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### Upskilling and Reskilling: Adaptive Strategies For HR Management in Facing The Industrial Revolution 5.0

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**Abstract:** *The Industrial Revolution 5.0 has given rise to a new paradigm in human resource (HRM) management, emphasizing the integration of technological advancements and humanistic values. This shift demands a shift in the role of HR from an administrative function to a strategic partner for organizations capable of bridging the collaboration between humans and machines. In this context, upskilling and reskilling strategies are crucial instruments for addressing the challenges of technological disruption and competency gaps. By enhancing technical skills and soft skills such as empathy and critical thinking, the workforce is expected to be more adaptive to future industrial dynamics. This research uses a qualitative method with a literature review approach to explore practices and theories related to HRM development strategies in the Industrial Revolution 5.0 era. Analysis is conducted using a thematic approach to identify organizational policy patterns in responding to structural changes. The study results indicate that the success of upskilling and reskilling programs is largely determined by an inclusive learning culture, transformational leadership, and digital infrastructure readiness. Integrating training strategies within the Strategic Human Resource Management (SHRM) framework is key to sustainability. Therefore, HRM development strategies should not be merely reactive but should be a long-term investment for organizational competitiveness and sustainability.*

**Keywords:** *Adaptability, Reskilling, Upskilling*



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### INTRODUCTION

The Industrial Revolution 5.0 is the next phase of the Industrial Revolution 4.0, marked by the integration of cutting-edge technologies such as artificial intelligence, intelligent robotics, and cyber-physical systems that are increasingly integrated into human life. However, unlike its predecessors, which emphasized automation and efficiency, the Industrial Revolution 5.0 prioritizes a human-centered approach and sustainability values (Handayani, 2024). In this context, the workforce is required not only to master technology but also to be able to forge harmonious collaboration between machines and humans. Therefore, the need for adaptive HR management strategies is increasingly crucial.

This rapid change in the work landscape has a direct impact on the competency structure of the workforce. The gap between the skills required by industry and the skills possessed by the workforce is a major challenge in this transition. The World Economic Forum (2020) noted that more than 50% of the global workforce will need to reskill in the next five years to remain relevant. This means that organizations need to formulate HR development strategies that are not merely reactive but also proactive in anticipating future skills needs.

In facing these dynamics, the concepts of upskilling and reskilling have become two core strategies used by organizations to ensure continued productivity and competitiveness. Upskilling refers to enhancing existing skills to meet new challenges, while reskilling refers to retraining for different roles due to shifting job requirements. These two strategies serve not only as adaptation mechanisms but also as long-term investments in organizational capabilities (Anas et al., 2025).

Human resource management, as a strategic function, plays a central role in developing effective upskilling and reskilling policies. Competency-based workforce planning is a relevant approach in this regard. Through skills gap mapping and predictive analysis of future needs, organizations can design training programs that are not only

responsive to technological changes but also support sustainable employee career growth (Ramadian & Ramadhina, 2025). This approach aligns with the principle of human resource development based on lifelong learning.

Beyond technical aspects, the Industrial Revolution 5.0 also demands the development of soft skills such as creativity, empathy, communication, and critical thinking (Azizah et al., 2025). These competencies differentiate the roles of humans and machines in modern work systems. Research by the McKinsey Global Institute (2021) shows that non-technical skills are crucial for increasing work effectiveness in a digital environment. Therefore, upskilling and reskilling should not solely focus on increasing technological capacity but should also incorporate the strengthening of humanistic values.

In practice, the success of upskilling and reskilling strategies is heavily influenced by the organizational ecosystem. A learning culture, leadership support, and the readiness of digital training infrastructure are key factors determining the effectiveness of these programs (Anshori et al., 2025). Organizations that are able to internalize a culture of innovation and adaptability will be able to respond more quickly to disruption, while creating an inclusive and highly competitive work environment. Therefore, a holistic and systemic approach is needed in HR transformation management. Furthermore, it is crucial to integrate upskilling and reskilling policies into long-term business strategies. This not only strengthens organizational competitiveness but also supports the sustainable development agenda (SDGs), particularly the pillars of quality education and decent work (Darussalam et al., 2025). By empowering the workforce through sustainable capacity development, organizations contribute to inclusive and resilient economic growth in the digital era.

In conclusion, upskilling and reskilling strategies are not merely technical solutions to industrial change, but rather represent a new paradigm in human resource management that is transformative and future-oriented. The Industrial Revolution 5.0 encourages

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organizations to develop a workforce that is not only technologically competent but also socially and ethically proficient (Leon, 2023). Therefore, adaptation through skills development is a crucial foundation for organizational sustainability and workforce well-being amidst increasingly complex global dynamics.

## METHOD

This research uses a qualitative approach with a literature review method, which aims to examine in-depth upskilling and reskilling strategies in HR management in the face of the Industrial Revolution 5.0. This approach was chosen because it is suitable for exploring theoretical concepts and actual practices that have been examined in various previous studies. According to Ridley (2012), literature studies play a crucial role in building a strong conceptual foundation before developing further empirical studies, especially on emerging issues such as competency development in the era of disruption.

The data used in this study were sourced from secondary literature in the form of international scientific journals, reports from global institutions (such as the World Economic Forum and McKinsey), and other relevant academic documents, with publication dates limited to the last five years (2019–2024). The literature was selected based on inclusion criteria that considered topic relevance, topicality, and scientific validity. Searches were conducted through databases such as Scopus, ProQuest, and Google Scholar using keywords such as "upskilling," "reskilling," "HR strategy," and "Industry 5.0."

Data analysis was conducted using thematic content analysis, consisting of data reduction, theme categorization, and information synthesis. This process follows the framework of Braun & Clarke (2006), which emphasizes the importance of data coding to identify meaningful thematic patterns. The main themes examined include human resource development strategies, digital competencies, humanistic skills, and technology integration into organizational policies.

To maintain validity, this study employed source triangulation and expert discussions to strengthen the interpretation of the findings. Creswell (2014) emphasized that validity in qualitative studies can be enhanced by confirming findings through multiple literature sources and stakeholders. Thus, this method is expected to provide a comprehensive picture of how organizations can respond to structural and technological changes by strengthening workforce competencies.

## RESULTS AND DISCUSSION

### 1. Transformation of the Role of Human Resource Management in the Era of the Industrial Revolution 5.0

The transformation of the role of human resource management (HRM) in facing the dynamics of the Industrial Revolution 5.0 is a strategic response to the systemic disruption brought about by the integration of advanced technology and changes in work values. HRM is no longer positioned merely as an administrative unit carrying out bureaucratic functions, but has shifted to become a strategic partner in designing an adaptive and innovative organizational architecture. This aligns with the ideas of Gamberini & Pluchino (2024), who emphasize the importance of redefining the HRM function into a strategic dimension, with a focus on developing organizational capabilities, strengthening corporate culture, and developing long-term competency strategies.

In the context of the Industrial Revolution 5.0, characterized by the synergy between artificial intelligence and the human touch, the existence of HR takes on a new meaning as an entity capable of bridging the relationship between human values and machine capabilities. The human-centric approach that is the main characteristic of this era implies that the role of HR must go beyond administrative management and move towards holistic, inclusive, and sustainable human resource management (Li, L & Duan, 2025). Organizations are required to focus not only on optimizing efficiency through automation, but



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also on creating value through human and technological collaboration in a dynamic and ethical workplace.

These changes require HR to formulate policies that are responsive to the volatility of the external environment, emphasizing the importance of designing competency development policies that are adaptive, contextual, and inclusive (Kumar et al., 2025). This approach includes mainstreaming the principles of lifelong learning, adopting flexible work models (hybrid/flexible working), and instilling the values of diversity and equality in talent management systems. Furthermore, competency development policies must also consider the need for new soft skills such as emotional intelligence, digital literacy, and the ability to work across functions amidst the complexity of modern organizations (Asmiati et al., 2023).

Furthermore, the transformation of HR's role in this era includes the responsibility to build organizational resilience in the face of unexpected dynamics. This resilience is not only related to operational continuity but also encompasses strategic adaptability, structural flexibility, and agility in the face of change (Temjanovski et al., 2025). Therefore, HR must develop transformative leadership models, internal coaching systems, and change management strategies that can foster collective readiness to navigate an uncertain future.

In the sustainability dimension, HR management is expected to not only manage the workforce but also act as a catalyst for the organization's sustainability agenda. This includes integrating ESG (Environmental, Social, and Governance) principles into employee recruitment, training, and retention processes, as well as developing green upskilling programs aimed at building awareness and competency in addressing the challenges of climate change and corporate social responsibility. HR plays a crucial role in ensuring that business strategies align with the principles of inclusive and ethical sustainable development (Saputro, 2024; Rachman et al., 2024).

Digital transformation in HR management cannot be ignored. The adoption

of technologies such as HR analytics, cloud-based digital platforms, and artificial intelligence in recruitment and performance management processes creates significant efficiency opportunities. However, it is important to emphasize that the use of these technologies must uphold ethical values, data privacy, and maintain a humanistic touch in decision-making (Octaviany et al., 2022). Therefore, strengthening digital literacy among HR practitioners is an urgent agenda to enhance the effectiveness of this transformation.

The consequence of these changes is a repositioning of the role of human resource management as a key player in building long-term organizational competitiveness. HR plays a role not only in creating internal efficiency but also in fostering an innovative culture, strengthening employee engagement, and creating a supportive and collaborative work environment (Fawehinmi et al., 2024). Within this framework, HR is responsible for facilitating strategic value creation based on human resources, the organization's most vital asset.

Thus, the transformation of the role of HR management in the Industrial Revolution 5.0 era cannot be understood as a linear process, but rather as a transformative one that demands paradigm adjustments, competency updates, and the strengthening of structures and processes that support humanistic values, sustainability, and technological collaboration. In an increasingly complex and digitalized workplace, HR must emerge as both a pioneer of change and a guardian of ethical and humanitarian values in modern organizations.

## 2. Upskilling and Reskilling Strategies as a Response to Competency Gaps

The exponential technological transformation, marked by the penetration of automation, artificial intelligence, and the digitalization of work processes, has triggered structural disruption in the workforce. This phenomenon has created an increasingly pronounced competency gap between the workforce's actual capabilities and future competency demands. This gap not only



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hampers organizational productivity but also increases the risk of structural unemployment if not addressed systematically (Silalahi et al., 2025). Therefore, upskilling and reskilling strategies are inevitable as a strategic response to this challenge. In this context, organizations are required to not only increase the technical skills of their workforce but also develop cognitive and affective aspects relevant to the collaborative and humanistic dynamics of Industry 5.0.

A strategic approach to implementing upskilling and reskilling ideally begins with a process of mapping future competency needs. This process involves a competency gap analysis based on a comprehensive competency framework (Kashemsanta & Plangsorn, 2024). The use of HR data and analytics is crucial in this process, in line with an evidence-based HRM approach, to ensure that training programs are not based on mere assumptions but on empirically identified needs. In practice, several leading global organizations have implemented this mapping through an artificial intelligence-based skills taxonomy that enables the alignment of training needs with long-term business roadmaps.

Furthermore, sustainable learning strategies must be designed dynamically and adaptively. The integration of digital technology into the learning process is a crucial and unavoidable element. The use of digital learning platforms such as Learning Management Systems (LMS), Massive Open Online Courses (MOOCs), and microlearning tools has been shown to increase flexibility, affordability, and personalization in the learning process. The concept of microlearning, which delivers training materials in a concise, focused, and easily accessible format, has been shown to increase learning absorption and retention, as supported by Muchiri's (2022) findings. Meanwhile, a personalized learning approach, which utilizes adaptive learning algorithms, provides a learning experience aligned with individual needs, preferences, and competency levels.

In addition to technical skills such as digital literacy, data analytics, and programming fundamentals, learning must also

emphasize strengthening non-technical skills that are transversal and contextual. Skills such as critical thinking, complex problem-solving, cross-disciplinary collaboration, interpersonal communication, and adaptability are essential in addressing the complexities of the modern workplace. McKinsey & Company (2022) emphasizes that a balance between hard and soft skills is a crucial foundation for career resilience amidst structural uncertainty. Therefore, a holistic approach that encompasses strengthening both types of skills is a proactive response to digital disruption and changing labor market needs.

However, implementing upskilling and reskilling strategies is not without various structural and cultural challenges. Budget constraints, resistance to change, lack of learning technology infrastructure, and a weak learning culture within the organization are key inhibiting factors identified in various studies. Organizations that fail to internalize the value of learning as part of their work culture will struggle to build sustainable learning systems (Arini & Respatiningsih, 2024). Therefore, strong managerial commitment, investment in digital infrastructure, and strategic partnerships with external training institutions are required to strengthen internal capacity.

Several training models proven effective in this context include blended learning and agile learning approaches. Blended learning, which combines face-to-face and online learning, offers the flexibility and interactivity needed in modern training processes. Meanwhile, agile learning emphasizes project-based learning and rapid iteration, allowing for the adaptation of materials to dynamic business needs. Gunawan & Stevanie (2025) noted that organizations implementing agile learning demonstrated increased innovative capabilities and faster time-to-market compared to organizations with conventional training systems.

In the long term, this strategy has been proven to not only improve individual competencies but also strengthen the adaptive capacity of the organization as a whole. A study by Mokobombang & Natsir (2024) stated that organizations that invest in systematic training



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have a significant competitive advantage, particularly in terms of talent retention, operational efficiency, and speed of adaptation to market changes. On the other hand, unstructured training strategies only produce short-term results without providing a transformational impact on organizational culture and business sustainability.

Based on these findings, it can be concluded that upskilling and reskilling strategies are fundamental elements of a future-oriented human resource development agenda. These strategies must be data-driven, personalized, and supported by modern learning technologies. A balanced integration of technical and non-technical skills is key to building a resilient, adaptive, and innovative workforce. Therefore, HR management is required to play a strategic role in ensuring that organizations not only survive but also thrive in a dynamically changing work environment.

### 3. Implementation Challenges and Supporting Factors for the Success of Upskilling-Reskilling

In the context of digital transformation and accelerating industrial disruption, implementing upskilling and reskilling programs has become a strategic imperative for the continued competitiveness of organizations. However, these efforts are not without various structural and cultural challenges that hinder their effective implementation. One of the most crucial obstacles is the limited allocation of training budgets, particularly among micro, small, and medium enterprises (MSMEs), which generally prioritize short-term operational efficiency over long-term investment in human resource development. This phenomenon is reinforced by data from the World Economic Forum (2023), which shows that approximately 40% of companies in developing countries identify training costs as a major barrier to adopting continuous learning strategies.

Furthermore, another equally significant obstacle lies in the organization's cultural resistance to change. Rigid, hierarchical, or status-quo-oriented work cultures often foster fear and distrust of new training initiatives,

especially if the program has the potential to disrupt work habits or requires the adoption of unfamiliar technology. From the perspective of Kurt Lewin's (1947) theory of organizational change, failure to achieve the "unfreezing" stage, the initial phase of building awareness and readiness for change, can hinder subsequent transformational stages and lead to systemic resistance that is difficult to overcome without progressive leadership intervention (Gruenewald & Mueller, 2025).

Furthermore, implementation challenges are exacerbated by the digital infrastructure gap, particularly in geographic regions or organizational units that lack equitable access to information technology. The lack of adequate digital devices, limited high-speed internet connections, and the absence of technically and pedagogically responsive learning platforms are substantial barriers to optimizing online and hybrid learning (Leon, 2023). This inequality creates a digital divide that not only impacts access to information but also widens competency disparities between workgroups within an institution.

Along with infrastructure challenges, low levels of digital literacy among a large portion of the workforce also hinder the implementation of skills development programs. Employees from older generations or those with non-technical backgrounds tend to experience cognitive and affective barriers in understanding new technologies. Therefore, an inclusive, scaffolding-based pedagogical approach is needed, allowing for gradual learning and tailoring to the characteristics of the trainees. Without such an approach, upskilling programs tend to fail to reach the groups most in need of competency interventions.

In facing these complex challenges, transformational leadership plays a crucial role in success. Inspiring, visionary leadership that builds collective commitment to a vision for change creates a work environment that is adaptive to learning. According to Bass and Riggio's (2006) theory, transformational leaders not only drive the technical learning process but also create a psychological climate that supports openness, innovation, and cross-



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functional collaboration. Such leadership acts as a catalyst in building a work culture based on growth and sustainability.

Equally important is the need to integrate HR development strategies with the organization's strategic vision and direction. Upskilling and reskilling implementation must be designed as an integral part of a Strategic Human Resource Management (SHRM) framework that emphasizes alignment between future competency needs and long-term business goals (Jamal et al., 2025). Without this integration, training programs will be reactive, non-systemic, and vulnerable to discontinuity when managerial policy changes or external pressures occur.

Furthermore, establishing a culture of continuous learning is an essential cultural foundation for supporting the success of competency improvement programs. A learning culture that emphasizes reflection, exploration of new knowledge, and allowing space for experimentation and constructive failure will create a learning organization, as proposed by Peter Senge (1990). Such organizations are not only responsive to external changes but also proactive in developing internal potential through continuous innovation.

Ultimately, a systemic approach is essential in developing and implementing human resource development policies. This approach encompasses not only technical training but also requires synergy between organizational structure, information technology, strategic planning, and human resource governance. Thus, upskilling and reskilling programs are no longer viewed as short-term projects, but rather as strategic investments in building organizational capabilities sustainably and adaptively to increasingly complex and unpredictable industry dynamics.

### CONCLUSIONS

The overall dynamics of the transformation of the role of HR management in the Industrial Revolution 5.0 era emphasize the urgency of repositioning the HR function from an administrative entity to a strategic actor

in creating human and technology-based organizational value. In an increasingly complex ecosystem, the synergy between technological sophistication and human values is a key foundation for organizational sustainability. Upskilling and reskilling strategies have emerged as an integral response to digital disruption and the widening competency gap. An adaptive, data-driven approach that integrates technical and non-technical skills provides a crucial framework for building a resilient workforce. However, the effectiveness of these programs is often hampered by budget constraints, cultural resistance, and disparities in digital infrastructure. Therefore, transformational leadership and a culture of continuous learning are crucial prerequisites for creating a work environment that supports sustainable competency development. HR is also required to be able to manage multigenerational dynamics and global complexity with an inclusive and values-based approach. In this context, HR development strategies must align with the organization's strategic direction to generate long-term impact. Integrating training programs into the Strategic Human Resource Management (SHRM) framework is imperative to ensure sustainability and effectiveness. Thus, investment in human resource development is not only a tool to increase competitiveness, but also an ethical and strategic foundation for organizational sustainability.

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