Utilization of Smart Technology on Performance Management in the Era of Society 5.0 : Literature Review Study

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Abstract

The integration of intelligent technology within performance management has emerged as a significant concern in the context of Society 5.0, wherein the synergy between humans and technology is essential for generating added value and enhancing productivity. Society 5.0 underscores the necessity for collaboration between advanced technological systems and societal frameworks, thereby necessitating an adaptive, data-driven, technology-based performance management system. This article offers a comprehensive literature review regarding the implementation of intelligent technology in performance management, with particular emphasis on technologies such as artificial intelligence (AI), the Internet of Things (IoT), big data, and analytics, all aimed at improving the efficiency and effectiveness of organizational performance. Through an examination of recent scholarly works, this article delineates the factors that influence the adoption of smart technology, the challenges encountered, and the prospective advantages for human resource management and organizational objectives. The findings indicate that smart technology not only enhances the performance measurement process but also facilitates accelerated and more precise decision-making based on real-time data. Nevertheless, the successful adoption of this technology necessitates readiness in digital infrastructure, transformation of organizational culture, and the presence of qualified human resource competencies. This article seeks to provide valuable insights for academics, practitioners, and policymakers in devising strategies for the implementation of smart technology within the Society 5.0 framework to promote sustainable improvements in organizational performance.

Keywords: Smart Technology; Employee Performance; Era Society 5.0

INTRODUCTION

Smart technologies, including Artificial Intelligence (AI) and big data, present significant opportunities for enhancing performance management in contemporary organizational settings. The use of real-time data enables managers to monitor performance with greater precision and provide timely, relevant feedback. Moreover, AI has the capability to predict employee training and development needs by analyzing historical performance patterns. Consequently, this technology has the potential to transform the assessment, management, and improvement of performance, facilitating a more personalized and sustainable approach to Human Resource (HR) development. AI offers numerous advantages across various domains, including services, industry, and society (Huang & Rust, 2018).

In the context of performance management, the integration of technology not only enhances financial efficiency within organizations but also addresses various societal challenges. These challenges include an aging population, progressive climate change, and social inequality. The implementation of technology across different sectors has precipitated significant transformations in both human lifestyles and work environments. A critical component of this shift is the management of Human Resources (HR) performance, which is profoundly influenced by advancements in intelligent technology.

Nonetheless, the incorporation of intelligent technology in performance management presents its own set of challenges. A primary concern is achieving a balance between technological implementation and the humanization of HR management. While technology has the potential to improve efficiency and precision, excessive reliance on it may diminish human interaction, adversely affecting employee intrinsic motivation and increasing stress levels due to stringent supervision. Consequently, performance management in the Society 5.0 era must consider how to leverage technology to facilitate comprehensive HR development while prioritizing essential human aspects such as employee welfare, psychology, creativity, and collaboration.

Currently, there is a notable shift in the role of HR within organizations. Employees are now expected not only to meet predefined targets but also to engage in continuous skill development, particularly in relation to new technologies and digital literacy. Concurrently, organizations must ensure that HR development is an ongoing process by providing relevant training, fostering innovation, and cultivating a work environment conducive to learning in accordance with contemporary demands. In this context, a performance management approach that is excessively rigid and solely outcome-focused may prove inadequate. A more flexible, adaptive, and data-driven approach is essential to accommodate the rapid changes characteristic of the Society 5.0 era.

Therefore, this study aims to examine the transformation of performance management in the Society 5.0 era through the utilization of intelligent technology and its implications for HR management within organizations. It is necessary to delineate the concept of intelligent technology in the realm of human resource management, particularly in terms of performance management. A suitable methodology for this examination is a systematic literature review (SLR). The objectives of this SLR study are to address the following research questions:

Q1. How does the application of intelligent technologies (AI, IoT, and big data) in performance management influence individual and organizational performance in the Society 5.0 era?

Q2. What is the impact of the implementation of intelligent technology on employee performance management?

Previous SLR research on artificial intelligence in human resource management has been conducted by Charlwood & Guenole (2022). While the potential applications of AI in human resource management are extensive, a disparity exists between targeted implementation and the current reality (Tambe et al., 2019). It is hoped that this research will contribute to the understanding of the utilization of intelligent technology in human resource performance management, as well as its implications, benefits, and challenges within the framework of corporate management.

LITERATURE REVIEW

Human resource management, as a pivotal component of corporate strategy, is undergoing significant adaptation in response to major technological advancements. The substantial advantages of artificial intelligence in strategic decision-making within management information systems underscore the necessity for diligent oversight to safeguard data security and integrity (Ramadhana, 2024). In this context, artificial intelligence has emerged as a transformative force in the ways organizations recruit, manage, and develop their workforce.

Performance management is a systematic process designed to ensure that the activities and outcomes of individuals, teams, or organizations align with established strategic objectives. Armstrong (2006) posits that performance management encompasses various activities, including the formulation of goals, the monitoring and evaluation of performance, the provision of feedback, and the development of employees to enhance productivity. The overarching aim of this process is to increase the overall effectiveness of the organization by maximizing the contributions of each human resource.

Goals and objectives (goal setting) are established collaboratively between the organization and the individual, delineating specific targets to be achieved within a designated timeframe. Secondly, performance monitoring and evaluation involve the periodic assessment of employees' work to ensure alignment with their established goals. Thirdly, feedback and training entail analyzing performance results to provide constructive input and identify areas that require further development. Fourthly, employee development encompasses providing necessary training to enhance skills and improve future performance.

Additionally, the factors influencing the adoption of artificial intelligence (AI) in management institutions in India are modeled, focusing on social impact and the attainment of improved outcomes (Priya et al., 2022). The historical trajectory of AI in human resource management has been marked by an increase in both research and practical applications aimed at enhancing various HR functions. The implementation of AI has the potential to improve professional performance, mitigate workplace burnout, and enrich the overall employee experience.

The concept of Society 5.0 was initially introduced by the Japanese government as a vision for a future society that thoroughly integrates digital technology into daily human life. Unlike the Society 4.0 era, which emphasized the internet-based industrial revolution and digitalization, Society 5.0 prioritizes the human element within technological innovation. In this context, technologies such as artificial intelligence (AI), big data, the Internet of Things (IoT), and robotics are utilized not only to enhance industrial efficiency but also to foster a more inclusive, prosperous, and sustainable society (Fukuyama, 2018).

In the context of Society 5.0, intelligent technologies such as artificial intelligence (AI), big data, and the Internet of Things (IoT) play a crucial role in enhancing performance management within organizations. The integration of smart technology with performance management is fundamentally transforming how organizations manage, assess, and foster employee performance. This synergy is particularly evident in several key areas, including Real-Time Performance Data Collection and Analysis, Improved Accuracy and Objectivity in

Performance Evaluation, Accelerated and More Effective Employee Feedback and Development, Automation of Performance Management Processes, Utilization of Data for Strategic Decision-Making, and the Challenges Associated with the Integration of Smart Technology and Performance Management.

In this contemporary landscape, the convergence of intelligent technology and performance management presents substantial opportunities to improve the efficiency, accuracy, and relevance of employee performance management practices. Nevertheless, the implementation of these technologies must be approached with caution to ensure that they support human well-being and contribute to the organization's long-term value.

METHODS

This study employed qualitative methods, specifically utilizing a Systematic Literature Review (SLR) approach. The SLR is integrated into the qualitative methodology as it involves a comprehensive review of published research accompanied by a descriptive analysis of the subject matter. SLR research systematically collects, critically evaluates, integrates, and presents findings from diverse studies related to a specific research question or topic of interest (López et al., 2021). The SLR framework facilitates the qualitative identification and synthesis of evidence, ensuring consistency and adherence to established methodological conventions (Mays & Pope, 2000; Mays & Pope, 1995).

Review Structure

This study employs a systematic review approach to investigate the relationship between two significant phenomena: the use of smart technology and performance management. By conducting a structured and comprehensive review of the existing literature, we aim to identify trends, insights, and knowledge gaps related to the use of smart technology and performance management in the context of Society 5.0.

Strategy

The subsequent step involved conducting a systematic and comprehensive review of the existing literature from prior studies. The author employed relevant databases and keywords to identify articles that met the established inclusion criteria. The Scopus database was selected due to its esteemed reputation for journals and its rigorous selection process. The keywords used in the systematic search included "utilization of intelligent technology," "performance management," and "the era of Society 5.0." The selection of these keywords was guided by the objectives of the systematic literature review, specifically to explore the relationship between "utilization of intelligent technology in human resource performance management during the era of Society 5.0," with the review encompassing studies published between 2013 and 2023.

Study Election

The methodology for study selection adhered to the guidelines outlined in the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) (Moher et al., 2010).

Journal Selection and Inclusion/Exclusion Criteria

The author retrieves articles by utilizing phrases or sentences entered into a search engine to locate relevant information, which is subsequently filtered. The eligibility of the articles for

inclusion in the review is assessed based on established inclusion and exclusion criteria. The inclusion criteria employed in this systematic literature review are as follows: 1) publication within the last five years, 2) classification as scientific papers, 3) authorship in English, 4) relevance to the fields of Business, Management, and Accounting, and 5) availability of full-text access.

The initial search of the selected database, utilizing specific keywords, yields a total of 5,468 articles. The first step involves the removal of duplicate entries and the exclusion of articles published prior to the last five years, resulting in the elimination of 2,654 articles from further consideration. The subsequent screening phase applies the inclusion and exclusion criteria to the 2,803 articles that remain. In this stage, articles that do not qualify as scientific papers are removed, leading to a further reduction of 2,665 articles. The third criterion requires that all articles be published in English; as a result, 89 articles fail to meet this requirement and are excluded. The fourth criterion necessitates that only articles with full-text accessibility be retained, yielding a total of 1,437 articles. The fifth criterion focuses on selecting articles specifically related to Business, Management, and Accounting, which results in a final pool of 100 articles. To ensure objectivity in this systematic literature review, the full text of all selected articles was downloaded and analyzed.

Appendix 1 illustrates the various steps undertaken by the author in the search for articles and the implementation of the inclusion and exclusion criteria.
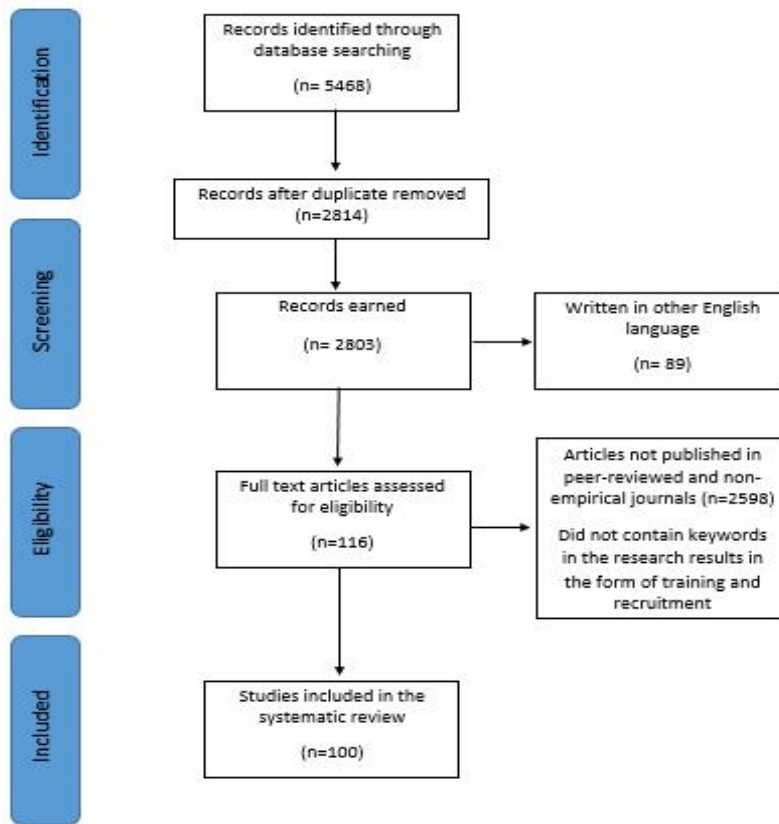
RESULTS AND DISCUSSION

Developments in the Use of Smart Technology

The first step in the process of having a systematic literature review is to reveal the year of publication of articles. Over the past 10 years, intelligent technology has shown its use in human resource performance management in 2018 (Allen et al., 2018), with an average of two articles published throughout 2018-2021, as well as a graph of the increasing use of intelligent technology in human resource performance management in 2022 and 2023. Because it coincides with the current era of technology 5.0, the use of intelligent technology continues to be intensified in any business line. This growth is indicated by statistics showing that 50% of companies are using AI, big data, and other technologies. This study can illustrate that the growth that occurs in 2024 in intelligent technology will increase.

Journal Publications

The next stage of this systematic literature review is to examine journals that contain articles related to smart technology in performance management in the era of society 5.0.

Table 1. Title, Number of Top Citations and Journal Results

Title	Number of Citation	Summary of Journal Results

The impact of Industry 4.0 on organizational performance: the case of Pakistan's retail industry	49	There are five core technologies of Industry 4.0 (3D Printing, Big Data Analytics, Cloud Computing, Internet of Things (IoT) and Robotics). These five technologies influence the organizational performance of the retail industry in the Pakistani context. The disruptive technologies of Industry 4.0, especially 3D printing, big data analytics, cloud computing, IoT and robotics, can help Pakistan's retail industry solve various problems and challenges, such as meager revenues, increasing costs. and disorganized systems.
Integrating artificial intelligence into a talent management model to increase the work engagement and performance	55	AI supports the acquisition and retention of talented employees, AI supports the right employee training and development, the right teams, AI-powered organizational culture, AI-powered leadership, reducing employee workload with AI has a positive impact on company performance and employee engagement. The use of AI will help managers or owners create a successful work environment by implementing artificial intelligence in the company, thereby increasing employee engagement and company performance.
Assisting artificial intelligence adoption drivers in human resources management: a mediation model	8	Adoption of artificial intelligence (AI) and the mediating effect of trust and how trust influences human resource (HR) management in the banking sector in Saudi Arabia. Significant and positive impact of perceived

		usefulness and trust on the application of artificial intelligence in human resource management. The indirect effect of trust between perceived benefits and application of AI in human resource management was also found to be significant.
The Role of Information Technology Governance Implementation Information Technology Governance (IT Governance as an Important Factor in Important Factors in Improving Company Performance	15	The implementation of information technology governance (IT Governance) plays an important role in the use of information technology so that it is in accordance with the company's vision, mission and goals. Many companies have not implemented IT Governance due to various factors such as: internal companies that reject the application of information technology, limited human resources who have mastered information technology competencies, unavailability of frameworks and policy bases. in the information technology environment, lack of commitment from top management, high investment costs in IT Governance and so on. The greater use of technology is not accompanied by greater support for strategy achievement so that the investment made is in vain.
Using natural and artificial intelligence in the talent management system	29	The use of natural and artificial intelligence in talent management systems in the Moscow Region. The extent of use of talent management technologies, tools, the ratio of demand for natural and artificial intelligence in talent management, and the level of

		employee trust in humans (robots) in management are analyzed. It is proven that personnel management services and company management do not effectively use natural intelligence within the framework of talent management systems, relying on special opportunities and approaches. Ambiguities in the assessment of artificial intelligence by employees and company management are revealed. The author considers the problem of identifying the ratio of artificial and natural intelligence in talent management for the first time, human resource management systems, as well as good support for management decision-making in the application of artificial intelligence in business processes and organizational management.
Employability prediction: a survey of current approaches, research challenges and applications	58	The job market landscape is increasingly dynamic and continues to evolve due to globalization, automation and recent advances in Artificial Intelligence. Identifying important factors influencing employability, as well as new job market requirements can be of great help to all stakeholders. Data-based techniques and machine learning have been widely used in various fields of educational data mining. An increasing number of studies are investigating data mining techniques for employability prediction which enables the application of data mining for employability.

Systematic Review: Strategies for Empowering MSME Actors Towards a Digital Economy Through Social Action	45	Changes in consumer behavior in the digital era can be an opportunity for small and medium enterprises (MSMEs) to expand market access. This is also a challenge for MSMEs to adapt. This research analyzes strategies for empowering MSME actors towards digital through social action, namely Volunteers, MSME Community, Digital Economic Clinic, Smart Village Model and Economic Heroes by providing continuous assistance and collaborating with various parties. This research is used to design a curriculum for development and empowerment of MSME subjects towards digitalization of social roles in providing contributions and solutions to problems faced in reducing the digitalization gap between villages and cities.
Toward cooperative competitiveness for community development in Economic Society 5.0	73	Economic Society 5.0 is an answer to the challenges of the Industrial Revolution 4.0 through the creation of new value from advanced technological developments which aims to reduce the gap between human and economic problems. Superior human resources and adequate digital infrastructure are requirements for Economic Society 5.0. Digital orientation and government support have a positive and significant effect on digital innovation, on the contrary; digital capabilities and employee resistance did not show any influence. Digital orientation, government support and digital capabilities also have a positive

		and significant effect on competitiveness.
Facilitating performance measurement and management through digital business strategy	10	The focus of the research was to determine the relationship between digital business strategy and performance measurement and management (PMM). The aspects that make up a digital business strategy are grouped into five main dimensions: understanding of technology, goals, resources, management and responsibility. The research results reveal a direct and positive relationship between goals and management regarding digital business strategy and PMM.
The effects of digital business strategy on the collaboration performance of companies: the moderating effect of digitally enabled performance measurement	10	This research aims to investigate digital business strategy as a key to facilitating collaboration across organizational boundaries. His study focuses on the relationship between digital business strategy and collaboration performance. The author identifies five types of digital business strategy elements based on the literature: development, goals, resources, management capabilities, and digital leadership. the influence of digital business strategy on collaboration performance can be moderated by digitally enabled performance management.

THEORETICAL AND PRACTICAL IMPLICATIONS

Theoretical Implications

Economic Society 5.0 emerged as an answer to the challenges of the Industrial Revolution 4.0 through the creation of new value from the development of advanced technology that aims to reduce the gap between human and economic problems. The job market landscape is now increasingly dynamic and continues to evolve due to globalization, automation, and recent advances in Artificial Intelligence. This encourages organizations to plan, manage, and utilize their human resources more effectively. HR managers and HR professionals need to improve their understanding of the use of technology such as the five core technologies of Industry 4.0 (3D Printing, Big Data Analytics, Cloud Computing, Internet of Things (IoT) and Robotics). These five technologies impact organizational performance and data analysis to utilize the full potential of the implemented system.

The implementation of information technology governance (IT Governance) plays an important role in the utilization of information technology to be in accordance with the company's vision, mission and goals. The implementation of this intelligent technology allows for enriching the understanding of the interaction between humans and machines in the context of the work environment. This can provide deeper theoretical insights into organizational dynamics and employee productivity.

Practical Implications

Based on the journals that have been presented above, the results of the journal can help plan and implement the application of smart technology in employee performance management starting from recruiting the best candidates more efficiently. This can reduce the time and costs used in the recruitment process. With careful data analysis, companies can identify areas where employees can improve their productivity. The use of smart technology in performance management can speed up the decision-making process and allow companies to allocate resources better. Smart technology can help reduce bias in HR decision-making, such as in the recruitment process, promotions, and employee assessments. This helps ensure that decisions made are based on data and not on preferences or stereotypes. The use of intelligent technology in performance management will help companies manage their human resources. This provides a better employee experience through more efficient time management, customized training, and better internal communication. With careful data analysis, companies can identify factors related to employee turnover and take preventive measures to retain valuable talent.

The use of intelligent technology also allows companies to be more responsive to changes in the work environment, including market changes and technology needs, by providing faster and more accurate data insights. Planning, provisioning and supervision of the use of intelligent technology are also parts that must be made systematically. The use of proving operational efficiency, but also about improving the employee experience and helping companies achieve their long-term goals.

Some things to keep in mind that the use of smart technology also presents challenges, such as data security, privacy, and ethics, which must be handled carefully. There are still many companies that do not apply smart technology in employee performance management, this is caused by various factors such as internal companies that reject the application of information technology, limited human resources who master information technology competencies, the unavailability of a framework and policy basis in the technology environment, information, lack of commitment from top management, high investment costs in IT Governance and so on.

CONCLUSIONS AND RECOMMENDATION

The purpose of this study is to review the literature on the use of intelligent technology in performance management. First, this review aims to synthesize the literature on the use of intelligent technology in performance management and examine its development over time. Second, the purpose of this study is to present a conceptual framework based on the literature synthesis conducted. Based on this, a conceptual framework is developed. Future research in the domain of the use of intelligent technology in performance management aims to examine in depth the extent of the positive and negative impacts of intelligent technology and performance management on companies.

The authors acknowledge that this study has several limitations, such as the fact that the articles analyzed were at the top of the list of articles that met the inclusion and exclusion criteria. Therefore, the findings of this study cannot be generalized to all research on the use of intelligent technology in performance management in the era of society 5.0. In addition, this study only reviewed articles written in English, so studies conducted in other languages were not included in this review.

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