DIGITAL TRANSFORMATION IN VIETNAM AND THE HUMAN RESOURCE QUALITY CHALLENGE

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ABSTRACT

Digital transformation is a vital condition for development in the Fourth Industrial Revolution era. It enhances competitiveness, management efficiency, labor productivity, service quality and the well-being of citizens. In the digital transformation process, technology is considered a tool, while human resources are the decisive factor for success. Therefore, a corresponding development of human resources is essential for the successful implementation of digital transformation, particularly in effectively operating and managing the digital economy. This paper analyzes the current state of human resource quality, identifies the requirements for digital transformation in Vietnam and proposes solutions to optimally prepare human resources for the digital transformation needs in the country.

Keyword: Human resources, digital transformation, enhancement, quality.

1. INTRODUCTION

Digital transformation is a driving force for development in the era of national advancement. For Vietnam to become a prosperous, strong nation with a high-income economy by 2045, it must undertake digital transformation. In this process, digital human resources are a core endogenous factor, essential for the success of digital transformation.

In recent years, efforts to attract and develop digital human resources have achieved certain results. The proportion of highly skilled labor in the workforce is increasing. However, Vietnam's digital human resources remain limited and insufficient to meet the demands of national digital transformation.

2. CONCEPT AND ROLE OF DIGITAL TRANSFORMATION

2.1. Concept of Digital Transformation

According to the Digital Transformation Handbook published by the Ministry of Information and Communications, digital transformation refers to the process of applying data and digital technologies to create comprehensive and fundamental changes in the way individuals organizations and entire industries live, work, manage and produce. This concept emphasizes that digital transformation is not limited to the simple digitization of information or the use of isolated technological tools, but instead involves the integration of information technology into all activities, operational processes and management systems within enterprises as well as across the broader socio-economic system. Through this process organizations can redesign workflows, enhance decision-making based on data and shift toward more flexible, efficient and innovation-driven operating models. As a result, digital transformation becomes a key driver of modernization and sustainable development in the digital era.

2.2. Role of Digital Transformation

Digital transformation plays a vital role in promoting economic growth, improving governance and enhancing social welfare. For businesses, digital transformation significantly enhances competitiveness by enabling organizations to optimize internal processes, improve production efficiency, reduce costs and develop new business models that better respond to changing market demands. The application of digital technologies such as automation, artificial intelligence and data analytics allows enterprises to improve product quality, strengthen customer engagement and expand their presence in domestic and global markets. In the public sector, digital transformation supports the development of digital government by improving management capacity and public service delivery. Through

digital platforms and online public services, governments can better understand the needs of citizens and businesses, increase transparency and enhance the effectiveness of state management.

In addition, digital transformation contributes to increasing efficiency and labor productivity across all sectors of the economy. By applying digital solutions to management, production and business operations organizations can optimize the use of resources, streamline workflows and improve coordination, thereby generating higher value-added outcomes. Digital transformation also helps expand opportunities and promote social equality by providing people with greater access to information, education, training and digital services regardless of geographical location or socio-economic conditions. By narrowing the digital divide, digital transformation improves quality of life and creates more inclusive development. Moreover, digital transformation fosters innovation and creativity by encouraging the adoption of new technologies, supporting experimentation with new ideas and promoting modern production and management methods that drive long-term competitiveness.

2.3. Key Factors for Successful Digital Transformation

One of the most important factors for successful digital transformation is awareness and the development of digital human resources. Human factors play a central role, as digital transformation requires a clear understanding of its importance and benefits among leaders, managers and employees. Without adequate awareness and commitment, digital transformation initiatives may face resistance or ineffective implementation. At the same time, the availability of a skilled workforce with strong digital competencies is essential. Continuous training, reskilling and upskilling programs are needed to equip workers with the knowledge and skills required to adapt to new technologies and evolving job requirements in the digital economy.

Another critical factor is the establishment of appropriate institutional and policy mechanisms. A clear legal framework, supportive policies and comprehensive national digital transformation programs provide strategic direction and create a favorable environment for implementation. These mechanisms help coordinate efforts among government agencies, businesses and educational institutions, while also encouraging investment and innovation. Effective policies reduce institutional barriers, ensure consistency in implementation and align digital transformation initiatives with national socio-economic development goals.

Finally, digital infrastructure and advanced digital technologies form the technical foundation for digital transformation. Investment in modern digital infrastructure, such as broadband networks, data centers, big data systems, cloud computing and the Internet of Things, is essential to support large-scale digital applications across sectors. At the same time, ensuring cybersecurity and data protection is crucial to maintaining trust and safeguarding digital systems from risks and threats. Strong digital infrastructure combined with secure and advanced technologies enables effective, sustainable and inclusive digital transformation throughout the entire economy and society.

3. CURRENT STATUS OF HUMAN RESOURCES AND HUMAN RESOURCE QUALITY

According to labor statistics from 2021 to 2024, Vietnam is currently experiencing a "golden demographic period," with a large and growing workforce in the working-age group. In 2024, the workforce of people aged 15 and above is projected to reach 53 million, an increase of approximately 575,400 compared to 2023 and nearly 2.4 million compared to 2021.

Along with the development of various economic sectors, Vietnam's labor structure has shifted positively, with a decreasing share of workers in agriculture, forestry and fisheries and an increasing share in industry, construction and services. The proportion of workers in agriculture, forestry and fisheries has steadily decreased from 48.6% in 2010 to 26.5% in 2024.

The average income of workers continues to improve across most economic sectors. In 2024, the average monthly income of workers is expected to be 7.7 million VND, an increase of 8.6% or 610,000 VND compared to the previous year.

Unemployment and underemployment are trending down, with Vietnam maintaining positive socio-economic results. The underemployment rate in the working-age group in 2024 is expected

to be 1.84%, a decrease of 0.18 percentage points compared to the previous year.

Vietnam's human resource quality can be assessed through several indicators:

- Human Development Index (HDI): Vietnam's HDI in 2023 was 0.766, placing the country in the group of nations with high human development, ranked 93rd out of 193 countries and territories. This marks an impressive improvement of 14 positions compared to the previous year, reflecting the government's commitment to promoting human development.

- Labor Force Education and Training Structure: The proportion of workers with formal training increased from 64.5% in 2020 to 70% in 2025, with the proportion of workers holding degrees or certificates rising from 24.1% in 2020 to 29% by 2025. Labor productivity growth has significantly contributed to both intra-sector effects and labor shifting effects, especially during 2021–2024, with labor productivity growing by 4.84% annually.

- Labor Productivity (LP): In 2024, the labor productivity of the entire economy is projected to reach 221.9 million VND per worker (approximately 9,182 USD), an increase of 726 USD compared to 2023 and 802 USD compared to 2022. Between 2010 and 2024, national labor productivity increased by more than 3.96 times.

4. LIMITATIONS OF HUMAN RESOURCES

Despite positive trends, there are still several challenges and limitations in the quality of Vietnam's labor force, including:

- Imbalance in Labor Structure: There is a "surplus of teachers, deficit of skilled workers," as the number of university and postgraduate-educated workers has rapidly increased, while the country faces a severe shortage of highly-skilled technical workers with vocational and associate degrees. By 2024, only 28.3% of the workforce will hold qualifications and certificates.

- Informal Labor: A large proportion of Vietnamese workers accept informal jobs that lack social insurance and formal contracts. In 2024, 64.6% of the workforce is employed in the informal sector, which is higher than the regional and global averages.

- Low Labor Productivity: Vietnam's labor productivity is significantly lower than that of neighboring countries and developed nations. For example, Vietnam's productivity based on purchasing power parity (PPP) in 2023 is just 11.2% of Singapore's level and 27% of South Korea's.

These statistics highlight significant challenges in improving the technical and vocational qualifications of the workforce.

5. SOLUTIONS TO IMPROVE HUMAN RESOURCE QUALITY TO MEET DIGITAL TRANSFORMATION DEMANDS

In the context of rapid digital transformation and the Fourth Industrial Revolution, improving the quality of human resources has become a decisive factor for enhancing national competitiveness and ensuring sustainable economic development. Although Vietnam has made notable progress in developing its workforce, several challenges remain, including limited digital skills, structural imbalances between vocational and higher education and a high proportion of unskilled labor. To effectively address these issues and meet the requirements of digital transformation, a comprehensive and coordinated set of solutions must be implemented.

First, accelerating reforms and improving the quality of education and training systems is a fundamental solution.

This reform should focus on integrating digital transformation into all levels of education, particularly higher education and vocational training. Educational institutions need to modernize their infrastructure by investing in digital platforms, smart classrooms and advanced training equipment to support digital learning. At the same time, training programs and curricula should be redesigned to emphasize practical skills, digital competencies, critical thinking, creativity and lifelong learning. Teaching methods must shift from traditional knowledge-based approaches to learner-centered and competency-based models that encourage innovation and adaptability. In addition, improving the quality of teachers and trainers through continuous professional development and digital upskilling is essential to ensure effective knowledge transfer in the digital era.

Second, ensuring that the scale and structure of training align with national economic recovery and development goals is a critical solution.

Human resource development strategies must be closely linked to socio-economic planning to avoid mismatches between labor supply and market demand. This requires adjusting enrollment targets, training fields and qualification levels to match the needs of key economic sectors, such as digital technology, manufacturing, services and green industries. By strengthening coordination between government agencies, educational institutions and industry stakeholders, training systems can be better oriented toward sectors that contribute most to productivity growth and economic restructuring in the digital economy.

Third, improving mechanisms and policies to encourage the active participation of businesses and employers in human resource development is essential.

Enterprises play a crucial role in identifying skill needs, providing practical training environments and supporting workforce upskilling and reskilling. Therefore, the government should introduce incentive policies such as tax reductions, financial support and public–private partnerships to motivate businesses to invest in training activities. At the same time, legal and institutional frameworks should be improved to clearly define the responsibilities and benefits of enterprises participating in vocational education and workforce development, thereby strengthening cooperation between the education system and the labor market.

Fourth, establishing effective models that link vocational education with businesses and labor markets across different regions is a key solution.

These models should promote close collaboration between vocational training institutions and enterprises in curriculum design, internships, apprenticeships and job placement. Special attention should be given to specific target groups, including young people, rural workers, disadvantaged groups and workers transitioning from traditional industries to digital sectors. By creating flexible and region-specific training models, vocational education can better respond to local labor market needs while contributing to balanced regional development.

Fifth, strengthening the forecasting and planning of vocational training needs, particularly in science and technology fields, is increasingly important.

Accurate labor market forecasting helps policymakers and training institutions anticipate future skill requirements and adjust training programs accordingly. Priority should be given to information technology, digital skills, artificial intelligence, automation and other high-tech fields that are driving digital transformation. Improving data collection systems and labor market information platforms will support evidence-based decision-making and ensure that human resource development keeps pace with technological change.

Finally, reorganizing and restructuring the network of vocational education institutions is necessary to improve flexibility, accessibility and training quality.

This includes consolidating inefficient institutions, expanding high-quality training centers and diversifying training forms such as online learning, blended learning and short-term certification programs. The vocational education system should be designed to accommodate learners of different ages, skill levels and career stages, while ensuring equitable access across regions and industries. By creating a more flexible and diversified vocational education network, Vietnam can build a resilient workforce capable of adapting to the evolving demands of the digital economy.

6.CONCLUSION

Vietnam possesses significant potential to develop human resources that will play a crucial role in the country's digital transformation. To enhance the quality of these human resources, it is necessary to develop a workforce capable of mastering technology and quickly adapting to technological changes. This will ensure that Vietnam can leapfrog ahead, avoiding lagging behind and close the development gap with other countries. Achieving this requires a collective effort from the entire political system, with the government playing a key role in shaping policies and strategies, education and training institutions fulfilling their crucial role in implementing these policies and businesses being the central actors in investment, transformation and technological adaptation.

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