



Some Solutions for Developing High-Quality Human Resources in the Context of Accelerated Industrialization in Vietnam

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ABSTRACT

The development of high-quality human resources is one of the decisive factors in successfully implementing the national renovation process and advancing industrialization and modernization in Vietnam. In the context of globalization and the Fourth Industrial Revolution, improving the quality of human resources is not only an urgent requirement but also a prerequisite for enhancing the country's competitiveness and facilitating effective international integration. To meet the demands of the current stage of renovation and accelerated industrialization and modernization, Vietnam must adopt comprehensive and strategic solutions aimed at fostering a highly skilled, knowledgeable, and adaptable workforce. Such solutions should focus on improving education and training systems, strengthening the linkage between human resource development and socio-economic strategies, and creating favorable institutional conditions to promote innovation, creativity, and sustainable growth

INTRODUCTION

In the context of deepening globalization and the rapid advancement of the Fourth Industrial Revolution, the development of high-quality human resources has emerged as a decisive factor shaping the success of nations. For Vietnam, a country undergoing dynamic transformation and striving toward sustainable growth, enhancing the quality of its workforce is not merely an urgent task but a strategic prerequisite for fulfilling the objectives of national renovation and accelerating industrialization and modernization.

High-quality human resources should not be understood solely in terms of advanced professional qualifications. Rather, they encompass individuals who possess adaptability in the face of technological and structural change, innovative and creative thinking, and the capacity to operate effectively within international and multicultural environments. Such attributes form the essential foundation for Vietnam to integrate more deeply into the global economy, strengthen its competitive advantage, and sustain long-term socio-economic development.

LITERATURE REVIEW

The issue of high-quality human resource development (HQRD) has been widely examined in international scholarship from the perspectives of human capital theory, strategic human resource development (SHRD), and organizational performance. Erosa et al. (2010) argue that human capital plays a decisive role in explaining cross-country income disparities, emphasizing education and skill accumulation as structural determinants of productivity and long-term growth. Similarly, Krueger and Lindahl (1999) highlight the centrality of education and skills in enhancing national well-being and sustaining competitiveness in the global economy. These macro-level analyses provide a theoretical foundation for understanding high-quality human resources as a key driver of socio-economic transformation.

At the organizational level, Swanson and Holton (2008) conceptualize human resource development (HRD) as a systematic process linking individual learning, organizational performance, and strategic objectives. In a similar vein, Noe et al. (2008) stress that employee training and development constitute core mechanisms through which firms build sustainable competitive advantage. Po Hu (2007) further advances the SHRD framework by theorizing the relationship between HRD practices, financial performance, and long-term competitiveness, suggesting that strategic alignment between HRD and business goals is crucial in technology-intensive sectors.

Empirical studies also demonstrate the impact of HRD practices on organizational outcomes. Priyanka Rani and Khan (2009) find a positive relationship between HRD initiatives and organizational performance, while Shrivastav et al. (2021) confirm that strategic HRM practices significantly enhance global competitiveness. These findings underscore the importance of integrating training systems, innovation capacity, and performance management within a coherent HRD strategy.

Within the Vietnamese context, research has increasingly focused on high-quality human resources in relation to the knowledge economy and industrialization. Diep (2010) identifies advanced professional qualifications, ethical standards, and adaptability to complex tasks as core attributes of high-quality human resources. Tuan (2012) emphasizes the role of labor quality in international labor mobility and competitiveness, especially under conditions of globalization. However, much of the existing domestic literature remains concentrated at the macro-policy level, with limited empirical investigation into sector-specific contexts, particularly high-tech agriculture and technology-driven enterprises.

Overall, prior studies provide a robust theoretical and empirical basis for examining high-quality human resource development. Nevertheless, gaps remain in integrating strategic HRD perspectives with the specific structural and technological transformations associated with Industry 4.0, especially in emerging economies. Addressing this gap constitutes the primary contribution of the present study.

METHODOLOGY

This study is grounded in the methodological principles of dialectical materialism, applied through a concrete-historical and holistic perspective. A systems approach is employed to examine high-quality human resource development as an interconnected process shaped by economic, political, social, and cultural factors. The research also builds upon and critically synthesizes findings from previous studies to consolidate the theoretical framework and strengthen the analytical foundation of the study.

To accomplish the research objectives, the author integrates a range of interdisciplinary methods commonly used in social science research. These include analytical and synthetic methods to interpret theoretical and policy documents; the historical and logical method to trace the evolution and internal coherence of viewpoints on human resource development; and statistical and comparative methods to assess trends and identify key patterns. The coordinated application of these approaches ensures both theoretical rigor and practical relevance, thereby enabling a comprehensive evaluation of strategies for developing high-quality human resources in the context of accelerated industrialization in Vietnam.

RESULT AND DISCUSSION

The Role of High-Quality Human Resources in National Economic Growth

In the context of deepening globalization and intensifying economic competition, high-quality human resources have emerged as a decisive factor in ensuring sustainable national development. Beyond constituting a workforce with advanced qualifications, this segment of human capital functions as a strategic driver of innovation, productivity enhancement, and structural transformation. From the perspective of social scientific methodology, human resources are not merely an input factor of production but a historically situated

and socially embedded force that shapes, and is shaped by, the dynamics of economic development.

High-quality human resources encompass not only individuals with advanced educational attainment but also those possessing specialized expertise, professional skills, critical thinking capacity, creative competence, and the ability to operate effectively in complex and internationalized environments. Ethical commitment, social responsibility, and collaborative capacity further constitute integral components of this category. Recognizing its strategic importance, the 11th National Congress of the Communist Party of Vietnam (2011) affirmed that developing and enhancing the quality of human resources, especially high-quality human resources, constitutes a strategic breakthrough and the most important competitive advantage for ensuring rapid, effective, and sustainable development (Communist Party of Vietnam, 2011, p. 130).

The centrality of high-quality human resources to national economic growth can be analyzed through several interrelated dimensions.

First, they are a decisive determinant of labor productivity. A workforce equipped with advanced knowledge and professional competencies is capable of improving operational efficiency, minimizing production errors, and optimizing technological processes. At the macroeconomic level, productivity growth directly contributes to increases in gross domestic product (GDP) and enhances a country's international competitiveness. Empirical evidence consistently indicates that nations with higher labor productivity tend to achieve higher income levels and more resilient economic structures.

Second, high-quality human resources serve as the principal foundation of innovation and technological advancement. In the era of the Fourth Industrial Revolution, knowledge creation and technological application have become the primary engines of growth. Scientists, engineers, technology specialists, and skilled managers play a pioneering role in research, development, and the commercialization of innovation. Through their creative activities, new industries are formed, existing sectors are upgraded, and economic structures are modernized. The 12th National Congress of the Communist Party of Vietnam (2016) emphasized that industrialization and modernization, within the framework of a socialist-oriented market economy and international integration, must be closely linked to the development of the knowledge economy, with science, technology, knowledge, and high-quality human resources serving as the main driving forces (Communist Party of Vietnam, 2016, p. 130).

Third, high-quality human resources significantly enhance a country's capacity to attract foreign direct investment (FDI). Multinational enterprises typically prioritize destinations with skilled labor forces capable of meeting the technical and managerial requirements of advanced production systems. The availability of competent human capital reduces training costs, improves operational efficiency, and ensures the long-term sustainability of investment projects. Consequently, high-quality human resources function as a critical structural condition for integrating global capital flows with domestic development objectives.

Fourth, they strengthen a nation's capacity for technological absorption and transfer. For developing economies, narrowing the technological gap with advanced countries requires not only access to imported technologies but also the human capability to adapt, internalize, and improve them. Highly trained engineers, researchers, and technicians are indispensable for transforming transferred technologies into domestically embedded productive capacities, thereby enhancing value creation and reinforcing national competitiveness.

Fifth, high-quality human resources contribute to the formation of a dynamic and efficient business environment. Strategic leaders, experienced consultants, and innovative entrepreneurs collectively shape an institutional ecosystem conducive to enterprise development, start-up initiatives, and responsible risk-taking. A competitive yet stable business environment constitutes a structural prerequisite for sustained economic expansion.

Sixth, high-quality human resources are essential for advancing inclusive and sustainable development. Experts in environmental management, public health, education, and social governance play a pivotal role in addressing global challenges such as climate change, environmental degradation, public health crises, and social inequality. When appropriately trained and institutionally supported, this segment of the workforce enables the harmonization of economic growth with social equity and environmental sustainability. The 13th National Congress of the Communist Party of Vietnam (2021) reaffirmed the priority of developing human resources particularly high-quality human resources for leadership, management, and key sectors through comprehensive improvements in education and training quality, alongside effective mechanisms for talent recruitment, utilization, and scientific-technological innovation (Communist Party of Vietnam, 2021, p. 203–204).

Taken together, these dimensions demonstrate that high-quality human resources constitute not only a quantitative labor factor but a qualitative, strategic force that mediates the relationship between structural transformation, technological progress, and sustainable national growth.

The Current State of High-Quality Human Resources in Vietnam

Throughout the process of renovation (Đổi mới) and international integration, Vietnam has made substantial progress in human resource development, recognizing it as a decisive factor for sustainable national advancement. With a population of approximately 101.3 million and a labor force of about 52.9 million people, the country is experiencing a favorable "golden population" structure. This demographic advantage, characterized by a large proportion of working-age individuals and high labor force participation, provides a significant foundation for economic expansion and enhances Vietnam's attractiveness to foreign investors, particularly in labor-intensive industries.

According to data from the General Statistics Office, the proportion of trained workers holding formal degrees or certificates increased from 26.4% in 2022 to 27% in 2023, and is projected to reach 28.3% in 2024, with a target of 30% by 2025. Although these figures indicate steady improvement in workforce qualifications, a notable gap remains compared to more advanced economies in the region. From a structural perspective, the quantitative expansion of training coverage reflects institutional efforts to improve human capital formation; however, qualitative disparities persist in terms of skill depth and innovation capacity.

Vocational education and training (VET) has recorded measurable advancements. Training institutions have diversified their programs, focusing on sectors aligned with market demand such as manufacturing and processing industries, information technology, and high-value services. Flexible short-term courses have enabled workers to update skills and adapt to rapidly evolving technological requirements associated with the Fourth Industrial Revolution. This adaptive approach signals a gradual shift from supply-driven training models toward a more demand-oriented framework.

The overall educational attainment of the labor force has also improved significantly. Access to education across all levels, from early childhood to postgraduate studies, has expanded, resulting in a growing number of university and college graduates entering the labor market each year. Key higher education institutions have undertaken curriculum reforms, upgraded infrastructure, and standardized faculty qualifications in line with international benchmarks. Increasing collaboration between universities and enterprises has created opportunities for students to gain practical experience, thereby narrowing the gap between academic knowledge and workplace requirements.

Deepening international integration has further stimulated improvements in human resource quality. New-generation free trade agreements (FTAs) not only facilitate economic expansion but also impose higher standards on workforce competence and institutional governance. Through international partnerships, faculty and student exchanges, and joint training programs, Vietnam has gradually absorbed advanced pedagogical models and global best practices. These processes contribute to strengthening the international competitiveness and mobility of Vietnamese workers.

In comparative terms, Vietnam continues to maintain relatively competitive labor costs compared to countries such as Thailand, Malaysia, and China. Combined with a workforce often recognized for adaptability, diligence, and responsibility, this factor has reinforced the country's position as an attractive destination for foreign direct investment, particularly in manufacturing, textiles, and electronics. At the same time, there has been a notable increase in highly qualified engineers and specialists in information technology, electronics, renewable energy, and other strategic sectors. This emerging cohort forms a core pillar for advancing digital transformation and sustainable development objectives.

Nevertheless, significant structural challenges remain. Although the proportion of trained workers is increasing, training quality is uneven, and mismatches between educational outputs and enterprise demands, especially in high-technology industries, persist. Expert assessments suggest that only around 30% of university graduates fully meet job requirements upon entry into the labor market. This discrepancy indicates systemic limitations in curriculum design, practical training integration, and skill forecasting mechanisms. Recognizing these constraints, the 12th National Congress of the Communist Party of Vietnam (2016) called for the formulation of comprehensive human resource development strategies across sectors and levels, emphasizing training and retraining within both educational institutions and production environments, with particular attention to professionalism and practical competencies (Communist Party of Vietnam, 2016, p. 25).

Overall, Vietnam has achieved meaningful progress in enhancing human resource quality, particularly in expanding access to education and strengthening institutional reforms. However, from a developmental and systemic standpoint, the transformation from demographic advantage to sustainable competitive advantage requires deeper structural alignment between education, labor market demand, technological innovation, and long-term industrial strategy. Continued educational reform, stronger university–industry–state linkages, and enhanced international cooperation will be essential to ensure that high-quality human resources become a decisive and enduring driver of national competitiveness in the evolving global economy.

Limitations and Challenges

Despite measurable progress in expanding access to education and training, significant structural constraints continue to impede the development of high-quality human resources in Vietnam. According to reports from the Ministry of Labour, Invalids and Social Affairs, while the overall proportion of trained workers has increased, the share of those holding college degrees or higher remains relatively modest compared to regional and global benchmarks. This imbalance generates recruitment difficulties for enterprises, particularly foreign-invested firms and high-technology companies that require advanced competencies and professional experience.

Recent assessments by the World Bank (2023) indicate that although Vietnam benefits from a sizable and youthful labor force, the proportion of workers equipped with skills aligned with the Fourth Industrial Revolution, such as artificial intelligence, big data analytics, and the Internet of Things (IoT), remains limited. Enterprises in information technology and electronics frequently report shortages of qualified software engineers, cybersecurity specialists, and highly skilled technicians. The TopDev 2024 report further underscores this gap, noting that advanced technology skill groups (e.g., AI, blockchain, data analytics) satisfy only around 30% of enterprise demand. In the semiconductor industry, annual demand for approximately 50,000 engineers is currently met at only about 20% of required capacity due to the scarcity of internationally qualified specialists (TopDev, 2025).

A critical structural bottleneck lies in the quality and adaptability of the education and training system. University education in Vietnam remains, to a considerable extent, embedded in a traditional pedagogical model that prioritizes theoretical knowledge transmission over competency-based and practice-oriented learning. Many academic and vocational curricula have not kept pace with rapid technological transformation or evolving labor market expectations. The persistent imbalance commonly described as “an oversupply of graduates but a shortage of skilled technicians” reflects deeper systemic misalignment between training outputs and productive needs.

As a consequence, graduates frequently lack essential transferable skills, including effective teamwork, persuasive communication, creative problem-solving, and adaptability in complex professional environments. These deficiencies constrain both individual career trajectories and the overall competitiveness of Vietnam’s workforce in international labor markets. Addressing this gap requires comprehensive reform of higher education governance, curriculum design, and university–industry collaboration mechanisms.

Foreign language proficiency, particularly in English, the dominant language of global commerce, science, and technology, has become increasingly indispensable. Beyond functioning as a communication tool, language competence facilitates access to global knowledge networks, participation in international projects, and integration into global value chains. However, the overall level of English proficiency among Vietnamese workers remains comparatively low. According to TopDev (2025), only about 5% of Vietnam’s total labor force is proficient in English, a figure significantly below that of several regional peers such as Indonesia (10%), Malaysia (21%), and Thailand (27%).

This linguistic limitation not only constrains individual mobility and opportunity but also undermines enterprise competitiveness in international markets. Furthermore, recent productivity growth rates, while positive, have not been sufficiently rapid to close the substantial gap with more advanced regional economies, including Malaysia, Thailand, South Korea, and Singapore.

Another pressing concern is the phenomenon commonly characterized as “brain drain.” Each year, a considerable number of students pursue overseas education, and many highly qualified experts, scientists, and engineers choose to remain abroad or work for multinational corporations. The departure of this talent pool represents not merely a quantitative labor loss but also a qualitative depletion of innovative capacity and intellectual capital.

The structural drivers of this phenomenon are multifaceted. Significant wage disparities between domestic and regional labor markets are one contributing factor. For example, an information technology engineer with five years of experience in Vietnam may earn substantially less than their counterparts in neighboring economies. However, beyond income differentials, issues such as limited research infrastructure, constrained career advancement pathways, and insufficiently competitive remuneration systems further reduce the domestic retention of high-level talent.

The cumulative effect of these limitations is a persistent shortage of high-quality personnel in critical sectors, including technology, healthcare, and education. This shortage restricts productivity growth, weakens innovation capacity, and complicates Vietnam's efforts to ascend global value chains. From a systemic perspective, overcoming these constraints requires coordinated institutional reform, enhanced incentive mechanisms, and a strategic reconfiguration of the relationship between education, labor markets, and national development objectives.

Policy Implications and Strategic Solutions for Building a High-Quality Workforce

Addressing existing structural constraints and fostering a high-quality workforce requires a comprehensive, systemic, and long-term strategy. From a social development perspective, human resource formation must be understood as a dynamic process embedded in institutional reform, technological transformation, and global integration. The following policy orientations are proposed.

First, comprehensive reform of the education and training system. A fundamental transformation of the education and training system is required, encompassing objectives, curricula, pedagogical approaches, governance structures, and quality assurance mechanisms. Central to this reform is the transition toward a competency-based education model. International experiences from countries such as Finland, Singapore, the Republic of Korea, and Japan demonstrate the importance of reducing excessive theoretical content, strengthening practical and experiential learning, and cultivating creativity and lifelong learning capacity. Curricula should integrate laboratory work, project-based assignments, collaborative learning, and real-world simulations to develop holistic competencies.

Investment in educational infrastructure, particularly at the postgraduate level, must also be prioritized. Modern laboratories, digital learning platforms, and research facilities are essential for enhancing applied research capacity and professional skill development. Expanding high-level training programs (master's and doctoral degrees), especially through international collaboration, will facilitate technology transfer and access to advanced methodologies.

Faculty quality remains a decisive factor in educational excellence. Therefore, policies aimed at attracting, retaining, and adequately remunerating highly qualified lecturers are critical. Continuous professional development programs should be institutionalized to enhance pedagogical innovation. The adoption of learner-centered methodologies that emphasize critical thinking, analytical reasoning, and problem-solving skills is indispensable for aligning training outcomes with contemporary economic demands.

Second, strengthening university–industry linkages. Effective collaboration between higher education institutions, vocational training centers, and enterprises is essential to ensuring that training programs correspond to labor market realities. Institutionalized partnerships can facilitate curriculum co-design, internships, apprenticeships, and cooperative education models that enable students to acquire workplace experience before graduation.

Pedagogical innovation should accompany this structural linkage. Approaches such as project-based learning (PBL), experiential learning, and integrated practical training models can bridge the gap between theoretical instruction and professional application. Expanding internship opportunities and enterprise-based training modules will enhance students' technical competence, adaptability, and professional maturity.

In addition, joint research initiatives and technology transfer partnerships between universities and enterprises should be actively promoted. Collaborative projects not only strengthen students' applied research capabilities but also contribute directly to solving practical production and management challenges. To ensure effectiveness, institutional frameworks for quality assurance and outcome assessment must involve both academic and industry stakeholders.

Third, advancing soft skills and foreign language proficiency. In an increasingly interconnected global economy, professional expertise alone is insufficient. The development of soft skills, including communication, teamwork, leadership, critical thinking, time management, and adaptive problem-solving, must become an integral component of formal education. Training institutions should combine curricular and extracurricular activities to cultivate these competencies systematically.

Foreign language proficiency, particularly in English, must be elevated as a strategic priority across all educational levels. As the dominant language of global science, technology, and commerce, English proficiency enhances access to knowledge networks, facilitates international cooperation, and strengthens integration into global value chains. Universities should adopt advanced language teaching methodologies, increase exposure to international exchange programs, and create immersive linguistic environments that encourage practical application.

Fourth, developing an integrated labor market information system. A robust labor market information system is indispensable for aligning educational supply with employment demand. Establishing a national labor market database that provides timely and accurate information on recruitment trends, wage levels, skill requirements, and sectoral forecasts will enable evidence-based policy formulation. Advanced economies have successfully implemented comprehensive labor market intelligence systems that support career guidance, institutional planning, and macro-level workforce strategies. Vietnam should invest in digital infrastructure and data analytics tools to enhance forecasting capabilities and anticipate future skill demands associated with digital transformation and structural economic shifts.

CONCLUSION

The development of high-quality human resources constitutes a strategic imperative for Vietnam in the context of global economic integration and the Fourth Industrial Revolution. Although the country benefits from a large and youthful labor force, persistent limitations in advanced technical skills, foreign language proficiency, and adaptability to modern professional environments continue to constrain its full potential. Addressing these challenges requires coordinated reforms that integrate educational transformation, institutional innovation, and labor market alignment. Enhancing vocational and higher education quality, particularly in high-technology and strategic service sectors, should be prioritized. Effective collaboration between educational institutions and enterprises is essential to ensure that graduates possess competencies aligned with real-world demands. Equally important is the systematic cultivation of soft skills, creative thinking, and foreign language proficiency alongside specialized expertise. Furthermore, talent attraction and retention policies must be strengthened to create a professional and innovation-oriented working environment capable of maximizing individual potential. Only through comprehensive and sustained reform can Vietnam's human resources evolve into a decisive driver of socio-economic development and national competitiveness in the new era.

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