

Analysis of Human Resource Management Development Strategy in Improving Human Capital Quality in the Era of Industrial Revolution 4.0

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ABSTRACT

This study aims to analyze human resource management development strategies and the role of human capital in improving organizational performance in the Industrial Revolution 4.0 era. Rapid technological developments require organizations to effectively manage and develop human resources to remain competitive and adapt to changes in the work environment. Therefore, developing employee competencies, skills, and knowledge is a crucial aspect in increasing organizational productivity and competitiveness. This study uses a qualitative research method with a literature study approach, namely by reviewing various scientific sources such as books, journals, and research reports relevant to the topic of human resource development and human capital. Data analysis techniques are carried out through the process of collecting, reviewing, and analyzing various literature related to human resource development strategies in the digital era. The results of the study indicate that human resource development strategies through training programs, competency improvement, and career development play a significant role in improving workforce quality. In addition, good human capital management can also encourage innovation, increase work productivity, and help organizations face the challenges of technological development in the Industrial Revolution 4.0 era. Thus, organizations need to implement sustainable human resource development strategies to improve organizational performance and maintain a competitive advantage amidst increasingly fierce global competition.

INTRODUCTION

The rapid development of technology in the modern era has brought about significant changes in various aspects of human life, including the economic, social, and organizational spheres. These changes have become increasingly apparent since the emergence of the Industrial Revolution 4.0 concept, characterized by the integration of digital technology, the internet, artificial intelligence, and automation across various work sectors. This situation demands that organizations adapt quickly to increasingly dynamic work environments. In this situation, the existence of human resources is a crucial factor because humans are the primary drivers in running organizational systems and utilizing available technology (Perwita, 2021).

Amidst increasingly advanced technological developments, organizations are required to have not only abundant human resources but also high-quality human resources. The quality of human resources is crucial to an organization's success in achieving its stated goals. Therefore, organizations need to optimally manage and develop employee potential to compete in an increasingly competitive work environment. These development efforts are inseparable from the role of Human Resource Management, which functions to plan, organize, direct, and control all employee potential so that they can work effectively and efficiently (Syah et al., 2023).

Human resource management plays a strategic role in improving the quality of the workforce within an organization. Through various programs such as training, competency development, and career development, organizations can enhance employee capabilities and skills, enabling them to face increasingly complex work challenges. In this context, human resource management no longer focuses solely on personnel administration, but also on building individual capacity to innovate, adapt, and maximize organizational performance (Pahira & Rinaldy, 2023).

Along with the development of digital technology, the concept of human resource management has also undergone significant changes. Organizations today are faced with the demand to integrate digital technology into various work processes, from recruitment systems and employee training to performance evaluations. This situation requires employees to possess digital skills, critical thinking skills, and the ability to collaborate in an increasingly modern work environment. Without the right development strategy, organizations will struggle to optimally utilize technology (Saimin, Noor Salim, Enny Ariyanto, 2023).

Furthermore, changes in work patterns occurring in the digital era have also influenced the characteristics of today's workforce. The modern generation of workers tends to have different expectations of the work environment, such as opportunities for growth, work flexibility, and a work environment that supports creativity and innovation. Therefore, organizations need to design human resource development strategies that adapt to the needs of today's generation of workers to increase employee engagement and loyalty to the organization (Nurqamar, Ulfa, Hafizhah, Fadhillah, & Rahmi, 2022).

In the context of modern organizations, human resources are no longer viewed merely as labor, but as vital assets with strategic value for organizational development. This concept has become known as Human Capital, emphasizing that the quality of employees' knowledge, skills, experience, and creativity is the primary asset for organizations in creating competitive advantage. Therefore, organizations need to make significant investments in human resource development to enhance the value of their human capital (Almismary, MF, & Hadi, 2020) Human capital development is a crucial strategy for organizations facing increasingly fierce global competition. Organizations that effectively manage and develop human capital will be better able to create innovation, increase work productivity, and maintain organizational sustainability. Conversely, organizations that neglect human resource development will struggle to cope with the rapidly changing business environment.

According to data from the World Economic Forum, approximately 50% of the global workforce is expected to need to reskill and update their competencies to remain relevant with technological developments in the next few years. This data shows that technological change not only impacts organizational work systems but also demands continuous improvement in human resource competencies (Widiastuti, 2020) This further emphasizes the importance of a systematic and planned human resource development strategy. Furthermore, a report from the Central Statistics Agency (BPS) shows that the quality of Indonesia's workforce still faces various challenges, particularly in terms of technological skills and work productivity. Many workers still lack the competencies needed for modern industry. This situation demonstrates that human resource development is an aspect that requires serious attention from both organizations and other stakeholders.

At the organizational level, implementing effective human resource development strategies can be done through various approaches, such as competency-based training programs, career development, leadership development, and the use of technology in employee learning processes. These strategies are expected to improve the quality of human resources, enabling them to adapt to technological changes and make optimal contributions to the organization. However, in practice, many organizations still lack the ability to manage human resource development optimally. Employee development programs are often not designed systematically and sustainably, resulting in suboptimal results (Abdillah & Nugraha, 2019) This condition can lead to low quality human capital in an organization, which can ultimately affect the organization's performance and competitiveness in the midst of global competition.

The purpose of this study is to analyze in depth the Human Resource Management development strategy in improving the quality of Human Capital in the Industrial Revolution 4.0 era. In addition, this study also aims to identify various factors that influence the success of human resource development in organizations, examine the role of training and competency development in improving the quality of the workforce, and analyze how human resource management strategies can increase productivity, creativity, and organizational

competitiveness amidst the development of digital technology. This study also aims to provide an overview of the importance of effective human capital management as an effort to improve organizational performance and provide recommendations for human resource development strategies that are relevant to organizational needs in the era of digital transformation.

RESEARCH METHODS

This study uses a qualitative research approach with a library research method. This approach was chosen because the research focuses on analyzing concepts, theories, and various scientific studies related to the development of Human Resource Management in improving the quality of Human Capital. Through a qualitative approach, researchers can gain a deeper understanding of various phenomena that occur in human resource management in the era of modern technological development. The library research method allows researchers to examine various scientific sources such as books, journals, research reports, and official documents relevant to the research topic, thus producing a comprehensive and systematic analysis (Sugiyono, 2021).

The type of research used in this study is qualitative descriptive research. Descriptive research aims to systematically, factually, and accurately describe various concepts and strategies related to human resource development in organizations. Through this approach, the researcher seeks to explain how human resource development strategies can play a role in improving the quality of human capital amidst the changes occurring in the Industrial Revolution 4.0 era. By using a descriptive method, this study not only presents existing theories but also examines various relevant previous research findings to provide a clearer picture of the phenomenon under study (Rukminingsih, 2020).

The data sources in this study consist of secondary data obtained from various scientific literature relevant to the research topic. This data includes academic books, national and international journal articles, research reports, and publications from official institutions related to human resource development and human capital. Furthermore, data was obtained from reports from international and national institutions that provide information on developments in the world of work and workforce quality in the digital era, such as reports published by the World Economic Forum and the Central Bureau of Statistics. The use of these various data sources aims to strengthen the analysis and provide a more comprehensive picture of human resource development strategies within organizations (Sugiyono, 2020).

The data collection technique in this study was carried out through documentation, namely by collecting various documents, literature, and research results relevant to the topic being studied. The researcher conducted a systematic literature search process by selecting sources with high credibility and strong relevance to the research. After the data was collected, the researcher grouped and classified the data based on themes related to human resource development strategies, improving the quality of human capital, and organizational challenges in the digital era. This process was carried out so that the data obtained could be analyzed in a more structured and easily understood manner.

The data analysis technique used in this study is qualitative descriptive analysis. The analysis was conducted by reviewing, comparing, and interpreting various concepts and research findings collected from various literature sources. The researchers then systematically compiled the data to generate a deeper understanding of human resource management development strategies in improving the quality of human capital. Through this analysis process, it is hoped that the research will provide a clear picture of the importance of human resource development as a key factor in increasing organizational competitiveness amidst the changes occurring in the Industrial Revolution 4.0 era.

RESULTS

The research results show that Human Resource Management development strategies play a crucial role in improving the quality of Human Capital in the Industrial Revolution 4.0 era. The rapid development of digital technology has transformed work patterns in various organizations, requiring workers to possess more complex capabilities than before. Organizations today require not only workers capable of completing routine tasks, but also workers capable of adapting to technological changes, possessing creativity, and producing innovations that can improve organizational performance. Therefore, human resource development strategies are a key factor that organizations need to consider in facing the challenges of increasingly rapid technological development.

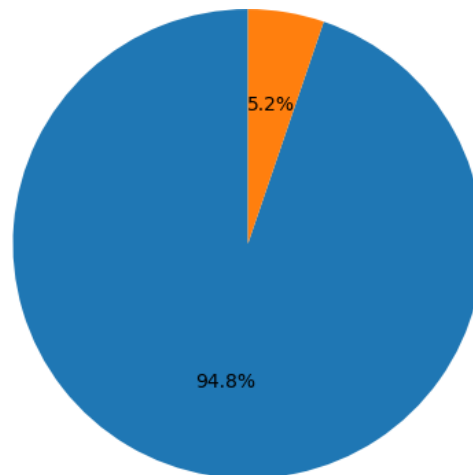
In the context of modern organizations, human resource development no longer focuses solely on improving technical skills, but also encompasses the development of critical thinking, communication, collaboration, and the ability to utilize digital technology. Various organizations are beginning to recognize that human resources are a crucial asset in determining organizational success. Therefore, many organizations have begun implementing various human resource development strategies such as training programs, competency development, and career development for employees. These strategies aim to improve the quality of the workforce so that they can contribute optimally to achieving organizational goals.

Human resource development is also a crucial step in enhancing organizational competitiveness amidst increasingly fierce global competition. Organizations with a highly competent workforce will be more adaptable to change and capable of creating innovation in various fields of work. Furthermore, a workforce with adequate skills and knowledge can also increase work productivity and the quality of work. Therefore, human resource development needs to be carried out continuously to ensure organizations maintain their sustainability and enhance their competitive advantage in the future.

According to data from the Central Statistics Agency (BPS), Indonesia's workforce will reach approximately 153 million people by 2025, with approximately 145 million employed. However, the majority of the workforce still works in the informal sector, which has relatively low productivity.

Furthermore, a report from the World Economic Forum indicates that approximately 50% of the global workforce will need to reskill to remain relevant with digital technology developments in the coming years. This data demonstrates that despite the substantial workforce, the quality of human resources still needs to be improved to cope with changes in the digital workplace.

Figure 1. Graph of the Composition of the Workforce in 2025



In addition to improving technical skills, human capital development also relates to enhancing employees' non-technical or soft skills. Abilities such as leadership, communication, creativity, and teamwork are crucial factors in supporting organizational success. In the era of the Industrial Revolution 4.0, organizations need a workforce that not only possesses technical skills but also the ability to work flexibly and adapt to increasingly dynamic work environments (Gok, Sinambela, Depari, Katolik, & Thomas, 2025).

The results of this study also show that organizations that actively implement employee training and development programs tend to have higher levels of work productivity. Training programs can help employees improve their job skills and understand the use of increasingly advanced technology. Furthermore, career development programs can also increase employee motivation, making them more committed to carrying out their duties and responsibilities within the organization.

Furthermore, an organizational culture that supports continuous learning is also a crucial factor in improving the quality of human capital. Organizations that provide opportunities for employees to continuously learn and develop their skills tend to have a more innovative and productive workforce. A work environment that fosters creativity and openness to change can also encourage employees to be more proactive in developing their potential.

This study also found that the use of technology in human resource management can help organizations improve the effectiveness of employee management. Digital technology can be used in various human resource management processes, such as recruitment, online training, performance evaluations, and employee competency development. By optimally utilizing technology, organizations can manage human resources more efficiently and sustainably improve the quality of human capital.

Furthermore, collaboration between organizations, educational institutions, and the government also plays a crucial role in improving the quality of human resources. Education and training programs tailored to industry needs can help prepare a workforce with competencies relevant to the evolving world of work. Therefore, collaboration between various parties is a strategic step in improving the quality of human capital in the digital era.

Overall, the results of this study indicate that human resource management development strategies play a crucial role in improving the quality of human capital in the Industrial Revolution 4.0 era. Organizations that are able to effectively manage and develop human resources will be better able to face technological change and global competition. Therefore, human resource development needs to be a top priority in organizational strategy to create a competent, innovative workforce capable of maximizing its contribution to the organization's future development.

DISCUSSION

The development of digital technology in the Industrial Revolution 4.0 era has brought significant changes to various aspects of human life, including organizational work systems and workforce management. These changes are marked by the increasing use of digital technology, automation, and the integration of information systems into various work processes. This situation is pushing organizations to make various adjustments to their human resource management strategies to cope with the increasingly dynamic work environment. In this situation, organizations are not only required to develop their existing technology but also to develop the quality of their human resources to optimally utilize that technology.

In the context of modern organizations, the role of Human Resource Management is becoming increasingly important in managing and developing workforce potential. Human resource management is not only related to personnel administration processes but also encompasses various strategies aimed at improving employee capabilities, skills, and competencies. Effective human resource development can help organizations increase work productivity, create innovation, and enhance organizational competitiveness. Therefore, developing the quality of Human Capital is a crucial factor that organizations need to consider in facing the challenges of technological change and global competition.

1. Human Resource Management Development Strategy

A human resource management development strategy is a crucial step an organization takes to improve the quality of its workforce. This strategy encompasses various planned efforts to enhance employees' abilities, skills, and knowledge, enabling them to carry out their duties and responsibilities more effectively. In an era of increasingly rapid technological development, organizations need to design human resource development strategies that are adaptive to changes in the work environment. This is crucial so that employees

can continuously improve their competencies and adapt to technological developments within the organization.

One strategy many organizations employ is employee training and development programs. Training programs aim to improve employees' job skills and knowledge in performing various job tasks. Furthermore, training can help employees understand the use of new technologies in their work processes. Through ongoing training programs, organizations can ensure that employees possess the skills needed for their jobs and increase productivity.

In addition to training programs, human resource development can also be achieved through career development programs, which provide employees with opportunities to improve their competencies and achieve higher positions within the organization. Career development opportunities can increase employee motivation and encourage them to continuously improve their skills. Thus, human resource development strategies not only benefit employees but also positively impact overall organizational performance.

The results of this discussion are in line with research conducted by (Sumanti, 2024) which states that human resource development strategies through training and competency development are important factors in improving employee performance. Armstrong explains that organizations that consistently provide training programs to their employees will be able to improve the skills, knowledge, and work abilities of their workforce, making them better prepared to face changes in the work environment. These findings indicate that ongoing training can be an effective way to improve employee productivity and work quality within an organization.

In addition, this research also has similarities with research conducted by (Pahira & Rinaldy, 2023) which explains that career development is a crucial part of human resource management strategy. His research indicates that organizations that provide career development opportunities to employees tend to have higher levels of work motivation, loyalty, and organizational commitment. This suggests that human resource development strategies should not only focus on improving job skills but also on providing opportunities for employees to develop and achieve higher career levels, thereby enabling them to make more optimal contributions to the organization.

2. The Role of Human Capital in Improving Organizational Performance

Human capital is one of the most important assets an organization possesses in achieving success and increasing competitiveness amidst global competition. The concept of human capital emphasizes that the knowledge, skills, experience, and creativity of employees are the primary assets for an organization in creating added value and innovation. Therefore, organizations need to optimally manage and develop human capital to maximize its contribution to achieving organizational goals.

Employees with high-quality human capital will be able to work more effectively and provide innovative ideas that can improve organizational performance. Furthermore, a highly competent workforce also tends to be more adaptable to increasingly dynamic work environments. This is crucial in facing ever-evolving technological developments and increasingly competitive market

demands. Human capital development is also closely linked to increased employee productivity. Employees with adequate knowledge and skills will be able to complete tasks more efficiently and produce higher-quality work. Therefore, investing in human capital development can provide long-term benefits for organizations, improving performance and maintaining competitive advantage.

Research conducted by (Balasopoulou et al., 2017) explains that human capital is one of the main factors determining organizational productivity and growth. Becker states that investing in employee education, training, and skills development can improve an individual's ability to perform work tasks more effectively. The research results indicate that organizations that prioritize human capital development tend to perform better and create greater added value than organizations that pay less attention to human resource development.

In line with this, research (Pahira & Rinaldy, 2023) also emphasized that human capital plays a crucial role in improving workforce quality and driving organizational economic growth. Schultz explained that an individual's knowledge, skills, and experience constitute an investment that can enhance work capabilities and productivity. Therefore, human capital development not only benefits individual employees but also positively contributes to improving organizational performance and competitiveness.

In addition, research conducted by (Selviyanti et al., 2019) stated that organizations that are able to manage and develop human capital effectively will be more adaptable to changes in the work environment and technological advancements. Armstrong emphasized that human capital development strategies through training, competency development, and employee capacity building can increase innovation and creativity within an organization. This demonstrates that sound human capital management can be a crucial factor in improving organizational performance while maintaining a competitive advantage amidst increasingly fierce competition.

3. Challenges of Human Resource Development in the Era of the Industrial Revolution 4.0

While human resource development plays a crucial role, organizations also face various challenges in implementing this process. One major challenge is the rapid pace of technological change, requiring organizations to continually update employee skills to remain relevant to job requirements. Without continuous skills development, employees will struggle to keep up with technological advancements in their work processes.

Furthermore, differences in employee education levels and abilities also pose challenges to human resource development. Not all employees possess the same ability to understand new technologies or participate in various training programs offered by the organization. Therefore, organizations need to design flexible development programs that adapt to the needs and abilities of each employee. Another challenge is the limited resources available to implement various human resource development programs. Employee training and development programs require significant costs, time, and effort.

Therefore, organizations need to design effective and efficient development strategies so that the programs implemented can provide maximum results in improving the quality of human resources in the era of the Industrial Revolution 4.0.

Research conducted by (Schwc, 2022) explains that the Industrial Revolution 4.0 is bringing major changes to the world of work, particularly in the use of digital technology, automation, and artificial intelligence. The study states that rapid technological developments require organizations to continuously improve the competency of their human resources to adapt to these changes. Without improved skills and technological capabilities, the workforce will struggle to meet increasingly complex work demands. This demonstrates that developing digital skills and adaptability are crucial factors in addressing the challenges of human resource development in the Industrial Revolution 4.0 era.

Furthermore, research conducted by the World Economic Forum (2020) also stated that technological changes in the Industrial Revolution 4.0 era have led to the emergence of new skills requirements in the workforce. The report explains that the majority of workers across various sectors need to reskill and upskill to remain relevant with technological advancements. This research emphasizes the need for organizations to design more innovative and sustainable human resource development strategies to enable employees to navigate the increasingly dynamic and competitive work environment.

CONCLUSION

Based on the discussion above, it can be concluded that human resource management development is a crucial factor in improving workforce quality and organizational performance. Development strategies implemented through training, competency enhancement, and career development can help employees improve their skills, knowledge, and work abilities. With sound human resource management, organizations can create a more productive and innovative workforce capable of optimally contributing to achieving organizational goals. Furthermore, human capital development is also a crucial aspect in facing the various challenges of the Industrial Revolution 4.0 era, characterized by rapid technological development. Organizations need to continuously improve the quality of their human resources to adapt to increasingly dynamic and competitive work environments. Therefore, implementing a planned and sustainable human resource development strategy, supported by various skills enhancement programs, is a crucial step for organizations in maintaining their competitive advantage and sustainably improving performance.

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