

The Impact of Science and Technology on Careers Industrialization and Modernization in Vietnam



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ABSTRACT: These days, science and technology are the primary drivers of development and the direct producers of the world economy. Every nation must have specific scientific and technical development strategies and programs for each particular period that are appropriate for its circumstances and material conditions, depending on its level of development. Nonetheless, the most noteworthy conclusion to be drawn from the strategies and policies is that every country in the world, from the most developed to the least developed, stated: "*The development of science and technology is an important new direction, decisive in the development of the national economy...*" As a result, research on the effects of science and technology is crucial for all nations, but Vietnam in particular.

KEYWORDS: Science and technology, industrialization, modernization, Vietnam

1. INTRODUCTION

In Vietnam, industrialization and modernization are not only an inevitable process but also an urgent requirement. Facing the situation of the country from a small farming economy striving to reach the goal: "*Rich people, strong countries, democratic society, fair, civilized*". With the advantage of a later country, Vietnam inherits great achievements of science and technology to shorten the process of industrialization and modernization. The Party and State have issued many important resolutions on science and technology and affirmed: "*Along with education, training, science and technology is the leading national policy, the driving force for socio-economic development*". Thus, the role as the driving force and the leading production force of science and technology has been consistently affirmed by the Party and is objectively inevitable. But the question is how can science and technology perform that role well? In other words, in the current national conditions, science and technology play the role of "Being the leading production force in the process of industrialization and modernization".

2. RESEARCH RESULTS

The concept of industrialization and modernization was raised by the Communist Party of Vietnam at the VII Congress: "Industrialization and modernization is the process of fundamental and comprehensive transformation of production, business, service and economic and social management activities from the main use of manual labor to the widespread use of labor power along with technology and Advanced and modern methods based on the development of industry and scientific and technological progress, creating high social labor productivity".¹ The core of industrialization and modernization is to convert manual and backward labor into advanced and modern labor to achieve high labor productivity, linking industrialization with modernization, clearly defining the role of industry and science and technology in the cause of industrialization.

2.1. Science and technology are the foundation and driving force of industrialization and modernization

Modern science and technology is not only an indispensable factor in the socio-economic life of a country but also a key factor in the cause of national industrialization and modernization, which "determines the competitive advantages and development speed of countries".

For Vietnam today, the role of science and technology is especially important when we are on the way to shorten the development stage to soon become a modern society. Right from the beginning of the national renovation, the Party has determined that science and technology are the most important direct production forces for society. Industrialization and modernization of the

¹ Communist Party of Vietnam: *Documents of the 7th Conference of the Eighth Central Committee*, National Political Publishing House, HN, 1996.

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country for the purpose of a rich and strong people, a just, democratic and civilized society must be based on the foundation and motivation of science and technology. The fundamental role is only promoted when the country has a developed science and technology, capable of solving the main tasks of science and technology set by the country's economic and social development requirements. The driving role of science and technology is expressed through the continuous innovation of technology and products, creating productivity, quality and high competitiveness of the economy in the context of international integration and globalization which is the trend of all mankind. Only when science and technology truly become the leading productive force will its fundamental role and motivation become solid and strong. For developing countries in general and Vietnam in particular, in order to accelerate the process of national renovation, it is indispensable to carry out both processes in parallel: industrialization, modernization and construction and development of science and technology in the context that the country's economic potential is still very limited and small. This can only be done when scientific and technological activities are associated with production, business, services and socio-economic management.

In the twenty-first century, the whole world is swept up in the development trend of the knowledge economy. Developed countries are gradually shifting to a knowledge economy with the characteristics of economies that know how to exploit, know how to fully promote the potential of gray matter, creative ideas and especially knowledge of science and technology to serve the strategic goals of society. This trend opens up many new opportunities for developing economies with low starting points to orient development strategies in line with the general trend of attracting and using scientific and technological knowledge to industrialize and modernize the country. This means that countries that build science and technology capable of acquiring, mastering, adapting, creating and using a lot of knowledge, especially scientific and technological knowledge, creating a dynamic institutional environment can attract more investment capital, modern technology and highly qualified labor from other countries for the goal of comprehensive development.

The reality of many countries in the world shows that without proper investment in science and technology, it is impossible to successfully carry out industrialization and modernization. Science and technology are the miraculous key for the country to get out of poverty and backwardness, typically in newly industrialized countries. Thereby, we see more clearly the decisive role of scientific and technological knowledge, knowledge of the whole society. Having new knowledge, creativity and creativity in the field of science and technology is to operate at a high level. Therefore, it is necessary to invest elaborately and expensively in the socialization of scientific and technological knowledge in order to equip professional knowledge combined with high skills of those directly involved in production, equip general knowledge combined with the operating technology of leaders and managers at all levels in industrial processes and modernize the country.

2.2. Science and technology for socio-economic development in the years of renovation

In the past, when the economy followed the mechanism of centralized management, bureaucracy, dogma subsidy, the commodity economy had no conditions for development, there was no competition within the industry as well as between industries, so production did not need new achievements of science. Therefore, the most important and urgent motivation to promote the development of science and technology is almost nonexistent. Even many achievements of institutes and research laboratories cannot come to life, cannot be applied to the reality of production. As a result, science and technology and production cannot find harmonious coordination with each other and support each other's development. The production side is content with the old, the old way, while science and technology lack a proper, reasonable and highly effective investment environment.

After nearly 40 years of carrying out renovation along with the transformation of the subsidized economy to market mechanisms, science and technology in Vietnam has many positive changes. Science and technology have really promoted their role in the cause of industrialization and modernization as affirmed by the Party: "Industrialization and modernization of the country must be equal to and based on science and technology".

Over the past decades, Vietnam has trained about 4.28 million staff with university and college degrees or higher, including 24.3 thousand doctors (12,261 PhDs working in the fields of science and technology, 41% working in colleges and universities); 101 thousand masters². On average, there are 190 scientific staff per 10,000 people. This is an important human resource for the country's science and technology activities. In fact, this team has the ability to absorb relatively quickly and master modern knowledge and technology in a number of industries and fields.

Over the past time, a network of scientific and technological organizations has been built with nearly 2,500 research and development institutions of all economic sectors, including 1,111 state institutions; 207 universities and colleges³. The technical infrastructure of institutes, research centers, laboratories, scientific and technological information centers, libraries, has also been strengthened and upgraded. There have appeared some types of good connection between scientific research and technological development with production - business.

Along with the process of renovating economic mechanisms, scientific and technological management mechanisms are gradually renewed in the direction of expanding links between research and production and business; As a result, it has improved

² <https://dantri.com.vn/khoa-hoc-cong-nghe/ca-nuoc-co-gan-2500-to-chuc-khoa-hoc-va-cong-nghe-20161008093639427.htm>

³ <https://dantri.com.vn/khoa-hoc-cong-nghe/ca-nuoc-co-gan-2500-to-chuc-khoa-hoc-va-cong-nghe-20161008093639427.htm>

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the efficiency of science and technology activities, contributing to improving productivity, quality and competitiveness of the economy. However, up to now, Vietnam's science and technology is still in a state of slow development, not meeting the country's needs properly.

Social sciences and humanities have made an important contribution to explaining and affirming the scientific and practical value of Marxism-Leninism and Ho Chi Minh thought, the path to socialism in Vietnam; provide scientific arguments for planning guidelines, guidelines and policies of the Party and the State; contributing to the success of innovation in general and to the process of renovating economic thinking in particular. In addition, social sciences and humanities also aim to solve many specific and pressing issues in the practice of socio-economic development such as globalization, international economic integration, the impact of the regional economic crisis on Vietnam's growth, etc religious issues, promoting national cultural identity in building and defending the Fatherland...

Natural sciences promote their strengths, delve into the research of highly applied theoretical problems, effectively approach a number of theoretical subjects such as mathematics, applied physics ... on par with the level of the world. There have also been many research works on natural science that bring high quality when brought into application such as research on obtaining and processing high-resolution satellite images to monitor forest fire status, remote sensing technology, physical geology, oil and gas exploration ...

Science and technology have been able to adapt and master many advanced imported technologies in many fields, especially telecommunications, energy, oil and gas, mechanical assembly of motorcycles, automobiles and civil electronics, production of building materials... Many urgent and important issues for the national livelihood posed by reality have been researched and proposed effective solutions by our country's science and technology forces such as: scientific basis for disaster prevention plans, especially flood control plans in the Red River Delta regions, Mekong River... Solutions to combat desertification in the central coastal region, produce vaccines against hepatitis B. In particular, in the agricultural and fishery industries, science and technology contribute to breeding many varieties of seedlings with high yield and quality. Vietnam's hybrid rice and corn hybrids account for 65% of the domestic market share.

The above achievements have initially shown the great potential of science and technology in Vietnam to create a driving force to accelerate the process of industrialization and modernization of the country.

2.3. In order for science and technology to truly become the leading production force in the process of national industrialization and modernization

The goal of industrialization and modernization of the country of the XIII National Party Congress is to soon turn our country into an industrialized country in the direction of modernity. Unlike leading countries, industrialization requires centuries, industrialization in our country requires shortening, "taking shortcuts, taking the lead". Only then can we shorten the gap and catch up with developed countries. Industrialization is not only the process of transforming the socio-economic state of the country from a state of productivity, quality, low efficiency, relying on agricultural production, using manual labor as the main to a state of productivity, quality and high efficiency based on industrial production methods, Applying new achievements of science and advanced technologies, we can also consider industrialization as a process of economic restructuring towards rapid increase in industries with high scientific and technological content and high value. Therefore, if we do not promote scientific and technological development, we cannot talk about promoting industrialization and modernization. Along with that, the requirement to promote the development of the market economy also requires us to develop science and technology. This is both an opportunity, to take advantage of later developed countries, and a challenge that requires overcome. Promoting scientific and technological development for our country not only stems from the pressing requirements of the process of accelerating industrialization, modernization and the development of the market economy, but also stems from the requirement of developing the country in a socialist orientation, which is essentially a kind of orientation to organize the economy Society is based both on the principles and laws of the market economy and on the principles and goals of socialism. To achieve that, we need a very high level of effort and creativity, which without enough intellectual level, without enough endogenous capacity, it is difficult to succeed. Therefore, promoting scientific and technological development becomes very important and urgent. To do so, we must implement some of the following methods:

First, create motivation for scientific and technological development. The driving force for scientific and technological development has always moved from two sides: science and production. Therefore, we need to encourage producers to turn to science themselves, considering science and technology as a vital and developing factor of enterprises. Only then can the demand for science and technology be boosted will scientists have the opportunity to fully develop their capabilities. To create this capacity, Viet Nam needs to:

Forming mechanisms and policies to promote enterprises to work effectively by applying science and deploying technology.

Allow businesses to use their own capital to use and develop science.

Soon amend and complete tax exemption and reduction policies for enterprises using advanced technology, technological innovation and product innovation. High taxes on enterprises using outdated technology, consuming raw materials and fuel, polluting the environment ...

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For scientists, we need to ensure that we have an income level corresponding to the value of their labor, equip necessary facilities to work, encourage and create conditions for Vietnamese science and technology staff living abroad to transfer knowledge, water technology.

Second, create capital for science and technology activities. Capital is a resource for scientific and technological development. If there is no or lack of capital, there are not enough conditions to realize science and technology goals. Experience in other countries shows that scientific and technological development is often mobilized from both the state and the business sector, many of which are from entrepreneurs. At the second meeting of the Central Executive Committee of the VIII session, our Party introduced investment policies to encourage support for scientific and technological development, whereby a part of capital in enterprises is reserved for research, technological innovation and human resource training. Part of the capital from socio-economic programs and projects is reserved for investment in science and technology to promote research, implementation and ensure the effectiveness of the project. Gradually increase the annual state budget expenditure rate for science and technology to reach not less than 2% of total state budget expenditure.

Third, expand international relations in science and technology. It can be said that this is a very important condition for the development of science and technology. If international cooperation and exchange on research and implementation are not effectively implemented... It is impossible to receive advanced science and technology of mankind, cannot take advantage of exogenous factors that are extremely necessary to transform endogenous factors, promote national scientific and technological capacity. We need to attach importance to cooperation in order to develop high-tech industries, give priority to foreign investment cooperation in scientific and technological development, only import and receive transfer of advanced technologies suitable to our capabilities.

Fourth, increase human resources for science and technology. Human resources of science and technology are the main forces of industrialization, modernization and deployment of science and technology. Without this resource, development cannot be said. Therefore, we need to accelerate the training of scientific and technological personnel, especially for key economic sectors and high-tech industries; rejuvenate scientific and technological staff in research institutions, schools and business establishments, accelerate the development of the science and technology human resource market.

Fifth, continue to innovate the organizational system of management of science and technology activities. This system plays the role of distributing, centralizing and managing the scientific and technological workforce, ensuring the effectiveness of development goals. One of the reasons why national science and technology is still inferior to other countries in the world is the ineffective organization of science and technology management. Therefore, the continuation of this system in the direction of the unified management of science and technology activities by the State has strategic significance in order to develop potential, anticipate and develop new technologies that are decisive for the entire economy.

These solutions are always closely interconnected and interact. Therefore, the synchronous implementation of them will bring high efficiency in the cause of industrialization and modernization of the country.

3. CONCLUSION

In the cause of industrialization and modernization of the country, it is impossible not to be based on a solid foundation of modern science and technology. Moreover, it is necessary to promote the advantages of the country and take advantage of its inherent capabilities, while taking advantage of more and more, higher and more popular applications of new achievements in science and technology. Only then can we promote Vietnam's inherent intellectual resources and spiritual strength to turn science into a direct productive force as Marx predicted and make science and technology become the foundation and driving force of industrialization, modernization of the country.

REFERENCES

- 1) Communist Party of Vietnam (1991), Documents of the Seventh National Congress, Truth Publishing House, Hanoi.
- 2) Communist Party of Vietnam (2011), Document of the XI National Congress, National Political Publishing House, Hanoi
- 3) Communist Party of Vietnam (2016), Document of the XII National Congress, National Political Publishing House, Hanoi
- 4) Communist Party of Vietnam (2021), Documents of the XIIIth National Congress, Truth National Political Publishing House, Hanoi.
- 5) Central Institute of Economic Management (2014), Project results: The role of human resources in science and technology in the period of industrialization and modernization, Hanoi.
- 6) <https://dantri.com.vn/khoa-hoc-cong-nghe/ca-nuoc-co-gan-2500-to-chuc-khoa-hoc-va-cong-nghe-20161008093639427.html>



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