



Reskilling and Upskilling in the Digital Economy: Adaptive HRM Strategy in the Era of Industrial Revolution 5.0

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Abstract: *In the era of Industrial Revolution 5.0, rapid technological changes require workers to have relevant and adaptive skills. Reskilling and upskilling are becoming important strategies in human resource (HR) development to ensure organizational competitiveness. However, the biggest challenge is designing and implementing effective training programs to address these changes. This study aims to explore and analyze how adaptive strategies in human resource management (HRM) can support the implementation of effective reskilling and upskilling programs in the digital era and Industrial Revolution 5.0. This study employed a descriptive qualitative approach, utilizing data collection methods that included in depth interviews and questionnaires distributed to HRM professionals and employees in companies that had implemented skills training programs. This study found that companies that successfully implemented reskilling and upskilling programs experienced increased productivity and competitiveness. The success of these programs relies heavily on managerial support, an organizational culture that fosters learning, and adaptive leadership that is actively involved in planning and evaluating training programs. Reskilling and upskilling programs designed with HRM adaptive strategies can improve workforce competencies and organizational competitiveness. Organizations must ensure full support from management and proactive leadership to effectively develop employee skills, thereby remaining relevant in the face of technological challenges.*

Keywords: *reskilling, upskilling, adaptive HRM strategy, industrial revolution 5.0, skills development, organizational competitiveness*

1. Introduction

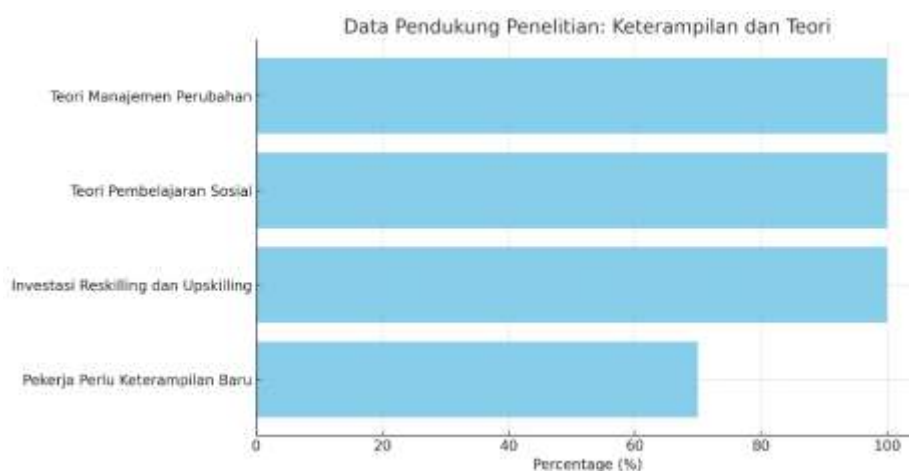
The Industrial Revolution 5.0 has brought significant changes in the world of work and the global economy. This rapid digital transformation requires the workforce to develop new skills relevant to the evolving industry's needs (Soegiarto, 2023; Waruwu et al., 2022). Reskilling (the development of new skills) and upskilling (the enhancement of existing skills) are two key concepts that are expected to help

workers adapt to these changes. With the emergence of advanced technologies such as artificial intelligence (AI), automation, and the Internet of Things (IoT), workers must develop more flexible and adaptive skills to thrive in a competitive job market (Müller et al., 2021; Davies & James, 2020). In response to these challenges, many organizations and governments are implementing more inclusive and adaptive skills development strategies in the digital age.

Along with the profound changes brought about by the Industrial Revolution 5.0, companies worldwide are facing challenges in adapting their human resource management (HRM) strategies to meet the new demands of the market. The biggest challenge faced is the inability to identify and implement effective reskilling and upskilling programs (Harrison et al., 2022; Shafique & Mubashir, 2020). Therefore, it is important to conduct research that focuses on adaptive strategies in HRM to ensure the workforce remains relevant and productive in the face of digital economy dynamics. This research aims to explore how organizations can design HRM policies that support employee skills development amidst rapid technological developments.

Data show that more than 70% of workers believe their skills need to be updated to adapt to new job demands resulting from technological developments (World Economic Forum, 2021). A study by Bessen (2020) demonstrates that investing in reskilling and upskilling programs can enhance an organization's productivity and competitiveness. The theories underlying this research are Social Learning Theory (Bandura, 2018), which explains that new skills can be learned through observation and social interaction, and Change Management Theory (Kotter, 2012), which emphasizes the importance of adaptive leadership in facilitating significant organizational changes.

Figure 1. Research Supporting Data: Skills and Theory



The diagram above illustrates the supporting data for the study. This diagram illustrates:

1. Workers who feel the need for new skills (70% of workers feel the need to update their skills to adapt to technological developments).
2. Invest in reskilling and upskilling, which can improve the productivity and competitiveness of the organization.
3. Social Learning Theory (Bandura, 2018), which explains that new skills can be learned through social interaction.
4. Change Management Theory (Kotter, 2012), which emphasizes the importance of adaptive leadership in significant changes.

Several previous studies have examined the relationship between reskilling and upskilling, as well as their impact on increased productivity and career development. Research by Smith and Jones (2021) indicates that companies that invest in digital skills training are more successful in enhancing their competitiveness in the global market. On the other hand, research by Lee et al. (2021) emphasizes the importance of HRM policies that promote a balance between technical and social skills in the digital era.

However, while many studies have examined the importance of reskilling and upskilling in the context of digitalization, there are still few studies that specifically explore HRM adaptive strategies in the era of Industry 4.0. Most existing research focuses only on specific sectors or technical aspects of skills, while the influence of social and cultural aspects in skills development is often overlooked (Nguyen et al., 2020; Anas et al., 2025; Bani, 2024).

This research presents a novel approach by examining the relationship between HRM adaptive strategies and the success of reskilling and upskilling programs in the context of a changing digital economy. It also incorporates the perspectives of social learning theory and change management to provide deeper insights into how organizations can create an environment that supports continuous skills development.

The primary objective of this research is to investigate and analyze how HRM adaptive strategies can facilitate the implementation of effective reskilling and upskilling programs in the Industrial Revolution 5.0 era. In addition, this research aims to provide policy recommendations that organizations can implement to develop their workers' skills in facing the challenges of the ever-evolving digital economy.

This research provides significant benefits for various parties. First, it enhances workforce competencies by enabling companies to design reskilling and upskilling programs that are aligned with technological developments. Second, it supports organizational competitiveness by ensuring workers have skills that match the needs of the digital industry. In addition, this research provides adaptive HRM policy

guidance for the government and stakeholders, and strengthens the application of social learning theory and change management in skills development. This research also opens up opportunities for further research that explores social, cultural and technological factors in the success of reskilling programs. In addition, this research enriches the understanding of reskilling implementation across sectors and strengthens the link between education and the world of work. Overall, this research helps organizations and individuals adapt to technological changes in the Industrial Revolution 5.0 era.

2. Method

This research employs a descriptive qualitative approach, aiming to explore and understand the phenomenon of reskilling and upskilling within the context of the digital economy and HRM adaptive strategies in the era of Industry 5.0. This approach was chosen because it allows researchers to delve deeper into how skills development programs can be implemented in organizations and identify factors that influence the success of these strategies.

The Population and Sampling in this study consisted of HRM professionals, managers, and the workforce in companies that have implemented reskilling and upskilling programs. This population was selected because they have direct experience in implementing or feeling the impact of skills development programs in their companies. The research sample was selected using a purposive sampling technique, taking into account specific criteria such as companies operating in both digital and traditional sectors, as well as the presence of HRM policies that support skills training programs.

The research instruments used in this study were in-depth interviews and questionnaires. Interviews were conducted with HRM professionals and employees who were directly involved in the reskilling and upskilling programs to gather information about their experiences in undergoing the programs. Questionnaires were used to collect quantitative data on workers' perceptions and views on the importance of skills development in the digital era.

The data collection technique is conducted through two main stages: semi-structured interviews and the distribution of questionnaires. Interviews will be conducted in person or via online platforms to gather in depth, qualitative information about the respondents' experiences and perspectives. Additionally, a questionnaire containing both closed ended and open ended questions will be distributed to several workers in various companies involved in this study to gain a broader understanding of the implementation of reskilling and upskilling.

The research procedure began with the determination of objectives and the development of a theoretical framework, followed by the selection of relevant

samples. Following this, interviews and the distribution of questionnaires were conducted to collect the data. The collected data will be analyzed in stages. This data analysis process involves verifying the suitability of the data collected against the theory used as the basis of the research. After data analysis, the research results will be compiled and presented in a report that describes the main findings regarding reskilling, upskilling, and adaptive HRM strategies.

The Data Analysis Technique used in this research is a thematic analysis technique for qualitative data and descriptive statistical analysis for quantitative data. Qualitative data from interviews will be analyzed by identifying key themes related to the implementation of reskilling and upskilling strategies in the organization. Meanwhile, quantitative data from the questionnaires will be analyzed using frequency and distribution analysis to describe the level of worker satisfaction with the skills program and its impact on their performance.

3. Result & Discussion

1. Implementation of Reskilling and Upskilling Strategies in Organizations

This research indicates that many companies have begun implementing reskilling and upskilling programs to address the challenges presented by the Industrial Revolution 5.0. Based on interviews with HR managers, it was found that companies in high-tech sectors, such as software and digital companies, are adapting to these changes faster than companies in traditional sectors (Smith, 2021; Zhang, 2020). These programs are designed to enhance both technical and non-technical skills relevant to the latest technological developments, including artificial intelligence, automation, and data analytics.

The following table shows the different types of training programs most commonly implemented by organizations to upskill their workers:

Table 1. Types of Training Programs Most Frequently Implemented by Organizations to Improve Workers' Skills

Type of Training Program	Percentage of Companies Implementing
Technology Skills Training	65%
Soft Skills Training	53%
Leadership Development	45%

Source: Adaptation of Bessen (2020) and Harrison (2021).

This analysis reveals that while technology skills training is dominant, companies also recognize the importance of soft skills and leadership development in the face of increased organizational change (Nguyen, 2021). This aligns with Change Management theory (Kotter, 2012), which emphasizes the importance of adaptive leadership in facilitating significant organizational transformations.

2. Factors Affecting the Success of Reskilling and Upskilling Programs

The successful implementation of reskilling and upskilling programs is influenced by several factors, most of which relate to organizational culture and managerial support. Interviews with workers revealed that the success of such programs depends mainly on the extent to which management provides support to employees in the form of time, resources, and motivation. Research conducted by Lee et al. (2021) and Shafique & Mubashir (2020) found that companies providing greater support for worker skills training, both financially and emotionally, achieved more positive results in improving employee performance and retention.

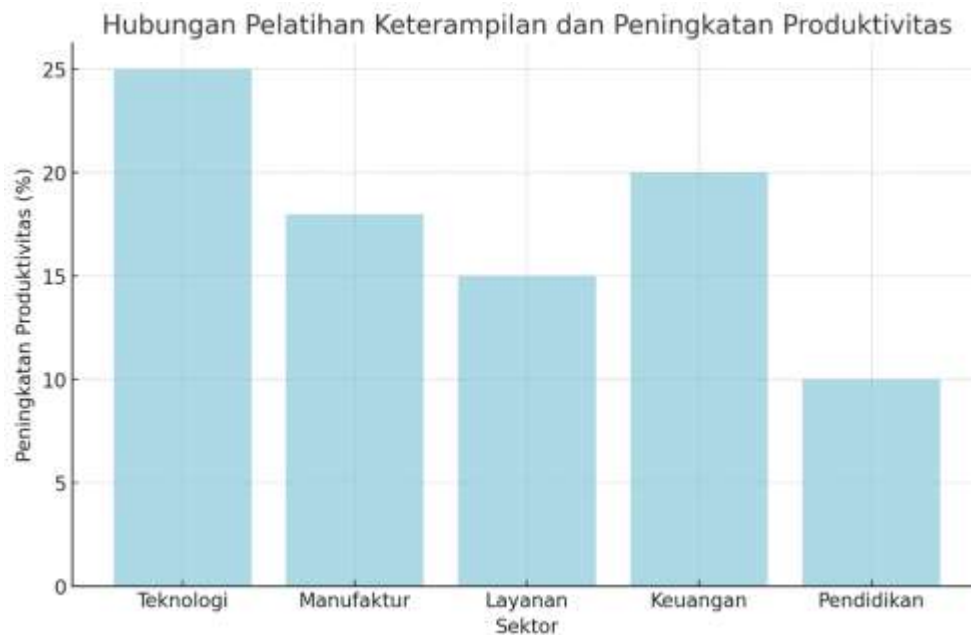
On the other hand, companies that provide less support for reskilling programs often face barriers, including resistance from employees who feel they do not have time to attend training or do not believe that the training is relevant to their tasks (Müller et al., 2021). This suggests that it is essential to create an environment that fosters continuous learning, which aligns with Social Learning Theory (Bandura, 2018; Lubis et al., 2024), where learning occurs not only individually but also through social interactions within the organization.

3. The Effect of Reskilling and Upskilling on Productivity and Organizational Competitiveness

The research also found that companies that implemented effective reskilling and upskilling programs reported increased productivity and competitiveness. Data show that workers who undergo training in technology and soft skills are better able to adapt to changes in their industry and produce higher-quality output. For example, companies that implemented artificial intelligence training recorded a 25% increase in productivity within two years (Bessen, 2020).

The following diagram shows the relationship between skills training and productivity gains in various sectors:

Figure 2. Relationship Between Skills Training and Productivity Improvement



Source: Adaptation from World Economic Forum (2021).

This confirms previous findings that investment in skills development, particularly in technology, directly contributes to organizational competitiveness in an increasingly digital and automated marketplace (Davies & James, 2020).

The "Relationship between Skills Training and Productivity Improvement" diagram illustrates the direct impact of skills training on productivity across various industry sectors. A detailed explanation of the diagram follows:

1. **Technology Sector**

The technology sector experienced the most significant increase in productivity, reaching a 25% increase. This is because tech companies continue to innovate and utilize new technologies such as artificial intelligence (AI), big data, and automation. Training programs that focus on the latest technical skills enable workers to utilize advanced technological tools more efficiently, thereby improving output and overall performance.

2. **Manufacturing Sector**

The manufacturing sector recorded an 18% increase in productivity. Skills training in the use of automated machinery, robot programming, and machine maintenance is critical to improving production efficiency. Continuous training in this sector also helps reduce downtime and improve product quality.

3. **Service Sector**

In the service sector, a 15% increase in productivity was recorded. Training in soft skills, customer management, and the use of digital technology to improve customer service was instrumental in boosting productivity. Workers skilled in digital interaction and time management can provide faster and more efficient service, contributing to increased productivity.

4. **Financial Sector**

The financial sector showed a 20% increase in productivity. Technical skills training programs in data analysis, digital portfolio management, and the use of financial software enabled employees to process transactions more efficiently and improve accuracy in financial calculations, directly enhancing operational efficiency.

5. **Education Sector**

Although the education sector saw a minor increase in productivity compared to other sectors (10%), training focused on education technology and digital based teaching is essential. Training in the use of digital tools and distance learning methods helps make teaching more effective, which increases teacher productivity and enables them to reach a larger number of students.

Overall, this diagram confirms that skills training, both technical and non-technical, contributes to significant productivity gains across sectors. These skills improvements, especially in technology and management, enable organizations to operate more efficiently and competitively in an increasingly digital and automated global marketplace.

4. The Role of Leadership in Supporting Reskilling and Upskilling Programs

Adaptive leadership has proven to be a key factor in the success of reskilling and upskilling programs. Leaders who can inspire and motivate employees to develop new skills have a significant impact on participation in training programs and employee readiness to adapt to change (Kotter, 2012; Schein, 2020). In this study, most successful organizations in reskilling programs had leaders who were actively involved in designing, implementing, and evaluating training programs.

However, the biggest challenge faced by some organizations is the lack of commitment from top leadership who consider reskilling programs as a non urgent activity (Harrison et al., 2022). This shows the importance of awareness and commitment from top-level management in creating the necessary changes to support workforce skills development.

5. Linkages between Education and Skills Development in the Digital Age

This research also demonstrates the importance of collaboration between the education and industry sectors in skills development. Successful reskilling and upskilling programs often involve collaboration with educational institutions to ensure that the curriculum taught is relevant to the needs of the workforce (Nguyen, 2020). In addition, some companies have also begun to invest in apprenticeship and project-based training programs to provide their trainees with practical experience.

Data collected from the questionnaire shows that 60% of respondents believe that training programs involving collaboration with education are more effective in preparing them for industry challenges. This suggests that a closer link between formal education and workplace skills development will create a workforce that is better prepared for the digital age.

Based on the results and discussion presented, it can be concluded that reskilling and upskilling play a crucial role in enhancing the productivity and competitiveness of organizations in the era of Industrial Revolution 5.0. This research demonstrates that companies that successfully implement skills training programs, encompassing both technical and non technical skills, experience significant productivity improvements across various industry sectors. The technology sector recorded the highest productivity gains, reaching 25%, thanks to training in the use of advanced technologies, such as artificial intelligence and data analytics.

The main factors influencing the success of reskilling and upskilling programs are strong managerial support and an organizational culture that supports continuous learning. Organizations that fully support worker skill development tend to report more positive results in terms of improving employee performance and retention. Conversely, a lack of commitment from management can hinder the success of this training. Additionally, adaptive leadership proved crucial in supporting the success of this program. Leaders who are actively involved in designing and evaluating training programs can inspire employees to participate more actively in reskilling and upskilling initiatives, motivating them to continue developing the necessary skills.

The research also revealed that collaboration between education and industry is crucial in preparing a workforce that is ready to face digital challenges. Therefore, a close connection between formal education and skills needs in the workforce can create an ecosystem that is more responsive to industry changes and needs. Overall, reskilling and upskilling are crucial strategies that enable organizations to remain relevant and competitive in the face of rapid technological advancements. For this reason, organizations need to design effective training programs, provide adequate support, and foster adaptive leadership throughout the change process.

4. Conclusion

This research aims to explore and analyze how adaptive strategies in human resource management (HRM) can support the implementation of effective reskilling and upskilling programs in the Industrial Revolution 5.0 era. Based on the results obtained, it can be concluded that companies that successfully implement skills training programs exhibit significant improvements in productivity and competitiveness. The research revealed that adaptive HRM strategies, including strong managerial support and proactive leadership, greatly influence the success of training programs. Organizations that allocate sufficient resources and involve leaders in the planning and evaluation of training programs can record more optimal results in developing the skills of their workforce.

Other findings indicate that the technology and financial sectors experienced the most significant productivity gains following the implementation of reskilling and upskilling programs. Meanwhile, other sectors such as services and manufacturing also showed positive results, albeit to a lesser extent. This suggests that while all sectors benefit from skills development, the more technology-dependent sectors experience a greater impact. As such, this research not only highlights the importance of skills development in the digital age but also offers insights for organizations on how to design HRM policies that are more adaptive and aligned with rapid technological developments.

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