

The fourth technological revolution: Opportunities and Challenges for Sustainable Growth of Vietnam

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Abstract

The concept of fourth industrial revolution (FIR) was first mentioned in the "Action Plan for High-tech Strategy" adopted by the German Government in 2012. Until now, the fourth industrial revolution has a tremendous impact on the economy, society and the environment at all levels - global, regional and country. For Vietnam, there should be policies on economic-social adjustment to address challenges and take advantage of opportunities offered by the fourth industrial revolution.

Keywords: The fourth technological revolution, Opportunities, Challenges, Sustainable Growth of Vietnam

Introduction

The concept of fourth industrial revolution (FIR) was first mentioned in the "Action Plan for High-tech Strategy" adopted by the German Government in 2012. Until now, the fourth industrial revolution has a tremendous impact on the economy, society and the environment at all levels - global, regional and country. For Vietnam, there should be policies on economic-social adjustment to address challenges and take advantage of opportunities offered by the fourth industrial revolution.

In the history of technological and industrial development, mankind witnessed the third industrial revolution in late eighteenth century with the invention of steam engine, in late nineteenth century with electrical energy, in late twentieth century with electronics, information technology and automated production. Now the world is talking about the beginning of the fourth industrial revolution with virtual intellectual, digital era and the explosion of interdisciplinary, multidisciplinary, transdisciplinary technologies which blur the boundary of the traditional single-discipline research, such as physics, biology and digital technology. The exponential development and impact of new technologies in the modern times have triggered changes in every aspects of socio-economic life, production, management and operation system.

The fourth industrial revolution brought about opportunities and huge challenges. Science and technology will turn the impossible into possible.

Productivity, quality and efficiency of products and services will increase, reducing trade costs and raising global sales, boosting economic growth and quality, and improving convenience for personal life.

On the economic aspect, the fourth industrial revolution will strongly impact production, shifting the world economy to "smart" knowledge economy. Scientific and technological advances are applied to optimize production process, distribution, exchange, consumption, management, and administration. From the perspective of the economic structure, the fourth industrial revolution is blurring characteristics of industry, services and agriculture. From the consumer perspective, people have benefited from access to new products and services of quality with lower costs.

From the standpoint of production, in the long run, the fourth industrial revolution has positive impacts. Given the growing application of automation and digitization in production processes, natural resources and unskilled labour are increasingly losing their competitive edge; production is gradually shifting to developed countries having skilled and highly qualified labour. The world economy has entered a period of technology- and innovation-driven growth instead of the traditional input-based growth.

The fourth industrial revolution is also redrawing the world map, with declined power of countries which rely mainly on the exploitation of resources

and increased power of countries which rely on technology and innovation. For enterprises, high-tech revolution improves quality, speed or cost, enhances transparency, and consumers' engagement based on mobile network and data network thus forcing companies to reorient design, market and supply chain of products and services. Under the impact of the fourth industrial revolution, customers are increasingly becoming the center of the economy.

Social impact, in recent decades, income inequality has tended to increase, and the fourth industrial revolution will further amplify this trend due to higher profits from high skills and strong digitization and automation. Meanwhile, the returns from ordinary skills have plummeted and replaced. This is one of the main reasons leading to the increase in inequality across the globe.

However, it is a real challenge for developing countries of which Vietnam is not an exception when the low-income groups who make up the majority of the population, especially the people in deep-lying, remote and ethnic minorities, have not been able to access and benefit from this growth. The modern industrial revolution can increase inequality and widen the rich and poor gap while machinery and artificial intelligence replaces human labor and creates pressure on the labor market. Demands for cheap and low-skilled labour will give way to demands for highly qualified manpower, and if no solution is taken to enhance the skills of labourers, developing countries such as Vietnam will face labor redundancy and unemployment. Besides the issue of conservation of ecosystems and environment, inequality will be the biggest social problem that countries have to cope with in the process of harnessing the advantages of the industrial revolution for economic growth.

The wave of technological innovation in parallel with international integration and liberalization of global trade will create enormous competitive pressure on businesses, forcing businesses to review business models, improve product and service supply, and constantly innovate to adapt to the changing market. Challenges to businesses, especially small and medium-sized enterprises,

are the lack of long-term vision, financial resources, information and skilled human resources to conduct technological innovation.

The fourth industrial revolution will also put pressure on public agencies. The digital era with new technology constantly changes operating platform, and facilitates citizens' broad participation in the policy-making process. At the same time, public authorities can rely on digital infrastructure to optimize the monitoring systems and social regulation in the forms of e-government, and smart urban areas. The State apparatus thus has to reform towards transparency and efficiency. Policy and law makers must also innovate the way of thinking, build capacity, closely cooperate with the business sector and social forces to be able to adapt and response flexibly to changes, and fully understand the new context to manage changes in socio-economic activities accordingly. Besides, in face of challenges caused by impacts of the new technology wave and high technology towards national and regional security, a powerful solution is needed to cope with, particularly transnational high-tech crimes, biological and automatic weapons.

Methods

To do the research, the author uses qualitative research methods and explanatory methods. Qualitative research method: Based on the theory and model from previous studies to collect information, then analyze the real situation of social security implementation for employees in enterprises Vietnam. Textual analysis was employed to analyse and interpret the content of the novel.

Besides, the article uses a combination of research methods, such as historical and logical methods, comparison and comparison, analysis and synthesis, inductive and interpretation, statistical methods from the sources references to serve in research and presentation.

Results

1. To actively cope with impacts of the fourth industrial revolution, seize opportunities and overcome challenges, Vietnam has persistently carried out economic restructuring, renewed growth model, improved growth quality, productivity and competitiveness of the economy,

resolved harmoniously immediate goals and long-term objectives, and economic growth and environmental protection, implementation of social justice, social security and social welfare, narrowed the rich and poor gap and improved people's material and spiritual life.

Despite the limitation of economic scale and resources, the Government has given priority to improving the quality of human resources and strengthening scientific and technological potential as one of three strategic breakthroughs. For low-income groups in society, the Government has synchronously implemented policies and measures to create jobs and raise income through vocational training and credit support, and focused on vocational training for rural youth, farmers, poor and near-poor households, the disabled, ethnic minority people and female laborers. Besides the national programs on scientific research and technological development to enhance national science-technology potential and level, the Government has earmarked investment in programs to support application of scientific and technological advances for rural, mountainous, remote and ethnic minority regions. Green growth policy has also been given more attention through tightened surveillance measures and control the sources of pollution from industrial activities.

The fourth industrial revolution is taking place exponentially and making strong impacts, both positive and negative on Vietnam. If Vietnam can take advantage of opportunities and overcome challenges, it will be able to narrow the development gap with advanced countries and achieve the goal of early becoming a modern industrialized country; otherwise, the development gap with advanced countries will continue to widen. To address challenges, and make good use of opportunities, Vietnam should implement a dual agenda: continue solving the remaining problems related to economic, social and environmental aspects as a result of the previous stage of hot development; quickly take advantage of opportunities and overcome new challenges relating to the galloping fourth industrial revolution on the global scale. The plan on restructuring the economy and renewing the growth model should include contents related to

these two groups. It must identify opportunities and challenges related to the fourth industrial revolution as mandatory contents for background analysis to adjust the medium-term and long-term development plans, especially in large programs on investment in infrastructure, first of all the Internet, information, and communication. It is necessary to enhance awareness of policy-making agencies as well as business sector (especially businesses in energy, resource exploitation, manufacturing industries, which are vulnerable to impacts) and the banking sector on the fourth industrial revolution to help adjust business and investment plans, thereby helping to prevent bad debts in future.

In the long run, Vietnam needs to quickly shift from a country with low comparative edge into one with higher competitive advantage and diversify its comparative advantages. To this end, it must combine multiple elements, such as a favorable geographical location, availability of natural resources and abundant human resources in which human resources is the key factor. With more than 70% of Vietnam's population live in rural areas, in the near future, these sectors continue to play an important role in the national economy. However, investment must continue to be made to high-tech application to boost productivity, quality and higher added value.

Build capacity to absorb technology, encourage innovation, establish intersectoral linkages; prioritize public investment in infrastructure development in association with improving connectivity (expanding coverage, increasing access speeds and lowering the cost of using the Internet); develop long-term capital markets and promote the development of risk capital funds associated with the development of technology and innovation. Implement appropriate industrial policies to strengthen linkages between domestic economic sector and areas with foreign direct investment (FDI). Measures must be taken to support business start-up and effective businesses in technology application and development, especially technology, and supporting industries must be associated with global value chains. Promote effective cooperation between the State, business sector and universities of technology to develop a number of selected industries

particularly information technology. Implement educational reform, provide strong support to science and technology through effective institutions and policies. Increase advocacy to raise awareness of the young generations, encourage students to enroll in science and technology institutions, and nurture the skills of science and technology. Encourage lifelong learning and continuing education capitalizing on the internet-based learning approaches. Establish mechanisms to encourage linkage between business and education and training institutions.

Besides the above-mentioned socio-economic solutions, in view of science and technology policy, to be able to seize opportunities, overcome challenges of the modern industrial revolution for sustainable growth Vietnam should take following measures:

First, identify technology direction and industrial technology sectors that Vietnam should prioritize in the medium and long term in order to head off new technology trends in the world (based on virtual intellectual, digital era, Internet of Things); renovate the development of national missions and tasks of science and technology in line the trend of interdisciplinary and cross-sector research on biology, physics and digital technology.

Second, shift the focus of science and technology policy from mainly investment in research and development (R&D) to commercialization of R&D results and focus on businesses as the center of the national innovation system.

Enhance businesses' capacity to absorb technology, allocate sufficient funds for import and master advanced technology of the world. At the same time, invest in research and application to rapidly improve domestic technological capacity, design, manufacture and application of technology in priority sectors, and areas.

Given limited resources, policy support to start-up should not spread to all start-up businesses to gain quantity. It is important to concentrate on start-up businesses with innovation and high growth potential. This is the solution to build up strong business force which can reach out and compete in international markets.

Third, continue to give priority to improving the quality of human resources. Focus on building capacity of technical personnel, technology administrators and managers, and business administrators. Implement policies to encourage highly qualified labor in research institutes and universities to transfer to business sector; and enhance the quality of higher education, and vocational training, and ensuring the supply of high quality labor force to businesses.

Fourth, renew the way of thinking and methods of State management based on high-tech technology to minimize administrative procedures for enterprises, and ensure transparency of activities of state agencies. Full investment must be made to resolutely implement the e-government scheme to reduce social costs, and facilitate citizens and businesses' activities.

Fifth, in the context of international integration and interdependence, it is necessary to make efforts with the participation of all concerned countries in the region and the world. In response to the fourth industrial revolution, Vietnam should fully tap international cooperation and integration, reach consensus and join common action plans with countries and international organizations in the region and the world, grasp opportunities, overcome challenges for sustainable development, bridge development gap between countries and ensure that people access to equality and benefit from the industrial revolution and sustainable growth.

Conclusion

In the process of international integration, Vietnamese enterprises are always interested in building and organizing the implementation of social security for employees, considering this both an objective and a driving force for sustainable development. stabilize, maintain socio-political stability, contribute to bringing the country out of the group of poor countries, the material and cultural life of workers has been constantly improved, our country's position has been constantly enhanced international school. However, under the negative impacts of the international integration process as well as the negative side of the market economy, affecting the social welfare of workers in enterprises such

as unemployment, differentiation rich and poor, income inequality... Therefore, the synchronous implementation of solutions such as: completing the institutional framework for social welfare management in enterprises; promoting the role and responsibility of business leaders and managers in implementing social welfare for employees in enterprises; promote the role of organization representing employees in the enterprise, contributing to ensuring human rights in the process of international integration, completing the goals of comprehensive human development.

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Conflict of interest

The authors declare that they have no competing interests.

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