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Developing High Quality Human Resources on Science and Technology in the Context of Digital Transformation

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Abstract

The strong explosion of the Industrial Revolution 4.0 has been and is having a comprehensive impact on all aspects of social life. In particular, the issue of digital transformation is a trend that all industries and fields of operation in Vietnam are aiming for, especially science and technology activities are actively implementing to create great changes in labor productivity, quality, and operational efficiency applied to industries. To keep up with the trend of globalized science and technology development in the world as well as the current level of digital development, the application of digital transformation in science and technology is an urgent and top priority issue. Therefore, developing high-quality human resources in science and technology is an inevitable requirement and demand in the current context in order to grasp and master the achievements of digital science and technology, "taking shortcuts and taking the lead" in applying them to the technical field.

Keywords: high quality human resources, science and technology, digital transformation

1. Introduction: Our Party's viewpoint on developing high-quality human resources in science and technology in the context of digital transformation

The term digital transformation began to be known around 2015 and became popular around the world in 2017. With that spread, digital transformation began to enter Vietnam and was mentioned a lot around 2018. Recognizing this opportunity and challenge, the Prime Minister approved the National Digital Transformation Program to 2025, with a vision to 2030 on June 3, 2020 ^[1].

Digital transformation can be understood as the application of digital technology advances such as cloud computing, big data, etc. to all organizations and businesses to bring efficiency, high quality, and promote comprehensive development. However, digital transformation is not understood mechanically from the conversion of traditional manual operations to the application of digital technology to reduce human effort, but the essence of digital transformation is the process of overall and comprehensive change of individuals and organizations in the way of life, work and production methods based on digital technology.

To approach, grasp, transfer and propose digital science and technology solutions, solve economic and social problems in line with the development trend of the times, it is necessary to build a high-quality workforce with qualities, ethics, technical expertise, creativity, and flexible application of human knowledge into practice to create many technological products to improve the quality of management and material production in the economic and social fields. Therefore, high-quality human resources in science and technology are the most quintessential part of human resources, a combination of the quantity, quality and structure of people who are basically trained, have typical qualities; good capacity, good professional skills, proficient; have

¹ Decision No. 749/QĐ-TTg dated June 3, 2020 of the Prime Minister on Approval of the "National Digital Transformation Program to 2025, with a vision to 2030.

creativity, sensitivity, are and will achieve high efficiency in work, and are the main driving force in the process of economic and social development of each country.

Realizing the role of high-quality human resources in the development of the country, our Party has soon had the right policy on developing high-quality human resources, in which, most of them focus on the field of science and technology. Right from the 11th National Congress, our Party emphasized: "Developing and improving the quality of human resources, especially high-quality human resources, is a strategic breakthrough, a decisive factor in promoting the development and application of science and technology, restructuring the economy, transforming the growth model and is the most important competitive advantage, ensuring rapid, effective and sustainable development" ^[2]. This is a major step in the development of our Party's thinking on the role of the human factor in the country's rapid and sustainable development strategy. Accordingly, high-quality human resources are one of the three breakthroughs in the country's development strategy in the new period, grasping, transferring and applying advanced and modern scientific and technological achievements of developed countries in the world to improve labor productivity, product quality, organization, management, preservation and distribution of products in society.

The 12th National Congress of the Party continued to affirm the important role of high-quality human resources in the new situation: "Industrialization and modernization in the coming period is to continue to promote the implementation of the industrialization and modernization model in the conditions of developing a socialist-oriented market economy and international integration associated with the development of a knowledge-based economy, taking science, technology, knowledge and high-quality human resources as the main driving force" ³. On that basis, our Party also set out the direction and tasks of human resource development in the new period: "Building a human resource development strategy for the country, for each industry and each field, with synchronous solutions, focusing on solutions for training and retraining human resources in schools as well as in the production and business process, focusing on improving professionalism and practical skills" ^[4].

Inheriting the achievements of previous congresses, the 13th National Congress of the Party continued to identify the role and importance of developing high-quality human resources in the current period: "Developing human resources, especially high-quality human resources; prioritizing the development of human resources for leadership, management and key areas on the basis of improving, creating a strong, comprehensive and fundamental shift in the quality of education and training associated with the mechanism of recruiting, using and rewarding talents, promoting research, transferring applications and strongly developing science and technology, innovation" ^[5]. On the basis of training and fostering high-quality human resources in previous terms, our

Party has focused on summarizing practices, drawing lessons and giving directions and tasks to continue identifying high-quality human resources as one of the three breakthroughs, in which key areas are focused on promoting. It can be seen that the field of science and technology is the key to opening the door to "shortcuts and anticipation" to shorten the industrialization and modernization of the country, making the country develop quickly, strongly and sustainably. Therefore, the Congress also sets high demands and requirements for current science and technology human resources: "Developing a team of leading experts and scientists; focusing on technical human resources, digital human resources, technology management human resources, management human resources, business management; human resources for social management and organizing life, taking care of people" ^[6].

In addition, our Party needs to focus on: "Training people in the direction of ethics, discipline, order, sense of civic and social responsibility; having life skills, working skills, foreign languages, information technology, digital technology, creative thinking and international integration (global citizens)" ^[7]. This policy has demonstrated our Party's strategic vision on human resource development, especially high-quality human resources in science and technology. Digital transformation has strongly impacted our Party's leadership and direction in order to keep up with the development trend of the times as well as ensure meeting the requirements of rapid and sustainable development of the country, in which each citizen is an integration cell, with the pioneer being the country's high-quality human resources in science and technology.

2. Current status of developing high-quality human resources in science and technology in the context of digital transformation

The high-quality human resources in science and technology in our country today are the result of the continuous development of our Party under the strong impacts of digital transformation. In recent times, the development of high-quality human resources in science and technology in our country has achieved certain achievements:

Firstly, our Party has built policies to attract and make good use of talents, experts, and intellectual workers with high professional qualifications.

Recognizing the importance of a high-quality workforce in science and technology, the 13th Party Congress clearly stated the viewpoint that needs attention and focus: "Effectively implement policies on training, attracting and employing science and technology staff to stimulate creativity, enhance responsibility and respect differences in social science research. Remove obstacles in policies on training, attracting and using science and technology human resources, especially highly qualified human resources and leading scientists" ^[8].

² Documents of the 11th National Congress of Delegates, National Political Publishing House Truth, Hanoi, 2011, p. 130.

³ Documents of the 12th National Congress of Delegates, National Political Publishing House Truth, Hanoi, 2016, p. 90.

⁴ Documents of the 12th National Congress of Delegates, National Political Publishing House Truth, Hanoi, 2016, p. 116.

⁵ Documents of the 13th National Congress of Delegates, National Political Publishing House Truth, Hanoi, 2021, volume 1, pp. 203-204.

⁶ Documents of the 13th National Congress of Delegates, National Political Publishing House Truth, Hanoi, 2021, volume 1, p. 231.

⁷ Documents of the 13th National Congress of Delegates, National Political Publishing House Truth, Hanoi, 2021, volume 1, pp. 232-233.

⁸ Documents of the 13th National Congress of Delegates, National Political Publishing House Truth, Hanoi, 2021, vol. 2, p. 133.

The implementation of the Party's above viewpoints and policies has attracted, rewarded and created a scientific working environment for the team of high-quality human resources in science and technology to maximize their role and knowledge to contribute to the socio-economic development in all fields. Along with that, our Party and State have institutionalized the policy through the development and reform of attractive salary, bonus and welfare policies... for the team of high-quality human resources in science and technology; promulgated the Law on Cadres and Civil Servants in 2008 and the Law on Public Employees in 2010 (amended and supplemented in 2019); Decision No. 899/QĐ-TTg dated July 31, 2023 of the Prime Minister approving the National Strategy on attracting and employing talents to 2030, with a vision to 2050. The Party's guidelines and policies and the State's laws on attracting and employing talents have greatly contributed to determining the quantity and quality of high-quality human resources in general and high-quality human resources in science and technology in particular.

Second, the scale of the number of high-quality human resources in science and technology is increasing, contributing to ensuring the acceleration of the development of the digital economy in our country. The requirements of the fourth industrial revolution, especially in the context of digital transformation today, the development of high-quality human resources in science and technology to ensure the quantity to serve the cause of international integration, industrialization and modernization of the country has an important meaning and role in contributing to the rapid, strong and sustainable development of the economy in general and the digital economy in particular. According to statistics, the growth rate of the digital economy in Vietnam is the fastest in Southeast Asia for 2 consecutive years (2022 reaching 28% and 2023 reaching 19%), 3.5 times higher than the GDP growth rate; the proportion of the digital economy in Vietnam's GDP in 2023 will reach 16.5%; the growth rate of the digital economy in our country is about 20%/year^[9].

Third, the quality of developing high-quality human resources in science and technology in our country has made progress in all aspects. According to data from the General Statistics Office in 2023, the labor force in our country that has been trained with degrees and certificates is estimated at 14.1 million people, accounting for 27%, an increase of 0.6 percentage points over the same period last year 2022^[10]. The qualifications and professional capacity of the high-quality human resources in science and technology have been improved, and they have been systematically trained at prestigious training institutions in the country and internationally. In particular, strengthening research and application of science and technology in the fields of engineering-technology, medicine, agriculture, etc. has made an important contribution to the development of the country's socio-economy.

However, in addition, developing high-quality human resources in science and technology in the context of digital transformation today still faces many challenges and difficulties. The State's policies and incentives for high-

quality human resources in general and in the field of science and technology in particular are not high compared to companies, corporations, international organizations, and joint ventures. Therefore, recruitment opportunities for public organizations and companies are still limited, making it difficult to find successors. The scale of high-quality human resources in science and technology is unevenly distributed among regions and localities, mainly concentrated in large cities, while economic regions and localities with difficulties account for a low proportion, especially human resources in applying digital transformation in all fields. The quality of human resources in science and technology at times has not met international standards and the requirements of the 4.0 Industrial Revolution. The creation and invention of scientific and technological products by scientists in our country are still fragmented and small-scale; there is a shortage of high-quality human resources in a number of new technical fields such as: digital and information technology, automation, physics and advanced materials science, biotechnology, etc. The process of research, application and development of science and technology, and technology transfer is still weak. The 13th National Congress of our Party also stated that: "The quality of human resources, especially high-quality human resources, has not met the requirements of development; it is still heavy on theory, light on practice, and has not paid due attention to social skills, life skills, self-study ability, and creative skills"^[11].

3. Some basic solutions to develop high-quality human resources in science and technology in the context of digital transformation

In the coming years, digital transformation will continue to be an inevitable trend in Vietnam and many countries around the world, but to comprehensively develop the socio-economy, it is necessary to promote the development of high-quality human resources, especially high-quality human resources in science and technology. Therefore, in the coming time, it is necessary to synchronously implement the following solutions:

Firstly, raising awareness and responsibility of subjects while promoting subjective efforts of high-quality human resources in science and technology. This is a fundamental solution of decisive significance, the basis for developing high-quality human resources in science and technology in the context of digital transformation today. First of all, it is necessary to raise awareness of development subjects about the position and role of developing high-quality human resources in science and technology as well as the role of development subjects in this process. At the same time, subjects need to have the right awareness of the contributions and dedication of high-quality human resources in science and technology in the current new situation. In particular, focusing on raising awareness and self-awareness of high-quality human resources in science and technology in their role in contributing to the comprehensive development of the country's socio-economy. Therefore, the team of high-quality human resources in science and technology must constantly study, strive, and cultivate knowledge to gradually improve

⁹ Vietnam's digital economy has grown fastest in Southeast Asia for two consecutive years. Electronic Government Newspaper. <https://baochinhphu.vn>.

¹⁰ General Statistics Office (2023). Vietnam's labor market situation in 2023.

¹¹ Documents of the 13th National Congress of Delegates, National Political Publishing House Truth, Hanoi, 2021, vol. 2, p. 70.

their qualities, qualifications, and personal capacities to meet the requirements and demands of increasingly high criteria and standards of society. Building the right motivation and career ideals in science and technology in the digital age; development entities need to have sanctions to encourage and motivate the efforts of individuals to actively and proactively improve their qualities, qualifications, and capacities in science and technology, especially digital science and technology.

Second, continue to innovate the goals, contents, programs, and methods of developing high-quality human resources in science and technology in the context of digital transformation today. This is a breakthrough solution to improve the effectiveness of training, fostering, and developing high-quality human resources in science and technology today. Therefore, the goal of developing a team of high-quality human resources in science and technology must be a force with reasonable quantity and structure, good political qualities, good ethics, good professional capacity, proficient skills, creativity, and agility in work, always seeking to conquer new scientific, technological, and technical achievements as well as digital achievements. The content, program, and development method must focus mainly on the issue of skills and professional expertise: practical skills, independent working skills, teamwork skills, theoretical scientific research skills and appropriate application, self-study and self-research skills to ensure that each high-quality human resource in science and technology is a "global citizen" with the motto of "lifelong learning", "basic, practical, solid", constantly updating and mastering the foundation of new science and technology; the training program is increasingly standardized according to the training program of the Ministry of Education and Training as well as the training programs of countries in the region and the world. Therefore, it is necessary to strengthen sustainable international cooperation, going into depth in the field of education and training with universities and research institutes of advanced countries in the world and the region, especially cooperation programs to train high-quality human resources in science and technology, projects to establish joint training universities.

Third, innovate policies for high-quality human resources in science and technology combined with building a favorable training environment for comprehensive development of qualities, qualifications and capacity. This is an important solution to promote the overall role of the development subject as well as the development object, thereby improving the effectiveness of developing a team of high-quality human resources in science and technology to meet the increasingly high demands and requirements of society. First of all, innovate policies for managing and using these high-quality resources in a reasonable manner. Strictly and comprehensively manage both quantity and quality, from individuals to the total resources in units, enterprises and the state. Comprehensively manage moral qualities, political stance, lifestyle, qualifications, professional capacity, creativity, scientific research, working methods and styles. Raise the responsibility for self-management of each individual high-quality resource.

Innovate the policy of arrangement, use and treatment of high-quality human resources in science and technology. Based on the requirements, job position requirements, criteria and standards for each individual, units, enterprises and the

state need to have arrangements suitable to the qualities, qualifications, abilities, career trends and have specific development plans in the present and the future.

Innovating remuneration policies including salary, material conditions to ensure work; reward, honor and support policies for high-quality human resources in science and technology, closely combined with building a training and scientific working environment to maximize the subjective capacity of each subject. Therefore, regularly building, consolidating and promoting the role of leading organizations in units, enterprises and the state contributes to building an effective, democratic and scientific working environment, comprehensively promoting the subjective capacity of individuals in grasping, transferring and mastering digital science and technology, flexibly applying in production, management and distribution.

Thus, in the current innovation process, to promote the country's industrialization and modernization, the development of high-quality human resources in science and technology is one of the three breakthroughs that our Party and State focus on and care about. Digital transformation in the coming years is still a common global trend, so it is necessary to have specific measures to comprehensively develop this human resource team in terms of quantity, structure, quality and have appropriate policies to encourage and promote the subjective capacity of subjects in seizing opportunities, overcoming challenges brought about by digital transformation, while contributing to improving the ability to transfer and master modern and new science and technology of advanced countries in the world./.

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