EFFORTS TO ENHANCE EXCELLENT HUMAN RESOURCES TOWARDS GOLDEN INDONESIA 2045

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ABSTRACT

Indonesia Emas 2045 is a strategic vision that aims to make Indonesia a developed country, with one of the main focuses being the development of excellent Human Resources (HR). Global challenges such as the Industrial Revolution 4.0, technological disruption, demographic changes, and the need for new skills make improving the quality of human resources a national priority. Excellent human resources, who master technical skills such as artificial intelligence (AI), robotics, and the Internet of Things (IoT), as well as soft skills such as adaptability and creativity, are needed to improve Indonesia's competitiveness in the global market. This research aims to explore strategies for developing superior human resources through improving the quality of education, vocational training, and mastery of digital technology, and analyze the collaboration between the government, private sector, and educational institutions.

This research uses a descriptive qualitative method based on literature study. The benefits of this research are to provide insights into the strategic steps that can be taken to bridge the skills gap between education and industry, and to provide recommendations for strengthening vocational education and cross-sector collaboration. In conclusion, developing superior human resources requires a holistic approach that includes improving access to quality education, competency-based training and mastery of modern technology. Strong collaboration between the government, businesses and educational institutions is key to achieving this vision. Recommendations include strengthening curricula relevant to industry needs, improving access to technology in remote areas, and expanding vocational training programs to prepare a globally competitive workforce by 2045.

Keywords : Golden Indonesia 2045, Superior Human Resources, Competence

1. Introduction

The Golden Indonesia Vision 2045 is a blueprint for national development that focuses on achieving four main pillars, one of which is the development of superior human resources (HR) (Puspa et al., 2023). Excellent human resources are seen as the key to improving national competitiveness, given the importance of skills and knowledge to face global changes triggered by the Industrial Revolution 4.0. This revolution requires human resources who not only master technical skills such as artificial intelligence (AI), robotics, and the Internet of Things (IoT), but also soft skills such as adaptability, collaboration, and creativity (Bramanto, 2024).

The Indonesian government has identified human capital excellence as a strategic priority, in line with the digital transformation that spans almost all industry sectors. In the face of global challenges - such as technological disruption, climate change, and demographic shifts - Indonesia needs a workforce capable of innovating, competing globally, and solving complex problems.

This vision is in line with the 2020-2024 National Medium-Term Development Plan (RPJMN), which focuses on improving the quality of education, vocational training, and developing an innovation ecosystem. The aim is to prepare Indonesia for global challenges, especially in the context of increasingly competitive global economic integration. This growth opportunity is in line with the government's strategy of increasing investment in education and training, as well as collaboration between the government, private sector, and academia to accelerate human capital development (Widodo, 2020).

Recent references indicate that a major HR challenge in Indonesia is the skills gap, especially in the technology and innovation sectors (Gayatri et al., 2023). This has led to initiatives such as the Pre-Employment Card, which aims to upskill the workforce to meet current and future industry demands. Human resource development in Indonesia is currently faced with several key issues. First, the skills gap between industry demand and labor capacity (Nusraningrum & Dores, 2018). Industry 4.0 demands expertise in digital technologies such as artificial intelligence, data analytics and robotics, while much of Indonesia's workforce is still focused on manual and traditional skills. Second, unequal access to quality education, especially in remote areas, exacerbates inequality in human capital development (Maulido et al., 2024). Third, there is a lack of educational innovation at the vocational and tertiary levels, where curricula are not always relevant to global industry developments (Ubihatun et al., 2024). In addition, the weak integration between the education,

government, and industry sectors leads to a lack of practical experience for new graduates, who are often unprepared for the demands of the workforce. The low level of digital literacy and communication skills is also a big challenge in increasing the competitiveness of the workforce in the international arena.

This research aims to examine relevant strategies to improve the quality of Indonesia's human resources in order to achieve the vision of a Golden Indonesia 2045. One of the main focuses is to formulate policies that can bridge the skills gap between education and industry. In addition, this research aims to identify the important role of vocational education in developing human resources that are ready to compete in the digital era, including efforts to improve access and quality of education across Indonesia. Strategies such as digital transformation in education, increased collaboration between the private sector and education, and curriculum reform at the vocational level will be explored in depth. The ultimate goal of this research is to identify concrete steps that can be taken to ensure Indonesian human resources have the necessary skills to compete in the global market by 2045.

2. Theoretical Review

HR Development Theory

Human capital development is based on various theories that emphasize the importance of individual skills and abilities as development capital. One of the main theories often used is the Human Capital Theory, first proposed by Theodore Schultz and Gary Becker. This theory argues that individuals are an important form of capital, where investments in education, training and health can increase their productivity. In the context of human capital, increasing the capacity of individuals through education and training is considered the key to increasing the productivity of organizations and countries. This theory focuses on the idea that quality human capital is an important asset that contributes to economic growth, with investment in education serving to improve the overall capabilities of individuals, including technical skills and soft skills (Becker, 1993).

In addition, the Competency-Based Development (CBD) approach emphasizes the development of specific skills that are relevant to the needs of the organization and industry. This theory focuses more on outcomes than processes, i.e. ensuring that individuals have the necessary competencies to meet the demands of a specific job. In this context, competencies include

knowledge, skills, and behaviors that are relevant to a particular role. CBD is often used in employee training in companies to ensure that the workforce has skills relevant to technological changes and market dynamics (Davies, 2023). This is especially important in the era of the Industrial Revolution 4.0, where technical skills such as artificial intelligence, data analysis, and technology-based project management are in high demand. The application of CBD also helps in identifying skills gaps and developing targeted training programs.

This theory of human capital development underscores the importance of investing in education and training to improve individual productivity and a country's global competitiveness. In the Indonesian context, human capital development through education that focuses on specific skills is one of the priorities to achieve the vision of a Golden Indonesia 2045 (Aprinawaty et al., 2024).

Indonesia's Golden Vision 2045: Roadmap for Human Resources Quality Improvement

The Golden Indonesia Vision 2045 is a blueprint initiated to prepare Indonesia to achieve developed country status in 2045, coinciding with the 100th anniversary of independence. In the roadmap, improving the quality of human resources is prioritized by improving the quality of education, increasing access to quality education, and encouraging mastery of new skills relevant to the needs of the times, such as digital technology and innovation literacy. The government also encourages vocational education that is more connected to industry through training based on current and future labor market needs. This is reflected in Merdeka Belajar policy, which emphasizes educational flexibility and collaboration between educational institutions and the private sector.

In addition, the development of superior human resources in the digital era also emphasizes the importance of digital literacy and digital talent development, to face the challenges of the Industrial Revolution 4.0 (Novelia et al., 2022). The role of digital technology in education and skills development is the main focus of development programs, such as the Digital Talent Scholarship and Pre-Employment Card. These programs aim to strengthen the digital skills of the Indonesian workforce, which is urgently needed to compete in the era of globalization.

In the economic context, human resource development is directed at increasing productivity and global competitiveness. The development of the education and health sectors is also a key

agenda to improve the quality of life of the people, as well as ensuring Indonesia has a healthy, skilled and competent workforce.

The Golden Indonesia Vision 2045 also targets an increase in Indonesia's Human Development Index (HDI), which is a key indicator to measure the welfare and capabilities of human resources (Badan Pusat Statistik, 2023). Currently, the government continues to improve access to higher education, reduce unemployment, and facilitate the innovation ecosystem, including supporting technology startups and the creative industry ecosystem.

Determinants of Excellent Human Resources

To achieve the vision of superior human resources, there are several key determinants that must be considered, namely:

1. Quality education is the main foundation in creating competitive human resources. An education system that is relevant to industry needs, as well as strengthening technological literacy, is very important. The implementation of Merdeka Belajar policy in Indonesia emphasizes the flexibility and relevance of education to the world of work as well as the development of 21st century skills such as creativity, collaboration, and problem solving (Kemendikbudristek, 2021).

2. Vocational training provides practical skills needed by the job market. In Indonesia, strengthening vocational education is expected to address skills needs in the Industrial Revolution 4.0 era, especially in technology and manufacturing (Hamdani et al., 2020). Programs such as SMK Relevant and Kartu Prakerja aim to bridge the skills gap faced by the workforce.

3. Mastery and utilization of technology is crucial to increase the productivity and efficiency of human resources. The Industrial Revolution 4.0 demands the development of skills in artificial intelligence (AI), data analytics, robotics, and the Internet of Things (IoT). Investment in technology and digitalization is the main focus to create a workforce that is ready to face future challenges (Bramanto, 2024).

4. Physically and mentally healthy human resources are an important prerequisite in creating a productive workforce. Health programs such as improving access to basic health services, nutrition and disease prevention affect the quality of human capital. Mental health is also

becoming an increasingly important factor in the modern era to ensure optimal productivity (Silalahi, 2024).

The development of superior human resources requires a holistic approach, where education, technology and health are integrated to create a competitive and adaptive workforce in the midst of global competition.

3. Research Methodology

This research uses a descriptive qualitative design based on literature study, which aims to analyze strategies and policies related to the development of superior Human Resources (HR) in the context of the 2045 Golden Indonesia vision. This design is used to explore and understand the concepts described in various relevant literature sources (Nadria, 2023). Qualitative methods provide researchers with the space to explore HR development issues from theoretical and practical perspectives, enabling data collection that focuses on the interpretation of phenomena.

The data sources used in this study come from secondary data, such as scientific journals, government reports, textbooks, and related research articles that discuss HR development, education, technological innovation, and Indonesian government policies. These sources will be analyzed in depth to explore relevant empirical findings as well as to see the latest trends and issues in human resource development in Indonesia.
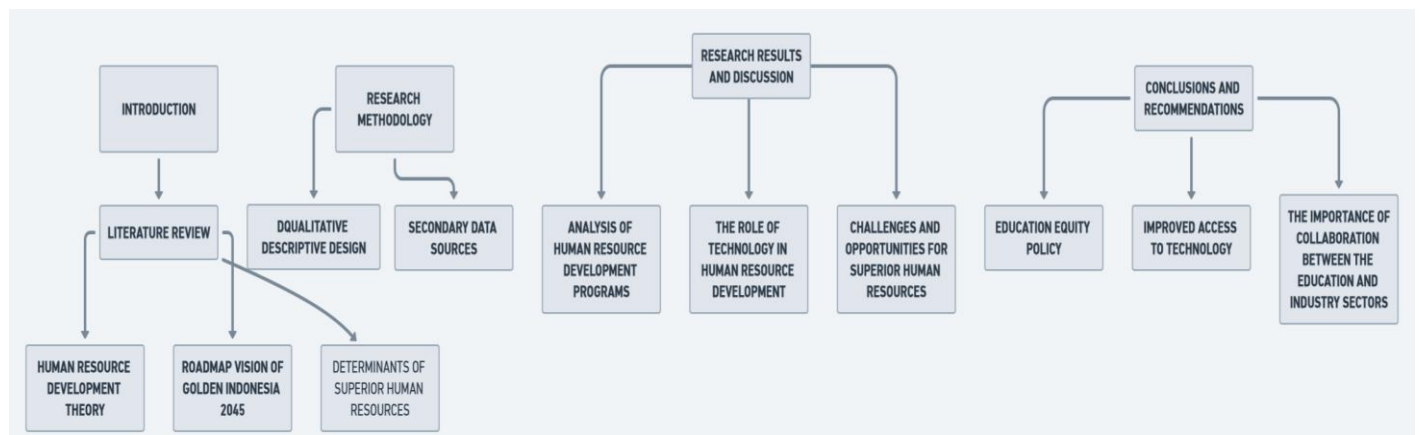

Figure: Research Flow

4. Research Result and Discussion

HR Development Program Analysis

Various national programs in Indonesia aim to improve the quality of Human Resources (HR), especially in facing global challenges and the era of the Industrial Revolution 4.0. One of the key programs is Merdeka Belajar, which provides flexibility in the learning process, encourages

innovation in education, and emphasizes relevance to the needs of the world of work. This program allows students and college students to gain learning experiences outside the traditional classroom, either through practical work in industry or research. The main focus of Merdeka Belajar is to bridge the gap between academia and the world of work by introducing project-based learning experiences and real work (Imun et al., 2024).

In addition, Vocational Training programs are crucial in creating a ready-to-work workforce. Vocational education plays a role in providing specific technical skills that can be directly applied in the workplace, especially in industrial and manufacturing fields. Indonesia is currently directing vocational training to support strategic sectors, including manufacturing, tourism and agriculture. Partnerships between vocational schools and industry are also being strengthened, with the aim of creating skills that match market needs (Dwiatmoko, 2024). The implementation of vocational training and productivity aims to improve the competence and competitiveness of the workforce, increase the capacity of vocational training institutions in organizing competency-based training, integrate regional training programs into competency-based vocational training, encourage the participation and cooperation of parties in handling vocational training and regional productivity, and integrate training and labor market information. By having the above tasks, the government must collaborate to channel their opinions, ideas, and ideas. So that it can give birth to a new innovation in the process of making public policy (Alfaritdzi & Prathama, 2023).

The Kartu Prakerja program is another initiative that focuses on training and upskilling the workforce, especially for those affected by economic changes due to digitalization and the pandemic. The program provides access to various online courses that help people improve their competencies in areas such as information technology, entrepreneurship, and administrative skills (Febrian & Hamim, 2024). This program has had a positive impact on human resource development by improving digital skills and work competencies, which are indispensable in the digital era.

In addition, Internship Programs managed by various ministries and educational institutions also play an important role in equipping students with practical experience in the industrial world. This program allows students to learn practical skills and be directly involved in industrial projects, ultimately improving their work readiness. With internships, students can establish relationships

with industries, gain practical knowledge, and strengthen their portfolios to compete in the job market (Kemendikbudristek, 2023).

An analysis of these various programs shows that the Indonesian government is strongly committed to preparing superior human resources to face global challenges, whether through formal education capacity building, technical training, or hands-on experience in the field. All of these programs have the main objective of ensuring that Indonesian human resources are ready to adapt to the demands of a modern economy that focuses on technological innovation and efficiency.

The Role of Technology and Innovation in HR Development

Digital transformation has a significant impact on HR development, especially in facing the Industrial Revolution 4.0 era. This change requires HR to master new technology-based skills, such as Artificial Intelligence (AI), Big Data, and other technology skills. AI and Big Data- based training is important because it can help the workforce to analyze large amounts of data and make faster and more precise decisions based on the data analysis (Bramanto, 2024).

Technological innovations such as the Internet of Things (IoT), cloud computing, and machine learning also demand a workforce that is able to adapt to an increasingly automated and digital- based work environment. Mastery of these technologies is important not only to increase productivity, but also to create efficiency in business processes. Therefore, digital skills training has become one of the main focuses in HR development strategies (Oktareza et al., 2024).

Technology also allows for flexibility in training and education, where online and module- based training allows participants to learn anytime and anywhere. Online learning platforms such as Massive Open Online Courses (MOOCs) and e-learning provide wider opportunities for the workforce to continue to improve their skills amid rapid technological developments (Fajrillah et al., 2020).

In addition, innovations in technology have opened up great opportunities for the development of the digital economy, especially in Indonesia which has great potential in the technology-based economy. The development of human resources with digital skills will support Indonesia's competitiveness at the global level, especially in emerging sectors such as e-commerce, fintech, and startup technology.

As such, technology not only affects how HR adapt to the world of work, but also creates new opportunities in the knowledge-based economy. Innovation and training in technology skills is an important foundation in ensuring Indonesia's human resources are ready to face global challenges.

Projected Supply and Demand of Indonesian Digital Talent

To achieve Golden Indonesia 2045, efforts to improve superior human resources (HR) are a top priority, especially in the context of digital transformation. According to projections by the Ministry of Communication and Information Technology (Pahlevi et al., 2024), the need for digital talent in Indonesia will continue to increase in line with the rapid development of technology. One of the significant initiatives is the provision of training and education in the field of information and communication technology (ICT), which includes the Digital Talent Scholarship program and various scholarships. It aims to produce individuals with digital competencies who are able to support economic growth and digital transformation

Indonesia is projected to need around 9 million digital talents by 2030 to achieve the digital economy growth target. However, the data shows that there is a gap between the availability and need for digital talent. In 2023, Indonesia has around 6 million digital talents, which is still far from the need of more than 10 million people. Therefore, HR training and development programs, such as the Digital Leadership Academy, are critical to closing the gap. On the other hand, the government is also focusing on aligning the education system with the needs of the digital job market. Graduates from vocational, vocational, and higher education colleges in the field of information technology must be prepared with relevant skills to meet the ever-evolving demands of the industry. Projections show that provinces with the highest levels of digital talent needs, such as West Java and DKI Jakarta, will play a central role in driving the achievement of the Golden Indonesia target.

To ensure the success of this strategy, government policies also emphasize the importance of collaboration between the education sector, government, and industry. This holistic approach is expected to be able to create an ecosystem that supports improving the quality of human resources, especially in the field of digital technology, which not only increases Indonesia's competitiveness at the global level but also realizes the grand vision of Golden Indonesia 2045 (Pahlevi et al., 2024).

Challenges and Opportunities in Creating Excellent Human Resources in Indonesia

Efforts to create excellent human resources in Indonesia are faced with a number of challenges and opportunities. One of the main challenges is educational inequality, which includes differences in quality between urban and rural areas. Rural areas often face limited educational infrastructure, resources and access to technology. These inequalities are exacerbated by economic disparities, which cause limitations in people's ability to access quality education (Anwar, 2022).

In addition, access to technology is a significant challenge, especially in remote areas. While digital transformation provides many opportunities to improve education and skills, unequal access to the internet and digital devices limits a large portion of the Indonesian population from making optimal use of such technologies (Hadiningrat et al., 2024). Without equitable access to technology, technology-based HR development is less effective, and this hinders the growth of digital talent needed to compete in the global market.

The quality of teachers is also an important issue in human resource development efforts. The skills and competencies of teachers and other teaching staff affect the quality of education received by students (Kusuma et al., 2024). The Director General of Teachers and Education Personnel of the Ministry of Education and Culture in (Habibah, 2023), stated that Indonesia has a shortage of 1.3 million teachers in 2024, along with the number of teachers retiring. Throughout 2022-2023, Indonesia has as many as 3.3 million teachers in public schools, but many of these numbers will retire, even the average number of teachers who retire reaches 70,000 teachers per year. In some regions, there is still a shortage of teachers who have the qualifications and ability to teach the skills needed in the era of the Industrial Revolution 4.0. Investments in teacher training, curriculum improvement, and professional improvement are essential to address these challenges.

However, behind these challenges, there are great opportunities. The acceleration of digitalization, government initiatives through programs such as Merdeka Belajar, and partnerships with the private sector pave the way for better human capital development (Wyman et al., 2023). Vocational training, apprenticeship programs, and initiatives such as the Pre-Employment Card also provide opportunities for people to improve practical skills needed in the workforce. Collaboration between the government, education sector, and industry will play an important role

in ensuring that Indonesia can build excellent human capital, ready to face global challenges, and ready for the Golden Indonesia of 2045.

5. Conclusions and Recommendations

Conclusions

Improving superior human resources to achieve the vision of a Golden Indonesia 2045 requires various efforts focused on developing education, vocational training, technological innovation, and access to health. Quality education with a curriculum that is adaptive to global needs, vocational training that is relevant to the job market, and increased access to digital technology are important steps. In addition, it is important to strengthen the quality of teachers, expand access to education in remote areas, and ensure optimal health through community-based health programs.

In terms of policy, the government should focus on equalizing the quality of education, improving access to technology, and training teaching staff who are ready to face the demands of the digital era. Competency-based vocational training programs must be strengthened, and collaboration between the private sector, education, and government is needed to create synergies in producing HR talents who are ready to face global challenges. Policies related to pre-employment cards, Merdeka Belajar, and support for research and technology development also need to be improved to accelerate the development of superior human resources.

Ultimately, achieving the vision of a Golden Indonesia 2045 requires a sustained commitment from all stakeholders to ensure that Indonesian human resources are ready to compete at the global level, have relevant skills, and are able to adapt to technological developments and future industry demands.

Recommendation

To prepare human resources that are ready to face global challenges, several concrete policy proposals need to be considered by the government, educational institutions and businesses. The government should strengthen access and quality of education across Indonesia, including remote areas, by providing adequate digital infrastructure. The curriculum needs to be adjusted to the needs of the Industrial Revolution 4.0, focusing on technology-based skills such as artificial intelligence (AI) and Big Data. Competency-based vocational training that is integrated with the

industrial world must also be strengthened to prepare a workforce that has practical skills and is relevant to market needs.

Educational institutions need to strengthen collaboration with industry to align the skills taught with the real needs of the working world. Internships and in-company training programs should be integrated into the formal curriculum, allowing students to gain practical experience early on. In addition, improving the quality of the teaching force should be a priority, by providing ongoing training to improve pedagogical skills and mastery of technology.

Businesses, especially the industrial sector, should play a more active role in HR development through partnerships with educational institutions and the government. Investments in workforce training programs, innovation and joint research will improve HR skills and productivity. Businesses also need to provide training platforms for workers to continuously upgrade their technological skills as industry needs change.

Collaboration between the public and private sectors is crucial in creating synergies for competitive HR development. The government can provide incentives to companies that invest in training and workforce development. Partnership programs between schools, universities and industries should be strengthened to create clear career paths for formal and vocational education graduates. This collaboration will ensure that Indonesian human resources are not only competitive in the national job market but also at the global level, in line with the vision of Golden Indonesia 2045.

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