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Research Article

Solutions to Promote the Development of Science and Technology to Develop Productive Force in Viet Nam Today

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Abstract
Currently, with the process of innovation and development, Viet Nam determines the development and application of science and technology advanced, especially high technology is the core content of the process of modern industrialization, associated with building a start-up nation and enterprise, promote rapid development – sustainable the country. This is also the core factor to Viet Nam does not fall into the "middle-income trap". The practice has also proved that the large difference in the level of development and application of science and technology, especially high technology in an international environment with the fierce competition which makes the loss and weakness are always on the side of not mastering advanced technology, it affects to the development of productive forces in Viet Nam and this is a big challenge in the process of innovation and integration under the impact of the 4th industrial revolution. From the philosophical approach, social philosophical, and interdisciplinary approach, the article analyzes and clarifies the role and contributions of science and technology and solutions to the development of productive force in Viet Nam. The result has shown that the role of science and technology is also extremely important and necessary for this development. In the context of the 4th industrial revolution, globalization and deep international integration, high human resources, science and technology, and creative innovation become the most important inputs factor of modern productive force, there is the key to decide speed and quality of countries and economic development. On top of that, science and technology activities in Viet Nam still have certain limitations for the development of productive force. This article has also shown solutions to promote the development of science and technology to develop productive force in Viet Nam today.

Keywords
Develop, science, science and technology, productive force, Viet Nam

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Introduction

In the current context, the knowledge economy is more and more based on science and technology achievement, including research, create new technology and products. The rapid and strong development of science and technology also shown the increasingly close relationship between science and technology with produce. Before, produce is not connect with science and modernization, but nowadays, it is more and more modern and indispensable in the socio-economic development of each country. Science and technology achievements are increasingly penetrating deeply into the process of production and become a direct productive force. In 35 years of implementing renovation, Viet Nam has achieved great achievements of historical significance, strong and comprehensive development in all fields such as economy, politic, cultural, social, national security, foreign relation. Especially, in 2020, Viet Nam takes on 3 responsibilities at the same: A non-permanent member of the Security Council, President of ASEAN, and AIPA. In 2021, despite the difficult context of COVID-19, Viet Nam has actively developed a national response strategy from managing the health crisis to promoting sustainable economic recovery. Successes and achievements that Viet Nam was achieved for many reasons, but the most ultimate reason related to the development of science and technology to develop productive force in Viet Nam. Therefore, in the current context of innovation and integration, also impact of science and technology revolution, from a certain aspect, searching, showing of basic and feasible solutions to promote the science and technology development to develop productive force in Viet Nam currently is an imperative issue.

Questions of researching

Question 1: What ultimate content is shown in the role of science and technology and their contributions to the development of productive force in Viet Nam?
Question 2: Where are solutions that promote the development of science and technology to develop productive force in Viet Nam?

Purpose of researching

Purposing of this article is to analyze and clarify the role, contributions of sciences and technology, solutions to promote the development of science and technology to develop productive force in Viet Nam currently.

Research methods

The article uses qualitative research base on analyzing and synthesizing documents related to science and technology activity, to the development of productive force in Viet Nam in the context of industrial revolution 4.0, consultation of experts, managers, and researchers who are working in public and private agencies in Ho Chi Minh City, Viet Nam.

Research overview

Research projects related to solutions to promote the development of science and technology to develop productive force in Vietnam can be summarized:

Firstly, in Fr. Bacon's work, "New Atlantis" (1962), the content is scientific manipulation on creating useful means to serve the life of man. He figured out an ideal society that knows research projects to social management and enriches for citizens, the human becomes intellectually lucid, building a prosperous kingdom. The typical works of K. Marx and Fr. Engels advert classify the role of science for a productive force. In "Dialectics of Nature", Fr. Engels stated the principle used as the basis for classifying the sciences as based on the forms of movement, also he insists that production practices, social struggle are sources, purposes, and motivation of science. The "Capital" series, which is the main work of K. Marx presented the findings on the laws of social movement, findings motivation, trending of this movement. Alvin Toffler's two works "The third wave" and "Power Shift". Specifically in "Power Shift", he insists that knowledge is strength, is the power of the future, are the things never run-outs, and is the most democratic power. In "The Third Wave", Alvin Toffler thought

that the rapid changes of the present world are not chaotic and random but a process of transformation from one civilization to another. The history of humans is followed by three waves: There are agricultural civilization, industrial civilization, and post-industrial but coordinates of them are due to science and technology achievement. Konrad Seitz, who is the author of the "Race into the 21st Century", was asserted that the role of science and technology as the strength of countries into the 21st century. Claude Alleegre with the work "Changllenging science of 21st Century" asserted that science advances in the 21st century will be even greater than in the past with science related to life, Earth, people, and brain; it will change daily life, upsets the knowledge and belief of human.

Secondly, works on the current of the development of science and technology in Viet Nam such as Science and technology in Viet Nam 1996-2000, Ha Noi Publishing House, 2001; Science and technology in Viet Nam 2002, Ha Noi Publishing House, 2003; Science and technology in Viet Nam 2004, Ha Noi Publishing House, 2005. Lately, Nguyen Thi Kien (2020) with book industrialization and modernization with the development of productive force in the industrial revolution 4.0 in Vietnam today, National Political Publishing House- Su That. Besides, there are also a lot of works of the Ministry of Science and Technology Vietnam, which overview the current state of science and technology development in the world, and policies of the countries in promoting them. Dang Van Luan (2021) with the book "The impact of modern science and technology progress to the Vietnamese family today", National Political Publishing House- Su That. This book contributed to clarifying the concept of science, technology, modern science and technology progress, and family; analyzing the impact of modern science and technology progress to the Vietnamese family today; proposing solutions to promote positive impacts and limit the negative impacts of it. Nguyen Viet Lam and Le Trung Kien (2021) with "US-China technology competition era 4.0 (Monographs) (1st edition, with corrections and additions)", National Political Publishing House- Su That. In this work, the authors analyzed the US-China technology competition in the 4.0 era, its impacts and effects on the world, and the specific adjustment of technology policies and strategies of the US, China, and some large countries. Besides, they also make predictions about competition trends, suggesting policy for the development of science and technology in Viet Nam so that this field becomes the top priority to economic development, ensuring security and defense in the period of deep international integration. In addition, many works and articles of researchers motivate solutions to science and technology development in Viet Nam today, such as: renewing the scientific and technological management mechanism, investment capital, and education and training. That works, most authors have grasped the objective viewpoint, comprehensive and the objective historical- specifically, put science and technology in development in the context of society, promoting science and technology application to develop productive force. However, there have not been any works that really go into depth and fully research, the system of problems and solutions to promote it.

Content

The role of science and technology to the development of productive force in Viet Nam today

In a sense, science is the system of knowledge about worldview. Also, science and technology are a set of systematic and creative activities whose main purpose develop knowledge, apply and use this knowledge in nature, society, and humans. The productive force is the organic unity between workers and the means of production, especially, are instruments of labor. Today it has become a direct productive force. Science and technology were determined as the most important motivation for the development of productive force, it is one of the factors that have an important and key role in the development of productive force and redistributing the labor force. The role of science and technology for the development of the current productive force in Viet Nam is shown:

First of all, with the rapid and strong development of science and technology, it was shown an increasingly close relationship between science and technology with production. Heretofore, while production has not been really connected with science and has not been modernized, now science and technology are more and more modern and indispensable in the socio-economic development in Viet Nam. Science and technology achievements are increasingly penetrating deeply into the process of production, it becomes a direct productive force; time to apply science

and technology achievement to production is becoming increasingly obvious and inevitable.

Secondly, science and technology are a strong impact on instruments of labor, the object of labor has created a leap of factors in means of production. The strength of science and technology development has formed the general movement of modern productive force, it constantly replaces technical equipment, procedures, technology system for low energy, consumes many fuel and materials, remove pollutant by high- tech equipment and system with high knowledge and high-quality productivity. Among factors constituting and determining to development of productive force, the instrument of labor has an extremely important position, it determines labor productivity, manifests the ability to conquer and master the nature of humans.

Thirdly, Science and technology not only impact strongly the means of product development but also impact workers – the leading factor of productive force. The activity of means of production depends on two factors: There are physical and mentality; but humans also depend on the present means of production, what is the means of production they use. In the past, the workers only had skill, experience, habit, physical, but today, under the influence of science and technology revolution, they need to have knowledge, understanding, attitude… to take part in the production process. Workers are no longer a direct manipulation factor in the production system but apply scientific knowledge to control the production process.

Fourthly, in recent years, Viet Nam had appeared "market of science and technology". On this side, science and technology (S&T) is not only applied by humans in material production activity, materialized in labor manipulation and brought about certain effects, but also step by step direct involvement in the production process, become a direct productive force. The close connection of science and technology is the inevitable trend of developing modern productive force in Viet Nam today, because science wants to develop quickly, it needs to have the help of modern technology; simultaneously, to produce new technology requires people to rely on new sciences discoveries. In the context of the 4th industrial revolution, globalization and international integration, high human resources, S&T, and creative innovation (CI), all these things become the most important input factor of modern productive force, this is the key to decide the speed, quality to countries and economic development. In Viet Nam, the role of S&T in industrialization and modernization has always been appreciated by the Party and State of Viet Nam. Resolution of the 6th Central Committee, term XI (Resolution No. 20-NQ/TW), Conclusion No.50-KL/TW of Secretariat in 2019 and documents, and resolution of Central Committee of the XIII term have reaffirmed that S&T is a top national policy, is a motivation for socio-economic development and national defense. The main achievements that we can mention are:

Firstly, S&T contributed significantly to the growth and competition of the economy, shifting the growth model and moving higher up the value chain. Recently, the economic growth of Viet Nam is decreasing, it depends on the exploitation of resources, raw export, and credit extension.

Secondly, S&T contributed solve problems and challenges, which were set by life. The proof is many research result has been transferred and served for production and business activity, and social life. Early 2020, the Ministry of S&T has mobilized professionals, scientists, and enterprises to deploy according to special procedures to perform S&T's tasks for the prevention and control of the COVID-19, particularly: Research and manufacture RT-PCR and real-time RT-PCR to detect the new strain of virus corona 2019 (SARS- CoV- 2).

Thirdly, Natural sciences, science technology, and technology have a more active contribution to labor productivity advanced, quality of product, protect the environment, efficient use of natural resources, adaptation to climate change, ensure national defense, security, safe social, protect and take care of health for citizen. Social science and humanities and political science have contributed to providing arguments for path and policy building; protect and develop the ideological foundation of the Party and State; build and develop the economy, culture, society, and citizens. Nevertheless, science and technology activities in Viet Nam still have certain limitations for the development of productive force, manifesting as: (i), science and technology capacity of Viet Nam is low. Viet Nam still is an underdeveloped country in science and technology; (ii), society's interest in S&T is still low; (iii), Viet Nam does not yet have an S&T management network up to the grassroots level; (iv), The application of science - engineering - technology to production has not been carried out synchronously and comprehensively. Devices put into production are still more fogy than the world, leading to environmental pollution; (v), Science and technology market in the current has developed, but the supply of it is underdeveloped (because human resources of science and technology still are limited about quantity and quality, lack of skill and creative innovation capacity, the number of high- and medium-level professional and technical in Vietnam still accounts for a small proportion of the

total number of employees. Causes are:

- Management mechanism and activity of S&T in Viet Nam have not been strength innovation according to the mechanism of autonomy and creativity of scientists. S&T activity does not connect with the application and production.
- The investment of S&T is still modest and not properly distributed.
- There are many shortcomings in the training, employment, and treatment of S&T cadres.
- Vietnam develops in growth model based on low-skilled and low-cost labor-intensive, land and other resources intensive, low-tech, mainly manufacturing raw products, and assembling for a long time.
- The cadres of science - technology, intellectual property, financial resources, scientific-technological facilities have been increased but are still very modest.

The ultimate solutions promote the development of science and technology to develop productive forces in Vietnam today

Firstly, promote innovation in the management of scientific and technological activities according to the direction of autonomy of agencies and organizations.
One of the leading reasons for the underdevelopment of science and technology in Vietnam is the inefficient and subsidized management mechanism. But up to now, the management mechanism and activities of science and technology in Vietnam have not been significantly innovated. Therefore, in the current context, Vietnam needs to change faster, stronger to manage management, allowing the scientists to have greater autonomy in the use of funding, allowing them to be flexible in their research, enabling them to exchange science in foreign technology and invite foreign experts into domestic research. The government is doing a job at the macro level to determine whether the subjects have a huge impact on the country, consider the scientific and technological issues of the country, after choosing healthy collections, giving them the right to exercise self-control so that they can do the measuring. In addition, researching mechanism of financial autonomy to the final product for scientists, buying the results of research so that scientists can work in peace. Financial problems have long been the largest barrier to scientists so far. Scientists are the ones who desire to work honestly and scientifically. Hence, they always desire to change financial institutions so that they do not take a long time to legalize documents but they devote themselves to the research of science. The management mechanism of science now makes researchers have to put up a lot of work on the funding of the research paper for the subject of research. The management agencies had to contract the management of payment management, which also worked for a lot of time in the research of scientists, researchers in the process. The ultimate product for the scientist will also raise the responsibility of the scientist, and it will change the old mechanism that fails to develop momentum, the creativity of the scientist, many administrative procedures that are only interested in the product of the last product, not the process of being monitored and interested in how the process of science works.
Secondly, to increase investment in science and technology.
Because investing in science and technology in Vietnam is low, and investment flows from the state budget, the contribution of businesses is increasing, but not significant, and still accounts for a small proportion. So we need to focus on investment from the whole society for science and technology activity, especially from the business and consider this is an extremely important solution to getting enough funding to respond to this activity. This mobilization through the forcing of businesses to set aside a certain rate of profits to set up a scientific and technological development fund of business. The state is investing in direct investment on the infrastructure of fundamental research and significant risk-risk research, projects, direct access to defense security, the government policy, and the state government. The common application of common user needs to be translated into either an acquisition or a loan or strengthening capital flows from the organization and social inclusion. To encourage investment resources outside the state budgets for science and technology, the state needs to continue to develop a monetary policy of taxes, which allow businesses to be criticized by 10% of tax returns to create the science and technology development fund, is cited 50% of the extra income for scientific and technological advanced application and not taxes. We continue to maintain other taxes and financial policies to motivate researchers and science organizations to be encouraged to participate in scientific and technological activities. For example, income from the implementation of scientific research and development technology is not an income tax; machinery, equipment, spare parts, supplies,

transportation, and technology domestic not be produced, document and article are imported to use directly in scientific research and development of technology... does not have to suffer imports tax and value-added tax. In addition, products published in the era of testing, products made of new technologies for the first time applied in Vietnam, science and technology consulting activities, technology transformation, imported high-tech, export technology, and enterprise innovate and advanced the level of technology... are entitled to the state-given tax rate. The medium-term and long-term loans for scientific and technological activity can benefit from interest rates and favorable conditions.

Thirdly, closely intertwined in scientific research and production, encouraging people to engage in creative activities. In Vietnam, the fact that scientists are less likely to research science, the number of scientists who specialize in technology is little, and the application of science is not high. Therefore, it needs to form a science and technology enterprise system to be closely intertwined in scientific research and production. It must be a strong boost for commercial research results. From the lessons in the scientific and technological development policy in countries around the world, we can see, promoting commercial research results that are at the heart of economic policies in many countries around the world, such as the United States, Korea, Malaysia, China. Viet Nam can also investigate to apply its to convert much traditional research to the operation under the mechanism of enterprise, co-financing a considerable budget to encourage and support the researchers to conduct commercialization for research results and register of their intellectual property protection for the inventions. Therefore, to develop the effectiveness of science and technology in the development of the manufacturing force in Vietnam, we must promote commercial performance.

Fourthly, priority to the development of advanced technology, high-tech connects with development of science and technology. High technologies are prioritized for investment and development towards the 4th industrial revolution, including artificial intelligence technology; internet of things; quantum technology; bioinformatics technology; aeronautical, space, and remote sensing technology; technology for designing and manufacturing high-resolution screens; advanced 3D printing technology; technology for manufacturing micro-satellites with the view that it is an advanced technology in the world, and at the same time must be a new technology in the world or new technology for Vietnam. These technologies must be consistent with the trend of modern science and technology development in the world.

Fifthly, improving quality, the effectiveness of science and technology human resources. Now, in Vietnam, the organization committee and science and technology cadres are still determined by the management agencies of the S&T organization, it limited flexibility in the use of resources, especially cadres have high levels of expertise. The current management of the personnel, which makes S&T organization is always passive in the use of the labor force, passive in the pay, and does not encourage the cadres of capacity. Thus, improvements are required for organization and management mechanisms for S&T organizations, innovation of wage and prize money policies for S&T cadres activities, and fiscal incentives for scientists who have contributed for social, at the same time, provide critical material and emotional support for scientists who measure the importance of peer learning. Also, it takes good conditions for scientists to research with manufacturing, business, training, and research, not to waste the gray source. And so, to create a large scientific market, scientists will contract and opportunities to develop their capacity. Building and implementing the development of the scientific and technological human resources is also the point of interest and attention in this fifth solution. As a result, the state needs to complete the process, the plan of training science and technology's cades, and the need to create a workforce that contracts and quality needed to meet the higher demand of innovation and integration. To implement the measurement, the State should be more interested in education - training, in fact, "the top priority to improve people's minds, train human resources, foster talents", to improve their workforce, at same time, the State must innovation and improve quality of undergraduate and postgraduate training at universities, academies, and research institutes, in order to promptly meet the workforce with high levels of science and technology; it is necessary to have to a plan for training and retraining for personnel of S&T in centers, and research institutions.

Sixthly, equip and invest in physical – engineering. The state needs to improve investment and innovation in modern science research equipment for labs at scientific centers, universities, research institutions; at the same time, developing information systems so that all S&T cadres can access, exploit, and use S&T documents resources in the research work. Scientists should be to went to training, fostering, engage in learning, exchanging, and cooperating in scientific research

in the advanced industrialized countries - modern technology.

Result and discussion

Today, Vietnam's full-scale innovation is in front of a new setting. In the world, the strategic competition between the nations, particularly among large countries, competes in all fields such as economy, political, diplomatic, cultural, security, national security, and national competitiveness, competitiveness and development of the country in a global context of pollen. Deep inside the strategic competition is the competition for science and technology, about the development of manufacturing force. The development of the S&T and the production of manufacturing force is taking place in a wide variety of countries around the world, with varying degrees, setting large opportunities and challenges in Vietnam's current development. This research was conducted to analyze and clarify the role and contributions of science and technology, solutions to promote this development to the development of productive force in Viet Nam today. The result has shown that the role of science and technology is also extremely important and necessary for this development. In the context of the 4th industrial revolution, globalization and deep international integration, high human resources, S&T, and creative innovation become the most important inputs factor of modern productive force, there is the key to decide speed and quality of countries and economic development. On top of that, science and technology activities in Viet Nam still have certain limitations for the development of productive force. Solutions which this article focus on promoting innovation in the management of scientific and technological activities according to the direction of autonomy of agencies and organizations; more investment for science and technology; closely linked between scientiic research and application to production, encourage citizens to take part in creative activities; encouraging people to engage in creative activities; priority to the development of advanced technology, high-tech connects with development of science and technology; improving quality, the effectiveness of science and technology human resources; equip and invest in physical – engineering. The research team believes that, in the current context, instead of the development of productive force as in the past, today it is necessary to develop the productive force selectively. With impacting and affecting of the 4th revolution, the outputs of modern productive force are no longer the exclusive product of labor in a country, but a global product. Therefore, the modern productive force becomes very important to promote the globalization process. This is a new feature, only found in the modern productive force, while the productive force in the past was not available or only in a narrow scope. More than 35 years of progressive innovation and integration approaches (8/2021), the level of development of the productive force in Vietnam has changed significantly as the level of means of production, especially the instruments of labor has been improved; S&T are widely applied to production; qualifications, skills, consciousness, and attitudes of workers are constantly increasing but compared with the requirements of modern production. In addition to accelerating the renewal of the growth model to in-depth development, rapidly transforming the economic structure towards modernity, economic growth will have to rely mainly on the productivity of synthetic factors, S&T and high-quality human resources continuing to promote the development of S&T to develop the production force is still an urgent issue in the current context in Vietnam.

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