M = 3.72$, $SD = 0.89$), and digital technologies improve organizational productivity ($M = 4.01$, $SD = 0.71$). The relatively low standard deviation values indicate that the respondents' opinions were fairly homogeneous. Based on the grand mean, it was concluded that digital transformation positively influences employee performance management to a high extent in the organizations studied.

Extent to which Digital Transformation Predict Human Resource Management Effectiveness in the 21st Century Workplace

Table 3: Mean Rating and Standard Deviation on the Extent to Which Digital Transformation Predicts Human Resource Management Effectiveness (N = 420)

S/N	Extent to which Digital Transformation Predict Human Resource Management Effectiveness in the 21st Century Workplace	Mean	SD	Decision
1	Digital transformation has improved the efficiency of recruitment and selection processes in my organization.	4.12	0.79	High Extent
2	Digital technologies have enhanced employee record management and accessibility of HR information.	4.08	0.83	High Extent
3	Digital transformation has strengthened employee performance monitoring and appraisal processes.	3.97	0.88	High Extent
4	The use of digital systems has increased workforce productivity in my organization.	4.10	0.81	High Extent
5	The integration of digital technologies has improved overall human resource management effectiveness.	4.18	0.73	High Extent
	Grand Mean	4.01	0.81	High Extent

Table 3: revealed a grand mean of 4.09 and a grand standard deviation of 0.81, indicating that respondents agreed to a high extent that digital transformation predicts human resource management effectiveness in the 21st-century workplace. Specifically, respondents agreed that digital transformation improves recruitment and selection processes ($M = 4.12$, $SD = 0.79$), enhances employee record management and accessibility of HR information ($M = 4.08$, $SD = 0.83$), strengthens employee performance monitoring and appraisal ($M = 3.97$, $SD = 0.88$), increases workforce productivity ($M = 4.10$, $SD = 0.81$), and improves overall human resource management effectiveness ($M = 4.18$, $SD = 0.73$). The low standard deviation values indicate that the respondents' opinions were relatively homogeneous. Therefore, based on the grand mean, it was concluded that digital transformation predicts human resource management effectiveness to a high extent in the organizations studied.

Relationship Between Artificial Intelligence and Workforce Productivity in the 21st Century Workplace

Table 4: Relationship Between Artificial Intelligence and Workforce Productivity in the 21st Century Workplace (N = 420)

S/N	Relationship between Artificial Intelligence and Workforce Productivity in the 21st Century Workplace	Mean	SD	Decision
1	Artificial intelligence improves employees' efficiency by automating routine and repetitive workplace tasks.	4.18	0.72	Agreed

2	Artificial intelligence enables employees to complete tasks faster and with greater accuracy.	4.05	0.79	Agreed
3	Artificial intelligence enhances workforce productivity through improved access to information and data-driven decision-making.	4.12	0.75	Agreed
4	Artificial intelligence improves employee performance by supporting effective task management and reducing workplace errors.	3.96	0.83	Agreed
5	Artificial intelligence contributes significantly to overall improvement in organizational workforce productivity.	4.15	0.74	Agreed
	Grand Mean	4.01	0.81	Agreed

Table 4: showed that respondents agreed that artificial intelligence has a positive relationship with workforce productivity in the 21st century workplace. The grand mean score of 4.09 with a standard deviation of 0.77 indicates a strong agreement among respondents that AI contributes significantly to improving employee productivity. Specifically, respondents agreed that artificial intelligence improves employees' efficiency through automation of routine tasks (Mean = 4.18), enhances access to information and supports data-driven decision-making (Mean = 4.12), and contributes to overall improvement in workforce productivity (Mean = 4.15). The findings also reveal that AI enables employees to complete tasks faster and more accurately (Mean = 4.05), while supporting effective task management and reducing workplace errors (Mean = 3.96). The relatively low standard deviation values indicate that respondents had similar opinions regarding the contribution of artificial intelligence to workplace productivity. The result suggests that AI technologies enhance human capabilities by improving operational efficiency, supporting informed decision-making, and enabling employees to achieve higher levels of performance. Therefore, the study establishes that artificial intelligence has a positive relationship with workforce productivity in the 21st century workplace.

Discussion of Findings

This section provides the discussion of findings of the study on artificial intelligence and digital transformation in improving human resource management effectiveness. It compares the findings with previous studies and theoretical explanations to demonstrate how technological innovations shape recruitment practices, employee performance management, HR processes, and workplace productivity in contemporary organizations.

Influence of Artificial Intelligence on Recruitment and Selection Effectiveness in the Workplace: The study revealed that artificial intelligence positively influences recruitment and selection effectiveness by improving recruitment speed, candidate assessment accuracy, reducing administrative workload, and supporting better hiring decisions. This indicates that AI has transformed recruitment into a more efficient and data-driven process. The finding agrees with Tambe, Cappelli, and Yakubovich (2019), who established that AI improves HR decision-making through automation and analysis of workforce data. Similarly, Marler and Boudreau (2017) noted that digital technologies enhance evidence-based HR practices. However, the concerns raised by Köchling and Wehner (2020) regarding algorithmic bias highlight the need for ethical AI management and human supervision. The finding supports the Technology Acceptance Model (Davis, 1989), which suggests that perceived usefulness influences technology adoption.

Effect of Digital Transformation on Employee Performance Management in Organizations:

The study found that digital transformation improves employee performance management through enhanced monitoring, continuous feedback, improved communication, and effective evaluation processes. This shows that digital technologies have shifted

performance management from traditional periodic assessments to continuous and data-supported systems. The finding supports Verhoef et al. (2021), who emphasized that digital transformation improves organizational processes through technology integration. It also aligns with Strohmeier (2020), who argued that digital HR systems strengthen HR functions through improved information management. Furthermore, Tursunbayeva et al. (2018) highlighted that HR analytics supports better employee development and decision-making. However, organizations must address challenges such as digital skills gaps and resistance to technological change.

Digital Transformation as a Predictor of Human Resource Management Effectiveness

The study established that digital transformation significantly predicts HR management effectiveness by improving HR processes, reducing administrative tasks, enhancing decision-making, and strengthening strategic HR functions. This demonstrates that digital transformation has expanded HR's role beyond administrative responsibilities. The finding agrees with Bondarouk and Brewster (2016), who noted that electronic HR systems improve HR efficiency and strategic contribution. It also supports Marler and Boudreau (2017), who emphasized the importance of HR analytics in improving workforce decisions. However, as Vial (2019) explained, successful digital transformation requires organizational readiness, leadership support, and employee capability development. The finding also reflects the Resource-Based View theory (Barney, 1991), which identifies technological capability and skilled employees as valuable organizational resources.

Relationship Between Artificial Intelligence and Workforce Productivity in the 21st Century Workplace:

The study found that artificial intelligence has a positive relationship with workforce productivity by improving efficiency, supporting decision-making, reducing errors, and enhancing employee performance. This suggests that AI increases productivity by assisting employees in completing tasks more effectively. The finding aligns with Brynjolfsson and McAfee (2014), who argued that productivity gains occur when humans and digital technologies work together. It also agrees with Raisch and Krakowski (2021), who explained that AI creates value through human–technology collaboration. The International Labour Organization (2023) further noted that AI is changing workplace processes and creating opportunities for improved productivity. However, organizations need to invest in employee training and digital skills development to maximize AI benefits.

Conclusion

The study concluded that artificial intelligence and digital transformation have become critical drivers of human resource management effectiveness in the 21st century workplace. The findings demonstrated that artificial intelligence significantly enhances recruitment and selection effectiveness by improving the speed, accuracy, and efficiency of hiring processes. The study also established that digital transformation positively influences employee performance management through improved communication systems, performance monitoring, and organizational workflow processes. Furthermore, the study revealed that digital transformation significantly predicts overall human resource management effectiveness, while artificial intelligence maintains a strong positive relationship with workforce productivity. Based on these findings, it was deduced that organizations that effectively integrate artificial intelligence and digital technologies into their human resource management systems are more likely to achieve improved operational efficiency, enhanced employee productivity, and sustainable organizational competitiveness in the digital era.

Recommendations

- i. Organizations should integrate artificial intelligence technologies into recruitment and selection processes to improve hiring efficiency, reduce administrative workload, and enhance the quality of workforce selection.
- ii. Management of organizations should invest in digital transformation initiatives such as digital HR platforms, automated performance management systems, and cloud-based communication tools to improve employee performance management and organizational productivity.
- iii. Human resource personnel should be provided with continuous training and digital skill development programmes to enhance their competence in the use of artificial intelligence and digital HR technologies.
- iv. Government and organizational policy makers should develop supportive policies, infrastructure, and ethical guidelines that encourage the effective and responsible adoption of artificial intelligence and digital transformation in workplace management systems.

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