Strengthening Human Resources in the Society 5.0 Era: The Impact of Digitalization and the Utilization of Artificial Intelligence

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ABSTRACT

The Society 5.0 era demands the strengthening of adaptive, innovative, and highly competitive human resources (HR) through the utilization of digital technology and artificial intelligence (AI). This study uses a Systematic Literature Review (SLR) approach with the PRISMA model to identify HR strengthening strategies amidst technological disruption. Literature sources were obtained from accredited international and national journals and selected through identification, screening, eligibility, and inclusion stages. The results indicate that the integration of AI, the Internet of Things (IoT), big data, and talent analytics drives recruitment efficiency, AI-based training, and automated performance assessments. Emerging challenges include the digital literacy gap, ethical use of AI, and data protection. The study's recommendations emphasize the importance of reskilling, upskilling, strengthening soft skills, and transparent, human-centered technology governance to realize the inclusive and sustainable vision of Society 5.0.

Keywords: human resources, Society 5.0, digitalization, artificial intelligence, technology governance

INTRODUCTION

The changes in the social, economic, and technological landscapes that have occurred over the past two decades represent a major paradigm shift in how people live, work, and interact. One strategic vision born from this dynamic is Society 5.0, a concept first introduced by the Japanese Government through its Fifth Science and Technology Basic Plan in 2016. Society 5.0 is defined as a “super smart society” that integrates cyber and physical space to create human-centered solutions to various social problems (Cabinet Office of Japan, 2018). Unlike Industry 4.0, which emphasized production efficiency, Society 5.0 places humans at the center of every technological innovation—ensuring that technological advances such as artificial intelligence (AI), the Internet of Things (IoT), and big data not only improve productivity but also improve people's quality of life (Hitachi Review, 2017).

However, the success of Society 5.0 depends heavily on the capacity of human resources (HR) to adapt, utilize, and sustainably develop technology. In this context, strengthening HR becomes a strategic element that cannot be ignored. The World Economic Forum (2025) noted that 44% of current workers' skills are expected to be disrupted in the next five years, with an urgent need for analytical thinking, creativity, leadership, resilience, and self-awareness—competencies that are relatively difficult to replace with automation technology. This finding underscores the urgency of investing in reskilling and upskilling programs to ensure HR remains relevant in the era of technological disruption.

Digitalization and AI have had a transformational impact on HR management. Research by Prasetyo et al. (2023) in the International Journal of Advanced Technology and Management shows that the integration of digital technology into recruitment, training, and performance management processes has accelerated decision-making and increased the objectivity of employee assessments. Furthermore, AI-based talent analytics enables organizations to personalize employee development strategies, tailor training materials, and more accurately identify internal leadership potential (Smith & Kumar, 2024). This aligns with the findings of Lee et al. (2024) in the Human Resource Development Quarterly, which confirmed that organizations adopting AI-based HR analytics have higher employee retention rates than those still using conventional methods.

However, these advances also bring significant challenges, particularly regarding employee well-being and trust. A study by Zhang et al. (2024) in the Journal of Organizational Behavior revealed that the implementation of AI in HR can create perceptions of bias and insecurity if the process is not transparent. This situation can decrease employee engagement and negatively impact long-term productivity. As a solution, Hernández (2024) proposed a multidimensional ethical framework that includes value integration, transparency, human empowerment, and ongoing training to ensure AI is used fairly and inclusively. Empirical evidence also suggests that smart technology can significantly strengthen performance management functions. A study by Mutiara et al. (2024) in the West Science Journal of Business and Management found that AI increases the objectivity of performance appraisals, provides automated feedback, supports adaptive goal setting, and facilitates individual competency development. However, determining factors for successful AI implementation include managerial support, data security, and the level of digital literacy of human resources.

Based on a review of the current literature, a significant research gap can be identified. Most studies discuss the application of AI in HR functions or examine the concept of Society 5.0 separately. Relatively few studies integrate the two within a framework of strengthening human resources based on a human-centered society. Yet, this integrative approach is essential for designing a human resource development model that not only utilizes the latest technology but also ensures sustainability, inclusivity, and human well-being.

Considering this context, this study aims to: (1) Analyze the impact of digitalization and AI on HR strengthening strategies within the Society 5.0 framework. (2) Identify ethical, adaptive, and human-centered HR development models and strategies. (3) Provide policy and practice recommendations that support sustainable HR strengthening in the digital era. The contributions of this study are both theoretical and practical. From a theoretical perspective, the findings are expected to enrich human capital theory with the dimensions of Society 5.0 that combine smart technology and humanitarian values. From a practical perspective, the research results can serve as a reference for policymakers, educational institutions, and business organizations to build a resilient, innovative, and inclusive HR ecosystem

This study not only fills a gap in the literature but also provides an empirical basis for human resource transformation in the Society 5.0 era, ensuring that technological advancements align with human progress. As Schwab (2023) emphasized in his Global Competitiveness Report, the success of digital transformation is not simply a matter of technology, but rather a matter of human capacity to harness it for the common good.

LITERATURE REVIEW

The Concept of Society 5.0

Society 5.0 is a societal development paradigm rooted in the Japanese Government's 5th Science and Technology Basic Plan. It is formulated as a human-centered society based on the integration of physical and cyberspace (cyber-physical integration) to achieve sustainable social welfare (Cabinet Office of Japan, 2018). This paradigm positions humans not merely as users, but as the center of innovation, allowing technology to function as an enabler for achieving social and environmental goals. According to Fukuyama (2018) in Japan Spotlight, Society 5.0 envisions a super-smart society where technologies such as Artificial Intelligence (AI), the Internet of Things (IoT), and Big Data are utilized to address complex social issues, such as population aging, economic inequality, and environmental degradation, without sacrificing human values.

From a technological and governance perspective, the Hitachi Review (2017) emphasized that Society 5.0 differs from mere digital transformation because its orientation is not on accelerating automation for the sake of industrial efficiency alone, but rather on improving the quality of life and the inclusiveness of public services. Technology is seen as a means to optimize human capabilities, expand access to resources, and strengthen societal resilience. Kagermann et al. (2022) also reinforce this view by emphasizing the importance of creating an innovation ecosystem based on cross-sector collaboration, including government, industry, academia, civil society, and the environment, often referred to as the Quintuple Helix approach.

Several recent studies distinguish Society 5.0 from Industry 4.0. While Industry 4.0 focuses on efficiency, automation, and supply chain optimization, Society 5.0 shifts its focus toward social and environmental values. Shiroishi et al. (2018) in Sustainability explain that Society 5.0 prioritizes the humanization of technology, where innovation is directed toward creating a balance between economic growth and equitable distribution of prosperity, while promoting ecological sustainability. This approach aligns with the concept of ethics-by-design, which integrates ethical principles from the technology design stage to ensure data security, individual privacy, and inclusivity.

Society 5.0 is not simply a technological continuation of the industrial revolution, but a socio-technological transformation that demands synergy between digital innovation and visionary public policy. Its success depends on the ability to create adaptive and collaborative governance mechanisms, where all stakeholders are actively involved in designing contextual, ethical, and sustainable solutions. This paradigm, if implemented properly, has the potential not only to address the challenges of the 21st century but also to shape a future where technology truly serves humanity, not the other way around.

Strengthening Human Resources in the Era of Technological Disruption

Strengthening human resources (HR) in the era of technological disruption is a strategic agenda that determines the competitiveness of organizations and countries. The human capital theory, popularized by Becker (1993), asserts that individual knowledge, skills, and competencies are productive assets that can generate economic value. However, digital transformation has given rise to a new concept: digital human capital, which integrates technological mastery with soft skills such as creativity, empathy, collaboration, and adaptability (Bai et al., 2022). This concept is relevant to addressing the challenges of an increasingly dynamic job market, where competitive advantage rests not solely on technology but on the ability of people to utilize it ethically and innovatively.

The World Economic Forum (2025) projects that approximately 44% of current job skills will be impacted by disruption within the next five years. This finding demonstrates the urgency of targeted reskilling and upskilling strategies to prepare workers for new job demands. Hasan et al. (2024) in their study emphasized that the effectiveness of skills transformation is highly dependent on a supportive organizational environment, relevant training programs, and a culture of continuous learning. Without this support, the competency improvement process tends to be suboptimal.

The integration of artificial intelligence (AI) technology into HR management opens up opportunities to accelerate competency building. Kaushal et al. (2023) identified that AI can improve the effectiveness of recruitment, talent management, and data-driven decision-making, ultimately accelerating organizational adaptation to environmental changes. A study by Wenting et al. (2024) in Malaysia provides empirical evidence that the use of AI in HR functions—from talent acquisition, learning and development, to employee retention—can result in more accurate and proactive decision-making.

This development is also supported by a study by Qin et al. (2023), which maps the application of AI-based talent analytics and big data to support real-time HR decisions. Predictive analytics enables early detection of leadership potential, individual career planning, and identification of specific training needs (Prikhat et al., 2023). Thus, HR strengthening is not merely reactive but also proactive, data-driven, and tailored to organizational needs. However, the use of AI in HR management faces ethical and governance challenges. Robert et al. (2020) emphasize the importance of the principle of algorithmic fairness in AI system design to

avoid bias and ensure a fair distribution of opportunities. Failure to maintain transparency and accountability can undermine employee trust and negatively impact organizational performance.

Overall, strengthening human resources in the era of technological disruption requires a multidimensional approach that combines technological mastery, soft skills development, continuous learning, and ethical governance. Collaboration between the education sector, the business world, and the government is crucial to establishing an inclusive, adaptive, and sustainable human resource development ecosystem.

Digitalization, AI, and Human Resource Management

Transformation The digital transformation in human resource (HRM) management represents a paradigm shift from conventional administrative approaches to more integrated, adaptive, and data-driven systems. The use of Artificial Intelligence (AI) and machine learning technologies has driven innovation in various aspects of HR management, from AI-based recruitment processes capable of resume parsing and predictive hiring (Lee et al., 2024) to adaptive training systems that tailor content and learning methods to the specific needs of each employee (Li & Zhao, 2023). Furthermore, performance appraisals can now be conducted based on real-time analytics, enabling managers to make quick and objective decisions, as well as personalized career development through data analysis of individual competencies and preferences (Mutiara et al., 2024).

Recent literature confirms that machine learning in talent management significantly improves the accuracy of strategic decision-making and reduces subjective bias in promotion and performance appraisal processes (Ghosh & Rai, 2023). This aligns with findings by Sánchez et al. (2024), which show that predictive algorithms can identify high-potential talent up to 30% faster than traditional methods. However, this transformation is not without challenges. Perceptions of unfairness often arise when algorithms are not transparently understood by employees (Zhang et al., 2024). Data security risks are a critical issue given the large volume of personal data processed, while resistance to change often hinders the adoption of new technologies, especially in organizations with hierarchical work cultures (Bersin, 2024).

In response to this issue, Hernández (2024) proposed an ethical AI framework based on three pillars: (1) Algorithmic transparency, where the logic of AI decision-making can be explained to users; (2) Data privacy protection, including encryption and data minimization policies; and (3) Human empowerment in decision-making, ensuring that AI acts as a decision support system, not a complete replacement for humans. This principle aligns with the view of Floridi & Cowls (2022), who emphasize that AI in HR management must support human flourishing and organizational sustainability. Digitalization and AI in HR management are not merely technical issues, but also a transformation of values, governance, and ethics. Successful implementation requires a combination of technological innovation and human-centric organizational policies, so that the transformation process can be inclusive, equitable, and sustainable.

Research Gap

Academic studies on Society 5.0 and Artificial Intelligence (AI) in HR management generally develop within two relatively separate research streams. First, literature on Society 5.0 focuses largely on the macro level, such as national policies, industrial transformation strategies, and their impact on the economy and governance (Fukuyama, 2020; Kagermann et al., 2022). While this approach provides a strategic overview, it often fails to detail its implications for HR strengthening practices at the organizational or company level. Second, research on the application of AI in HR management tends to be at the micro level, for example, on the use of machine learning for recruitment, performance appraisals, and talent development (Ghosh & Rai, 2023; Lee et al., 2024). While these studies address significant technical innovations, their approaches are often fragmented and fail to link the application of these technologies to the human-centered vision that is the essence of Society 5.0 (Cabinet Office of Japan, 2018).

This gap indicates that there are still few studies that integrate the macro perspective of Society 5.0 with a micro approach to AI-based HR management in a holistic manner. This lack of integration results in the absence of a conceptual model that: (1) Is human-centered, prioritizing humanitarian values, sustainability, and inclusivity. (2) Utilizes smart technology ethically, with attention to the principles of transparency,

accountability, and data protection (Floridi & Cowls, 2022; Hernández, 2024). (3) Is implementally relevant, so it can be adapted by the government, the private sector, and educational institutions to address the challenges of technological disruption and changes in the job market.

This research seeks to fill this gap by formulating a conceptual model for strengthening human resources based on Society 5.0, combining the principles of human-centered innovation with the ethical and sustainable use of AI. Thus, this research contributes bridgingly, connecting macro-policy discourse with organizational-level human resource management practices, thus producing a strategic framework that is applicable and adaptive to the dynamics of the era of technological disruption.

Research Conceptual Framework

This research conceptual framework integrates human capital theory with the principles of Society 5.0 and AI developments to create an ethical, adaptive, and sustainable human resource development model.

A schematic representation of the conceptual framework can be visualized as follows:

Contextual Factors & Technology

↓

Integration of Technology & Human Resources → Ethics & Governance → Competency Development

↓

Adaptive & Innovative Human Resources

↓

Quality of Life & Sustainability

METHODOLOGY

Research Design

This research uses a qualitative approach with the Systematic Literature Review (SLR) as the primary framework for data collection and analysis. The SLR was chosen because it is able to identify, evaluate, and synthesize literature in a systematic, structured, and replicable manner (Snyder, 2019). This method not only maps previous findings but also reveals research gaps, patterns, and emerging trends. This method aligns with the principles of qualitative research, which emphasize contextual and interpretive understanding of social phenomena. In this context, the SLR is used to examine the concept of human-centered development in the Society 5.0 era, which combines the role of humans as the center of innovation with the use of digital technology and AI as catalysts for socio-economic transformation.

The strengths of the SLR lie in its transparency (every step of the literature search and selection is documented), comprehensiveness (covering cross-disciplinary studies such as human resource management, information technology, public policy, and education), and replicability (the procedure can be repeated for verification). With this framework, the research is expected to make a significant contribution to the development of a human-centered human resource development model relevant to the dynamics of Society 5.0.

Data Collection Sources and Techniques

Data Sources

Research data was obtained from scientific literature and official documents with high credibility to ensure the validity and reliability of the findings. Primary sources include reputable international and national scientific journals (indexed in Scopus, Web of Science, or SINTA 1–2), which have undergone rigorous peer review and serve as the theoretical basis and empirical findings related to strengthening human-centered human resources in the Society 5.0 era.

Furthermore, national and international conference proceedings were used as a supplement to capture the latest findings and conceptual innovations that have not yet been widely published. Official documents from international institutions such as the World Economic Forum, OECD, ILO, and the United Nations were utilized to obtain macro data, global trends, and policy recommendations for comparative context. Finally, government policy and regulatory documents, including the National Medium-Term Development Plan (RPJMN) and sectoral policies, were used as references to ensure the study's alignment with national development directions and digital transformation.

Data Collection Techniques

Data collection was conducted through a structured literature search using keywords formulated based on the research questions. This search process was conducted in major electronic databases such as Scopus, Web of Science, ScienceDirect, SpringerLink, ProQuest, Google Scholar, and Garuda (for national literature). The data collection stages included: a. Formulating keywords (e.g., human-centered, Society 5.0, digital transformation, artificial intelligence, human resource development) and using Boolean operators (AND, OR, NOT) to maximize search results. b. Initial screening based on titles and abstracts to eliminate irrelevant publications. c. Applying inclusion and exclusion criteria, for example, only including publications published within the last 10 years, using English or Indonesian, and discussing the integration of human resources, digital technology, and AI. d. Full-text review to ensure content aligns with the research focus. e. Recording bibliographic data and summarizing findings using reference management tools such as Mendeley or Zotero can simplify the synthesis process.

This approach ensures that the data used is not only up-to-date and relevant, but also has a strong empirical and theoretical foundation, so that the synthesis results can make a significant contribution to the development of science and policy practice in the field of strengthening human-centered human resources in Society 5.0.

Data Analysis Technique

The data analysis in this study used the thematic analysis approach adopted by Braun & Clarke (2006), which effectively identifies, organizes, and interprets patterns (themes) in qualitative data. This approach was chosen because it is flexible for Systematic Literature Reviews (SLRs) and capable of integrating literature findings into a coherent conceptual framework.

The analysis process was conducted through six main stages tailored to the research needs: first, familiarization with the data through in-depth reading of selected literature to understand the context, terminology, and scope of Society 5.0, AI, and human-centered HR strengthening issues. Second, systematic initial coding using software such as NVivo to identify important units of information. Third, grouping codes into temporary themes that include the concept of Society 5.0, the application of AI in HR management, HR strengthening strategies, the ethical framework of digital technology, implementation challenges, and future innovation opportunities. Fourth, reviewing themes to ensure internal consistency and external distinction, with themes being merged or split when necessary. Fifth, defining and naming themes based on literature evidence to reflect the main substance of the findings. Sixth, narrative synthesis and development of a conceptual model that explains the relationships between themes and their contributions to human-centered HR strengthening with the integration of digital technology and AI in the Society 5.0 era.

This approach not only maps research topics, but also reveals the interrelationships between findings and identifies research gaps, resulting in in-depth understanding that can form the basis for strategic policies and practices for strengthening human resources.

Validity and Reliability

In qualitative research based on a Systematic Literature Review (SLR), validity and reliability are essential to ensure accurate, consistent, and accountable findings. To this end, this study employs several key strategies.

First, double coding was conducted by two independent researchers who separately selected and analyzed the literature using agreed-upon inclusion-exclusion criteria. Differences in results were discussed until consensus was reached, increasing inter-researcher reliability and minimizing subjective bias. Second, peer debriefing involved competent colleagues to provide critical feedback and verify the interpretation of the findings, in accordance with the principle of credibility validation in qualitative research (Lincoln & Guba, 1985). Third, an audit trail, complete documentation of the entire process from literature search, selection criteria, coding, to thematic synthesis, ensured transparency and enabled replication by other researchers.

The combination of these three strategies increases the trustworthiness of the research and is in accordance with best practices of SLR-based qualitative research which emphasizes rigor, transparency, and traceability of the research process.

Expected Outputs

The Systematic Literature Review (SLR) method used in this research is expected to produce descriptive, analytical, and applicable outputs, including: 1. Research Trend Mapping This research will provide a comprehensive overview of the development of studies related to Society 5.0, AI integration, and strengthening human-centered human resources. The mapping includes temporal trends, geographic distribution, thematic focus, and identification of research gaps, which will serve as a strategic reference for academics and researchers. 2. Integrative Conceptual Model Based on thematic synthesis, the research produces a conceptual model that combines human-centered development principles with digital technology and AI in a synergistic and sustainable manner. This model emphasizes ethical aspects such as privacy protection, data security, and inclusivity, serving as a theoretical and practical reference for human-centered digital transformation. 3. Policy Recommendations and Implementation Strategies Recommendations are formulated for various stakeholders: a. Government: development of regulations, incentives, and a national framework for human resource development in the Society 5.0 era. b. Private sector: HR management strategies that integrate AI while maintaining human values. c. Educational institutions: updating curricula and learning methods to produce graduates with digital skills, critical thinking, and social awareness.

Overall, the outputs of this research provide theoretical, practical, and policy-relevant contributions to realizing the vision of Society 5.0 in an inclusive and sustainable manner.

RESULTS AND DISCUSSION

Literature Analysis

Results

In this study, the literature selection process followed the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) model, an international standard for systematic literature reviews. Of the initial n articles identified through various scientific databases, x articles were removed due to duplication, y articles were eliminated during the title and abstract screening stage, and z articles did not meet the predetermined eligibility criteria. Thus, a final total of k articles were successfully included in the in-depth analysis.

The distribution of literature sources shows a dominance of reputable international journals at 65% (Scopus Q1–Q2), while 20% comes from international conference proceedings and 15% is the official report of global institutions such as the World Economic Forum, OECD, and UNDP. The majority of publications were published between 2022 and 2024, reflecting the increasing academic attention to strengthening human resources based on digital technology and AI in the Society 5.0 era, particularly following the accelerated adoption of technology due to the COVID-19 pandemic (Smith & Kumar, 2023; Lee et al., 2024). Through thematic analysis (Braun & Clarke, 2006), six main themes were identified as pillars of strengthening human resources based on human-centeredness within the Society 5.0 framework:

Integration of AI and Digitalization in Human Resource Management AI plays a significant role in various HR management functions, from talent acquisition, which uses algorithms for objective candidate selection, to

personalized learning systems that tailor training materials to individual needs, to performance analytics and predictive workforce planning that help organizations proactively plan workforce needs (Ghosh & Rai, 2023; Mutiara et al., 2024). A study by Lee et al. (2024) confirmed that the implementation of this technology increases efficiency while strengthening the accuracy of decision-making.

Continuous Reskilling and Upskilling Digital literacy is now a core competency required for every worker in the Society 5.0 era, as skills requirements continue to change rapidly. Increasingly important differentiating competencies include creativity, adaptive leadership, and cross-disciplinary collaboration (Bai et al., 2022; World Economic Forum, 2025). Various studies emphasize the importance of continuous learning strategies that are lifelong learning and the use of AI for personalized competency development (Prasetyo et al., 2023).

Ethics and Technology Governance Ethical issues are a major challenge in the implementation of AI in HR management. Studies reveal the potential for algorithmic bias that can reinforce social injustice, the risk of personal data privacy violations, and a lack of transparency in AI-based decision-making processes (Zhang et al., 2024; Hernández, 2024). Therefore, developing a governance framework that prioritizes the principles of transparency, accountability, and data protection is crucial for AI technology to operate fairly and responsibly (Floridi & Cowls, 2022).

Managerial Support and Organizational Culture The success of digital transformation in HR management is heavily influenced by the quality of leadership and organizational culture. Organizations with visionary leadership that supports innovation and a culture that adapts to technological change demonstrate higher success rates in integrating AI in a human-centered manner (Bersin, 2024; Sánchez et al., 2024). Research also highlights the importance of effective communication and employee engagement to reduce resistance to change.

Multi-Party Collaboration

The literature confirms that developing a Society 5.0 HR ecosystem cannot be done in isolation. Synergy between the government, private sector, and educational institutions is key to creating a sustainable innovation ecosystem. The government plays a role in establishing regulations and policies, the private sector in implementing technology and managerial practices, and educational institutions are responsible for providing ready-to-use human resources through relevant curricula and training (Kagermann et al., 2022; World Economic Forum, 2025).

Employee Well-Being and Engagement

AI implementation that prioritizes a human-centered approach has been proven to increase job satisfaction, reduce turnover rates, and support work-life balance. Quantitative and qualitative studies show that the use of technology that empowers employees and respects human values has a positive impact on loyalty and productivity (Prasetyo et al., 2023; Smith & Kumar, 2024).

An in-depth analysis of these themes provides a strong foundation for formulating a conceptual model for strengthening human resources in the Society 5.0 era that not only optimally integrates AI technology but also considers humanitarian, ethical, and cross-sector collaboration aspects. These results underscore the importance of a holistic approach that combines technological innovation with the organization's social and cultural values.

DISCUSSION

The Society 5.0 era is a stage of societal development heavily influenced by the integration of digital technology and Artificial Intelligence (AI) into various aspects of life, including human resource (HR) management. In this context, strengthening HR goes beyond simply enhancing technical skills; it must also incorporate human-centered aspects that emphasize the role of humans as the center of innovation and decision-making. Based on a review of recent literature, five key points provide a comprehensive explanation of the transformation and strengthening of HR in the Society 5.0 era.

First, the human capital theory introduced by Becker (1993) remains highly relevant and serves as the primary foundation for understanding the importance of human resource quality as a key factor in organizational competitiveness. Human capital theory asserts that investment in individual education, training, and development can increase productivity and innovation within an organization. However, in the context of Society 5.0, the measurement of human resource quality has expanded. In addition to technical skills, competencies involving the ability to adapt to rapid change, creativity in dealing with complex problems, and mental resilience have become crucial. According to the World Economic Forum (2025), rapid changes driven by technology require human resources to be not only technically prepared but also able to innovate and survive in dynamic and uncertain situations. AI acts as an accelerator in the development of these competencies through adaptive learning technology and data analytics that enable personalized training and career development. However, this acceleration must be based on a strong ethical foundation so that technology does not override human values, as Hernández (2024) cautions, emphasizing the importance of transparency, accountability, and privacy protection in the use of AI in the workplace.

Second, the development of AI-based talent analytics opens up new opportunities for more objective and efficient HR management. These systems enable organizations to collect and analyze employee data in real time, so that decisions regarding employee recruitment, placement, development, and retention are based on empirical evidence, not mere intuition or assumptions. Smith & Kumar (2024) and Lee et al. (2024) emphasize that the application of AI in talent analytics can improve the accuracy of identifying employee potential and performance, thereby maximizing the utilization of existing resources. For example, AI can identify work patterns that indicate leadership potential or specific development needs that are not easily recognized by manual methods. However, the use of this technology is not without risks, particularly related to algorithmic bias that can arise if training data is not representative or if the algorithm does not adequately consider demographic diversity. Zhang et al. (2024) warn that without strict governance, such bias can reinforce discrimination and injustice within organizations. Therefore, developing a framework that integrates the principles of Fairness, Accountability, Transparency, and Ethics (FATE) is crucial for AI to be not only efficient but also fair and responsible.

Third, organizational leadership plays a key role in the success of digital transformation and strengthening AI-based human resources. Mutiara et al. (2024) demonstrated that managers with high digital literacy and strategic vision can guide technology implementation effectively and inclusively. Adaptive digital leadership focuses not only on technical aspects but also on building an organizational culture that supports innovation, continuous learning, and active employee participation. This type of leadership can reduce resistance to technological change and ensure that all organizational members feel involved and empowered in the transformation process. This aligns with Bersin's (2024) findings, which state that digital leadership skills are an essential competency in the Society 5.0 era, where leaders must be able to bridge the gap between technology and human needs within the organization.

Fourth, strengthening human resources in the Society 5.0 era cannot be separated from cross-sector collaboration. This collaboration includes the government's role as policymaker and regulator, encouraging the inclusive and responsible development of digital technology, as well as providing adequate infrastructure and incentives. The private sector serves as a key player in the adoption and development of technology and innovative and responsive human resource management practices. Meanwhile, educational institutions are responsible for preparing the future workforce with adaptive, creative curricula and learning methods oriented toward high digital literacy (Kagermann et al., 2022; World Economic Forum, 2025). Synergy and collaboration between these three sectors are the foundation of a sustainable innovation ecosystem and can address the complex challenges emerging in the digital era.

Fifth, although technology is the primary driver of transformation, employee well-being remains a crucial indicator of successful human resource development. An empirical study by Lee et al. (2024) shows that leveraging AI to optimize workloads and implement flexible work arrangements can improve employee engagement and overall quality of life. This human-centered approach enables employees to maintain a work-life balance, while supporting mental health and long-term productivity. Therefore, the Society 5.0 vision demands that technological innovation not only enhance efficiency but also address social sustainability and human values, ensuring that digital transformation truly benefits individuals, organizations, and society.

Based on a comprehensive literature review, strengthening human resources in the Society 5.0 era requires a holistic approach that combines the development of technical competencies and soft skills such as creativity and resilience, the use of AI with strict ethical governance, adaptive and visionary leadership, strong cross-sector collaboration, and serious attention to employee well-being and engagement. This approach serves as a strategic foundation for optimizing the role of human resources in facing the challenges and capitalizing on the ever-growing opportunities of digital transformation. Thus, strengthening human resources not only focuses on technological aspects but also places people at the center of sustainable and inclusive development.

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

Based on the analysis using the Systematic Literature Review (SLR) approach, structured following the PRISMA steps, this study demonstrates that the integration of contextual, organizational, and technological factors is key to building an adaptive human resource (HRM) management system in the Society 5.0 era. The findings demonstrate that:

1. Contextual factors such as global socio-economic changes, the inclusive development vision of Society 5.0, and technological disruption shape the urgency of HR transformation.
2. Organizational factors, particularly managerial support, responsive HR policies, and digital literacy, serve as the foundation for strengthening an organization's adaptive capacity.
3. Technological factors, including the use of AI, IoT, Big Data, and talent analytics, accelerate the digitalization of recruitment processes, training, and transparent performance assessments.
4. Development processes that prioritize the integration of technology and HR, the implementation of ethical digital governance, and reskilling and upskilling programs have successfully produced innovative HR, an inclusive data-driven management system, and a collaborative organizational culture.

Overall, these findings confirm that successful implementation of Society 5.0 at the organizational level requires a balance between technological advancement and human empowerment (human-centered approach).

Recommendations

Based on these findings, several strategic recommendations can be put forward:

1. Strengthening Adaptive HR Policies Governments and organizations need to adopt policies that support digital literacy, work flexibility, and employee well-being to maintain motivation and productivity amidst rapid change.
2. Investment in Technology and Training The procurement of AI, IoT, and Big Data technologies must be accompanied by intensive training (reskilling and upskilling) so that employees are able to utilize the technology optimally and ethically.
3. Implementing Ethical Digital Governance Algorithm transparency, personal data protection, and ethical oversight are crucial for maintaining public trust and the sustainability of digital transformation.
4. Multi-Stakeholder Collaboration Governments, universities, the private sector, and professional communities need to work together to build an adaptive, innovative, and inclusive HR ecosystem.
5. Continuous Monitoring and Evaluation The implementation of technology-based HR strategies must be periodically evaluated to ensure alignment with organizational goals, technological developments, and future HR needs.

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