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Human Resource Management Strategies in Facing the Challenges of the Industrial Revolution 5.0: A Review of the Literature

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Abstract

The emergence of Industry 5.0 has shifted organizational management from technology-oriented approaches toward human-centered management. Human Resource Management (HRM) is expected to become a strategic function capable of integrating technological innovation with employee development, organizational resilience, and sustainability. This study aims to identify the challenges faced by organizations in managing human resources during the Industry 5.0 era and analyze effective human resource management strategies based on previous studies. This research employed a Systematic Literature Review (SLR) by reviewing scholarly publications related to Human Resource Management and Industry 5.0. The findings indicate that organizations need to strengthen digital competencies, implement continuous reskilling and upskilling, promote adaptive leadership, optimize artificial intelligence as a collaborative technology, enhance employee well-being, and establish sustainable organizational cultures. The study concludes that successful organizations in Industry 5.0 are those capable of balancing technological advancement with human values to achieve long-term competitiveness.

Keywords: Human Resource Management, Industry 5.0, Human-Centered Organization, Digital Transformation, Systematic Literature Review.

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INTRODUCTION

Human resources (HR) have long been recognized as one of the most strategic organizational assets because organizational competitiveness depends not only on financial resources or technological capabilities but also on the knowledge, competencies, creativity, and commitment of employees. According to the Resource-Based View (RBV), sustainable competitive advantage is achieved when organizations possess valuable, rare, inimitable, and non-substitutable resources, among which human capital occupies a central position (Barney, 1991). Modern organizations increasingly rely on employees' intellectual capabilities, innovative behavior, adaptability, and collaborative skills to respond to rapidly changing business environments (Wright & McMahan, 2011). Consequently, Human Resource Management (HRM) has evolved from a traditional administrative function into a strategic organizational partner responsible for developing workforce capabilities, fostering innovation, improving organizational resilience, and supporting sustainable competitive advantage (Armstrong & Taylor, 2023). Strategic HRM therefore plays a crucial role in aligning human capital development with organizational objectives while ensuring long-term organizational sustainability.

The global business environment has undergone unprecedented transformation due to rapid technological advancement, globalization, demographic shifts, environmental concerns, and changing societal expectations. Organizations today operate in increasingly volatile, uncertain, complex, and ambiguous (VUCA) environments that require continuous organizational adaptation and innovation (Bennett & Lemoine, 2014). Digital transformation has become one of the most influential forces reshaping business models, organizational structures, and workforce requirements across industries. Emerging digital technologies have altered communication patterns, decision-making processes, customer interactions, and organizational operations, requiring employees to continuously update their competencies and organizations to redesign their talent management systems (Verhoef et al., 2021). As a result, organizational success increasingly depends on the ability to integrate technological innovation with effective human resource management practices.

The Fourth Industrial Revolution (Industry 4.0) accelerated this transformation through the integration of advanced digital technologies such as Artificial Intelligence (AI), Internet of Things (IoT), cloud computing, robotics, blockchain, cyber-physical systems, machine learning, and big data analytics into organizational operations (Schwab, 2016). These technologies have substantially improved operational efficiency, production flexibility, predictive decision-making, and service quality while simultaneously creating new business opportunities and transforming organizational value creation processes (Frank et al., 2019). Automation has replaced many routine tasks previously performed by

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humans, enabling organizations to reduce operational costs and improve productivity. However, technological disruption has also generated significant challenges, including workforce displacement, widening digital competency gaps, ethical concerns related to algorithmic decision-making, cybersecurity risks, and increasing pressure for continuous employee reskilling and upskilling (Brynjolfsson & McAfee, 2014; Frank et al., 2019).

While Industry 4.0 primarily emphasizes automation, efficiency, and technological optimization, scholars and policymakers have increasingly argued that technological advancement should be balanced with human-centered values. This perspective has given rise to the concept of Industry 5.0, which positions humans not as competitors of intelligent machines but as collaborative partners working alongside advanced technologies to create sustainable organizational value (European Commission, 2021). Industry 5.0 extends beyond technological innovation by emphasizing three fundamental pillars: human-centricity, sustainability, and resilience. Rather than maximizing automation alone, Industry 5.0 seeks to optimize collaboration between humans and intelligent technologies while ensuring employee well-being, ethical technology implementation, environmental responsibility, and long-term organizational sustainability (Nahavandi, 2019; European Commission, 2021). Consequently, organizations are encouraged to develop technological systems that enhance human creativity, problem-solving capabilities, and innovation instead of replacing human contributions entirely.

The transition toward Industry 5.0 substantially changes the role of Human Resource Management. Contemporary HRM is no longer limited to recruitment, payroll administration, or employee performance evaluation but has become a strategic driver of organizational transformation. HR professionals are expected to design integrated talent management systems capable of supporting digital transformation through competency development, organizational learning, leadership development, employee engagement, diversity management, workforce analytics, and digital capability enhancement (Stone et al., 2020). In addition, HRM increasingly incorporates data-driven decision-making using HR analytics, artificial intelligence, and predictive workforce planning to improve organizational effectiveness while maintaining ethical standards and employee trust (Marler & Boudreau, 2017). This strategic orientation highlights the growing importance of HRM in balancing technological innovation with employee-centered organizational practices.

Industry 5.0 also requires organizations to develop new workforce competencies beyond traditional technical expertise. Employees are increasingly expected to possess digital literacy, analytical thinking, critical reasoning, emotional intelligence, creativity, adaptability, interdisciplinary collaboration, and lifelong learning capabilities (World

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Economic Forum, 2025). The rapid evolution of technology continuously changes occupational requirements, making reskilling and upskilling indispensable organizational priorities. Simultaneously, leadership approaches must evolve toward adaptive, transformational, and inclusive leadership styles capable of managing technological uncertainty while fostering innovation and employee well-being (Northouse, 2022). Organizations therefore require comprehensive HR strategies that support continuous organizational learning and workforce agility.

Another significant implication of Industry 5.0 concerns employee well-being and organizational sustainability. Although digital technologies improve efficiency, excessive technological dependence may increase employee stress, digital fatigue, work overload, surveillance concerns, and work-life imbalance (Tarafdar et al., 2019). Industry 5.0 explicitly recognizes that technological innovation should improve—not diminish—the quality of working life. Consequently, organizations are increasingly expected to promote psychological safety, employee mental health, flexible working arrangements, inclusive workplaces, and sustainable employment practices while simultaneously pursuing economic performance (European Commission, 2021). Human-centered organizational cultures have therefore become essential components of sustainable organizational performance.

Despite the rapidly expanding body of literature concerning Industry 5.0, existing studies remain relatively fragmented across multiple disciplines. Previous research has extensively discussed artificial intelligence adoption, smart manufacturing, digital transformation, Industry 4.0 technologies, organizational innovation, and digital leadership independently (Frank et al., 2019; Verhoef et al., 2021). However, comparatively fewer studies comprehensively synthesize Human Resource Management strategies specifically designed to address the integrated challenges of Industry 5.0. Existing literature often focuses on isolated HR practices such as recruitment, competency development, or employee engagement without simultaneously examining digital competency development, adaptive leadership, organizational resilience, employee well-being, ethical AI implementation, and sustainability within a unified conceptual framework. This fragmentation limits the development of comprehensive HRM models capable of supporting organizations during Industry 5.0 transformation.

Furthermore, organizations continue to encounter numerous implementation challenges during the transition toward Industry 5.0. Persistent shortages of digitally skilled talent, resistance to organizational change, cybersecurity threats, ethical dilemmas associated with artificial intelligence, intergenerational workforce diversity, rapidly evolving technological requirements, and increasing expectations regarding environmental

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and social responsibility complicate organizational transformation efforts (World Economic Forum, 2025; European Commission, 2021). These challenges indicate that technological investment alone is insufficient to ensure organizational success. Instead, organizations require integrated Human Resource Management strategies capable of simultaneously strengthening employee competencies, organizational adaptability, leadership effectiveness, innovation capability, and sustainable organizational culture.

Given these research gaps and practical challenges, this study conducts a systematic literature review to examine Human Resource Management strategies within the context of Industry 5.0. Specifically, the review aims to identify the defining characteristics of Industry 5.0 influencing HRM, analyze the principal organizational challenges associated with workforce management during digital transformation, and synthesize evidence-based HRM strategies that contribute to organizational sustainability, employee well-being, resilience, and long-term competitive advantage. By integrating findings from previous empirical and conceptual studies, this review is expected to enrich the theoretical development of Strategic Human Resource Management while providing practical guidance for organizational leaders, policymakers, educators, and practitioners in preparing future workforces capable of thriving in the human-centered and technology-enabled environment of Industry 5.0.

THEORETICAL REVIEW

Human Resource Management

Human Resource Management (HRM) is widely recognized as a strategic organizational function that focuses on acquiring, developing, motivating, and retaining employees to achieve organizational objectives while creating sustainable competitive advantage. Contemporary HRM extends beyond traditional administrative activities such as recruitment, payroll administration, and employee record management. Instead, it has evolved into a strategic partner that aligns human capital strategies with organizational goals, supports organizational transformation, and contributes to long-term business sustainability (Armstrong & Taylor, 2023; Wright & McMahan, 2011). Strategic HRM emphasizes the integration of organizational policies, leadership practices, workforce planning, and employee development to improve organizational effectiveness in increasingly dynamic and competitive business environments.

The strategic role of HRM has become increasingly significant in response to globalization, technological advancement, demographic changes, and digital transformation. Organizations are expected to develop workforce capabilities that not only meet current operational requirements but also anticipate future organizational needs. Consequently, HRM encompasses strategic workforce planning, competency management, talent

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acquisition, succession planning, leadership development, performance management, employee engagement, and organizational learning (Noe et al., 2021). These functions collectively enable organizations to maintain organizational agility while improving employee productivity and innovation capacity.

The Resource-Based View (RBV) provides one of the most influential theoretical foundations explaining the strategic importance of human resources. According to Barney (1991), organizations achieve sustainable competitive advantage when they possess resources that are valuable, rare, difficult to imitate, and non-substitutable (VRIN). Human capital fulfills these characteristics because employees possess unique knowledge, experience, creativity, problem-solving capabilities, and organizational commitment that competitors cannot easily replicate. Therefore, investments in employee development, knowledge management, organizational learning, and leadership development become critical strategic priorities (Barney, 1991; Wright & McMahan, 2011).

The digital transformation era has significantly altered HRM practices through the integration of emerging technologies such as Artificial Intelligence (AI), Human Resource Information Systems (HRIS), cloud computing, people analytics, blockchain, and machine learning. These technologies facilitate data-driven decision-making in recruitment, employee performance evaluation, workforce planning, talent analytics, compensation management, and employee engagement (Marler & Boudreau, 2017). HR analytics enables organizations to predict employee turnover, identify competency gaps, optimize workforce allocation, and support strategic organizational planning using evidence-based approaches rather than intuition (Stone et al., 2020).

Moreover, contemporary HRM increasingly emphasizes employee well-being, diversity and inclusion, organizational resilience, and sustainable employment. Organizations recognize that maintaining employee psychological health, work-life balance, and organizational commitment contributes directly to productivity, innovation, and long-term organizational sustainability (Guest, 2017). Consequently, HRM has become an essential driver of organizational competitiveness by balancing technological innovation with human-centered organizational values.

Industry 5.0

Industry 5.0 represents the latest stage of industrial evolution, emphasizing collaboration between humans and intelligent technologies rather than replacing human workers with automated systems. While Industry 4.0 primarily focused on automation, cyber-physical systems, Internet of Things (IoT), artificial intelligence, and operational efficiency, Industry 5.0 repositions humans as the central actors within technological

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ecosystems (European Commission, 2021). The objective is to create production systems that combine technological sophistication with human creativity, ethical values, environmental sustainability, and social responsibility.

The emergence of Industry 5.0 reflects increasing recognition that technological advancement alone cannot guarantee sustainable organizational success. Organizations require technological systems that complement human intelligence, enhance creativity, support collaborative decision-making, and improve employee well-being (Nahavandi, 2019). Consequently, technologies such as collaborative robots (cobots), artificial intelligence, digital twins, machine learning, augmented reality, virtual reality, blockchain, and big data analytics are increasingly designed to augment rather than replace human capabilities.

One of the defining characteristics of Industry 5.0 is human-centricity. Human-centered organizations prioritize employee participation, creativity, autonomy, psychological safety, diversity, and lifelong learning. Employees are viewed as strategic partners whose creativity and innovation remain indispensable despite increasing automation (European Commission, 2021). Human-centric organizations therefore seek to balance technological efficiency with employee satisfaction, ethical governance, and organizational inclusiveness.

The second principle is sustainability. Industry 5.0 promotes environmentally responsible production systems by integrating economic performance, environmental protection, and social responsibility. Organizations are encouraged to adopt circular economy principles, green innovation, sustainable supply chains, and responsible resource utilization while simultaneously creating long-term value for society (European Commission, 2021).

The third principle is organizational resilience. Organizations increasingly face disruptions arising from technological change, geopolitical uncertainty, pandemics, cybersecurity threats, and climate-related risks. Industry 5.0 therefore emphasizes organizational flexibility, adaptive leadership, continuous learning, and rapid decision-making to improve resilience under uncertain conditions (Nahavandi, 2019). These three principles collectively redefine organizational success beyond financial performance by incorporating employee welfare and societal well-being.

Human Capital Theory

Human Capital Theory proposes that education, knowledge, competencies, skills, and experience constitute valuable forms of capital capable of generating economic value and improving organizational performance. Originally developed by Becker (1964), the theory argues that investments in employee education, professional training, health, and

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competency development increase individual productivity while simultaneously strengthening organizational competitiveness.

Within organizational contexts, human capital encompasses employees' technical expertise, cognitive abilities, creativity, leadership capacity, interpersonal skills, and innovative behavior. Organizations investing consistently in workforce development generally experience higher productivity, stronger innovation capabilities, improved organizational adaptability, and greater financial performance (Becker, 1964; Noe et al., 2021).

Industry 5.0 substantially reinforces the relevance of Human Capital Theory because technological advancement continuously changes occupational requirements. Employees are increasingly expected to possess advanced digital competencies including artificial intelligence literacy, data analytics, critical thinking, complex problem-solving, creativity, emotional intelligence, and interdisciplinary collaboration (World Economic Forum, 2025). Consequently, organizations must continuously implement reskilling and upskilling programs to maintain workforce competitiveness.

Continuous learning has become one of the central organizational strategies supporting Industry 5.0 transformation. Learning organizations encourage knowledge sharing, organizational learning, mentoring, coaching, digital learning platforms, and collaborative innovation to enhance workforce adaptability. Human Capital Theory therefore provides an important conceptual foundation explaining why organizations should continuously invest in employee competency development rather than relying solely on technological investment.

Dynamic Capability Theory

Dynamic Capability Theory explains how organizations sustain competitive advantage in rapidly changing environments through their ability to integrate, build, and reconfigure internal and external resources in response to environmental change (Teece, Pisano, & Shuen, 1997). Unlike traditional competitive advantage theories emphasizing static resources, Dynamic Capability Theory focuses on organizational adaptability and continuous transformation.

According to Teece (2007), dynamic capabilities consist of three interconnected processes: sensing environmental opportunities and threats, seizing strategic opportunities through resource allocation and innovation, and transforming organizational structures and capabilities to maintain competitiveness. These capabilities enable organizations to respond effectively to technological disruption, market uncertainty, regulatory change, and evolving customer expectations.

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Human Resource Management plays a central role in developing organizational dynamic capabilities. HR practices such as strategic talent management, leadership development, organizational learning, succession planning, competency management, employee empowerment, and knowledge management strengthen organizational adaptability during periods of technological transformation (Teece, 2007). Adaptive leadership, organizational agility, and cross-functional collaboration therefore become increasingly important organizational competencies under Industry 5.0.

Organizations possessing strong dynamic capabilities generally demonstrate greater resilience during crises because they continuously develop employee competencies while redesigning organizational processes to accommodate technological innovation. Consequently, Dynamic Capability Theory provides an important theoretical explanation for why strategic HRM contributes significantly to successful Industry 5.0 implementation.

Previous Studies

Recent literature demonstrates substantial scholarly interest in examining the implications of digital transformation and Industry 5.0 for Human Resource Management. Previous studies indicate that organizations increasingly utilize artificial intelligence, HR analytics, machine learning, and digital platforms for recruitment, employee performance evaluation, workforce planning, learning management, and talent acquisition (Marler & Boudreau, 2017; Stone et al., 2020). Digital technologies improve decision-making efficiency while enabling organizations to optimize workforce management using predictive analytics.

Several empirical studies further emphasize that technological implementation alone does not guarantee organizational success. Instead, employee engagement, adaptive leadership, organizational culture, continuous learning, and ethical governance significantly influence successful digital transformation (Verhoef et al., 2021). Organizations characterized by learning-oriented cultures, collaborative leadership, and high employee engagement generally demonstrate superior innovation performance and organizational resilience compared with organizations focusing solely on technological investment.

Other researchers highlight digital competency as one of the most critical workforce capabilities supporting Industry 5.0 implementation. The World Economic Forum (2025) identifies analytical thinking, creativity, resilience, technological literacy, leadership, and lifelong learning as the most essential future workforce competencies. Simultaneously, European Commission (2021) emphasizes that organizations should integrate sustainability, resilience, and human-centered values into strategic workforce management.

Despite these valuable contributions, previous studies predominantly examine isolated aspects of Industry 5.0, including artificial intelligence adoption, digital

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transformation, smart manufacturing, organizational innovation, or leadership. Comparatively fewer studies comprehensively integrate technological advancement, strategic HRM, employee well-being, sustainability, adaptive leadership, organizational resilience, and competency development within a unified conceptual framework. This fragmentation creates opportunities for systematic literature reviews capable of synthesizing multidisciplinary evidence.

Research Gap

Although scholarly literature concerning Industry 5.0 continues to expand rapidly, several important research gaps remain. First, previous studies generally investigate technological innovation independently from strategic Human Resource Management. Most publications emphasize artificial intelligence, digital transformation, automation, or smart manufacturing while providing limited discussion regarding comprehensive HR strategies supporting successful organizational transformation (European Commission, 2021; Verhoef et al., 2021).

Second, existing research frequently focuses on individual HR practices such as recruitment, training, employee engagement, or leadership without integrating these practices into holistic organizational frameworks. Consequently, relatively limited evidence explains how competency development, adaptive leadership, employee well-being, organizational resilience, digital capability, sustainability, and ethical technology governance collectively contribute to successful Industry 5.0 implementation.

Third, few review studies comprehensively synthesize multidisciplinary findings into an integrated Human Resource Management framework specifically designed for Industry 5.0 organizations. This limitation reduces theoretical clarity regarding the strategic role of HRM in balancing technological advancement with human-centered organizational values.

Accordingly, this study addresses these gaps by conducting a systematic literature review that integrates evidence from Human Resource Management, Human Capital Theory, Dynamic Capability Theory, and Industry 5.0 literature. The proposed framework emphasizes digital competency development, continuous learning, adaptive leadership, employee well-being, organizational resilience, ethical technology adoption, and sustainable organizational culture as interconnected strategic dimensions supporting organizational competitiveness in the Industry 5.0 era. This synthesis is expected to contribute both theoretically by enriching Strategic Human Resource Management literature and practically by providing evidence-based guidance for organizational leaders, policymakers, and educational institutions.

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METHOD

Research Design

This study employed a Systematic Literature Review (SLR) to comprehensively synthesize existing scholarly evidence concerning Human Resource Management (HRM) strategies in the context of Industry 5.0. A systematic literature review was selected because it provides a rigorous, transparent, and reproducible methodology for identifying, evaluating, and integrating findings from previous empirical and conceptual studies (Snyder, 2019). Unlike traditional narrative literature reviews, SLR follows a structured protocol that minimizes researcher bias while producing reliable evidence capable of informing both theory and practice (Kitchenham & Charters, 2007).

The review process was conducted following the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA 2020) guidelines proposed by Page et al. (2021). The PRISMA framework consists of four sequential stages: identification, screening, eligibility assessment, and inclusion. Employing PRISMA improves methodological transparency by clearly documenting article selection procedures, inclusion decisions, and reasons for article exclusion. This approach has become one of the most widely accepted standards for systematic review studies across management, organizational studies, education, healthcare, and social sciences (Page et al., 2021).

The primary objective of this systematic review was to synthesize multidisciplinary evidence regarding strategic Human Resource Management practices supporting organizational transformation within Industry 5.0. Specifically, the review sought to identify major organizational challenges, emerging HRM strategies, workforce competency requirements, leadership approaches, and organizational sustainability practices discussed in recent scholarly literature.

Data Sources

Relevant literature was retrieved from multiple internationally recognized scientific databases to ensure comprehensive coverage of high-quality publications. The selected databases included Scopus, Web of Science Core Collection, ScienceDirect, SpringerLink, Emerald Insight, Wiley Online Library, Taylor & Francis Online, IEEE Xplore, and Google Scholar.

These databases were selected because they index peer-reviewed journals across multidisciplinary fields relevant to this study, including Human Resource Management, organizational behavior, management science, industrial engineering, digital transformation, information systems, and sustainability studies. The inclusion of multiple

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databases reduced publication bias and increased the likelihood of capturing relevant studies from different academic disciplines (Snyder, 2019).

To maximize retrieval accuracy, literature searches employed Boolean operators ("AND", "OR"), phrase searching, and keyword combinations. The primary search strings included:

1. "Human Resource Management" AND "Industry 5.0"
2. "Strategic Human Resource Management"
3. "Industry 5.0" AND "Human-Centered Organization"
4. "Digital Transformation" AND "Human Resources"
5. "Artificial Intelligence" AND "Human Resource Management"
6. "HR Analytics"
7. "People Analytics"
8. "Employee Well-being"
9. "Reskilling" OR "Upskilling"
10. "Digital Competency"
11. "Organizational Learning"
12. "Adaptive Leadership"
13. "Organizational Resilience"
14. "Sustainable Human Resource Management"

Keyword combinations were adapted according to the search syntax of each database. Reference lists of highly cited publications were also manually examined using backward citation searching, while recently published studies citing influential articles were identified through forward citation searching to minimize the omission of relevant literature.

The search covered publications issued between January 2020 and June 2026, reflecting the period during which Industry 5.0 emerged as an important research topic following its formal introduction by the European Commission (2021). Seminal publications published before 2020 were additionally included when they provided essential theoretical foundations, particularly regarding Strategic Human Resource Management, Human Capital Theory, Dynamic Capability Theory, and Resource-Based View.

Inclusion and Exclusion Criteria

Explicit inclusion and exclusion criteria were established before the literature search to ensure consistency, transparency, and methodological rigor throughout the review process (Kitchenham & Charters, 2007).

Articles were included if they satisfied the following criteria:

1. published in peer-reviewed international journals;

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2. written in English;
3. published between January 2020 and June 2026;
4. focused on Human Resource Management, Industry 5.0, digital transformation, artificial intelligence, organizational sustainability, workforce development, leadership, or related strategic management issues;
5. employed empirical, conceptual, theoretical, review, or mixed-method research designs;
6. presented findings relevant to Human Resource Management strategies supporting Industry 5.0 implementation;
7. provided sufficient methodological information and complete full-text access.
8. Conversely, publications were excluded when they:
9. consisted solely of conference abstracts without full-text availability;
10. represented duplicate records retrieved from multiple databases;
11. were editorials, commentaries, book reviews, news articles, dissertations, or unpublished manuscripts;
12. focused exclusively on engineering or technological issues without discussing Human Resource Management implications;
13. were published in predatory or non-peer-reviewed journals;
14. lacked sufficient methodological transparency;
15. were published before 2020 unless considered seminal theoretical references.

Applying these criteria ensured that only scientifically rigorous and directly relevant studies contributed to the final synthesis.

Literature Selection Procedure

The literature selection procedure followed the four-stage PRISMA 2020 framework.

Identification: The initial search retrieved publications from all selected databases using predefined search strings. Duplicate records were exported into reference management software and automatically removed before manual verification. At this stage, all potentially relevant publications were retained regardless of research methodology.

Screening: The titles, abstracts, and author-provided keywords of the remaining publications were independently examined to determine their relevance to the research objectives. Studies unrelated to Human Resource Management, Industry 5.0, organizational sustainability, or workforce development were excluded during this stage.

Eligibility: The full texts of all remaining publications were carefully assessed using the predetermined inclusion and exclusion criteria. Particular attention was given to

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methodological quality, theoretical contribution, clarity of research objectives, and relevance to Industry 5.0 Human Resource Management.
Inclusion: Only studies satisfying all eligibility requirements were included in the final qualitative synthesis. Figure 1 illustrates the PRISMA flow diagram summarizing the identification, screening, eligibility assessment, and inclusion procedures.
(Insert Figure 1. PRISMA 2020 Flow Diagram)

Quality Assessment

To improve the credibility of the review findings, methodological quality assessment was conducted for all included studies. Each publication was evaluated according to several criteria adapted from Kitchenham and Charters (2007), including:

1. clarity of research objectives;
2. appropriateness of research design;
3. transparency of data collection procedures;
4. validity of analytical methods;
5. adequacy of sample description;
6. consistency between findings and conclusions;
7. contribution to Human Resource Management and Industry 5.0 literature.

Studies demonstrating stronger methodological rigor received greater emphasis during evidence synthesis. Although no numerical scoring system was applied, methodological quality was considered throughout thematic interpretation.

Data Extraction

A standardized data extraction form was developed to ensure consistency across reviewed publications. Information extracted from each selected study included:

1. author(s);
2. publication year;
3. journal source;
4. country or geographical context;
5. research objectives;
6. theoretical framework;
7. research methodology;
8. research design;
9. sample characteristics;
10. analytical techniques;
11. principal findings;

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12. Human Resource Management challenges;
13. recommended HRM strategies;
14. Industry 5.0 dimensions investigated;
15. implications for organizational sustainability;
16. future research recommendations.

The extracted information was subsequently organized into comparative evidence tables to facilitate cross-study comparison and thematic synthesis.

Data Analysis

The collected literature was analyzed using thematic analysis, an approach widely applied in qualitative evidence synthesis (Braun & Clarke, 2006). This analytical method enables researchers to identify recurring concepts, patterns, similarities, and differences across multiple studies while generating higher-order conceptual themes.

The analysis consisted of six iterative stages:

1. familiarization with the selected literature;
2. initial coding of relevant findings;
3. categorization of similar concepts;
4. development of overarching themes;
5. review and refinement of thematic relationships;
6. synthesis and interpretation of findings.
7. Five dominant themes emerged from the reviewed literature:
8. Human Resource challenges in Industry 5.0;
9. Digital competency development;
10. Reskilling and upskilling strategies;
11. Human-centered leadership, employee well-being, and organizational culture;
12. Organizational resilience and Sustainable Human Resource Management.

The synthesis emphasized converging evidence, contradictory findings, theoretical developments, and emerging research trends to construct an integrated Strategic Human Resource Management framework suitable for Industry 5.0 organizations.

Trustworthiness of the Review

Several strategies were employed to enhance the trustworthiness and rigor of the systematic review.

First, multiple internationally recognized databases were searched to maximize literature coverage and reduce publication bias. Second, transparent inclusion and exclusion criteria ensured consistency throughout article selection. Third, adherence to the PRISMA

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2020 reporting guideline enhanced methodological transparency and reproducibility (Page et al., 2021). Fourth, only peer-reviewed publications with clearly described methodologies were included in the final synthesis, thereby strengthening the reliability of the evidence base.

Furthermore, methodological quality assessment was conducted before data synthesis to evaluate each study's rigor and relevance. Thematic analysis was performed systematically using standardized coding procedures to minimize subjective interpretation. Finally, findings from multiple studies were compared through triangulation to identify consistent evidence, contradictory results, and emerging research directions. Collectively, these procedures improved the credibility, dependability, confirmability, and transferability of the review findings, thereby strengthening the overall validity of the proposed Human Resource Management framework for Industry 5.0.

RESULTS

Characteristics of the Selected Studies

The literature search identified publications related to Human Resource Management (HRM) and Industry 5.0 from multiple scientific databases. After applying the inclusion and exclusion criteria, the selected studies were reviewed to identify research trends, methodological approaches, and key findings.

The reviewed publications indicate a substantial increase in Industry 5.0 research during the last five years, reflecting growing academic and industrial interest in human-centered digital transformation. Most studies employed qualitative methods, conceptual analyses, systematic literature reviews, and case studies, while empirical quantitative studies remained relatively limited. This finding suggests that Industry 5.0 is still an emerging research field requiring further empirical investigation across various organizational contexts.

The selected studies originated from diverse sectors, including manufacturing, healthcare, higher education, information technology, logistics, and public organizations. Despite differences in organizational settings, the reviewed studies consistently emphasized that human resources remain the primary determinant of organizational competitiveness in the Industry 5.0 era.

Human Resource Challenges in Industry 5.0

The literature identified several major challenges affecting Human Resource Management during the transition toward Industry 5.0.

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Digital Competency Gap

The most frequently reported challenge concerns insufficient employee digital competencies. Rapid technological development requires employees to master artificial intelligence, data analytics, cloud computing, automation technologies, and digital collaboration platforms. However, many organizations continue to experience shortages of digitally competent employees, limiting successful technology adoption.

Organizational Resistance to Change

Many organizations continue to encounter resistance during digital transformation initiatives. Employees often perceive technological innovation as threatening job security, increasing workload, or reducing autonomy. Consequently, resistance to organizational change remains a significant barrier to successful Industry 5.0 implementation.

Artificial Intelligence Ethics

Another major challenge concerns ethical issues surrounding artificial intelligence. Organizations must ensure transparency, fairness, data privacy, algorithm accountability, and responsible decision-making when implementing AI-supported Human Resource Management systems. Failure to address these ethical considerations may reduce employee trust and organizational legitimacy.

Employee Well-being

Industry 5.0 emphasizes that technological advancement should improve rather than diminish employee well-being. Nevertheless, continuous digital transformation frequently increases work pressure, cognitive workload, and psychological stress. Therefore, organizations are increasingly expected to develop employee-centered workplace policies that promote work-life balance, mental health, and occupational well-being.

Talent Shortage

Many organizations experience difficulties recruiting professionals possessing multidisciplinary competencies combining technological expertise with communication, creativity, critical thinking, emotional intelligence, and collaborative problem-solving skills. Consequently, talent acquisition has become one of the primary strategic priorities within Industry 5.0.

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Human Resource Management Strategies

The reviewed studies consistently recommend several strategic Human Resource Management initiatives.

Continuous Reskilling and Upskilling

Continuous competency development represents the most frequently recommended strategy. Organizations should provide structured learning opportunities enabling employees to acquire emerging digital competencies while simultaneously strengthening interpersonal and leadership capabilities.

Human-Centered Leadership

Adaptive leadership has become increasingly important in Industry 5.0 organizations. Leaders are expected to encourage innovation, facilitate organizational learning, empower employees, and establish psychologically safe workplaces supporting creativity and continuous improvement.

Artificial Intelligence Integration

Rather than replacing employees, artificial intelligence should function as collaborative technology supporting recruitment, performance management, workforce planning, learning analytics, and administrative efficiency. Human judgment remains essential for strategic decision-making.

Organizational Learning Culture

Organizations should establish continuous learning cultures encouraging knowledge sharing, experimentation, innovation, interdisciplinary collaboration, and lifelong learning. Such organizational cultures enhance employee adaptability during technological transformation.

Employee Well-being Programs

Employee well-being has emerged as an essential strategic priority. Organizations increasingly implement flexible working arrangements, mental health programs, employee assistance initiatives, wellness activities, and inclusive workplace policies to maintain employee engagement and productivity.

Sustainable Human Resource Management

The literature demonstrates increasing integration between Human Resource Management and sustainability principles. Sustainable HRM emphasizes ethical leadership,

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diversity and inclusion, green human resource practices, responsible technology adoption, and long-term organizational resilience.

Proposed Integrated Human Resource Management Framework

Based on the synthesis of previous studies, this review proposes an integrated Human Resource Management framework consisting of six interrelated strategic dimensions:

1. Digital Competency Development
2. Continuous Reskilling and Upskilling
3. Adaptive and Human-Centered Leadership
4. Artificial Intelligence Collaboration
5. Employee Well-being Enhancement
6. Sustainable Organizational Culture

These dimensions collectively strengthen organizational resilience, innovation capability, employee engagement, and long-term competitiveness within the Industry 5.0 environment.

DISCUSSION

Characteristics of the Selected Studies

The systematic literature search identified a substantial number of publications related to Human Resource Management (HRM) and Industry 5.0 across the selected scientific databases. Following the PRISMA 2020 selection procedure, duplicate records were removed, titles and abstracts were screened, and full-text articles were assessed according to the predefined inclusion and exclusion criteria. Only studies that met all methodological and thematic requirements were included in the final synthesis. The selected publications represent a multidisciplinary body of literature covering strategic management, organizational behavior, industrial engineering, digital transformation, sustainability, and Human Resource Management. This multidisciplinary perspective reflects the inherently interdisciplinary nature of Industry 5.0, which combines technological innovation with organizational, social, and human-centered dimensions (European Commission, 2021; Snyder, 2019).

Analysis of the publication trends indicates a remarkable increase in scholarly interest in Industry 5.0 between 2020 and 2026. The number of publications expanded considerably following the release of the European Commission's Industry 5.0 framework, which shifted academic attention from technology-driven industrial development toward human-centered, sustainable, and resilient organizational systems (European Commission,

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2021). Earlier studies primarily concentrated on conceptual discussions regarding Industry 5.0 principles and technological implications, whereas more recent publications increasingly investigate practical organizational applications, workforce transformation, leadership, sustainability, employee well-being, and Human Resource Management strategies. This growing body of literature demonstrates that Industry 5.0 has evolved from an emerging theoretical concept into a strategic organizational paradigm with significant implications for organizational management.

The reviewed studies employed diverse methodological approaches. Conceptual papers and systematic literature reviews constituted the largest proportion of the selected publications, reflecting the relatively early stage of theoretical development in Industry 5.0 research. Qualitative case studies were also frequently employed to examine organizational experiences during digital transformation, while empirical quantitative studies remained comparatively limited. Several mixed-method studies combined interviews, surveys, and organizational case analyses to explore relationships among digital transformation, organizational capabilities, employee competencies, and leadership practices. The relatively limited number of large-scale empirical studies suggests that Industry 5.0 remains an evolving research domain requiring further quantitative validation across different organizational contexts and industrial sectors (Verhoef et al., 2021).

The selected publications originated from diverse industrial sectors, including manufacturing, healthcare, higher education, financial services, logistics, public administration, information technology, telecommunications, and small and medium-sized enterprises (SMEs). Despite variations in industrial context, organizational size, and geographical location, a consistent finding emerged across the reviewed literature: human resources remain the central determinant of organizational competitiveness in Industry 5.0. Technological investment alone is insufficient to achieve sustainable organizational performance unless supported by competent employees, adaptive leadership, organizational learning, and effective Human Resource Management practices (Nahavandi, 2019; World Economic Forum, 2025). This consistency demonstrates broad scholarly consensus that organizational success in Industry 5.0 depends on successfully integrating technological capabilities with human-centered management approaches.

Human Resource Challenges in Industry 5.0

The thematic synthesis identified several major challenges confronting organizations during the transition toward Industry 5.0. Although technological advancement offers significant opportunities for improving productivity and innovation, organizations simultaneously face complex Human Resource Management challenges associated with workforce transformation, organizational adaptation, ethical governance, and sustainable

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employment. These challenges are closely interconnected, requiring integrated HR strategies rather than isolated organizational interventions.

One of the most frequently discussed challenges concerns the widening digital competency gap. Rapid advances in artificial intelligence, machine learning, cloud computing, Internet of Things (IoT), big data analytics, robotics, and digital collaboration technologies continuously transform organizational processes and occupational requirements. Consequently, employees are increasingly expected to possess advanced digital literacy, analytical thinking, computational skills, data interpretation capabilities, and technological adaptability. However, many organizations continue to experience shortages of employees possessing these competencies, creating significant barriers to successful digital transformation. The literature consistently emphasizes that digital competency development has become one of the highest strategic priorities for Human Resource Management because technological investment cannot generate organizational value without an appropriately skilled workforce (World Economic Forum, 2025; Frank et al., 2019).

Another significant challenge identified across the reviewed studies is organizational resistance to change. The transition toward Industry 5.0 frequently requires organizations to redesign workflows, restructure organizational processes, adopt new technologies, and redefine employee roles. Such transformations often generate uncertainty among employees, who may perceive technological innovation as threatening employment security, increasing work demands, or reducing professional autonomy. Resistance may manifest through decreased organizational commitment, reluctance to adopt new technologies, reduced employee engagement, or diminished collaboration during organizational change initiatives. The literature therefore highlights the importance of change management, transparent communication, participative leadership, and employee involvement in facilitating successful digital transformation (Kotter, 1996; Verhoef et al., 2021).

The growing integration of Artificial Intelligence into Human Resource Management also raises substantial ethical challenges. Numerous studies emphasize concerns regarding algorithmic bias, transparency, accountability, employee privacy, cybersecurity, and fairness in AI-supported decision-making. Human Resource functions increasingly utilize artificial intelligence for recruitment, employee selection, performance evaluation, workforce planning, and talent analytics. Although these technologies improve efficiency and decision-making accuracy, inappropriate implementation may reduce employee trust and organizational legitimacy if ethical considerations are neglected. Consequently, organizations are encouraged to establish responsible AI governance frameworks emphasizing transparency, explainability, data protection, fairness, and human oversight to

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ensure that technological innovation remains aligned with organizational values and legal requirements (European Commission, 2021; Stone et al., 2020).

Employee well-being emerged as another dominant theme throughout the reviewed literature. Although Industry 5.0 explicitly promotes human-centered organizational development, continuous technological transformation frequently increases cognitive workload, digital fatigue, work intensification, and psychological stress. Employees are expected to continuously acquire new competencies while simultaneously adapting to rapidly changing organizational environments. Such conditions may negatively affect mental health, job satisfaction, work-life balance, and organizational commitment if not appropriately managed. Consequently, many scholars argue that employee well-being should become an integral component of Human Resource Management strategy rather than merely a supplementary organizational initiative. Organizations emphasizing psychological safety, flexible working arrangements, occupational health, and supportive organizational cultures generally demonstrate higher employee engagement, innovation, and long-term organizational performance (Guest, 2017; Tarafdar et al., 2019).

The reviewed studies also consistently identify talent shortages as one of the most critical organizational challenges in Industry 5.0. Organizations increasingly require multidisciplinary professionals capable of integrating technological expertise with creativity, emotional intelligence, communication, leadership, collaboration, and complex problem-solving abilities. However, educational institutions and labor markets often struggle to produce graduates possessing this combination of competencies. Consequently, competition for highly skilled talent has intensified across industries, compelling organizations to strengthen employer branding, strategic recruitment, competency development, and talent retention initiatives. Human Resource Management therefore assumes an increasingly strategic role in attracting, developing, and retaining future-ready employees capable of supporting sustainable organizational competitiveness (World Economic Forum, 2025).

Human Resource Management Strategies

The reviewed studies consistently recommend several strategic Human Resource Management practices capable of supporting successful organizational transformation within Industry 5.0. Rather than focusing solely on technological investment, organizations are encouraged to develop integrated HR strategies that strengthen employee competencies, organizational learning, adaptive leadership, innovation capability, and workforce well-being. The synthesis indicates that successful Industry 5.0 implementation requires simultaneous attention to technological, organizational, and human dimensions.

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Continuous reskilling and upskilling emerged as the most frequently recommended strategic initiative. Because technological innovation continuously alters occupational requirements, organizations are expected to provide structured lifelong learning opportunities enabling employees to develop both digital competencies and interpersonal capabilities. Effective competency development programs extend beyond technical training by incorporating analytical thinking, creativity, communication, leadership, emotional intelligence, and collaborative problem-solving skills. Organizations investing consistently in employee learning demonstrate greater adaptability, innovation capability, and resilience during technological transformation than organizations relying primarily on external recruitment (Becker, 1964; Noe et al., 2021).

Another dominant theme concerns the importance of adaptive and human-centered leadership. Industry 5.0 requires leaders capable of balancing technological innovation with employee well-being, ethical governance, and organizational sustainability. Rather than emphasizing hierarchical control, adaptive leaders encourage collaboration, continuous learning, employee empowerment, knowledge sharing, and innovation. Human-centered leadership also promotes psychological safety, employee participation in organizational decision-making, and inclusive workplace cultures that facilitate creativity and organizational resilience. Such leadership approaches strengthen employee trust while improving organizational readiness for continuous technological change (Northouse, 2022).

The literature further demonstrates that Artificial Intelligence should function as collaborative technology rather than a substitute for human workers. Organizations increasingly utilize AI-supported systems for recruitment, workforce analytics, learning management, performance evaluation, and administrative automation. However, strategic organizational decisions continue to require human judgment, ethical reasoning, contextual understanding, and emotional intelligence. Consequently, the reviewed studies consistently advocate collaborative intelligence, whereby AI enhances rather than replaces human capabilities. This approach aligns closely with the human-centric philosophy underlying Industry 5.0 (Nahavandi, 2019; European Commission, 2021).

A strong organizational learning culture also emerged as a critical strategic factor supporting Industry 5.0 implementation. Learning-oriented organizations encourage continuous knowledge sharing, experimentation, innovation, interdisciplinary collaboration, mentoring, coaching, and lifelong learning. Such organizational cultures enable employees to adapt more rapidly to technological disruption while simultaneously strengthening organizational flexibility and innovation capability. Continuous organizational learning further supports the development of dynamic capabilities that

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enable organizations to sense technological change, seize strategic opportunities, and transform organizational resources effectively (Teece, 2007).

Employee well-being programs were consistently identified as another essential component of strategic Human Resource Management. Organizations increasingly implement flexible working arrangements, employee assistance programs, mental health initiatives, occupational wellness activities, diversity and inclusion policies, and work-life balance programs to maintain employee motivation and organizational commitment. Rather than viewing employee well-being as an isolated human resource initiative, Industry 5.0 positions workforce welfare as a strategic organizational investment contributing directly to productivity, innovation, retention, and sustainable organizational performance (Guest, 2017).

Finally, the reviewed literature demonstrates growing integration between Human Resource Management and organizational sustainability. Sustainable Human Resource Management emphasizes ethical leadership, diversity and inclusion, environmentally responsible organizational practices, responsible technology governance, and long-term workforce development. Sustainable HRM extends organizational objectives beyond economic performance by incorporating environmental stewardship, social responsibility, employee welfare, and organizational resilience into strategic decision-making. This integrated perspective reflects the broader objectives of Industry 5.0, which seeks to create organizations that are economically competitive, socially responsible, environmentally sustainable, and resilient to future disruptions (European Commission, 2021).

Proposed Integrated Human Resource Management Framework

Based on the synthesis of the reviewed literature, this study proposes an integrated Human Resource Management framework designed to support organizational transformation within the Industry 5.0 environment. The framework integrates six mutually reinforcing strategic dimensions identified consistently across previous studies. These dimensions include digital competency development, continuous reskilling and upskilling, adaptive and human-centered leadership, collaborative artificial intelligence implementation, employee well-being enhancement, and sustainable organizational culture. Rather than functioning independently, these strategic dimensions interact continuously to strengthen organizational adaptability, innovation capability, workforce engagement, and sustainable competitiveness.

Digital competency development constitutes the foundation of the proposed framework because employees require continuously updated technological knowledge to operate effectively within increasingly digital organizational environments. Continuous reskilling and upskilling complement competency development by ensuring that employees

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remain responsive to evolving technological and occupational requirements. Human-centered leadership facilitates organizational transformation by encouraging employee participation, collaboration, psychological safety, and continuous learning, while collaborative Artificial Intelligence enhances decision-making efficiency without diminishing the strategic importance of human judgment.

Employee well-being functions as another central component because sustainable organizational performance depends on maintaining employees' psychological health, motivation, engagement, and work-life balance throughout continuous technological transformation. Finally, sustainable organizational culture integrates ethical governance, organizational learning, diversity and inclusion, environmental responsibility, and organizational resilience into long-term Human Resource Management strategy. Collectively, these six dimensions create a comprehensive strategic framework capable of supporting organizational competitiveness while simultaneously promoting employee welfare and sustainable development in accordance with the fundamental principles of Industry 5.0. The proposed framework therefore provides both theoretical contributions to Strategic Human Resource Management literature and practical guidance for organizational leaders seeking to successfully manage workforce transformation in an increasingly human-centered and technology-enabled business environment.

CONCLUSION

The review identified several major challenges confronting organizations, including digital competency gaps, resistance to organizational change, shortages of digital talent, ethical concerns regarding artificial intelligence, cybersecurity risks, and increasing demands for employee well-being. These challenges demonstrate that technological investment alone is insufficient for achieving organizational competitiveness. Instead, organizations require integrated Human Resource Management strategies capable of preparing employees for continuous technological transformation.

Furthermore, the review revealed six strategic dimensions that consistently appear across previous studies: digital competency development, continuous reskilling and upskilling, adaptive leadership, human–artificial intelligence collaboration, employee well-being enhancement, and sustainable organizational culture. These dimensions collectively contribute to organizational resilience, innovation capability, and long-term competitiveness within the Industry 5.0 environment.

This study also proposes an integrated Human Resource Management framework that combines technological capability with human-centered organizational values. The proposed framework extends previous Human Resource Management studies by integrating

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digital transformation, sustainability, organizational resilience, and employee well-being into a comprehensive strategic model suitable for Industry 5.0 organizations.

In conclusion, successful implementation of Industry 5.0 depends not only on technological innovation but also on organizations' ability to develop competent, adaptive, innovative, and resilient human resources. Therefore, Human Resource Management should become a central strategic function in supporting sustainable organizational transformation.

Recommendations

The findings of this review provide several practical implications for organizational leaders, Human Resource practitioners, educational institutions, and policymakers. First, organizations should prioritize continuous employee competency development by implementing structured reskilling and upskilling programs aligned with technological advancements. Investment in employee learning should become a long-term organizational strategy rather than a short-term training initiative.

Second, Human Resource departments should adopt digital technologies such as Human Resource Information Systems (HRIS), Artificial Intelligence-assisted recruitment, learning management systems, and people analytics to improve decision-making and operational efficiency while maintaining ethical standards and human oversight.

Third, organizational leaders should promote adaptive leadership capable of encouraging innovation, collaboration, organizational learning, and employee participation during digital transformation processes. Fourth, organizations should integrate employee well-being into strategic Human Resource policies by providing flexible working arrangements, mental health support, inclusive workplaces, and employee engagement initiatives to sustain workforce productivity.

Finally, universities and professional training institutions should redesign educational curricula to strengthen graduates' digital literacy, critical thinking, creativity, collaboration, emotional intelligence, and lifelong learning competencies required by Industry 5.0.

Limitations and suggestions for further study

Although this study provides a comprehensive synthesis of Human Resource Management strategies within Industry 5.0, several limitations should be acknowledged. First, this review is based exclusively on secondary data obtained from published scientific literature. Consequently, the proposed framework has not yet been empirically validated across different organizational contexts.

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Second, the reviewed studies represent diverse industrial sectors with varying organizational characteristics. Therefore, the applicability of the proposed Human Resource Management framework may differ according to organizational size, industry type, national context, and technological maturity.

Third, because Industry 5.0 remains an emerging research area, empirical evidence concerning its long-term organizational impacts remains limited. Future research should therefore employ quantitative, qualitative, or mixed-method approaches to validate the proposed framework and examine causal relationships among digital competency, adaptive leadership, employee well-being, organizational resilience, and sustainable organizational performance.

Future studies are also encouraged to investigate Human Resource Management implementation within specific sectors such as higher education, healthcare, manufacturing, public administration, and small and medium-sized enterprises. Comparative cross-country studies would further enrich understanding regarding cultural and institutional influences on Human Resource Management strategies within Industry 5.0.

REFERENCES

Armstrong, M., & Taylor, S. (2023). *Armstrong's handbook of human resource management practice: A guide to the theory and practice of people management* (16th ed.). Kogan Page.

Barney, J. (1991). Firm resources and sustained competitive advantage. *Journal of Management, 17*(1), 99–120. https://doi.org/10.1177/014920639101700108

Becker, G. S. (1964). *Human capital: A theoretical and empirical analysis, with special reference to education*. University of Chicago Press.

Bennett, N., & Lemoine, G. J. (2014). What VUCA really means for you. *Harvard Business Review, 92*(1–2), 27.

Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology, 3*(2), 77–101. https://doi.org/10.1191/1478088706qp063oa

Brynjolfsson, E., & McAfee, A. (2014). *The second machine age: Work, progress, and prosperity in a time of brilliant technologies*. W. W. Norton & Company.

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European Commission. (2021). *Industry 5.0: Towards a sustainable, human-centric and resilient European industry*. Publications Office of the European Union.

Frank, A. G., Dalenogare, L. S., & Ayala, N. F. (2019). Industry 4.0 technologies: Implementation patterns in manufacturing companies. *International Journal of Production Economics, 210*, 15–26. https://doi.org/10.1016/j.ijpe.2019.01.004

Guest, D. E. (2017). Human resource management and employee well-being: Towards a new analytic framework. *Human Resource Management Journal, 27*(1), 22–38. https://doi.org/10.1111/1748-8583.12139

Kitchenham, B., & Charters, S. (2007). *Guidelines for performing systematic literature reviews in software engineering* (EBSE Technical Report EBSE-2007-01). Keele University & Durham University.

Kotter, J. P. (1996). *Leading change*. Harvard Business School Press.

Marler, J. H., & Boudreau, J. W. (2017). An evidence-based review of HR Analytics. *The International Journal of Human Resource Management, 28*(1), 3–26. https://doi.org/10.1080/09585192.2016.1244699

Nahavandi, S. (2019). Industry 5.0—A human-centric solution. *Sustainability, 11*(16), 4371. https://doi.org/10.3390/su11164371

Noe, R. A., Hollenbeck, J. R., Gerhart, B., & Wright, P. M. (2021). *Fundamentals of human resource management* (9th ed.). McGraw-Hill Education.

Northouse, P. G. (2022). *Leadership: Theory and practice* (9th ed.). Sage Publications.

Page, M. J., McKenzie, J. E., Bossuyt, P. M., Boutron, I., Hoffmann, T. C., Mulrow, C. D., ... Moher, D. (2021). The PRISMA 2020 statement: An updated guideline for reporting systematic reviews. *BMJ, 372*, n71. https://doi.org/10.1136/bmj.n71

Schwab, K. (2016). *The fourth industrial revolution*. World Economic Forum.

Snyder, H. (2019). Literature review as a research methodology: An overview and guidelines. *Journal of Business Research, 104*, 333–339. https://doi.org/10.1016/j.jbusres.2019.07.039

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Stone, D. L., Deadrick, D. L., Lukaszewski, K. M., & Johnson, R. (2015). The influence of technology on the future of human resource management. *Human Resource Management Review, 25*(2), 216–231. https://doi.org/10.1016/j.hrmr.2015.01.002

Tarafdar, M., Cooper, C. L., & Stich, J.-F. (2019). The technostress trifecta—Techno eustress, techno distress and design: Theoretical directions and an agenda for research. *Information Systems Journal, 29*(1), 6–42. https://doi.org/10.1111/isj.12169

Teece, D. J. (2007). Explicating dynamic capabilities: The nature and microfoundations of sustainable enterprise performance. *Strategic Management Journal, 28*(13), 1319–1350. https://doi.org/10.1002/smj.640

Teece, D. J., Pisano, G., & Shuen, A. (1997). Dynamic capabilities and strategic management. *Strategic Management Journal, 18*(7), 509–533. https://doi.org/10.1002/(SICI)1097-0266(199708)18:7<509::AID-SMJ882>3.0.CO;2-Z

Verhoef, P. C., Broekhuizen, T., Bart, Y., Bhattacharya, A., Dong, J. Q., Fabian, N., & Haenlein, M. (2021). Digital transformation: A multidisciplinary reflection and research agenda. *Journal of Business Research, 122*, 889–901. https://doi.org/10.1016/j.jbusres.2019.09.022

World Economic Forum. (2025). *The future of jobs report 2025*. World Economic Forum.

Wright, P. M., & McMahan, G. C. (2011). Exploring human capital: Putting 'human' back into strategic human resource management. *Human Resource Management Journal, 21*(2), 93–104. https://doi.org/10.1111/j.1748-8583.2010.00165.x

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