



THE ROLE OF HUMAN RESOURCES IN SUSTAINABLE SOCIO-ECONOMIC DEVELOPMENT

O papel dos recursos humanos no desenvolvimento socioeconômico sustentável

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ABSTRACT

Objective: This paper analyzes and evaluates the role of human resources in sustainable socio-economic development in Vietnam while also identifying the limitations in maximizing this role. Based on the findings, the study proposes solutions to improve the quality of human resources to meet the demands of sustainable development. **Methodology:** The research employs analytical and synthetic methods based on documents, statistical reports, and empirical studies. In addition, social philosophy approaches are applied to assess the impact of human resources on socio-economic development. **Results:** The research results indicate that human resources have a direct impact on GDP growth, labor productivity, national competitiveness, and the sustainable development of society. However, the quality of human resources in Vietnam still faces several limitations, such as low professional qualifications, inadequate labor skills to meet market demands, and shortcomings in the training structure as well as in improving workers' quality of life. **Conclusion:** To enhance the role of human resources in socioeconomic development, Vietnam needs to focus on key solutions such as education reform, strengthening vocational training, improving labor quality, and developing policies to attract talent. Investing in human resources not only contributes to economic growth but also ensures long-term sustainable development.

Keywords: Human Resources, Sustainable socio-economic development, Vietnam

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The role of human resources in sustainable socio-economic development

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RESUMO

Objetivo: Este artigo analisa e avalia o papel dos recursos humanos no desenvolvimento socioeconômico sustentável no Vietnã, identificando também as limitações na maximização desse papel. Com base nos resultados, o estudo propõe soluções para melhorar a qualidade dos recursos humanos e atender às demandas do desenvolvimento sustentável. **Metodologia:** A pesquisa utiliza métodos analíticos e sintéticos baseados em documentos, relatórios estatísticos e estudos empíricos. Além disso, abordagens da filosofia social são aplicadas para avaliar o impacto dos recursos humanos no desenvolvimento socioeconômico. **Resultados:** Os resultados da pesquisa indicam que os recursos humanos têm impacto direto no crescimento do PIB, na produtividade do trabalho, na competitividade nacional e no desenvolvimento sustentável da sociedade. No entanto, a qualidade dos recursos humanos no Vietnã ainda enfrenta diversas limitações, como baixa qualificação profissional, qualificação inadequada da mão de obra para atender às demandas do mercado e deficiências na estrutura de treinamento, bem como na melhoria da qualidade de vida dos trabalhadores. **Conclusão:** Para aprimorar o papel dos recursos humanos no desenvolvimento socioeconômico, o Vietnã precisa se concentrar em soluções-chave, como reforma educacional, fortalecimento da formação profissional, melhoria da qualidade da mão de obra e desenvolvimento de políticas para atrair talentos. Investir em recursos humanos não só contribui para o crescimento econômico, mas também garante o desenvolvimento sustentável a longo prazo.

Palavras-chave: Recursos Humanos, Desenvolvimento socioeconômico sustentável, Vietnã

INTRODUCTION

In the context of globalization and the ongoing Fourth Industrial Revolution, human resources are increasingly becoming a core factor that determines the sustainable development and competitiveness of each country. For Vietnam – a country in the process of industrialization and modernization – improving the quality of human resources is not only an urgent requirement but also a key driver to promote economic growth, improve labor productivity, and enhance the quality of social life.

In the digital age, the concept of human resources is not limited to the quantity of labor but also reflects the level of expertise, work skills, creativity, and adaptability to the rapid changes in the knowledge-based economy. In recent years, Vietnam's human resources have played an important role in socio-economic development, as demonstrated by GDP growth, improvements in labor productivity, and integration into the global economy. However, alongside the achieved results, Vietnam still faces many challenges, such as uneven labor quality, limited application of science and technology skills, and the imbalance between labor supply and demand due to the ineffective linkage between the education system, training, and the practical needs of businesses. These limitations not only affect labor productivity and efficiency but also directly impact the country's competitiveness in the context of a world that is rapidly shifting toward a digital economy and sustainable development. Therefore, researching and evaluating the current situation, as well as proposing solutions to enhance human resource quality to meet the requirements of sustainable socio-economic development, is an important and urgent task. This will not only help Vietnam make the most of its available labor potential but also contribute to building a modern, innovative economy that is highly adaptable to future challenges.

1 LITERATURE REVIEW

The development of high-quality human resources is a crucial research focus in countries with advanced scientific and technological capabilities. Numerous studies have explored various aspects of human resource development in different economic contexts.

Chris (1994), in "Human Resources in Development along the Asia-Pacific Rim," compared human resource development processes in Thailand, Indonesia, Malaysia, and the Philippines with newly industrialized countries (NICs) such as South Korea, Taiwan, Singapore, and Hong Kong. The study emphasized that NICs have successfully enhanced human resource quality through education policies, vocational training, and talent attraction. This suggests a developmental model that could be applied to other developing nations. Bryan (2002), in "Restructuring Malaysia's Economy: Development and Human Resources," analyzed the importance of education and training in promoting an industrialized workforce. The author argued that while Malaysia had made significant progress, without a synchronized human resource development strategy aligned with industrialization, the economy would face a shortage of skilled labor, hindering modernization efforts.

Isola and Alani (2005) studied the impact of education and healthcare on economic growth in Nigeria. Their findings indicated that literacy rates and life expectancy were strongly correlated with GDP growth. However, they also noted that some countries might struggle to translate investments in education into actual economic growth if supporting policies such as infrastructure improvement and labor management systems were lacking.

Tania and Sehoon (2014), in "National Human Resource Development in Brazil: Lessons from South Korea," highlighted that South Korea's human resource development model, which integrates education, industry, and government policies, could serve as a valuable lesson for emerging economies like Brazil. However, they also stressed that adapting this model requires adjustments to fit each country's cultural and political context. Agus (2015), in "Parents as the First and Most Important Teachers for Developing High-Quality Human Resources" underscored the role of family education in human resource development. This study offered a distinct perspective compared to previous research focused on formal education, pointing out that early educational interventions could create significant long-term differences in workforce competency.

Rajashi and Stefanos (2024), in "Prioritizing People: The Crucial Role of Human Resource Development in Successful AI Adoption in the Workplace" discussed the relationship between human resource development and artificial intelligence (AI) advancement. They argued that while AI can enhance labor productivity, inadequate training programs, and workforce management could lead to negative consequences such as unemployment and income inequality.

Alamsyah and Nursini (2024), in "Human Resource Quality and Competitiveness Enhancement" asserted that a nation's competitiveness depends on the quality of its workforce. They provided empirical evidence showing that countries with highly skilled labor forces tend to sustain stable economic growth and compete effectively in the global market. Hanushek and Woessmann examined the relationship between cognitive skills, years of schooling, and economic growth. They pointed out that while average years of schooling are correlated with growth, without ensuring education quality, economic development outcomes remain limited. This raises an important policy question: should the focus be on the quantity or quality of education?

In the Vietnamese context, Thanh and Quynh (2023) highlighted that education and training are key factors in improving human resource quality, particularly in the digital transformation era. Thang (2023) emphasized that the connection between higher education, science and technology, and innovation is crucial for developing a workforce that meets industrialization and modernization demands. Tuyen and Dao (2023) assessed the current state of Vietnam's human resource quality and proposed 18 criteria to enhance workforce competitiveness in the Fourth Industrial Revolution. These criteria include both technical factors (such as professional qualifications and digital skills) and soft skills (such as critical thinking, creativity, and teamwork), demonstrating the necessity of a comprehensive human resource development strategy. Lan (2023) analyzed the importance of legal human resources in the context of international economic integration, particularly in high-tech investment environments. This represents a novel yet crucial aspect of human resource development, emphasizing the need for specialized training alongside traditional technical skills.

Hoa (2023) proposed strategies to improve Vietnam's human resource quality for effective international integration. These recommendations extend beyond education, encompassing workplace improvements and talent attraction policies, reflecting the necessity of a multidimensional approach to human resource development.

Finally, the study "New Contexts and Requirements for Human Resource Development" emphasized the need to adjust human resource policies according to global trends. Understanding and adapting to changes in the international economic-social landscape will enable countries to optimize their human resource development strategies.

This literature review demonstrates the widespread academic interest in human resource development, particularly its role in economic progress. While many studies focus on education and training as primary drivers of human resource quality, few examine the importance of foundational preparation before specialized training. A lack of early education and social development can impact the long-term effectiveness of human resource training programs. This gap highlights the need to establish a strong educational and social foundation to develop a workforce capable of driving innovation and economic transformation.

2 METHODOLOGY

This study adopts the analytical-synthetic method to systematize arguments from various sources, including statistical reports, scientific research both domestically and internationally, as well as practical surveys on human resources and socio-economic development. The combination of multiple data sources ensures objectivity, and comprehensiveness, and provides a solid foundation for the findings and recommendations in this study.

At the same time, the study employs philosophical social methods to analyze the role and impact of human resources on socio-economic development in greater depth. Specifically, the dialectical materialism method is used to view human resources as a dynamic entity, continuously evolving under the influence of economic, cultural, political, and technological factors. The historical materialism method is applied to analyze the development process of human resources in Vietnam through various historical stages, drawing important lessons and identifying future development trends. Additionally, the system analysis and synthesis method is used to evaluate the relationship between human resources and other socio-economic factors, providing a basis for proposing comprehensive policy solutions to optimize the use of human resources in the current development context.

Finally, the study combines empirical analysis with philosophical theory to not only provide accurate assessments of the current state of human resources but also offer sustainable strategic directions, contributing to improving the quality of human resources to meet the development requirements of Vietnam's economy in the context of integration and digital transformation. Furthermore, it helps evaluate the impact of human resources on

technological transfer and the effective utilization of advanced technologies, supporting the nation's ongoing transformation into a knowledge-based, technology-driven economy.

3 RESULTS AND DISCUSSION

3.1 Theoretical Framework on the Role of Human Resources in Sustainable Socio-Economic Development

Human resources always play a core role in the sustainable development of the economy and society. The concept of human resources has long been studied by scientists and businesses from various perspectives, leading to the formation of diverse definitions. According to the International Labour Organization (ILO), the human resources of a country includes all individuals of working age who are capable of participating in labor activities (Cuc, 2014). Meanwhile, C  u and Ch  nh (2008) define human resources as "the human capacity to create material and spiritual wealth for society, expressed through quantity and quality at a given time".

Human resources can be understood in two ways: broadly, human resources refer to the labor supply for society to ensure sustainable development; narrowly, human resources refer to all individuals of working age who are capable of participating in production activities, including both physical and intellectual factors. Human resources are not only the labor force but also a decisive factor in the sustainable development of an organization or nation. Developing and effectively managing human resources will contribute to creating long-term and stable value, not only economically but also culturally and socially.

Human resources have a profound impact on the sustainable development of the economy, especially in the context of globalization and rapid technological change. Individuals with high expertise and creative skills are key factors in driving science and technology, creating products and innovative processes, and contributing to the development of green and sustainable industries. Through this human resource, countries can leverage and apply advanced technologies to enhance labor productivity and minimize negative environmental impacts.

Human resources are a decisive factor for sustainable economic growth: Labor productivity is a key factor in creating sustainable economic development. To achieve this, it is not only necessary to have modern machinery and technology but also a workforce capable of researching, creating, and operating these technologies. Scientific and technological human resources play a crucial role in developing new technologies, thereby improving overall labor productivity and contributing to building a strong and sustainable economy. Investing in human resource training and development will help countries achieve economic growth goals while protecting the environment and improving citizens' quality of life.

Human resources play a decisive role in digital transformation and sustainable digital economy: Digital transformation is a strong global trend, especially in the current context when digital technology becomes an important factor in economic and social development. To successfully transform digitally, a team of highly skilled science and technology human resources with mastery of technology and creativity is required. This will ensure the effective application of digital technologies in production and business practices, thereby promoting the development of a sustainable digital economy. This transformation not only improves production efficiency but also helps society shift toward a green and environmentally friendly economy.

Human resources enable effective and sustainable technology transfer: For developing countries like Vietnam, adopting and applying advanced technologies is crucial for improving productivity and enhancing economic sectors. Scientific and technological human resources play an essential role in receiving, transferring, and applying new technologies, while also helping to "domesticate" foreign technologies to suit the country's actual conditions. They also help evaluate and test technology quality to avoid outdated technologies, ensuring long-term and sustainable economic efficiency.

Human resources improve production efficiency and sustainable labor productivity: Developing high-quality human resources helps reduce labor costs and increase labor productivity per unit of output while minimizing negative environmental impacts. In particular, science and technology serve as a "lever" to improve product and service quality, while also enhancing production efficiency. Strategies to improve labor productivity based on knowledge and technology are essential to ensure the sustainable development of organizations and countries. Investment in science, technology, and innovation will create sustainable and stable economic values, while also protecting the environment and improving the quality of life for communities.

Human resources contribute to building a fair and inclusive society: One of the key factors in creating a sustainable society is fairness and inclusivity. High-quality human resources, well-trained with creative thinking and a spirit of dedication, will contribute to addressing social issues, from reforming the education system to improving the quality of public services such as healthcare and social protection. These workers, with their skills and knowledge, will not only help develop the economy but also contribute to building fair systems where everyone has equal opportunities and access to deserving social benefits.

3.2 Results and Limitations of Human Resource Development for Sustainable Socio-Economic Development in Vietnam

Human resources play an extremely important role in promoting sustainable socio-economic development. To assess the impact of human resources on sustainable development, we need to consider three main factors: quantity, quality, and human resource development policies.

About the quantity of human resources. According to the 2019 consolidated survey report by the Ministry of Science and Technology, the country currently has 185,436 people involved in research and development (R&D), an increase of nearly 7.4% compared to 2017 and a 10.54% increase compared to 2015 (Ministry of Science and Technology, 2021). Among them, researchers account for the highest proportion, approximately 80.94%. The number of personnel in this field has grown steadily over the past four years (2015-2019), from 167,746 people to 185,436 people. The structure of the research workforce in science and technology mainly includes researchers (80%), technicians (6-7%), and support staff. The number of highly qualified personnel (master's and doctoral degrees) has also increased, with the proportion of researchers with a doctoral degree rising from 11% in 2015 to 15% in 2019. By 2020, Vietnam had about 1.5 million people with university or higher education degrees, including thousands of professors, associate professors, and doctors participating in science and technology fields (Phuong, 2022).

About the quantity and quality of human resources. The quality of human resources, particularly in science and technology, has been continuously improved and developed. Many reputable scientists have gained international recognition. The contributions of this workforce, especially in research and development, have increased labor productivity and the added value of products. During the 2016-2020 period, the average labor productivity growth rate was 5.8% per year, higher than the 4.3% rate of the 2011-2015 period (Ministry of Labor – Invalids and Social Affairs, 2020). Additionally, the share of high-tech product export value in total goods export value has risen sharply from 19% in 2010 to approximately 50% in 2020. These achievements clearly show the important contribution of human resources to the sustainable development of the economy (Ministry of Labor – Invalids and Social Affairs, 2021).

On human resource development policies. The government has implemented many policies to promote human resource development, particularly in science and technology. However, the implementation process still faces many challenges due to limitations in financial resources and infrastructure. Projects such as Project 911 (training doctoral-level lecturers for universities and colleges) and Project 599 (training high-level human resources abroad) have helped improve the quality of human resources, but their effectiveness remains limited. In addition, human resource training programs in science and technology have been continuously improved and innovated, creating favorable conditions for participating in scientific research. Policies to attract domestic and international science and technology personnel have been strongly promoted, particularly through financial support, immigration procedures, visas, and work permits.

With these efforts, human resources not only contribute to economic development but also play a key role in protecting and developing a sustainable society, from healthcare, and education, to national defense and security (Cuong, 2022).

Despite the achievements, there are still limitations and challenges in leveraging human resources for sustainable socio-economic development in Vietnam. These challenges have hindered the ability to meet the demands for innovation, industrialization, and modernization.

Uneven distribution of human resources: One major issue with human resources in science and technology (S&T) is the asymmetrical distribution between regions. Large cities such as Hanoi, Ho Chi Minh City, and Da Nang concentrate the majority of S&T's human resources, while disadvantaged provinces face shortages in this area. The structure of the research workforce has not significantly changed during the period from 2015 to

2019. Approximately one-third of research personnel work in S&T (35.37% in 2019), similar to the proportion in social sciences and humanities research (32.6% in 2019). Fields such as medical sciences, natural sciences, and agriculture account for a small proportion of the total R&D workforce, even though agriculture remains an important sector in Vietnam's economy (Trung, 2023).

Shortcomings in human resource training: In the field of education, many higher education institutions have not established appropriate output standards, and the training programs are not up-to-date, particularly in high-tech fields. These institutions face challenges such as a shortage of resources, insufficient infrastructure for research and study, and many cannot train according to international standards. Investment in infrastructure and research space has not been adequately emphasized, leading to difficulties in maintaining training quality.

Quality of graduates does not meet practical demands: Although there are over 300 universities and colleges offering high-tech programs, the quality of graduates still does not meet the demands of employers. Many students in S&T fields, despite being well-trained, lack practical skills and the ability to conduct in-depth research upon graduation. Furthermore, the rate of S&T students pursuing master's or doctoral degrees is very low, creating the risk of a future shortage of high-quality human resources, which will directly impact the country's industrialization and modernization process (Sang, 2023).

Weak linkage between research and production: Another critical issue is the lack of connection between scientific research and production. Although numerous scientific studies are conducted in universities and research institutes, most of the research results are not widely applied in production and business. The lack of cooperation with enterprises to transfer technology and products to the market reduces the effectiveness of research, limiting the contribution of science and technology to sustainable development.

3.3 Solutions to Enhance the Role of Human Resources for Sustainable Socio-Economic Development in Vietnam

Human resources play a critical role in the sustainable development of the economy and society. To ensure that human resources can meet the demands of the modern economy and support sustainable development, the following solutions need to be implemented:

Firstly, reforming and renewing the training programs at universities and vocational schools is essential. The curriculum should be designed with a practical approach, aligning with labor market demands, while focusing on developing key skills such as creative thinking, problem-solving, and teamwork. Additionally, regularly updating knowledge and applying modern science and technology will enhance competitiveness and creativity for learners. Furthermore, there should be an emphasis on training soft skills and digital skills – key factors for workers to adapt to the modern work environment. Skills like communication, time management, as well as the ability to use technology (programming, data analysis, cybersecurity) should be integrated into the training programs. Finally, strengthening cooperation between educational institutions and businesses will provide students with real-world work experiences through internships, academic exchanges, and joint research projects, contributing to the development of a high-quality labor force that meets the needs of socio-economic development.

Secondly, to promote the role of human resources in the knowledge economy, it is essential to encourage comprehensive investment and application of science and technology. First and foremost, investment in research and development (R&D) plays a key role. The government and businesses need to enhance support for scientific projects, establish modern research centers, and create favorable conditions for the implementation and replication of innovative initiatives. Simultaneously, key economic sectors need to quickly apply advanced technologies in production and business. The state can support this by offering incentives such as tax reductions, preferential loans, or creating a favorable legal framework for innovation activities. Additionally, developing modern technological infrastructure is indispensable. High-tech zones, data centers, and high-speed internet systems need to be built and expanded to create an environment conducive to scientific and technological development. Through this, workers will have opportunities to access new technologies, improve their skills, and contribute to the sustainable development of the economy.

Thirdly, encouraging creativity and innovation within the workforce is a crucial factor in fully realizing human potential in the process of socio-economic development. To achieve this, innovative thinking should be integrated into policies from the central to local levels. The government should proactively create an environment conducive to initiatives by establishing venture capital funds, organizing creative competitions, and supporting

scientific research projects with high application potential. These mechanisms will not only foster creative motivation but also spread a culture of innovation within the community. Additionally, the spirit of entrepreneurship should be strongly encouraged, especially among the youth and workers with new ideas. Start-up support programs such as business incubators, management skills training, and preferential funding will provide opportunities for creative ideas to be realized, helping start-ups grow sustainably and make positive contributions to the knowledge economy.

Fourthly, strengthening policies to protect workers and improve social living standards is also an important foundation for sustainable human resource development. First, the government needs to focus on building and implementing policies to ensure the practical rights of workers. This includes guaranteeing safe working conditions, a fair environment, vocational training opportunities, and access to social welfare services such as health insurance and unemployment insurance. These policies will not only help workers stabilize their lives but also contribute to improving productivity and long-term work morale. At the same time, community development programs, especially in remote, mountainous areas, and economically disadvantaged regions, should be promoted to create more job opportunities and improve the quality of local human resources. Vocational training, start-up support, and skill development activities will help workers in these areas integrate better into the modern labor market. Concurrently, fostering effective international cooperation is also crucial in developing high-quality human resources. Promoting international collaboration in education, training, and scientific research will open up learning opportunities, and access to advanced technologies, and expand global professional networks for workers. These relationships will not only enhance the quality of domestic training but also elevate the status of Vietnam's human resources internationally.

CONCLUSION

Human resources are not only the central factor driving economic growth but also the foundation for building a sustainable society. In the context of globalization and the Fourth Industrial Revolution, the demand for high-quality human resources is not only a requirement of the labor market but also a key element in enhancing labor productivity, promoting innovation, and strengthening national competitiveness. The role of human resources is increasingly affirmed as an indispensable pillar in the process of sustainable socio-economic development. To realize this, close cooperation between the State, enterprises, educational institutions, and each individual in society is necessary. The education system must undergo comprehensive reform to equip the younger generation with practical knowledge and skills, while universities and research institutes need to strengthen their links with businesses in training and applied research activities. At the same time, the government must continue to implement strong policies supporting the development of science and technology, encouraging innovative startups, and creating favorable conditions to attract talent from both domestic and international sources. Equally important, each individual needs to proactively engage in lifelong learning, and update new technologies such as artificial intelligence, the Internet of Things, blockchain, or biotechnology to adapt to the ever-changing world. Only when society collectively works toward the goal of comprehensive human development can Vietnam build a strong, skilled, and knowledgeable workforce that meets the demands of the times and contributes effectively to the country's sustainable socio-economic development in the future.

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