

**THE ROLE OF ECONOMIC DEVELOPMENT IN DEVELOPING SUPERIOR  
HUMAN RESOURCES IN INDONESIA**

1) *Management Study Program; Tashkent State University of Economics*

2) *Management Study Program; Universitas Pendidikan Indonesia*

**Student: Jurayeva Dilobar**

1) *jorayeva.dilobar@icloud.com*

**Supervisor: Askolani**

2) *askolani@upi.edu*

**Abstract:** *This study examines the relationship between economic development and the development of superior human resources in Indonesia. By analyzing various aspects of economic development such as education, entrepreneurship, technology, and government policy, the study demonstrates a strong reciprocal relationship between economic progress and improving the quality of human resources. Through a qualitative approach and literature review, the study identified that sustainable economic development provides the foundation for human resource development, while quality human resources are the primary drivers of economic progress. The study found that technology integration, character education, strengthening the MSME sector, and developing the creative economy are key factors in developing superior human resources in Indonesia. The study concluded that harmonizing economic policies and human resource development is crucial for realizing Golden Indonesia 2045.*

**Keywords:** *Economic development, Superior human resources (HR), Education, Entrepreneurship, Technology, Government policy*

## **INTRODUCTION**

As a developing country, Indonesia continues to strive to continuously improve the quality of its economic development and human resources (HR). In the era of globalization and increasingly fierce international competition, human resource excellence is a determining factor in national competitiveness. Economic development and human resource development are interconnected, where strong economic growth creates opportunities for human resource development, while high-quality human resources drive sustainable economic growth.

In recent decades, Indonesia has undergone an economic transformation marked by a shift from the primary sector to the secondary and tertiary sectors. This change requires adaptation and improvement in the quality of human resources to meet the evolving needs of the labor market. The role of economic development in developing superior human resources is becoming increasingly important given Indonesia's target to become a developed nation by 2045, which requires a foundation of high-quality human resources.

According to Abdillah and Ramadhan (2023), economic development has a significant impact on the quality of human resources in Indonesia in the modern era. This demonstrates that economic development measures need to be designed with consideration of their impact

on human resource development. Furthermore, Kristiyanti et al. (2023) emphasizes the importance of developing human resources and information technology as the foundation for maritime success in Indonesia, illustrating the link between economic development and human resources in strategic sectors.

This study aims to analyze the role of economic development in developing superior human resources in Indonesia by examining various aspects of economic development that influence human resource quality. Furthermore, this study also aims to identify strategies and policies that can be implemented to optimize the relationship between economic development and human resource development in Indonesia's national development.

The urgency of this research lies in the importance of understanding the dynamics of the relationship between economic development and human resource development to formulate integrated and comprehensive policies. By understanding how aspects of economic development influence human resource quality, it is hoped that more effective development strategies can be formulated to create superior human resources as the primary capital for sustainable development and national competitiveness.

Indonesia's economic development is undergoing a transformation from an agrarian economy to a technology-based sector, the creative industry, and the digital economy, which require human resources with specialized skills. Despite this progress, the gap between industry needs and the qualifications of graduates remains a challenge. Economic infrastructure development has a positive impact on access to education, health, and economic opportunities, especially in remote areas, which in turn improves the quality of human resources.

Sustainable economic growth provides fiscal space for budget allocations to the education and health sectors, but the challenge lies in the effective implementation of these budgets. The Industrial Revolution 4.0 and the digital economy are driving high demand for digital skills, but a large digital skills gap remains in Indonesia. Economic disparities between regions also impact the quality of human resources, with wealthier regions tending to have more superior human resources.

The transition to a green economy opens up new job opportunities and skills in environmentally friendly technologies. Free trade agreements increase competitive pressure on local human resources, but also open up opportunities for knowledge transfer. The growing manufacturing industry is improving technical and managerial skills, but their distribution needs to be equitable. The tourism sector also plays a crucial role in improving human resource skills in leading tourist areas.

Digitalization creates new demands for digital literacy, with MSMEs adapting to technology strengthening human resource capacity. Investment policies that support knowledge transfer can improve human resource quality. Innovation- and research-based economic development requires human resource capacity development in science and technology. Synergy between sectors and integrated policies are crucial for developing human resources capable of supporting Indonesia's economic transformation.

The agricultural sector also contributes to human resource development through the modernization of agricultural technology. Furthermore, an entrepreneurial ecosystem that

supports the development of MSMEs and startups can create human resources with innovative and adaptive skills. The success of Indonesia's economic development depends on the development of high-quality, integrated human resources across various sectors.

## Methodology

This research uses a qualitative approach using a literature study method to examine the role of economic development in developing superior human resources in Indonesia.

Literature studies were chosen because they allow for in-depth analysis of various secondary data sources that can provide a comprehensive overview of the topic under study.

The data sources used in this study were scientific journal articles, books, government reports, and other official publications related to economic development and human resource development in Indonesia. The inclusion criteria for literature sources included: (1) publications in Indonesian or English, (2) published between 2021 and 2025, (3) discussing topics related to economic development and human resource development in Indonesia, and (4) publications that could be scientifically validated.

The data collection process was conducted through a systematic search of electronic journal databases such as Google Scholar, ScienceDirect, and university digital libraries. Keywords used in the search included "Indonesian economic development," "superior human resources," "Indonesian creative economy," "education and human resources," "Indonesian entrepreneurship," and other relevant keyword combinations.

Data analysis was conducted using a content analysis approach to identify key themes emerging from the reviewed literature. The analysis process included: (1) reading and understanding all collected literature, (2) identifying and categorizing information based on themes relevant to the research objectives, (3) conducting an in-depth analysis of the relationships between themes, and (4) synthesizing findings to answer the research questions.

To ensure the validity of the research, source triangulation was conducted by comparing information from various publications and sources. Furthermore, a thorough and critical literature review was conducted to produce objective and accountable findings.

This research was conducted through systematic stages, beginning with comprehensive planning. The first stage involved literature mapping to identify research gaps and formulate research questions and a conceptual framework. The literature search strategy utilized various databases, including journals, university repositories, government publications, and international organizations. The literature selection process included title screening, abstract review, and full-text review, as well as using a PRISMA diagram for transparency. This research also relies on complementary data sources such as technical reports and policies from think tanks, and uses a matrix review for data extraction.

Data analysis was conducted using deductive and inductive techniques, using NVIVO software for coding and thematic analysis. Furthermore, a longitudinal analysis was conducted to understand changes in economic and human resource development policies in Indonesia, as well as a comparative analysis with ASEAN countries.

Secondary quantitative data from official sources such as BPS and Bank Indonesia were combined with qualitative data to provide a more holistic understanding. This research

also examines the micro-mechanisms of the relationship between economic development and human resources at the sectoral and regional levels. The findings were synthesized using narrative synthesis, integrating the analysis results with relevant theoretical perspectives.

The policy implications analysis considers the feasibility of implementation and the potential impact of the resulting recommendations. Methodological limitations are acknowledged, including the reliance on secondary data and the limited timeframe. Research ethics are prioritized in the responsible use of secondary data. The final stage of this research methodology is the preparation of a research report that adheres to academic writing standards and organizes the findings in a logical and accessible manner. The report's structure is designed to facilitate a clear understanding of the complex relationship between economic development and human resource development in Indonesia, with sections dedicated to describing specific aspects of this relationship. The report also highlights the theoretical and practical implications of the research findings and provides directions for future research that could deepen understanding of this topic.

#### Results and Discussion

##### The Dynamics of the Relationship Between Economic Development and Human Resource Development in Indonesia

Economic development and human resource development mutually influence each other. A developed economy supports human resource development through infrastructure and basic services, while quality human resources drive productivity and economic growth. In Indonesia, policy synergy in the education, health, employment, and infrastructure sectors is a crucial foundation for creating superior human resources and accelerating long-term economic development.

According to Abdillah and Ramadhan (2023), economic development in Indonesia has had a positive impact on improving the quality of human resources through various mechanisms. One key mechanism is through increased access to education and training, where economic growth has enabled the government and society to allocate more resources to the education sector. National income growth allows for the expansion of educational facilities, improvements in the quality of teaching staff, and the development of curricula relevant to industry needs. This aligns with the findings of Batubara and Tambunan (2022), who stated that education plays a crucial role in Islamic economic development through human resource development after the Covid-19 pandemic. Education not only improves individual skills and knowledge, but also shapes attitudes, values, and behaviors that support sustainable economic development. A quality education sector will produce graduates who are competitive in the global job market and contribute to increased national productivity. Furthermore, improving the quality of education also impacts other social aspects, such as reducing poverty, increasing health awareness, and strengthening civic values and tolerance. Therefore, investment in the education sector not only provides short-term economic benefits but also shapes a strong national character for the future.

Economic growth has also created new jobs that require specific skills and knowledge, thus encouraging increased human resource competency. Masudin et al. (2023) revealed that

in the Indonesian oil and gas industry, effective human-technology interaction is a critical factor in achieving sustainable development. The study emphasized the importance of an occupational safety climate in influencing the relationship between human-technology interaction and sustainable development. These findings illustrate how the development of strategic industrial sectors requires human resources with high technical competence as well as awareness of safety and sustainability aspects. A growing industry will drive increased worker competency standards, which in turn will improve the overall quality of human resources. This also demonstrates the importance of vocational education and job training tailored to the needs of industry and cutting-edge technology. Collaboration between businesses, government, and educational institutions is key to creating an adaptive and innovative work ecosystem. The greater the involvement of human resources in technology-based industrial processes, the greater the need for lifelong learning to keep the workforce relevant and productive.

However, uneven economic development can lead to disparities in human resource development across regions in Indonesia. Amin et al. (2025) in their study of urban poverty in Indonesia found that the livelihood strategies of the urban poor are highly dependent on their livelihood capital. This demonstrates the importance of inclusive economic development to ensure that all levels of society have access to the resources necessary for self-development. The economic disparity between regions in Indonesia has resulted in differences in the quality and access to education, health, and employment services, which ultimately impacts the quality of human resources in underdeveloped regions. Fair and equitable economic development is a prerequisite for equitable human resource development across Indonesia. Affirmative action programs such as the Village Fund, educational assistance for 3T (underdeveloped, frontier, and outermost) regions, and the development of basic infrastructure in underdeveloped regions are concrete efforts to address this gap. Furthermore, strengthening regional autonomy also provides opportunities for local governments to design human resource development programs tailored to the social and economic characteristics of their respective regions. Increasing the capacity of local governments and synergy between sectors are determining factors in achieving equitable, inclusive, and sustainable development.

Another aspect that deserves attention is the impact of globalization on economic development and human resource development in Indonesia. Globalization has opened up opportunities for Indonesia to participate in global value chains. However, it also presents challenges in the form of increasingly fierce competition. Indonesian human resources need to possess global competencies to capitalize on opportunities and face the challenges of globalization. Economic development oriented toward the global market needs to be supported by the development of human resources with adaptability, cross-cultural communication skills, and mastery of information technology. Regional and global economic integration has driven the movement of labor between countries, necessitating standardization and improvement of the quality of Indonesian human resources to compete in the international labor market. Professional certification, competency-based training, and improving foreign language skills are becoming increasingly important in this regard. In

facing the challenges of the Industrial Revolution 4.0 and the digital economy, Indonesian human resources must also master digital literacy, critical thinking, collaboration, and creativity as core competencies.

The government, through various ministries, has designed programs such as the Pre-Employment Card, Digital Talent Scholarship, and digital MSME training in response to the needs of human resource transformation in the global era. Furthermore, the involvement of the private sector in training and certification also demonstrates the importance of cross-sector synergy in strengthening the competitiveness of the national workforce. Overall, the dynamic relationship between economic development and human resource development in Indonesia is a complex and mutually reinforcing process. The success of economic development is inseparable from the quality and capacity of the human resources that support it, while effective human resource development requires a stable, inclusive, and sustainable economic environment. Therefore, development policies must be designed holistically and in an integrated manner, taking into account the social, economic, and cultural dimensions of society. In the long term, Indonesia's success in achieving its Golden Indonesia 2045 vision depends heavily on the extent to which economic development can be directed to support the transformation of human resources into a nation that is intelligent, competitive, and highly competitive globally. Investment in education, health, and innovation is the main foundation for creating productive and competitive human resources. Collaboration between the government, business, civil society, and educational institutions is essential to creating a human-centered development ecosystem. By optimizing the potential of its human resources, Indonesia has a significant opportunity to achieve inclusive and sustainable economic growth and address future global challenges.

#### The Role of Education in Developing Superior Human Resources

Education is the primary pathway to developing superior and competitive human resources. Studies show that sustainable economic development allows for increased investment in the education sector, which in turn will improve the quality of human resources. Education plays a role not only in transferring knowledge and skills, but also in shaping the character, values, and attitudes necessary to face global challenges. A quality education system will produce graduates with critical thinking, creativity, and problem-solving skills, which are essential skills in a knowledge-based economy. As Indonesia moves towards becoming a developed nation, education is the primary foundation for producing a competitive workforce at both the national and international levels. Educational transformation that focuses on quality and relevance to the needs of the workforce will accelerate the nation's economic and social development. Furthermore, education also serves as a mechanism for social mobility, enabling individuals to improve their socioeconomic status through increased capacity and competence. Investment in equitable primary, secondary, and higher education will foster inclusive economic growth that benefits all levels of society. Quality education also fosters a culture of innovation and entrepreneurship, which are drivers of knowledge-based economic development.

Abdillah (2024) emphasized the role of higher education institutions in improving the quality of human resources in Indonesia. Universities play a role not only in transferring

knowledge but also in developing the skills, values, and attitudes needed to face global challenges. Universities also serve as centers for research and innovation, producing new knowledge and technology that can drive economic development. Collaboration between universities, industry, and government (the triple helix) is becoming increasingly important in creating an innovation ecosystem that supports economic development and human resource development. Universities need to continuously adapt to technological developments and industry needs to ensure the relevance of graduates to the workforce. A higher education curriculum orientation based on competencies and industry needs will narrow the gap between graduates and the needs of the workforce. The development of multidisciplinary study programs is also necessary to prepare students to face the complexity of real-world problems, which often require a cross-disciplinary approach. Furthermore, universities also play a role in fostering leadership and entrepreneurial spirit among students through various soft skills development programs and practical real-world experiences. The internationalization of higher education through various student and lecturer exchange programs, as well as international research collaborations, is also key to improving the global competitiveness of Indonesian university graduates.

Quality assurance in higher education through national and international accreditation needs to be continuously improved to ensure educational quality meets global standards.

Similarly, Khairiyah and Dewinda (2022) argue that character education plays a crucial role in preparing quality human resources. Character education will shape individuals with high integrity, a strong work ethic, and the ability to adapt to change. Character education is not only important for personal development but also for building social capital and a work culture that supports sustainable economic growth. Values such as honesty, responsibility, discipline, and cooperation are the foundation for developing human resources who are not only intellectually intelligent but also possess emotional and social intelligence. Character education needs to be integrated into the formal curriculum and extracurricular activities to ensure the internalization of positive values in students. The implementation of character education requires the involvement of all educational stakeholders, including families, schools, and communities, to ensure the consistent instillation of character values in the various environments students encounter. A character education approach that is inclusive of local culture and wisdom will strengthen national identity while preparing students to become responsible global citizens. Learning models based on social projects and community service are also effective in fostering empathy, social awareness, and responsibility as part of character education.

Character education that emphasizes values such as hard work, honesty, and integrity will produce human resources with a strong and reliable work ethic, which are important assets in national economic development. Character development combined with technical competency will produce human resources that are competitive not only in terms of performance but also in terms of integrity and professionalism.

In the digital era, education needs to adapt to technological developments.

Boentolo et al. (2024) highlighted the role of teachers in utilizing artificial intelligence (AI) to develop a superior generation towards Golden Indonesia 2045.

The use of technology in education will prepare students to face the digital era and the Industrial Revolution 5.0. Educational technology not only transforms teaching and learning methods but also opens access to education in remote areas through distance learning and digital learning resources. However, the use of technology in education also requires infrastructure readiness, teacher digital competence, and student digital literacy. Economic development that supports digital infrastructure and access to information technology is a prerequisite for digital transformation in education. The development of high-quality, locally relevant digital learning platforms is also a challenge in the digitalization of education in Indonesia. The integration of technology into education needs to be accompanied by appropriate pedagogical development so that technology becomes more than just a tool but can truly improve the quality of learning processes and outcomes. The use of learning analytics data can help personalize learning according to the needs and learning styles of each student. Artificial intelligence can also be used to develop intelligent tutoring systems that can provide real-time guidance and feedback to students. However, the role of teachers as facilitators, mentors, and role models remains irreplaceable by technology. Therefore, improving teachers' digital competencies is key to the digital transformation of education that remains centered on humanitarian values and student character development.

Mardhiyah et al. (2021) emphasize the importance of 21st-century learning skills as a requirement for human resource development. Learning skills, including critical thinking, creativity, communication, and collaboration, are becoming increasingly important in facing rapid changes in the world of work. Economic development oriented toward innovation and high technology demands human resources with these 21st-century skills. In addition to cognitive skills, non-cognitive skills such as emotional intelligence, adaptability, and resilience are also becoming increasingly important in the ever-changing world of work. Education needs to be designed to develop these skills through student-centered learning methods, project-based learning, and collaborative learning. The educational curriculum needs to be periodically reviewed and adapted to technological developments and the needs of the world of work to ensure the relevance of education to economic development. Interdisciplinary learning that integrates various fields of study such as science, technology, engineering, arts, and mathematics (STEAM) is an effective approach to developing higher-order thinking skills and creativity in students. Digital skills and information literacy are also integral parts of 21st-century skills that need to be developed starting in elementary school. Independent and lifelong learning skills need to be instilled in students to prepare them for the rapid changes in the future world of work. Developing a growth mindset that emphasizes continuous learning and improvement will help students face challenges and failures as part of the learning process. Authentic assessments that measure not only knowledge but also students' skills and attitudes in real-world settings are crucial in ensuring the achievement of 21st-century skills.

Romawati and Nisa (2024) discuss the role of education and training in building the capacity of creative industry players in Indonesia. The creative industry is one of the fastest-growing economic sectors and requires human resources with high levels of creativity and

innovation. Education and training that are relevant to the needs of the creative industry will drive the development of this sector and create new jobs. The creative industry encompasses various subsectors such as design, film, music, fashion, culinary arts, and gaming, which require a combination of technical skills, creativity, and an entrepreneurial spirit. Formal education needs to be complemented by vocational training and non-formal education to meet the human resource needs of the creative industry. Collaboration between educational institutions, the creative industry, and creative communities is crucial in developing an educational ecosystem that supports the growth of creative talent in Indonesia. The development of a creative industry-based curriculum needs to take into account the dynamics of global trends and local cultural characteristics to produce creative works that are unique and have high market value. Creative business incubation on campus can bridge the gap between formal education and real-world applications in the creative industry. The use of digital technology in creative industry education will expand access to global references and enable collaboration across geographic boundaries. The development of soft skills such as storytelling, pitching, and networking is also crucial for creative industry players to market their work and establish business partnerships. Festivals, competitions, and showcase events for student creative work should be facilitated to provide real-world experience and market exposure. Competency certification in the creative industry will also help standardize human resource quality and provide formal recognition of the expertise of creative industry players.

#### Entrepreneurship as an Economic Driver and Creator of Superior Human Resources

Entrepreneurship plays a strategic role in Indonesia's economic development and the development of superior human resources. Entrepreneurship not only creates jobs and economic value, but also encourages innovation, creativity, and risk-taking, which are the hallmarks of superior human resources. A conducive entrepreneurial ecosystem will increase national economic competitiveness. In the era of globalization, entrepreneurship opens opportunities for Indonesian entrepreneurs to enter the global market, but also demands adaptability skills and a global perspective.

Human resource development through entrepreneurship fosters character traits such as independence, responsibility, and creativity. MSMEs, especially in the creative economy, play a crucial role in economic development and the development of competitive human resources. Entrepreneurial resilience, innovation, and adaptation to market and technological changes are crucial in creating resilient human resources.

Furthermore, social entrepreneurship and ecopreneurship are important approaches to addressing social and environmental issues. Entrepreneurship education that integrates aspects of sustainability and business ethics will create entrepreneurs who can contribute positively to society and the environment. The importance of collaboration between the government, private sector, and education to create a supportive entrepreneurial ecosystem was also identified. Access to financing, financial literacy, and digital transformation are also key factors in entrepreneurship development. Developing policies that support entrepreneurship and innovation infrastructure will strengthen the growth of technology- and innovation-based entrepreneurship in Indonesia.

Overall, entrepreneurship serves as an economic driver and a builder of superior human resources, with a vital role in addressing global challenges and creating sustainable solutions for Indonesia's economic future. Entrepreneurship also drives new job creation, increases competitiveness, and supports inclusive and sustainable economic development. By leveraging innovation, creativity, and adaptability skills, Indonesian entrepreneurs can become agents of change that not only create economic value but also contribute to social and environmental well-being, in line with the sustainable development goals.

## Technology and Digitalization in Economic Development and Human Resource Development

The era of the Industrial Revolution 4.0 and the transition to Society 5.0 have transformed the landscape of economic development and human resource development in Indonesia. Studies show that technology and digitalization are crucial factors in developing superior human resources through various mechanisms. Digital technology has transformed the methods of production, distribution, and consumption in various economic sectors, requiring human resources to adapt to these changes. Digitalization has also opened up new opportunities in education, training, and access to knowledge that can improve the quality of human resources.

This rapid digital transformation requires a comprehensive strategy that connects economic policy, education, and human resource development to ensure Indonesia can optimize the benefits of digitalization for national development. The rapid adoption of technology and digital transformation across various economic sectors requires human resource preparedness that is not only capable of using technology but also developing technology-based innovations relevant to local and global needs.

Kristiyanti et al. (2023) emphasize the importance of developing human resources and information technology as the foundation for maritime success in Indonesia. The maritime sector is a strategic sector in Indonesia's economic development, and the development of information technology in this sector requires human resources with adequate digital competencies. The maritime sector, which encompasses shipping, fisheries, marine tourism, and the shipping industry, requires digital transformation to increase efficiency, productivity, and competitiveness. Human resources in the maritime sector need to master digital technologies such as the Internet of Things (IoT), artificial intelligence, and big data to optimize maritime resource management. Maritime economic development that focuses on technology and innovation will encourage the development of superior maritime human resources and global competitiveness. The integration of maritime information systems that connect various stakeholders, such as fishermen, shipyard entrepreneurs, port operators, and the government, will create an efficient and transparent digital maritime ecosystem. The use of remote sensing technology and geographic information systems also enables more accurate and sustainable monitoring and management of marine resources. Maritime human resource development needs to include mastery of modern navigation technology, digital communication systems, and technology-based maritime supply chain management to enhance Indonesia's competitiveness as a maritime nation on the global stage.

Samputra and Alfarizi (2025) examined whether advanced Society 5.0 technology can create economic and social value for millennial and Generation Z MSMEs in Surabaya, Indonesia, from an economic resilience perspective. This study showed that the adoption of advanced technology by MSMEs managed by the younger generation can increase economic and social value. This indicates that technology-focused economic development will encourage the development of human resources that are adaptive to change. Society 5.0 combines technological advances with humanistic aspects to create a human-centered society. In this case, technology is not only a tool to increase efficiency and productivity, but also to improve the quality of life. Human resources in the Society 5.0 era need to possess advanced technical and digital skills, as well as social skills, creativity, and critical thinking abilities that cannot be replaced by artificial intelligence. MSMEs managed by millennials and Generation Z have an adaptive advantage in adopting new technologies because they grew up in the digital era. However, they also need support with business knowledge, financial management, and effective marketing strategies. Digital platforms that connect MSMEs with consumers, suppliers, and financial institutions create a digital business ecosystem that supports MSME growth and economic resilience. MSMEs can leverage Society 5.0 technologies such as the Internet of Things, blockchain, and artificial intelligence to improve operational efficiency, supply chain transparency, and personalized customer service, ultimately enhancing their competitiveness in the global market.

Masudin et al. (2023) examined the impact of safety climate on human-technology interaction and sustainable development in the Indonesian oil and gas industry.

This study found that effective human-technology interaction will drive sustainable development, but is influenced by the safety climate within the organization. This finding demonstrates the importance of developing human resources who are not only technologically proficient but also aware of safety and sustainability aspects. The high-tech oil and gas industry requires human resources with strong technical competencies and a high level of safety awareness.

Economic development in the oil and gas sector requires attention to developing human resources who comprehensively understand human-technology interaction to ensure safety, efficiency, and sustainability of operations. Digital technologies such as IoT sensors, remote monitoring, and big data analytics can improve safety by providing early warnings of potential hazards and enabling better decision-making. Virtual and augmented reality simulations can be used to train oil and gas workers to deal with emergency situations without exposure to real-life hazards. Sustainable development in the oil and gas sector also requires technology to reduce environmental impacts, such as carbon capture and storage (CCS) technology and renewable energy for production facility operations. Human resources who understand the balance between economic, social, and environmental aspects in oil and gas operations will contribute to the sustainable development of this sector.

Boentolo et al. (2024) discuss the role of teachers in utilizing AI to develop a superior generation towards Golden Indonesia 2045. The use of AI in education will prepare students to face the challenges of the digital era.

Economic development that supports digital infrastructure and access to educational technology will accelerate the development of superior human resources in Indonesia. AI can be used as a learning tool that provides personalized, adaptive, and interactive learning experiences. Teachers need to have digital literacy and the ability to integrate AI into the learning process without losing the humanistic aspect of education. Digital economic development needs to be balanced with the development of educators' digital competencies to ensure optimal use of technology in education. AI-based learning systems can analyze the learning patterns, strengths, and weaknesses of each student to provide the most appropriate learning materials and methods. However, the role of teachers remains crucial in providing guidance, motivation, and character development, which cannot be completely replaced by AI. Collaborative learning between students, supported by AI, can also develop communication, cooperation, and problem-solving skills, which are essential for facing the complex challenges of the future. Investment in digital educational infrastructure, development of quality digital content, and teacher training in the use of AI are essential components of the human resource development strategy towards a Golden Indonesia 2045.

Digitalization has also transformed the job market and skills requirements. Automation and artificial intelligence have replaced routine and repetitive jobs, but they have also created new job opportunities that require digital skills, creativity, and higher-order thinking skills. Indonesian human resources need to adapt to these changes through upskilling and reskilling. The development of the digital economy requires support for education and training relevant to the needs of the digital industry. Partnerships between the digital industry, educational institutions, and the government in curriculum development and training will produce human resources ready to face the challenges of the digital economy. Platform-based jobs (gig economy) such as online transportation drivers, digital freelancers, and online traders have created new forms of work that require digital and entrepreneurial skills. Vocational and vocational education needs to adapt its curriculum and learning methods to prepare graduates with the skills needed in the digital job market. Digital skills certification programs also need to be developed to provide formal recognition for digital competencies acquired through various learning pathways, both formal and informal. Employment policies also need to be adjusted to accommodate the changing nature of work in the digital era, including aspects of social protection for digital workers.

Furthermore, digitalization has opened up opportunities for lifelong learning through online courses, webinars, and other digital learning resources.

Lifelong learning is becoming increasingly important in the face of rapid technological change and evolving skills needs. The development of the digital economy needs to support infrastructure and access to lifelong learning to ensure that Indonesian human resources can continuously improve their competencies and relevance to job market needs. Online learning platforms such as Massive Open Online Courses (MOOCs) and micro-learning, which offer flexible and affordable courses, can be a solution to increase access to quality education. The development of Digital Learning Centers in various regions, especially outside Java, can bridge the digital divide and provide access to digital learning resources for communities in remote areas. A digital-based labor market information system also

needs to be developed to provide information on trends in skills needs and job opportunities, so individuals can make informed decisions about their education and career paths. The development of financial technology (fintech) has also had a significant impact on economic development and human resource development in Indonesia. Fintech has increased financial inclusion by providing access to financial services for people previously underserved by the conventional banking system.

Human resources in the financial sector need to adapt to these changes by mastering digital financial technology and understanding digital consumer behavior.

Economic development that supports fintech innovation will accelerate the transformation of the financial sector and encourage the development of competent human resources in the field of financial technology. The development of a fintech ecosystem that encompasses fintech startups, traditional financial institutions, regulators, and consumers requires human resources with cross-disciplinary competencies that combine an understanding of finance, technology, and consumer behavior. Adaptive and forward-thinking regulations are also needed to support fintech innovation while protecting consumers and maintaining financial system stability. Fintech also opens opportunities for MSMEs to access alternative financing through peer-to-peer lending and crowdfunding platforms, which in turn drives economic growth and job creation.

Digital transformation in the public sector is also a crucial aspect of economic development and human resource development in Indonesia. E-government has increased the efficiency and transparency of public services, creating a conducive environment for economic development. Human resources in the public sector need to have digital competencies to optimize the use of technology in public services. Economic development supported by effective and efficient governance will accelerate national development and human resource development. A transparent e-procurement system can reduce corruption and increase the efficiency of government spending, which in turn improves the quality of infrastructure and public services. Integrated online licensing services can also shorten the time and costs of starting and expanding businesses, encouraging private sector growth and job creation. Smart city development, which combines digital technology, data, and human-centered urban design, can improve the quality of life for urban residents and the efficiency of city resource management. The post-pandemic era emphasizes the importance of technology and digitalization in economic recovery and human resource development in Indonesia. The pandemic has accelerated digital adoption in the education, health, and business sectors, requiring human resources to adapt to a technology-based new normal. Digital transformation strengthens economic resilience, while improving digital infrastructure and competency is key in the education and healthcare sectors. Businesses that are responsive to digitalization have proven more resilient in the face of crises.

#### Economic Policy and Human Resource Development for Indonesia's Future

An integrated economic development policy with human resource development is key for Indonesia in facing increasingly complex global challenges. A holistic approach that combines these two aspects is essential to create a strong foundation for long-term growth and global competitiveness.

Sectors such as agriculture, which require modernization and farmer competency development, need to be supported through agricultural technology and entrepreneurship training to create competitive farmers. Furthermore, strengthening village-owned enterprises (BUMDes) in villages can play a significant role in improving local human resources through business and managerial training, as well as providing access to broader markets.

Furthermore, developing the creative economy and tourism can encourage the creation of creative and innovative human resources, with a focus on mastery of digital technology, design, and understanding of global markets, so that Indonesian products can compete internationally. Sustainable economic development also needs to consider environmental aspects by integrating ecological awareness into vocational education to create human resources capable of preserving nature. Furthermore, equitable development across regions is a challenge that needs to be addressed through educational decentralization policies tailored to local potential, so that the quality of human resources is equitable throughout Indonesia.

Equally important, the Industrial Revolution 4.0 and digital transformation present both challenges and opportunities for Indonesia. Therefore, increasing human resource capacity in digital literacy and other technological skills is imperative.

With policies that encourage economic digitalization and equitable digital infrastructure development, Indonesia can ensure that this digital transformation provides inclusive economic benefits for all. Overall, development policies that support these sectors will create innovative, skilled, and adaptive human resources to global economic changes and strengthen Indonesia's competitiveness on the international stage.

## Conclusion

Economic development plays a very strategic role in developing superior human resources (HR) in Indonesia. The relationship between economic development and HR development is not a one-way relationship, but rather a reciprocal, mutually influencing, and reinforcing one. In the context of national development towards Indonesia Emas 2045, where Indonesia aims to become a developed nation with a high level of prosperity and strong global competitiveness, the presence of superior HR is key. Therefore, economic development cannot be separated from systematic and sustainable efforts to develop the quality of Indonesian people.

Based on the results of the studies and analyses conducted, it can be concluded that economic development contributes directly and indirectly to increasing the capacity, competence, and character of human resources in Indonesia. One of the main contributions of economic development lies in its ability to create an ecosystem that supports HR development. When the economy grows positively and sustainably, the country has greater fiscal capacity to allocate budgets to strategic sectors, particularly education, vocational training, and skills development programs. By strengthening the education and training sector, Indonesian human resources can be better prepared to face the challenges of an increasingly complex and competitive world of work.

Furthermore, healthy economic growth encourages the creation of broader and higher-quality job opportunities. With the opening of relevant job opportunities, Indonesian

workers can access jobs that match their competencies and gain experience that enriches their professional capacity. This creates a positive cycle: a growing economy provides opportunities for human resources to develop, while at the same time, quality human resources will drive higher economic growth in the future.

Furthermore, economic development is supported by entrepreneurship and the development of MSMEs, which create resilient, independent, and innovative human resources. Business activities train important skills such as creativity, risk-taking, and efficient resource management. Therefore, it is crucial for the government and stakeholders to strengthen the entrepreneurial ecosystem through education, access to capital, technical guidance, and ongoing mentoring.

Furthermore, in the current era of the Industrial Revolution 4.0 and the acceleration of digitalization, economic development that integrates technology and innovation is becoming increasingly important. Digital transformation has become a key driver of productivity and economic competitiveness, and to optimally utilize it, human resources are needed who are able to adapt, think critically, and master information and communication technology.

Therefore, innovation-oriented economic development must be accompanied by education and training policies that are responsive to future industrial needs. Education must be directed towards equipping students not only with theoretical knowledge but also with practical skills relevant to the needs of the world of work, including the ability to innovate and think computationally.

Advanced economic development also requires attention to aspects of sustainability and environmental sustainability. In terms of sustainable development, the human resources developed must have a high level of ecological awareness, understand the importance of preserving natural resources, and be able to apply green economy principles in daily economic activities. An economy that solely pursues growth without considering its impact on the environment will carry long-term detrimental risks, including public health risks, natural disasters, and resource degradation. Therefore, sustainable economic development also demands the development of human resources who are socially and environmentally responsible and possess integrity in carrying out their economic activities. To realize the vision of Golden Indonesia 2045, an economic development strategy is needed that is explicitly integrated with a human resource development strategy. A partial and sectoral development approach is no longer adequate to address the complex challenges of 21st-century development. A holistic economic policy is needed, integrating aspects of education, training, job creation, MSME empowerment, technology utilization, and environmental preservation. This policy must reflect synergy between the public sector, the private sector, academia, and civil society. The central and regional governments must work together to create an inclusive and participatory development ecosystem, where every individual has the opportunity to develop optimally.

As part of a long-term strategy, economic development must also be directed at Creating high-value-added jobs that require advanced skills. These jobs not only absorb labor but also increase national productivity. In this regard, sectors such as high-tech

manufacturing, the digital economy, the creative industry, renewable energy, and the professional services sector are priorities for development.

By encouraging the growth of these sectors, Indonesia can create a more complex economic structure, which in turn will encourage the development of adaptive, innovative, and solution-oriented human resources. However, this study recognizes several limitations that need to be addressed for further research. The study's focus, which relies on literature, means that the findings may not cover all aspects of the relationship between economic development and human resource development. The literature approach tends to be generalistic, so there is still a need for more in-depth and specific follow-up research. Therefore, further research using mixed methods, namely a combination of qualitative and quantitative approaches, is highly recommended to provide a more holistic and accurate understanding. A quantitative approach will help objectively measure the extent to which economic development impacts human resource development indicators, while a qualitative approach can explore experiences, perceptions, and social dynamics occurring on the ground.

Furthermore, it is important to conduct case studies in specific economic sectors to obtain a more specific and practical picture. For example, the agriculture, fisheries, manufacturing, tourism, and information technology sectors have different characteristics and impact the development of superior human resources. Case studies will help identify best practices that can be replicated in other sectors and provide more targeted policy recommendations. Furthermore, a regional approach is also important to explore variations in development across regions in Indonesia, given the disparity in development between western and eastern Indonesia, which impacts the quality of human resources in each region.

Furthermore, it is important to emphasize that human resource development is not solely the responsibility of the government but also requires the active participation of the business world, educational institutions, and the wider community. The business world has a role in providing a work environment that supports learning and competency development. Educational institutions must be able to transform into centers of innovation and future skills. The wider community also needs to be empowered to become active players in human resource development, whether through community programs, informal training, or other productive activities.

Ultimately, to achieve an Indonesia with superior human resources, a paradigm shift in how we view economic development is necessary. Development is not only measured by Gross Domestic Product (GDP) growth, but also by improvements in the quality of human life, social inclusion, and long-term prosperity. Economic development and human resource development must be viewed as an inseparable whole. With a synergistic, integrated, and sustainable approach, Indonesia can realize its grand vision of becoming a developed nation supported by high-quality, globally competitive human resources that make a positive contribution to the world. Therefore, investing in economic development that prioritizes human development is the best investment for the nation's future.

### RECOMMENDATION

Indonesia's economic development must be strategically directed and integrated with the development of superior human resources. The government needs to align economic and educational policies with industry needs through relevant curricula, vocational training, and strengthening digital literacy. The entrepreneurial ecosystem must also be strengthened through incentives, financing, and early training to encourage innovation and economic independence. Digital transformation and the development of the creative economy as strategic sectors require increased internet access, digital training, and the protection of intellectual property rights. Triple helix collaboration between government, industry, and universities is crucial to creating adaptive and work-ready human resources. Economic development must also be inclusive and sustainable, with equitable access to education, training, and economic opportunities, including for rural communities, women, and vulnerable groups. The development of a green and circular economy needs to be accompanied by environmental education and environmentally friendly technologies.

Village-owned enterprises (BUMDes) and the village economy play a crucial role in creating superior local human resources, supported by training and mentoring. Investment in research and development (R&D) encourages innovation and human resource competitiveness. Periodic evaluation of development policies is necessary to ensure they remain effective and adaptive to the challenges of the times. With this comprehensive approach, economic development will provide a strong foundation for creating superior, productive, and globally competitive Indonesian human resources, capable of adapting to the dynamics of technological, social, and economic change at the national and international levels.

### REFERENCES:

1. Abdillah, F. (2024). Peran perguruan tinggi dalam meningkatkan kualitas sumber daya manusia di Indonesia. *EDUCAZIONE: Jurnal Multidisiplin*, 1(1), 13-24.
2. Abdillah, F., & Ramadhan, Y. M. (2023). Pengaruh Pembangunan Ekonomi Terhadap Sumber Daya Manusia Di Indonesia Pada Era Modern. *Benefit: Journal of Bussiness, Economics, and Finance*, 1(2), 54-68.
3. Aji, J. S., Retnaningdiah, D., & Hayati, K. (2022). Optimalisasi Peran Dan Fungsi BUMDes Astaguna Dalam Pengembangan Ekonomi Masyarakat Desa Trihanggo. *JAPI (Jurnal Akses Pengabdian Indonesia)*, 7(2), 155-162.
4. Alfarizi, M., & Herdiansyah, H. (2024). Innate green propensity: Precursors of ecopreneurial intentions among Indonesian Education Human Resources University. *The International Journal of Management Education*, 22(2), 100977. <https://doi.org/10.1016/j.ijme.2024.100977>
5. Amin, C., Pramono, W. T., Jumadi, J., Sari, D. N., & Samson, M. G. M. (2025). Navigating urban poverty: The role of livelihood capital in the livelihood strategies of urban beggars in Indonesia. *Social Sciences & Humanities Open*, 11, 101298. <https://doi.org/10.1016/j.ssaho.2025.101298>

6. Batubara, N. Z., & Tambunan, K. (2022). Analisis Peran Pendidikan Dalam Pembangunan Ekonomi Islam Melalui Sumber Daya Manusia Pasca Pandemi Covid-19. *Jurnal Ilmiah Kohesi*, 6(1), 8-13.
7. Boentolo, F., Manu, C. C. C. R., Saragih, O. G., & Zalukhu, S. (2024). Peran guru memanfaatkan AI dalam membangun generasi unggul menuju Indonesia emas 2045. *Aletheia Christian Educators Journal*, 5(1), 42-48.
8. Hardi, I., Afjal, M., Can, M., Idroes, G. M., Noviandy, T. R., & Idroes, R. (2024). Shadow economy, energy consumption, and ecological footprint in Indonesia. *Sustainable Futures*, 8, 100343. <https://doi.org/10.1016/j.sftr.2024.100343>
9. Khairiyah, U., & Dewinda, H. R. (2022). Peran pendidikan karakter dalam mempersiapkan sumber daya manusia yang bermutu. *Psyche 165 Journal*, 119-124.
10. Kristiyanti, M., Kundori, K., & Hermawati, R. (2023). Membangun sumber daya manusia dan teknologi informasi sebagai dasar kejayaan maritim di Indonesia. *Jurnal Sains Dan Teknologi Maritim*, 23(2), 109-122.
11. Latif, L., Kamaludin, K., & Sunarto, A. (2024). Ketahanan Berwirausaha, Daya Hidup Ukm Dan Keberlangsungan Dalam Menghadapi Persaingan Usaha Untuk Menciptakan Sdm Yang Unggul. *Indonesian Collaboration Journal of Community Services (ICJCS)*, 4(2), 81-89.
12. Mardiyah, R. H., Aldriani, S. N. F., Chitta, F., & Zulfikar, M. R. (2021). Pentingnya keterampilan belajar di abad 21 sebagai tuntutan dalam pengembangan sumber daya manusia. *Lectura: Jurnal Pendidikan*, 12(1), 29-40.
13. Mas'ud, L. P., & Susilo, M. Y. (2023). Peran Umkm Dalam Membangun Dan Menumbuhkan Ekonomi Kreatif Di Era Revolusi 5.0 Menuju Ekonomi Global. *Jurnal Ilmiah Metansi (Manajemen dan Akuntansi)*, 6(2), 266-275.
14. Masudin, I., Tsamarah, N., Restuputri, D. P., Trireksani, T., & Djajadikerta, H. G. (2023). The impact of safety climate on human-technology interaction and sustainable development: Evidence from Indonesian oil and gas industry. *Journal of Cleaner Production*, 434, 140211. <https://doi.org/10.1016/j.jclepro.2023.140211>
15. Pancawati, A. P. A., & Widaswara, R. Y. (2023). Pengembangan ekonomi kreatif dalam meningkatkan potensi pariwisata. *Jurnal Ekonomi Bisnis Dan Akuntansi*, 3(1), 166-178.
16. Rasyiqah, D., Zamhari, A., Yahya, M., Daniyasti, N., & Fitriani, A. (2023). Peran Kewirausahaan Di Era Globalisasi Dalam Memajukan Perekonomian Di Indonesia. *Jurnal Multidisiplin Indonesia*, 2(6), 953-953.
17. Romawati, A., & Nisa, F. L. (2024). Peran Pendidikan dan Pelatihan Dalam Membangun Kapasitas Pelaku Industri Kreatif di Indonesia. *Jurnal Inovasi Bisnis Indonesia (JIBI)*, 1(4), 209-215.
18. Samputra, P. L., & Alfarizi, M. (2025). Can advanced society 5.0 technology create economic and social value for millennial and generation Z MSMEs in Surabaya, Indonesia? An economic resilience perspective. *Asia Pacific Management Review*, 100355. <https://doi.org/10>