

ENHANCING HUMAN RESOURCE QUALITY IN VIETNAM'S LOGISTICS INDUSTRY: A FOUNDATION FOR SUSTAINABLE DEVELOPMENT

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Abstract: Vietnam's logistics sector has experienced rapid growth and plays a key service role in promoting economic development. However, this growth is constrained by shortages in human resources, particularly high-quality personnel with strong international integration capabilities. This article focuses on analyzing the current state of logistics human resources in relation to the sustainable development of Vietnam's logistics industry. Based on a synthesis of secondary data from industry reports, government agencies, and academic studies, the paper clarifies key concepts, theoretical foundations, and the current situation of logistics human resources. The findings indicate that despite strong growth momentum and significant potential, a substantial gap remains between labor demand and the existing workforce's capabilities. Shortages of skilled workers with professional expertise, technological competencies, and foreign language proficiency constitute major challenges. Accordingly, the paper proposes several strategic solutions, including reforming training programs, strengthening cooperation among universities, enterprises, and the state, and promoting practice-oriented training, with the aim of improving human resource quality and enhancing Vietnam's logistics position within global supply chains.

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1. Introduction

The logistics sector in Vietnam is encountering significant opportunities for growth, establishing itself as a vital economic domain that positively influences national economic growth. Logistics serves not only as a supportive service sector but also as the "backbone" of the economy, facilitating connections, optimizing transportation expenses, expediting the movement of goods, and enhancing business competitiveness. The evolution of logistics contributes to reducing production and operational costs, broadening market access, attracting investments, and robustly supporting international trade activities. In the era of globalization

and the Fourth Industrial Revolution, logistics assumes an increasingly pivotal role in fostering socio-economic progress at both national and local scales. Nevertheless, the swift advancement of the industry presents a substantial challenge regarding human resources. At present, Vietnam is grappling with a significant deficit of high-caliber logistics professionals, particularly in roles that demand specialized knowledge, technological proficiency, and international communication skills. This shortage undermines the industry's competitiveness, especially as Vietnam aspires to establish itself as a regional and global logistics center.

To enhance the quality of human resources within

the logistics sector, it is essential to establish close collaboration among The State, businesses, training institutions, and industry associations. The Government has shown its dedication through specific policies, such as Decision No. 2229/QĐ-TTg dated October 9, 2025, which approves the Vietnam Logistics Service Development Strategy for the period of 2025-2035, with a vision extending to 2050. This strategy highlights the importance of human resource training in transitioning the workforce from a focus on quantity to one on quality and international professionalism. Concurrently, creating a mechanism that connects businesses, universities, and localities to develop practical training programs that are regularly updated to align with global trends is regarded as a crucial and urgent solution. Enhancing the quality of human resources is not merely an immediate necessity but also a long-term strategy aimed at ensuring sustainable development and national competitiveness in the logistics sector. The analysis above indicates that while logistics is recognized as a significant driver of economic growth and international integration, deficiencies in the quality of human resources are emerging as a bottleneck that impedes the sustainable development of the industry in Vietnam. Consequently, this article aims to elucidate the theoretical and practical aspects related to the enhancement of human resource quality in Vietnam's logistics industry, viewing this as the fundamental basis for long-term growth and the improvement of national competitiveness.

2. Theoretical basis and research overview

2.1. Concept of human resources

Human resources (HR) refer to the complete potential of individuals - encompassing physical strength, intellectual ability, skills, knowledge, experience, and creativity - that can be harnessed to promote economic and social development. Throughout history, this concept has been examined from various perspectives. The United Nations (2000) defines HR as human capital, highlighting the significance of knowledge and creativity in both personal and national progress. On a macro scale, human resources are viewed as the total working-age population, which acts as a labor source for the economy; in a more specific context, they represent the portion of the working-age population that is capable of engaging in labor, playing a crucial role in the production and business operations of society (Tiep, 2005).

From an economic standpoint, human resources are evaluated not only in terms of quantity but also with a focus on quality and creative potential. Cau and Chanh (2008) contend that human resources represent human assets that can generate both material and spiritual wealth for society, which is reflected through quantity, quality, and structure

at a specific moment in time. At the organizational and enterprise level, human resources encompass the entire workforce engaged within the organization. As noted by Nhon (2006), the human resources of a business consist of the employees listed on the payroll and compensated by the business; concurrently, human resources are perceived as the aggregate physical and intellectual capabilities of individuals, which directly influence the survival and growth of the organization (Diem & Quan, 2004; Quan, 2014).

In conclusion, human resources represent the entirety of individuals and their labor potential, assessed at various levels ranging from the national to the organizational level. Within the scope of this study, human resources are primarily examined at the enterprise level, highlighting the current workforce along with the qualifications, skills, and competencies of the employees.

2.2. Concept of human resource quality

Human resource quality encompasses a broad concept that indicates the level of workforce development regarding physical, intellectual, and mental capabilities. This aspect is crucial as it not only influences labor productivity and production efficiency but also mirrors the economic, social, and cultural advancement of a nation. As noted by authors Cau and Chanh (2008), human resource quality represents "a certain state of human resources, reflecting the relationship between the internal factors that constitute human resources". Furthermore, author Phung (2006) suggests that HR quality can be evaluated through education, expertise, skills, and health - criteria that are quantifiable and represent the actual abilities of workers. In contrast, Ran (2008) examines HR quality through two dimensions: operational capacity (evidenced by training, academic credentials, job skills, etc.) and moral character - a component that is challenging to quantify yet is essential for both personal and organizational growth. Furthermore, Tiep (2008) highlights that the quality of human resources comprises various factors: health, cultural level, expertise, practical skills, social dynamism, ethics, work style, income, and the extent to which personal needs are satisfied. These factors do not exist in isolation; rather, they interact with one another, shaping the essence and practical value of human resources. In light of the digital economy, globalization, and Industry 4.0, the quality of human resources is in a state of continuous evolution and development, necessitating assessments that are flexible, comprehensive, and contextually relevant. Consequently, enhancing the quality of human resources is not merely an immediate concern but also a long-term strategy essential for ensuring the competitiveness and sustainable growth of the economy.

Enhancing the quality of human resources is defined as the process of augmenting the overall value of individuals, which includes physical capabilities, intellectual abilities, professional skills, and social attributes, to satisfy the increasingly elevated demands of economic and social progress. On an individual level, this represents a holistic development process for workers, enabling them to consistently enhance their skills and attributes to adapt to the fluctuations within the labor market. At the organizational level, improving the quality of human resources entails the organization and execution of management, training, and development initiatives aimed at elevating the quality of the workforce relative to the current state. This process aims to enhance the physical strength, mental capacity, creativity, and professional behavior of employees, thus increasing the effectiveness of achieving the development goals and strategies of the enterprise.

2.3. Overview of research on enhancing human resource quality

In recent years, the quality of human resources has emerged as a significant research focus for numerous scholars both nationally and internationally, highlighting the crucial role of human factors in boosting labor productivity, organizational efficiency, and national competitiveness within the framework of integration and sustainable development. Theoretically, Benjamin Bloom (1956) was among the first scholars to establish the groundwork for analyzing the competency structure of workers, identifying three components of human resource quality: cognition (knowledge and thinking), emotion (qualities and attitudes), and skills (action-oriented capabilities). Bloom posited that a high-quality individual is one who can actively receive, process, synthesize, and evaluate information, while also exhibiting positive qualities and the capability to convert knowledge into effective work behavior.

In Vietnam, Nhon (2006) organized the concept of human resource quality into three fundamental categories: physical strength (health, endurance), intellectual strength (educational attainment, professional skills), and spirit (sense of organizational discipline, responsibility, conduct). This framework underscores the intrinsic elements within the structure of human resource quality and emphasizes the interconnectedness of material and non-material factors in evaluating human capabilities.

Building on this viewpoint, Kha (2007), in his research on the training and utilization of human resources within a market economy, highlighted the essential role of training in enhancing the quality of human resources. However, this study did not establish a specific set of criteria for measuring human resource quality. Likewise, Nhat (2008)

examined the current state of human resource quality in Vietnam amid innovation and international integration, while suggesting several strategies for developing high-quality human resources to fulfill the demands of industrialization and modernization. Nonetheless, the research primarily concentrated on a macro perspective and did not adequately quantify the influencing factors or delineate specific operational methods applicable to each industry.

From a policy implementation standpoint, Son (2015) identified seven categories of solutions aimed at enhancing the quality of human resources in Vietnam, which include: improving educational levels and skills, fostering a learning society, aligning human resource strategies with socio-economic development plans, enhancing labor market information, and bolstering international collaboration. These proposed solutions reflect a thorough comprehension of the significance of human resources in national development. Nevertheless, the study falls short in its examination of the various elements that contribute to human resource quality, such as mental resilience, physical capability, soft skills, and adaptability to technology.

Since 2017, there has been a gradual shift in international research towards exploring the connection between digital transformation and the quality of human resources. Schwertner (2017) contends that digital transformation transcends mere technological application in business processes; it necessitates a holistic reorganization of the entity, which demands a workforce equipped with innovative thought, technological proficiency, and the capacity to adjust to the digital landscape. Rathi Meena and Parimalarani (2020) further observe that in India, the digitization of banking services has not only influenced products and services but has also transformed the mindset and operational models of employees. Consequently, this evolution necessitates that human resources possess digital competencies, adaptable thinking, and a commitment to lifelong learning. However, the majority of these studies have primarily focused on the effects of the phenomenon without thoroughly investigating the interplay between internal factors (knowledge, skills, attitudes) and external factors (technology, market, policy) on the quality of human resources.

In recent years, research conducted by Van (2021), Lugovsky (2021), and Tu (2023) has started to explore the quality of human resources within the framework of digital transformation in the finance and banking sector, particularly concerning the younger workforce, known as Generation Z. These studies indicate that digital transformation encompasses not merely technological

advancements but also a holistic transformation of business models, organizational culture, and human resource capabilities. Nevertheless, these investigations primarily concentrate on the internal functions of banks and do not thoroughly examine the reciprocal relationship between technological demands and human resource capabilities. Concurrently, there remains a deficiency of integrated theoretical frameworks that can effectively assess human resource quality in a highly digitalized context.

Adopting a high-quality human resources perspective, Diep (2010) underscores the significance of human resource development in fostering the knowledge economy, where human resource quality is evaluated based on three fundamental components: physical strength, intellectual strength, and mental strength. In light of this, the author suggests strategies for cultivating high-quality human resources that align with the long-term developmental needs of the economy. From the standpoint of addressing the demands of innovation and integration, Nhat (2008) identifies the deficiencies in the quality of Vietnam's human resources, which arise from low wages and inadequacies in human resource planning, management, and development, while also proposing measures to enhance the quality of human resources to support the nation's industrialization and modernization.

A review of various studies indicates that the quality of human resources is a complex concept, shaped by both internal factors (such as physical strength, intellectual ability, and character) and external factors (including the work environment, technology, policies, and market conditions). Nevertheless, the majority of research has primarily focused on establishing broad criteria for evaluating human resource quality, while the creation of specific criteria that cater to the unique characteristics and circumstances of each industry and organization remains an area that necessitates further investigation. In the context of Vietnam's logistics sector, which is under considerable pressure from digital transformation, automation, and international integration, enhancing the quality of human resources is not only a pressing necessity but also a fundamental requirement for sustainable development. Consequently, there is a need for more comprehensive research that integrates both quantitative and qualitative methods to elucidate the elements of HR quality, assess the influence of internal and external factors, and subsequently propose strategies to enhance HR quality in accordance with the distinct characteristics of Vietnam's logistics industry.

3. Research methodology

Data collection method

The article employs secondary data collection

techniques derived from published sources to guarantee reliability and systematicity. Data was gathered from: Vietnam logistics industry Reports released by the Ministry of Industry and Trade, the Vietnam Logistics Association (VLA), the General Statistics Office, and specialized management agencies; Proceedings of seminars, dissertations, theses, and scientific articles published in esteemed domestic and international journals pertaining to human resource development and logistics; National strategic documents and policies concerning human resource development, digital transformation, digital economic development, and logistics within the framework of international integration. The data was chosen to comprehensively represent the current situation, trends, and factors influencing the quality of human resources in Vietnam's logistics sector.

Data processing methods

The gathered data underwent processing through qualitative research techniques, which included:

Document analysis: This method was utilized to organize the theoretical and practical foundations associated with the quality of human resources in the logistics sector, elucidating concepts and content pertinent to the study.

Synthesis and generalization: This approach was employed to extract prominent features, existing challenges, and the current state of development in the training, utilization, and advancement of logistics human resources.

Comparative method: This method aimed to assess Vietnam's current situation over time, thereby elucidating gaps, development, and opportunities for enhancing the quality of human resources.

System analysis: Utilized to suggest a range of solutions aimed at enhancing the quality of human resources sustainably, considering the viewpoints of businesses, educational institutions, and governmental management agencies.

4. Current status of the research issue

4.1. Current status of the logistics industry in Vietnam

The logistics sector in Vietnam is witnessing one of the most rapid and stable growth trajectories in the region, boasting an average annual growth rate ranging from 14% to 16% and an estimated market size of around USD 40-42 billion (VLA, 2023). This growth is attributed to the significant modernization of transportation, warehousing, delivery, and supply chain operations, aligning with the evolving trends of the digital economy. Furthermore, Vietnam has emerged as one of the 29 nations involved in the World Logistics Passport Program, highlighting its increasingly significant role on the global supply chain landscape.

Table 1. Top 10 emerging logistics markets in 2024

Rank	Rank Change	Country	Overall Score	Last Year's Score	Domestic Opportunities	International Opportunities	Business Fundamentals	Digital Readiness
1	0	China	8.61	8.31	8.54	9.08	6.71	8.07
2	0	India	7.21	7.43	7.86	7.60	6.35	6.28
3	0	UAE	6.49	6.59	5.52	6.10	8.71	6.88
4	0	Malaysia	6.17	6.16	5.25	6.03	7.84	6.55
5	0	Indonesia	6.16	6.08	6.33	6.34	6.07	5.70
6	0	Saudi Arabia	6.05	6.07	5.41	6.11	7.28	6.02
7	0	Qatar	5.85	6.02	5.72	4.93	7.21	6.36
8	+2	Vietnam	5.73	5.52	5.26	6.44	6.03	5.20
9	0	Mexico	5.60	5.55	5.37	6.25	5.41	5.16
10	-2	Thailand	5.59	5.67	5.13	5.96	5.51	5.87

Source: Agility, 2024

According to the Agility Emerging Markets Logistics Index 2024, Vietnam is positioned 8th out of 50 in the global ranking of emerging logistics markets, and it holds the 3rd position in Southeast Asia, following Malaysia and Indonesia, while outperforming nations like the Philippines, Myanmar, and Cambodia.

In comparison to 2023, Vietnam has advanced significantly, moving ahead of Thailand and Mexico to achieve 8th place globally in the emerging logistics sector. Within the domestic logistics arena, Vietnam is ranked 9th, having improved by 73 places since 2022, with a score of 5.26.

In terms of international logistics prospects, Vietnam is at the forefront of Southeast Asia and ranks 3rd worldwide with a score of 6.44. Furthermore, the metrics for business conditions and technological readiness are ranked 15th and 21st, respectively, indicating notable enhancements in the logistics landscape due to adaptive management strategies and technological advancements (Agility, 2024; Ministry of Planning and Investment, 2024).

The swift growth of the industry has resulted in a heightened demand for infrastructure, including seaports,

warehouses, distribution centers, and freight forwarding services. This surge has also created considerable pressure on the labor market, particularly for skilled professionals.

The Vietnamese government has established a strategic objective to position logistics as a vital service sector within the economy. As outlined in Decision No. 2229/QĐ-TTg dated October 9, 2025, which endorses the Vietnam Logistics Service Development Strategy for the period spanning 2025 to 2035, with a vision extending to 2050, Vietnam aims to achieve an average annual growth rate of logistics service revenue between 12% and 15% during the 2025-2035 timeframe. This growth is expected to contribute directly to the gross domestic product (GDP), accounting for 5% to 7%. By the year 2050, the logistics sector in Vietnam aspires to attain sustainable development and enhanced integration, with its GDP contribution projected to rise to 7%-9%, while simultaneously reducing logistics costs to a range of 10%-12%. These objectives are crucial for bolstering national competitiveness, particularly in light of the significant transformations occurring within the global supply chain post-pandemic and the ongoing effects of digital transformation.

Table 2. Newly registered transport and warehousing enterprises, total capital, and labor force in the first 9 months of 2024

Category	First 9 months of 2024			Compared with the same period in 2023 (%)		
	Number of enterprises	Registered capital (billion VND)	Number of Employees (persons)	Number of enterprises	Capital	Employees
Total enterprises nationwide	121,898	1,158,536	735,097	103.4	103.4	96.6
Transport and warehousing enterprises	6,503	36,551	28,898	113.5	88.7	118.3
Share of transport & warehousing enterprises / total nationwide (%)	5.33	3.15	3.93	—	—	—

Source: Vietnam Logistics Report 2024

In the first nine months of 2024, the nation saw the establishment of 121,898 new enterprises, which collectively registered a capital of VND 1,158,536 billion and provided employment for 735,097 individuals. When compared to the same timeframe in 2023, these metrics showed an increase of 3.4% in both the number of enterprises and registered capital, while the workforce saw a decline of 3.4%. Specifically, within the transport and warehousing sector, 6,503 new enterprises were founded, representing 5.33% of the total enterprises across the country. This sector's total registered capital amounted to VND 36,551 billion, which is 3.15% of the overall figure, and it employed 28,898 workers, accounting for 3.93%. In comparison to the previous year, the number of new enterprises in transportation and warehousing experienced a notable rise of 13.5%, and the workforce increased by 18.3%, indicating a substantial expansion in employment scale. Nevertheless, the registered capital saw a decrease of 11.3%, suggesting a more cautious investment approach or the emergence of small and medium-sized enterprises.

In 2023, as per the World Bank's evaluation, Vietnam achieved the 43rd position out of 139 economies assessed on the Logistics Performance Index (LPI), representing a notable advancement from its 53rd place in 2010. Within the ASEAN region, Vietnam ranks among the top five nations, sharing this position with the Philippines and trailing only Singapore, Malaysia, and Thailand. On a global scale, as reported by Agility, an international transportation and logistics service provider, Vietnam is recognized as one of the top 10 most appealing emerging logistics markets out of 50 markets surveyed. Significantly, in the criterion for "international logistics opportunities", Vietnam holds the 4th position worldwide, reinforcing its status as a promising hub for logistics development in Southeast Asia. Despite these substantial advancements, the logistics sector across the nation continues to encounter various challenges, including insufficient infrastructure, elevated transportation costs, limited connectivity in international supply chains, and a lack of skilled labor.

The Agility report indicates that Vietnam has achieved notable advancements in infrastructure efficiency, trade policy, logistics service quality, and technological readiness. The integration of emerging

technologies such as the Internet of Things (IoT), artificial intelligence (AI), blockchain, and big data is progressively enhancing operational efficiency and transparency within the supply chain. Additionally, Vietnam's advantageous geographical position - situated in the heart of Southeast Asia and featuring an extensive coastline - provides numerous opportunities for the development of a network of seaports, airports, and multimodal logistics centers.

In summary, the recent growth of Vietnam's logistics sector highlights its vast potential and strategic importance in fostering national economic development. Nevertheless, despite these accomplishments, challenges persist, including a lack of high-quality human resources, insufficient infrastructure, and elevated logistics costs, which pose significant obstacles. Consequently, it is essential to continue pursuing comprehensive policies focused on human resource development, infrastructure investment, and the promotion of innovation to establish a robust foundation for the sustainable growth of Vietnam's logistics industry and its deeper integration into the global supply chain.

4.2. Current state of Vietnam's logistics workforce

Vietnam is becoming a promising and appealing market for the logistics sector due to its robust economic growth rate, advantageous geographical position, and significant international integration. According to information published by the General Statistics Office, during the first nine months of 2024, the nation saw the establishment of nearly 6,500 new enterprises in the logistics field, which represents about 5.33% of the total number of newly formed businesses across the country. In comparison to the same timeframe in 2023, the number of companies rose by 13.5%, and the workforce increased by 18.3%, indicating a trend towards operational expansion within the industry. Nevertheless, the total registered capital experienced a decline of 11.3%, suggesting a more cautious approach to investment or market entry by businesses with limited capital. The total registered capital for this category of enterprises amounted to VND 36,550 billion, with close to 28,900 registered employees. These statistics highlight the vibrancy of the logistics sector while also emphasizing the necessity to enhance resource utilization efficiency and the quality of human resources.

Table 3. Situation of new logistics enterprises and number of employees in the first 9 months of 2024

Indicators	First 9 months of 2024	Compared with the same period in 2023 (%)
Number of newly established enterprises	6,500	+13.5%
Total registered capital (billion VND)	36,550	-11.3%
Total registered workforce (persons)	28,900	+18.3%

Source: Vietnam Logistics Report 2024

Currently, the logistics sector is grappling with a significant shortage of human resources, both in terms of quantity and quality. The Ministry of Industry and Trade (2024) reports that the existing logistics workforce fulfills only about 40% of the actual demand. As of 2023, merely 5-7% of the workforce in this sector has received formal training in logistics, while the demand for recruitment continues to rise sharply, with 50% of businesses indicating a need to hire an additional 15-20% of employees in the near term (VLA, 2023). Despite the industry expanding at an average annual rate of 15-20%, workforce growth is only at 7.5%, leading to an increasingly severe imbalance (Vietnam Logistics Research and Development Institute, 2024).

In the long run, forecasts from the Ministry of Industry and Trade and the Vietnam Logistics Research and

Development Institute suggest that by 2030, the entire industry will require approximately 2.2 million additional workers, including around 200,000 high-quality personnel-defined as workers possessing professional qualifications, vocational certificates, and proficient foreign language skills. If the workforce growth rate remains at 7.5% annually, Vietnam will only be able to add about 117,532 workers during the 2016-2030 timeframe, which falls significantly short of the actual demand. Moreover, assuming that each logistics company currently employs an average of 400 individuals and needs to retrain 50% of its workforce at a growth rate of 5% per year, transport and freight forwarding companies alone (approximately 200 large firms) will require the training of at least 100,000 additional workers over the next 15 years.

Table 4. Demand for workforce and skill levels in the logistics sector of Vietnam for the year 2023

Criteria	Percentage (%)
Enterprises seeking to hire an extra 15–20% of their workforce	50%
Employees who have received formal training in logistics	5-7%
Workforce skilled in English	4%
Enterprises that provide retraining for their staff	30%
Enterprises satisfied with employees' qualifications	6.7%

Source: Ho Chi Minh City Institute for Development Studies, 2023.

Furthermore, a study conducted by the Ho Chi Minh City Development Research Institute (2023) indicated that 53.3% of logistics firms are deficient in employees possessing suitable professional qualifications, 30% of these firms are required to retrain their staff, and merely 6.7% express satisfaction with the professional qualifications of their existing workforce. In a similar vein, a survey from the National Economics University found that as much as 80.26% of individuals in the logistics sector receive training through their everyday tasks, 23.6% engage in domestic training programs, 6.9% benefit from instruction by foreign specialists, and only 3.9% have undergone training overseas. The logistics sector is presently facing challenges due to the Fourth Industrial Revolution. Cutting-edge technologies such as artificial intelligence (AI), the Internet of Things (IoT), blockchain, as well as transportation management software (TMS) and warehouse management software (WMS) are becoming critical necessities for personnel in the industry. Nevertheless, a majority of companies are encountering difficulties in sourcing employees who are proficient in technology. Consequently, businesses are compelled to invest in internal training initiatives or recruit foreign experts, which escalates operational

expenses.

A burgeoning trend in the industry is the emphasis on green and sustainable logistics, which companies are prioritizing to reduce carbon emissions. However, the current workforce in this domain is not sufficiently trained in environmentally sustainable logistics practices, resulting in a deficit of highly specialized personnel.

In response to the increasing demand for human resources within the logistics sector, by July 2023, 59 higher education institutions had established training programs related to this field, accommodating approximately 5,600 students annually. The range of majors available is quite extensive, including: Logistics and Supply Chain Management, Customs and Logistics, Logistics Service Management, Transportation Management, International Business and Logistics, Multimodal Transportation, Maritime Management, and Port Management - Import-Export - International Freight Forwarding (Vietnam Logistics Report, 2023).

Concerning the quality of training, currently around 20% of universities comply with domestic accreditation standards, 7.5% are undergoing the accreditation process, and another 7.5% have received recognition from international bodies such as AUN, FIBAA, and

Triple Crown. Training programs are being implemented uniformly across various educational systems, including mass education, high-quality, advanced, and international integration. Significantly, the percentage of training programs that incorporate international vocational certificates such as FIATA, AGKN, or degrees from foreign universities has risen from 20% in 2021 to 22.5% in 2023. These programs not only deliver comprehensive knowledge but also focus on enhancing practical skills and providing internships to bolster students' professional competencies.

Furthermore, short-term, specialized training initiatives such as FIATA FD and FIATA FHD (collaboratively organized by VLA/VLI) have successfully trained over 1,000 participants in the last three years. Nevertheless, these programs still do not adequately address the annual training requirements for tens of thousands of workers. Projections indicate that by 2035, Vietnam will need to recruit over 350,000 logistics personnel, yet the current capacity to fulfill this demand is merely around 10% (Vietnam Logistics Report, 2024). Indeed, 85.7% of Vietnamese companies are compelled to train their staff through hands-on work experience. Some large corporations, including Gemadept and Tan Cang Saigon, have set up their own training facilities to proactively cultivate human resources. However, the absence of a formal training ecosystem that connects educational institutions, businesses, and regulatory agencies continues to be a significant obstacle. In the era of globalization and profound economic integration, a skilled workforce is essential for boosting the competitiveness of Vietnamese logistics firms. Strategic investment in human resource development not only enables businesses to adapt to emerging technological trends but is also vital for Vietnam's aspiration to become a regional and global logistics hub.

5. Strategies to enhance the quality of human resources in Vietnam's logistics sector - a cornerstone for sustainable development

First, it is essential to create an effective coordination mechanism among three key parties: businesses, educational institutions, and government regulatory bodies to ensure alignment between training goals and real-world requirements. This collaboration should encompass activities such as vocational certification training, organizing internship and apprenticeship opportunities, recruitment processes, academic assessments, career counseling, skills enhancement, and applied scientific research. The creation of scholarship funds and a series of specialized seminars featuring leading companies and both domestic and international experts will foster a practical learning environment, aid in enhancing the professional capabilities of learners, and encourage innovation in training.

Secondly, educational institutions must prioritize

the adjustment of their training programs to align with career orientation, emphasizing roles that are currently in high demand and are expected to remain so, including: logistics administrative personnel, transportation coordinators, warehouse operators, truck drivers, e-commerce and logistics IT professionals, among others. To accomplish this, it is essential to secure investment from the government and encourage social initiatives to enhance scholarships, financial assistance, and create opportunities for students to intern at reputable companies, thereby gaining exposure to real-world work environments. Concurrently, it is crucial to innovate teaching methodologies and the content of training programs in a manner that is concise, practical, and adaptable, particularly for short-term or medium-term courses offered by institutes, centers, and professional associations. Additionally, referencing and adapting successful training programs from developed nations such as Japan, Singapore, and Germany will aid in standardizing content, enhancing integration, and particularly fortifying students' specialized foreign language competencies.

Third, logistics companies must take an active role in the training and development of their workforce. In particular, they should establish policies that encourage employees to seek further education, such as offering support for training costs, providing flexible scheduling options, and organizing in-house training sessions. At present, many companies are still required to conduct their own training because the workforce does not yet fulfill practical requirements. Common methods of self-training include on-the-job training, mentoring programs that pair experienced employees with newcomers, or inviting experts to conduct internal training sessions. This approach serves as a practical solution in a context where formal training programs lack flexibility and timely updates.

Fourth, it is essential to foster connections between functional agencies such as port authorities, customs, tax, and inspection agencies, and training institutions to enhance the development of practical skills. Specifically, these agencies can provide professional support by establishing simulation rooms, supplying real data, and sending officials to serve as guest lecturers. In turn, training institutions can offer specialized training courses for civil servants while also transferring new technologies to facilitate administrative reform and the digitization of logistics management processes. Adopting the principle that "every staff member is a lecturer" will help close the gap between theory and practice, thereby contributing to the cultivation of human resources capable of functioning in a high-tech and legally intricate environment.

Fifth, it is essential for businesses and training institutions to actively support the creation and ongoing operation of logistics alumni associations within educational establishments. These associations serve

not only as networks for exchanging knowledge and professional experiences but also as vital connections between educational institutions and businesses for recruitment efforts, updating labor market insights, and guiding industry advancements. This relationship will foster both vertical and horizontal connections within the training-labor utilization framework, thereby facilitating the development of a sustainable logistics ecosystem and the spread of knowledge throughout the community.

6. Conclusion

The caliber of human resources is a crucial element influencing the operational efficiency and competitiveness of Vietnam's logistics sector amid integration and digital transformation. Despite the

robust growth of the industry, the deficiency in human resources, both in quantity and quality, poses a significant challenge, particularly given the rising demand for technological expertise and green logistics. In practice, the absence of strong connections among educational institutions, businesses, and the government represents a significant barrier to the training and development of skilled professionals. Consequently, the establishment of a comprehensive training ecosystem, the enhancement of practical training, and the implementation of internationally recognized vocational training programs are urgent priorities necessary to lay a solid foundation for sustainable growth and to elevate Vietnam's logistics industry on the global supply chain landscape.

REFERENCES

- Agility. (2024). *Agility emerging markets logistics index 2024*. Agility.
- Bloom, B. S. (1956). *Taxonomy of educational objectives: The classification of educational goals*. Longmans.
- Ministry of Industry and Trade. (2024). *Vietnam Logistics Report 2024*. Industry and Trade Publishing House.
- Ministry of Planning and Investment. (2024). *Vietnam Logistics Conference 2024: Transformation for Breakthrough*. Ministry of Planning and Investment.
- Chanh, M. Q. (2000). *Human Resource Economics*. National Economics University Press.
- Cau, T. X., & Chanh, M. Q. (2008). *Human Resource Economics Coursebook*. National Economics University Press.
- Cam, T. T. N., Tu, H. T. C., & Linh, N. T. (2023). Digital Human Resource Management of Vietnamese Enterprises in the 4.0 Era. *Journal of Science and Foreign Information*.
- Diep, L. T. H. (2010). *Developing High-Quality Human Resources to Form a Knowledge Economy in Vietnam*. Center for Training and Continuing Education of Political Theory Lecturers, Vietnam National University, Hanoi.
- Diem, N. V., & Quân, N. N. (2007). *Human Resource Management Textbook*. National Economics University Press.
- Hac, P. M. (2001). *Research on people and human resources in the period of industrialization and modernization*. National Political Publishing House.
- Hill, R., & Stewart, J. (2000). Human resource development in small organizations. *Journal of European Industrial Training*, 24(2/3/4).
- Kha, P. V. (2007). *Training and Utilizing Human Resources in Vietnam's Market Economy*. Education Publishing House.
- Ky, L. V. (2018). *Developing High-Quality Human Resources for Thanh Hoa Province's Industrial Sector* [Doctoral Dissertation]. Training Center.
- Lugovskoy, A. V. (2021). Liberalization of Russian higher education in the global era: Challenges and outcomes. *Humanitarian and Social Sciences*, (3), 220–233.
- Meena, R., & Parimalarani. (2020). Impact of digital transformation on employment in banking sector. *Journal Name*, (ISSN 2277-8616).
- Nhat, P. C. (2008). Improving human resource quality to meet the requirements of innovation and economic integration. *Communist Review*, (786).
- Nhon, B. V. (2009). *Human resource management in an organization*. National Academy of Politics.
- Phung, V. T. N. (2006). *Development Economics Coursebook*. Labor and Social Affairs Publishing House.
- Phuong, D. T. T. (2023). *Improving the effectiveness of human resource management to promote the development of Vietnam's logistics industry in the new context*. In *Proceedings of the PUBEC 2023 National Scientific Conference*. Finance Publishing House
- Schwertner, K. (2017). Digital transformation of business. *Trakia Journal of Sciences*, 15(1), 388-393.
- Tiep, N. (2007). *Human Resources Textbook*. Labor and Social Affairs Publishing House.
- Tiep, N. (2011). *Human Resources Textbook*. Labor and Social Affairs Publishing House.
- UNDP. (2000). *Human Development Report*. United Nations Development Programme.
- Vu, B. T. (2005). *Harnessing Human Resources for Industrialization and Modernization: International Experience and Vietnamese Practice*. Publisher.
- Vietnam Logistics Services Business Association. (2021). *Proceedings of the 8th Congress (2021-2024): Innovation and Digital Transformation*. Vietnam Logistics Services Business Association.