The Impact of Artificial Intelligence on Productivity Layout

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Abstract: Productivity layout is the core content of the development of productive forces. Artificial intelligence is expected to become China's new kinetic energy for economic growth entering the stage of high-quality development, which will have a profound impact on the layout of productive forces. This paper analyzes the impact of artificial intelligence on its productivity layout from the perspective of manufacturing, energy industry and health management industry, draws the advantages and risks of the Chinese market in the development of artificial intelligence, and proposes relevant measures and suggestions.

Ⅰ.The Relationship between Artificial Intelligence and Productivity Layout

ⅰ. Factors Affecting Productivity Layout

Productivity layout is the rational distribution and allocation of production factors and economic resources, which is the core content of productivity development. In terms of traditional influencing factors, productivity layout is mainly affected by four factors: first, natural environment affects productivity layout; second, resources restrict productivity layout; third, labor conditions become the constraints of productivity layout; fourth, economic condition is also an important factor affecting productivity layout. With the advancement of science and technology, the spatial influence of natural resources on productivity layout has been declining, which is mainly benefited from the prosperous development of modern transportation industry, resulting in continuous optimization of the industrial structure and gradual improvement of rationality; meanwhile, labor mobility has become normalized. In addition, the constraints of the economy on productivity layout are mainly reflected in the convenience of capital and trading markets. Due to the development of modern technology transfer and diversity of trading conditions, the impact of the economy on productivity layout is gradually weakening.

The Central Economic Work Conference which was held in December 2017 pointed out that the economy in China has shifted from high-speed growth stage to high-quality development stage. The approach of supply-side structural reform has become the principle way of domestic productivity distribution, in which the most important point is to rely on technological innovation to drive development. Scientific and technological innovation is mainly represented by the progress of artificial intelligence, and the combination of artificial intelligence technology and other traditional industries can create a new generation of intelligent industries based on traditional industries.

ⅱ. Industrialization of Artificial Intelligence

Marvin Minsky defines artificial intelligence as a science that enables machines to do things used to be accomplished with human intelligence. Artificial intelligence not only profoundly affects people's production and life styles, but is also expected to become a new kinetic energy of economic growth when China enters high-quality development phase. The development of artificial intelligence technology is driven primarily by business needs, especially the Internet needs. Although it is still in the early stage of development at present, the width and depth of penetration to traditional industries are unprecedented. Besides, the development of artificial intelligence is also

a great opportunity to promote industrial upgrading for traditional industries, to foster new growth points and form new kinetic energy through the in-depth application of artificial intelligence. Let's give an example, the cross-media sencing computing technology can supply intelligent applications like face recognition for many security-demanding areas including parking lots, banks, schools and warehousing logistics,etc.

In addition, artificial intelligence is playing an increasingly more prominent role in employment, labor and capital. Until now, digital technology has had a bigger effect on medium-skilled jobs (such as travel agents), rather than extremely low-skilled or high-skilled jobs. On the other hand, as artificial intelligence evolves the range of missions that digital systems can complete increases, which is probably to gradually expand the range of alleged "routine tasks". Artificial intelligence is also moving into advanced areas of work, including several professional tasks that were previously impossible for machine to perform. In the short term, artificial intelligence is likely to replace tasks rather than work, and will also create new types of work. But new types of work are more unimaginable than existing jobs that might be lost. Changes in the field of employment are usually gradual, with no violent transition. With artificial intelligence entering the workplace, it is likely to be a continuous replacement increasing from a small number to completeness.

"Artificial intelligence is not an independent technology, but exists with dependence on the industries." Cai Zixing, vice chairman of the China Artificial Intelligence Society, believes that the current industrialization of artificial intelligence has ushered in a new opportunity: on the one hand, the industrial base of artificial intelligence development has basically come into being, the number of related enterprises has increased substantially, and the scale of financing is expanding year by year; on the other hand, the starting point of artificial intelligence technology is higher, and the cognitive intelligence technology is more mature.

In 2017, the overall scale of China's artificial intelligence industry exceeded 400 billion yuan, in which the scale of the core industry of artificial intelligence reached 70.85 billion yuan, and the industry scale driven by artificial intelligence application exceeded 320 billion yuan.

Ⅱ. The impact of artificial intelligence on the layout of productivity in different industries

ⅰ. The Manufacturing Industry

For the manufacturing industry, first, artificial intelligence is good for improving the manufacturing industry structure. On the one hand, artificial intelligence will gradually eliminated certain backward manufacturing enterprises. The manufacturing of some traditional machinery and equipment and supporting components may be at the risk of market shrinkage, and traditional electronic information products urgently need to combine artificial intelligence to ease the upgrade pressure to meet market needs. On the other hand, artificial intelligence revolutionize certain industries. The combination of artificial intelligence and traditional manufacturing is represented by providing several new features in the short term, but it will eventually subvert the industry architecture. At the same time, artificial intelligence and related industries will develop into new pillar industries. As a technology with general purpose, artificial intelligence can be widely applied in various industries and fields. Second, artificial intelligence will increase the production efficiency of manufacturing industry. Artificial intelligence can increase manufacturing intelligence and prolong the operation time of the factory. Applying intelligent robots can enable the factories and workshops to have longer working hours, and the enterprise do not need to bear overtime costs to enable the factory to operate 24 hours a day. There has been so many countries having non-stop "unmanned factory" such as the United States, Japan, Germany. In addition, artificial intelligence can improve the matching between supply and demand, and increase the flexibility of the production lines. By forecasting market trends, artificial intelligence can scientifically make output plans throughout the industry chain to make each link keep the minimum inventory on the premise of satisfying the needs, or even "zero inventory", and meanwhile the efficiency of matching demand with products can be improved. Lastly, artificial intelligence can improve the quality inspection level and improve the product yield. It realizes comprehensive real-time monitoring in all aspects of

the production line, which can greatly enhance the enterprise's ability to supervise and control product quality, reduce defective products and improve production efficiency. Third, the development of artificial intelligence will transform the international division of labor in manufacturing industry. Artificial intelligence will change the global manufacturing value chain and form a new international division of labor system, which would have a major effect on the traditional international division of labor in manufacturing. On the one hand, artificial intelligence adds up-to-date links to the existing value chain. This link has turned into a new dominant position in the chain, and developed countries are trying to grab the dominant position to consolidate its manufacturing industry's leading position in the global division of labor. On the other hand, artificial intelligence has also altered the traditional form of value chain, and the superiority of low labour cost in developing countries will proceed to weaken. Like other developing countries, China's manufacturing business has the superiority of lower labor cost as usual while competing with developed countries, but the widespread applications of artificial intelligence will change this situation. Meanwhile, China's labor costs are rising, and high labor cost in enterprise has turned into an obstacle of manufacturing development in developed coastal areas, but the development of artificial intelligence is conducive to solving the problem of high labor cost.

It is worth noting that artificial intelligence has different effects on different trades in the manufacturing industry. For labor-intensive professions such as household electric appliances and consumer electronic products, artificial intelligence majorly plays the role of decreasing the quantity of employees and improving the quality of products; for biomedicine, aerospace and other technology innovation driven industries, the high efficiency of AI in data mining, analysis and other aspects will alter the traditional pattern of technology R&D; for process-typed industries such as metallurgy and chemical industry, artificial intelligence can help realize product customization with low-cost; for clothing, food and other industries, AI can help enterprises precisely forecast market trends and quickly respond to the market.

ⅱ. The Energy Industry

For the energy industry, artificial intelligence can be applied to the entire industry chain from top to bottom in the energy industry, which helps to improve the safety of business operation and improve efficiency while reducing costs. For example, submarine exploration robots developed in China have effectively reduced the cost of deep-sea oil exploration and unmanned aerial vehicles are tentatively applied in oil exploration. Another example is the cooperation between China and Google, and its purpose is to study how to use artificial intelligence to automatically interpret seismic imaging, thus replacing some routine work that needs to be solved by manpower. These "liberated" people can do some more complex tasks to increase overall efficiency.

ⅲ. The Health Management Industry

For the health management industry, China's health management industry of artificial intelligence has unique development advantages based on the massive personal health evolution data of China's 1.3 billion people and the complex living environment data brought by diverse natural environment and geographical features. If we make good use of the health management industry of artificial intelligence, it will form a huge market in China. Based on the standard of health management formed by the algorithm of China's health management of artificial intelligence, and the service capacity formed by serving a large number of people, it is prospective to build the advantage of China's medical industry in the competition of international service trade. It has an extraordinary significance in the process of promoting "The Belt and Road" initiative in China and the construction of "human destiny community" in countries along the road.

Ⅲ. Advantages, Risks and Countermeasures of Artificial Intelligence

ⅰ. Advantages and Risks of Artificial Intelligence

Based on the above analysis on the impact of artificial intelligence on China's industrial layout, it can be seen that there are advantages in four aspects of Chinese market, respectively data advantage, market advantage, policy advantage and talent advantage. But the risks cannot be ignored: first, artificial intelligence can improve the efficiency of network attacks and threaten the security of network space; second, artificial intelligence can exacerbate the disclosure of personal information and threaten the privacy of individuals; third, artificial intelligence systems still have decision-making biases that threaten personal safety; fourth, artificial intelligence can replace jobs in traditional industries and threaten social employment security.

ⅱ. Responses to Risks

In view of the above risks, the following measures can be taken. First, strengthen technical application research to improve cyberspace security defense capability. Second, emphasize both legislation and technical study to promote privacy security management. Third, strengthen application security of artificial intelligence to avoid risks of personal safety. Fourth, optimize professional setting of discipline and on-the-job training to reduce the risk of social unemployment.

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