INDUSTRIAL REVOLUTION 4.0: THE PROCESS OF RECRUITING QUALIFIED HUMAN RESOURCES

Finna Fakhriyah[1], Hayu Dwi Adiyanti[2],
Rahman Almutazan[3], Mohammad Agung Saryatmo[4*]

[1,2,3,4] Master of Management Department, Universitas Tarumanagara, Indonesia
E-mail: finna.117231049@stu.untar.ac.id, hayu.117231031@stu.untar.ac.id,
rahman.117230000@stu.untar.ac.id., mohammads@ft.untar.ac.id

*Corresponding Author

ABSTRACT

The Industrial Revolution 4.0 brings changes in all aspects where all access and work involve technology and high optimization using AI and artificial intelligence. The industrial revolution 4.0 is also known as the technological revolution, whereas revolutions 1.0, 2.0, and 3.0 did not use technology. This process also involves changes in human behavior and life patterns. Individuals or human resources in a company must have high quality in line with the changes in the industrial revolution. To get quality human resources, of course, you have to go through a recruitment and selection process until you are selected to join an organization or company. The recruitment process itself currently also involves technology because it adapts to changes in the industrial revolution; this has been happening for a long time, including in Indonesia. The aim of this research is to see the influence of the industrial revolution on the process of conserving quality human resources. The method used is a literature study from previous related research; the journals used are journals from the last 10 years, and then a review process is carried out. Previous research illustrates that by following the industrial revolution, the conservation process will be more effective and efficient, and if companies or organizations do not follow the revolution, it will cause difficulties in obtaining quality human resources. The results of the literature review presented by us no longer need to send applications directly to the office; just send an email, and information about job openings can be obtained via digital and online platforms. This research still has shortcomings due to limited resources and research time. This research provides a contribution to organizations or companies as reference material, and it is hoped that further research can study it more deeply with more and more accurate sources.

Keywords: Industry 4.0, Human Resources, Recruitment

1. INTRODUCTION

Industry 4.0 is a revolution in the industrial world that combines automation and cyber technology using artificial intelligence in its application (Heri et al., 2021). The late revolution from 1.0, 2.0, and 3.0 aims to digitize and optimize all parts (Ing Tay et al., 2018). This change affects various sectors, starting with horizontal integration, which brings new concepts to the world. Horizontal integration describes a company that must cooperate and compete with companies with the same characteristics to produce products efficiently. Next is vertical integration, where intelligent machines create automatic control to reconfigure a product. Finally, there is end-to-end engineering integration, that is, each stage can be reused for the same product, which ensures the product can be customized (Wang et al., 2016).

Digitalization occurred for the first time in the era of Revolution 4.0 as a form of technological revolution. The digitalization process also causes a change in the behaviour and lifestyle of society, including Indonesia. Automated processes like those now influence civilization (Hartini, 2023). Companies that have human resources in their productivity processes are also experiencing changes where now every individual is forced to learn high-tech gadgets quickly to support their daily work (Industrial Informatics (INDIN), 2014 12th IEEE International Conference On., 2014). In this case, quality human resources are needed to be able to learn and

adapt to change. The company carries out a recruitment process to obtain quality human resources. The recruitment process has also evolved with the changes in this industrial revolution. In the 1.0 era, the process for obtaining workers was quite simple, usually, workers were obtained based on personal relationships or closeness with the owner of the organization or company and were recruited only when there was a need. In the 2.0 era, companies have begun to develop where jobs have begun to be divided into several groups so that workers can be obtained through basic skills tests and interviews and job vacancy information is obtained through newspapers. Then it further developed in the 3.0 era where technology already existed but had not yet been digitized, tests were developed by adding psychological assessments and special abilities to get candidates (Idrus et al., 2023)

In the era of Revolution 4.0, using digitalized technology as well as in terms of recruitment. AI (Artificial Intelligence), a form of digitalization, can help HR managers to carry out the recruitment process more easily and find quality human resources that companies need through social media and online platforms such as Instagram, LinkedIn and other technology-based websites (Ibrahim, Rusydan & Hassan, 2019). AI also helps screen candidates according to needs and online interviews and tests also make the remote recruitment process easier so that the recruitment process becomes more effective (Sharaburyak et al., 2020). Other research shows that information technology can help increase efficiency, provide a wider network to find candidates and reduce bias towards prospective workers (Jatmiko, Syams & Awalia., 2024). Companies that do not follow changes such as the industrial revolution will be left behind, especially in terms of human resource management, because the more the industry evolves, the competition will become tighter and there will be more competitors. For this, companies must adapt and study changes in the 4.0 revolution that are directly related to digitalization technology in terms of obtaining human resources (Fitri & Gunawan, 2023). There is a long-term impact on organizations or companies after the digitalization adaptation process in recruitment, this digitalization technology influences changes, including social and ethical impacts (Fernández-Martínez & Fernández, 2020).

Based on the explanation above, the reason the researcher wants to study in more detail is the recruitment process because of the limited research time and if one study is studied in more detail, the research will be more focused. The aim of the research is to provide an overview of the influence of Industrial Revolution 4.0 on the process of recruiting quality human resources. This study is based on literature studies from previous research related to human resource management.

Industry 4.0
Industry 4.0 was first introduced to the public at the Hannover Messe industrial exhibition in the city of Hannover, Germany, in 2011. The origin of the word revolution is because there was a change from 1.0 focusing on the use of steam engines, 2.0 focusing on the use of electric power, and 3.0 using computers and robots. Industrial Revolution 4.0 involves all components of the previous revolution at a faster rate towards all stimuli, using innovation and technology as needed. This refers to direct changes that are integrated with information technology. "Industry 4.0 is an advanced manufacturing model encompassing a broad set of technologies, not necessarily unpublished but integrated with each other, as well as an entire industry characterized by a virtual, digital, and technological level and high performance" (Ortiz, 2020).

Revolution 4.0 is a comprehensive change in all aspects of industrial production through the combination of digital and internet technology with conventional industry. Industrial Revolution 4.0 is an era that emphasizes the element of speed in the availability of information

in an industrial environment, always being able to connect and share information with one another. Industrial revolution is a term where this era has special characteristics, namely the strong use of digitalization technology and artificial intelligence in various aspectsof human life (Schlechtendahl et al., 2015).

Based on the explanation above regarding the industrial revolution 4.0, according to experts, it is concluded that the industrial revolution 4.0 is a form of improvement that is far from the previous revolution, where industry 4.0 involves technological aspects that were not present in the previous three revolutions. Technology makes significant changes in all aspects,where every activity can be carried out quickly and automatically due to the very high level ofdigitalization and optimization. Every individual is required to do all work quickly and be ableto adapt to these changes.

Human Resources

Human resources are "productive individuals who work as drivers of an organization in institutions or companies who have a function as assets, so their abilities must be trained and developed" (Susan, 2019). Human resources are the most important element because they have the task of planning and managing (Priyono, 2016). "Human resources are also an important and main part of an organization that must be managed well; this involves strategic human resource management (HRM)." For human resources to be involved in an organization or company, they must go through a recruitment and selection process. Recruitment is the process of attracting members according to their needs, while human resource selection is one of the functions of human resource management (HRM). This process is to obtain workers and then select them according to the criteria and requirements required by the organization or company (Badriyah, 2016).

Based on the explanation regarding human resources above, the author concludes that human resources are individuals involved in an organization or company and are an importantpart and a milestone of an organization or company that should not be ignored. Humanresources are obtained through a recruitment process, then selection according to the required characteristics, and then involvement in the organization or company.

Recruitment

Recruitment is the process of creating, searching for, determining several people, and inviting them both from outside and within the industry as potential workers with certain criteria (Wati et al., 2023). Recruitment is the process of attracting members who meet the criteria in terms of the number and type required (Fahmi, 2016). Based on the definition above,the author states that recruitment is a process of obtaining human resources based on criteria that have been determined by the company or organization.

From this explanation, the author draws the conclusion that human resource recruitmentin the industrial revolution 4.0 era involves a process of searching for workers based on certaincriteria that have been determined by the organization or company according to needs, where this process involves technological aspects in efforts to adapt to the industrial revolution 4.0.

2. RESEARCH METHOD

This research is a literature review. A literature review is a research method that summarizes the results of previous research to present clearer facts about the research. The method used in this research is a literature review of previous research. The survey results werecarried out using

scientific articles, books, other relevant sources, and theories, which then provided critical definitions (Ramdhani et al., 2014). The focus of this research is Industry 4.0 and human resources. Data collection uses the help of the Google search engine via the web, such as Google Scholar and ScienceDirect. The journals reviewed are national and international research journals related to "Industrial Revolution 4.0 on the Human Resource Recruitment Process." The journal year limit is 2014–2024, which is a journal for the last 10 years where research in the last decade saw changes in digitalization technology, including where this is related to research (Idrus et al., 2023).

3. RESULTS AND DISCUSSION

The Industrial Revolution 4.0 is the first revolution in digitalization. Digitalization with high and sophisticated technology has brought changes to almost all aspects of an organization or company. Digitalization is an innovation aimed at increasing productivity and efficiency with the help of technology, including in terms of recruitment, so that the quality of resources increases and is qualified (Sunarto, 2020). Industry 4.0 in terms of recruitment is a new innovation that changes systems in the world of business and human resource management. A study also proves that digitalization innovation also faces challenges to becoming a smarter industry (Chehri et al., 2021). An era that brings changes such as AI and artificial intelligence helps organizations or companies carry out the recruitment process more easily, including remote recruitment, according to a study that states that in the early stages, data analysis and digital platforms, recruitment management systems, the use of big data and analytics, video interviewing, online skills testing, chatbots and communication automation, game-based assessments, social media analysis, and mobile recruitment help organizations or companies more quickly obtain human resources with the help of complex AI (Mukhtar, 2023). The 4.0 revolution era also plans the recruitment and selection process using a digitalization system utilizing social media such as Instagram, Facebook, Twitter, and other online sites to increase recruitment efficiency (Berdykulova et al., 2024; Sofiana et al., 2022).

The application of technology has a positive impact, namely reducing costs, selecting efficiency, reducing bias, and being able to get the best candidates because humans are also placed as one of the most important factors in technological innovation, according to research results (Iwan et al., 2023; Salvadorinho et al., 2022). Digitalization also reduces the impact of fraud so that organizations or companies can obtain quality human resources so that company performance increases (Ammirato et al., 2023; Sofiana et al., 2022). This is supported by a study that proposes a human resource development framework for innovation in the 4.0 era. The research results state that the design of a desktop-based decision support system that adopts the preference selection index method can be used to overcome problems at CV. KHz Technology regarding employee recruitment (Syahputra et al., 2021).

Other research supports the idea that in the era of Industrial Revolution 4.0, employee performance increased and human resources were more productive (James et al., 2022). Recruitment is also able to increase the interest of generation Z job applicants because of the information they obtain through social media, where generation Z is known as the all-digital generation. This is proven by a study regarding the effectiveness of e-recruitment and social media. It was stated that e-recruitment increases generation Z's interest in applying for jobs, and generation Z is more interested in applying for jobs if e-recruitment and social media are combined (Hardiansyah et al., 2023). Apart from increasing the interest of job applicants, the digitalization system can also help an organization overcome the interest of applicants, one of which is POLRI recruitment. Research conducted by Yudanto and Soeling (2023) regarding

the POLRI recruitment process aims to design alternative actions to overcome problems within the POLRI organization due to the lack of maximum member acceptance so that quality decreases in all aspects such as knowledge, abilities, and attitudes. It is also supported by other research that there are obstacles to recruiting, which is carried out systematically without a digitalization process.

There is a gap in perception due to the lack of transparency in the process carried out, so changes need to be made in terms of recruitment (Nur Aqlia & Ina Wales, 2022). The influence of the Industrial Revolution 4.0 on increasing resources is very significant because the recruitment process has been updated so that obtaining quality human resources is more effective and efficient. One of the improvements in human resources occurs in an organization where their employees have high performance due to increased competence and compete with each other in the era of digitalization. Competition is in a positive direction because they both improve performance with the help of technology (Rohida et al., 2018). The role of recruitment in producing quality human resources in the era of Revolution 4.0 is not without challenges. A company manager is required to adjust the recruitment, selection, and placement processes, where these three parts must be right on target (Sucahyowati et al., 2020). Apart from that, there are also negative impacts from the Industrial Revolution 4.0, where bias and discrimination can still appear in other forms. The issue of ethical and privacy violations is also still being questioned due to the rise of data breaches (Iwan et al., 2023).

Based on the explanation above, several important points can be drawn about the fact that digitalization changes have a big impact on an organization or company, especially in terms of recruitment. The recruitment process also evolved from era 1.0 to 4.0, where era 1.0 carried out simple recruitment when the need was urgent, and this was obtained through acquaintances or close relatives. Then it evolved in the 2.0 era, where job application information could be obtained through advertisements in newspapers, because in this era, companies had increasingly developed specialization in tasks. It is increasingly developing in the 3.0 era. In this era, the use of technology has emerged but has not yet been digitized, so processes such as data filtering with big data and obtaining other information using AI do not yet exist; digitalization only emerged in the 4.0 era.

Revolution 4.0 already uses AI, where all recruitment processes are assisted by AI. AI helps companies find the best candidates for recruitment through several processes, all of which can be done online and faster. Recruitment in the era of revolution 4.0 attracts interested job applicants, including generation Z, where generation Z is known as the all-digital generation. Gen Z, as they are called, is lazy about visiting an organization or company to get a job; they prefer to get information through social media. That's why digitalization is very helpful. However, there are still companies that have not evolved due to limitations. The limitation in question is the lack of resource capabilities for applying AI and artificial intelligence assistance.

4. CONCLUSIONS AND SUGGESTIONS

Recruitment is a stage in getting quality employees according to the company's needs. In the industrial era 4.0, technology helps companies find quality human resources, make processes more effective and efficient, and save costs. The use of online platforms and special applications helps companies find it easier to find the desired candidates to fill the positions needed by the company. Thus, the recruitment process using technology is very helpful. Prospective employees no longer need to send application files directly to the office; they just send the files via email. Information about job openings can also be obtained online via websites and digital

platforms.

This research highlights the benefits of technology in simplifying the recruitment process and obtaining quality employees according to company needs. This research can be a reference for companies that believe that following the industrial revolution will be very beneficial, but there are still shortcomings in this research. The shortcomings of this research include that the journals used are still quite limited and have many shortcomings; the journalsreviewed still lack a Scopus index and are directly related to recruitment, which is still lacking.This research is only a journal frame work without any validity or reliability.

This research provides a contribution to organizations or companies as reference material to strengthen a company or organization. The Industrial Revolution 4.0 should not be ignored because it will have an impact on the continuity of the organization or company in obtaining quality human resources. However, it is hoped that future research will pay more attention to the data sourcesused by expanding the scope of research and the validity of the journals used. If possible, additional data can be used that can be tested for validity and reliability. Future research mightalso develop variables that will be tested so that research on the Industrial Revolution 4.0 and human resource management is richer.

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