The Impact of Artificial Intelligence on New Quality Productivity: A Perspective Based on Innovation

Shengyu Tian*, Weijie Zhao
School of Accounting, Harbin Finance University, Harbin, China
**Corresponding Author*

Abstract: Artificial intelligence is an important driving force for the development of human society. It is no longer simply a substitute for human tools, but a multi-level, multi-level method of improving productivity. Under this background, artificial intelligence technology, which is mainly composed of labor, labor and labor object, is fundamentally reconstructing industrial innovation ecology. From the point of view of innovation, this paper analyzes the cultivation of new productivity under the background of artificial intelligence and the realistic ways of establishing modern industrial system. On this basis, we believe that artificial intelligence technology can promote the improvement of the speed and process of product innovation with its internal innovation as the driving force. This kind of innovation linkage can not only stimulate the internal vitality of enterprises, but also promote the cooperation among industries, forming a strong overall competitiveness. This is essential to drive a shift in productivity from quantitative to qualitative change, helping us build a more efficient, flexible, and inclusive modern industrial system.

Keywords: Artificial Intelligence; New Qualitative Productivity; Modern Industrial System; Technological Innovation

1. Introduction

The new quality productivity is different from the traditional productivity. It pays attention to both "quality" and "new". The term "new" refers to new technologies, new models, new industries and new growth drivers; the term "quality" refers to media, raw materials, quality, quality, etc.; and the term "promotion of quality by new means to promote high-quality development through innovation. The ultimate end-result of new quality productivity is productivity, which is a kind of modern advanced productivity formed by technological breakthrough, factor of production innovation and deep industrial transformation. It turns the quantity of laborer, labor material, labor object and its optimal combination into essential connotation, and takes improving total factor productivity as its main characteristic [1]. Facing the impact of a new round of scientific and technological revolution and industrial transformation, it is of great significance to comprehensively understand and scientifically grasp how to better apply artificial intelligence technology to form and develop new quality productivity and help the construction of modern industrial system.

With the deepening of the new round of scientific and technological revolution, the development of advanced productive forces has become a strategic height for countries to seize world economic hegemony. Therefore, at the Central Economic Work Conference held in December 2023, it was put forward that "technological innovation should drive industrial innovation, especially using disruptive and cutting-edge technologies to generate new industries, models and kinetic energy and cultivate new productivity"[2].

Artificial intelligence is a cutting-edge disruptive technology that breaks through traditional machine learning and deep learning. It has the ability to perceive, recognize, learn, reason, make decisions and other higher levels of human intelligence. It has great advantages in fields such as repetitive task processing, big data analysis and auxiliary research and development. Supporting it can effectively promote factor appreciation, improve production efficiency and stimulate the productivity upgrading potential of the Pilot Zone. As a new type of new digital productivity, "artificial intelligence +" has shown strong application ability in many fields such as machine learning, deep learning, natural language processing, etc. Based on the previous research, this paper will analyze from which

aspects artificial intelligence promotes the development of new quality productivity, and probe into the influence path of artificial intelligence on new quality productivity.

2. The Influence of Artificial Intelligence on the Development of New Productivity

Raising the new level of productivity is not only the internal power to promote the sustainable development of China's economy, but also the important foundation to promote the high-quality development of China's economy. In this process, we should see, take a suitable China's national conditions, with independent intellectual property rights of the development path, can really take the road of Chinese modernization [3]. Therefore, in order to accelerate the development of new quality productivity, it is necessary to actively explore effective innovation path to ensure the continuous improvement of productivity.

The rise of artificial intelligence is a revolutionary revolution in today's digital age. This change has a profound impact on labor, materials and objects. By fine-tuning and optimizing these key factors, AI can greatly increase productivity, thereby facilitating the shift to a more efficient and intelligent manufacturing system. This means not only the rapid progress of productivity, but also the emergence of a new level of productivity. The artificial intelligence technology represented by machine learning, big data and other artificial intelligence technologies is fundamentally changing the traditional production mode, promoting the optimization and transformation of industrial structure, injecting new vitality into China's economy and propelling human society towards a better future.

Today, with the rapid development of technology, artificial intelligence has become an important driving force to promote the transformation of social productivity. It can not only improve the quality and ability of workers, but also cultivate a large number of more efficient, innovative ability, more comprehensive technology of a new generation of workers [4]. With the development of science and technology, the traditional standardization work is gradually replaced by artificial intelligence. Therefore, the market demands for low technology and repetitive work are increasingly low. At the same time, because artificial intelligence has the ability to provide a large number of non-standard work, the demand for high-tech, highly creative work has increased. This structural change caused by the demand side has further promoted the structural change in the supply of labor. This means that the highly qualified workforce will expand considerably and they will be able to do more complex and challenging work. For example, through the use of automation tools, intelligent systems and other scientific methods of learning and use, can greatly reduce human intervention and error rate, so that work efficiency and accuracy have been significantly improved. At the same time, through the analysis of big data and intelligent monitoring, we can find the potential risks and defects in time, and make early warning and management in time. Aiming at the above problems, this paper intends to use machine learning, deep learning and other cutting-edge technologies to mine and predict the hidden laws and trends in big data. Artificial intelligence can break through the limitation of scale return of traditional production factors by "human-like thinking", and realize the diversification, numeralization and greening of labor objects. For example, the use of artificial intelligence technology to control Internet of Things devices can effectively reduce the risk of device failure, reduce the bandwidth of data acquisition and equipment requirements, thereby greatly reducing the cost of real-time data acquisition, and promote the generation of new data [5]. Artificial intelligence uses machine learning, deep learning and other methods to imitate human cognition, and on this basis to model the massive data training, promote data mining, collection and generation of key technology innovation, promote the multiplication of data.

3. Artificial Intelligence Promotes the Development of New Quality Productivity from Two Angles of Innovation and Industry

3.1 Innovation of Artificial Intelligence Promotes Development of New Quality Productivity

Support for the innovation and development of artificial intelligence technologies is conducive to promoting factor appreciation, improving production efficiency and further improving the productivity of the Pilot Zone. Support for the innovative development of artificial intelligence is conducive to better integrating artificial intelligence into social development,

accelerating the establishment of new production relations with human as the main body and virtual and virtual as the main body, and promoting the formation of advanced productive forces [6].

The use of artificial intelligence technology to promote the development of new productivity, the establishment of modern industrial systems can be carried out in two ways: First, the inherent innovation-driven role. This process is driven by technological breakthroughs and innovation. Second, the externality of technology spillover. The innovation using artificial intelligence can not only improve the innovation ability of a single enterprise, but also promote the transformation and upgrading of the whole industrial chain.

The internal innovation-driven effect of AI innovation on new productivity is carried out from two perspectives: technological innovation and technological innovation [7].

On this basis, the introduction of artificial intelligence technology can accelerate the transformation of the original process, promote the transformation and upgrading of traditional industries. First of all, through the introduction of artificial intelligence technology, reduce the cost of cooperation, improve the efficiency of enterprise operation, promote the process of innovation. Artificial intelligence can help companies monitor terminals, automate many tasks and processes, such as the Jingdong Shanghai Logistics Center, which employs just four people and places nearly 200,000 orders a day based on automated robotic devices (Liuetal. 2020). Secondly, artificial intelligence technology can simulate the whole manufacturing process and realize the whole process optimization. By predicting the influence of different process parameters on product quality, the artificial intelligence system obtains the optimal combination of process parameters (Grashof & Kopka, 2023) and realizes the whole process supervision. The remote control system allows enterprises to organize production remotely and in real time to meet the uncertain market demand. At the same time, improvements to existing manufacturing processes can enhance the competitiveness of existing products, while also creating new industries. For example, self-driving vehicles are process-enhanced innovations that combine technologies related to artificial intelligence, such as automobiles with sensor safety systems, communications systems and high-resolution mapping [8].

At the technical level, "AI +" is the combination of AI, blockchain, big data, cloud computing, Internet of Things, deep learning and other digital technologies with "AI +" new digital productivity. The deep integration and cooperation of many key technologies will provide strong support for data processing, information analysis and decision support in the production process. Artificial intelligence can achieve technological breakthroughs, support the thorough transformation of production functions, improve production efficiency, is an important driving force for the development of new productivity [9]. With the development of artificial intelligence technology, two new paradigms have emerged: “AI primary research and development” and “scientific intelligence”. For example, in 2020 DeepMind, Google’s team of artificial intelligence, announced that its algorithm, AlphaFold, could accurately predict the three-dimensional structure of proteins by using deep learning techniques to solve the protein folding problem that has long plagued biologists; the latter promoted the shift of scientific research from the traditional “small-scale farm workshop” model to the “platform-based scientific research” model, thereby increasing the efficiency of research and development. The introduction of these new research and development models could reduce the cost of breakthrough technological innovation and increase the success rate of breakthrough technological innovation. For example, Moderna Biotechnology of the United States has used artificial intelligence algorithms to shorten the product development cycle, accelerate product innovation, and successfully develop and deliver COVID-19 vaccines within 65 days.

3.2 Artificial Intelligence Promotes the Development of New Quality Productivity from the Industrial Perspective

In today's rapidly developing economic environment, artificial intelligence technology is gradually becoming an external driving force for innovation to promote new productivity growth [10]. This innovative effect cannot be achieved by a single enterprise alone, but depends on the coordinated operation of the entire industrial chain system. Specifically, its impact can be subdivided into two levels: one is the innovation

activities of upstream suppliers; the other is the innovation needs of downstream customers.

The supplier is not only the raw material supplier in the manufacturing process, but also the improvement of its technological innovation ability is important to the efficiency of the whole industry chain. The cooperation between key enterprises and key enterprises is generally deep, and often involves specific technical needs and standards. Therefore, if artificial intelligence technology is applied to enterprises, there will be direct technical requirements for suppliers, thus promoting them to make innovation in relevant technical fields, while upstream enterprises can directly obtain each other's technical knowledge and resources through R&D cooperation, resource sharing and other means. The application of artificial intelligence can break through the technical barriers in each link of the traditional industrial chain, and the innovation demand of the core enterprise and the technical cooperation with its suppliers are the keys to realize the overall technical innovation, and the suppliers are driven by this, to promote the system linkage innovation from local innovation to the whole industrial chain. Lietal. (2018) Further found that the number of patents of focus enterprises increased by one unit, and the number of patent applications of their suppliers increased by 0.66% to 0.87% accordingly.

For downstream users, market demand and application scenarios are an important source of innovation-driven. In the whole process from R&D, production and consumption, artificial intelligence technology can be transferred down the industrial chain to meet the needs of the end consumer market. This is the common goal of focus enterprises and user enterprises, and the effective realization of this goal requires the technical docking between the two. After adopting artificial intelligence technology, key enterprises can promote the innovation of their downstream users through staff structure adjustment and business model optimization [11]. On the one hand, after key enterprises use artificial intelligence technology to realize intelligent manufacturing, their downstream users will face the challenge of new technologies and must be skilled in the use of artificial intelligence technology; at the same time, in order to ensure smooth docking with the target enterprises, downstream users enterprises must adjust their labor force structure, increase the employment rate of highly-skilled labor force and provide them with employee training. Li Bin et al., 2024); On the other hand, after focus enterprises upgrade and improve their products by using artificial intelligence technology, the new market demand and business model will guide the client enterprises to optimize the original business model to meet the market demand.

4. Conclusion and Prospect

The ultimate goal of new quality productivity is productivity, which is a new type of advanced productivity produced by the breakthrough of scientific and technological revolution, the distribution of productive factors and the deep transformation and upgrading of industries. This productivity is people-centered, it highlights the quality of workers, the quality of labor materials and labor objectives of the best match, its central feature is to improve total factor productivity. This requires us to change the relationship between labor and material, labor object and their relationship from quantity to quality, so that the whole society's total factor productivity can be improved.

Under the background of a new round of scientific and technological revolution and industrial transformation, it is of great significance to fully understand and scientifically master the generation and development of artificial intelligence in the new era. Artificial intelligence is an important driving force, which can optimize the allocation of resources, improve production efficiency and promote the upgrading and transformation of industrial structure. How to combine artificial intelligence and traditional productive forces and promote their deep integration and development is the key to build an intelligent, efficient and sustainable modern industrial system.

As for enterprises, they should not only consider their own resources, market position and competitive advantage, but also analyze and refer to the behavior mode and decision logic of other enterprises. This is because the impact of the core enterprise and the resulting innovation spillover effect can significantly affect the direction of innovation and application of suppliers and customer groups.

For example, in terms of technical requirements, the core enterprise will often put forward higher standards to guide other enterprises in the industry to follow up, so as to enhance the overall technical level of the industry and

product quality. In the application scenario, these core enterprises will provide customized solutions according to their own business needs and the actual needs of customers to further expand the scope of its technology applications.

In the input and cooperation of R&D resources, the core enterprises usually have abundant R&D funds, talents and advanced experimental facilities, which can effectively attract and encourage external suppliers or customers to join in the R&D of new technologies. Promote efficient sharing and diffusion of scientific and technological achievements through sharing of intellectual property rights, joint laboratory construction, etc.

Finally, in the aspect of knowledge acquisition and transfer, the core enterprise promotes knowledge exchange and transfer among enterprises by holding seminars and so on. This is not only conducive to enhancing the overall innovation efficiency of the industrial chain, but also conducive to enhancing the sustainability of the overall industry. In this sense, the core enterprise is to promote the entire industrial chain, the key to technological innovation.

Acknowledgement

This work was supported by the 2024 Heilongjiang University Student Innovation and Entrepreneurship Training Program Project (University-level project) "Intelligent Financial Outsourcing"(Project No. X202410245023).

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