New Quality Productivity in Data-Driven Industries Elements, Structure and Functions

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Abstract: The rapid development and wide application of today's new generation of information technology has brought about a wide-ranging and deep socio-economic revolution, and the digital economy, as a new economic form, has emerged, with digital transformation becoming an inevitable choice for the development of the country and human society. In the digital era, the factors of production are widely connected, the production structure is constantly changing, and the production function is constantly expanding, which also gives rise to the deepening of the connotation and extension of the digital economy. However, the real development of the data ownership structure, as well as the recognized value assessment and benefit distribution mechanism, the institutional mechanism of data circulation and trading, and the cultivation and configuration of the data factor market are still facing great difficulties, and there are a large number of open issues worthy of in-depth exploration and practice.

Keywords: New quality productivity; Digital economy; "Meta-productivity"

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1. Introduction

The current digital economy research and practice has faced many problems that cannot be explained and guided by industrial economic theories, such as data as a new type of factor, whose characteristics, value and significance have not yet formed a consensus. There is no consensus on a clear path and program to build a data factor market and allow data to participate in distribution as a factor of production. The status of data assets has not yet been established, the problem of data rights has not yet been solved, the sharing and circulation of data is full of obstacles, and the data security and privacy protection system is not sound, and these challenges also call for the construction of a data governance system. The rapid development of digital platforms has resulted in a dominant, winner-takes-all market pattern, which has brought about problems such as data siphoning, market monopolization, and tax erosion. There are still many inapplications to regulate them along the antitrust rules of the industrial economy era. The prosperity of the digital economy relies on globalized data circulation, sharing and trading, and the existing rules and systems of international governance are facing great challenges brought about by digital transformation. Although it is not yet possible to give a clear conclusion on this issue, as far as my personal knowledge and understanding are concerned, it is still necessary to study the digital economy as a disruptive new economic form.

2. Elemental Characteristics of New Quality Productivity in Data-Driven Industries

Data resources have gradually become the fourth major factor of production following the three factors of production of "land, capital, and labor", and with the advent of the era of credible data trading, data has

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risen to become the core asset of the society, and has become an economic resource that cannot be ignored by the modern society.Data has many unique characteristics.From a doctrinal point of view, the value of data itself looks at the data alone; from an ontological point of view,the data contains useful information, and further mining of knowledge can be used to recognize the laws through the data into human wisdom; from a methodological point of view,all the traditional physical things can be digitized and then empowered through data,which is equivalent to the fact that all physical entities have a digital twin in the data space.^[1]This makes data elements and traditional elements than have many unique characteristics.The development cost of data factorization is high in the early stage, but the data has value only if it is used,and the marginal cost in the process of use decreases, and multiple people can use it at the same time, unlike the land factor, which can only be used by a single person.The value of data elements can be reused and combined to increase again, as long as it is used and may even always have value.

Also, the source of data is non-scarce, unlike many things that have physical limitations. After the dataization of everything, these characteristics make the data production elements not quite the same as traditional elements. The value of data in the era of big data is the collision, fusion, sharing and circulation of multiple data, and only after the data has become a necessary element of production will it produce significant value and exchange value. The core of the construction of digital China must be to let data run through the whole process of digital China and various fields, especially the development of the digital economy is the core of the data value play. Enterprise competition is changing from competition for resources such as factors, markets and technologies to data competition, and data has become the core driving factor for enterprises to occupy the high ground of industrial competition. From the perspective of data resources, when perception is ubiquitous and connection is ubiquitous, data will also be ubiquitous. All production equipment, sensing equipment, networking terminals, including the producers themselves are constantly generating data resources, which permeate the entire life cycle of product design, modeling, process, maintenance, etc., the production, operation, management, service and other aspects of the enterprise, as well as the entire value chain of suppliers, partners, customers, etc., that is becoming the cornerstone of the enterprise's production and operation.^[2]From the perspective of data management, digital transformation has gradually become a must for enterprises in the digital economy, and data management capabilities are the core capabilities in digital transformation. The data-driven competitive situation requires enterprises to elevate data to the same strategic position as accounting, finance, management and other functions, and will become the basic guideline for enterprise operations in the future. From a data-driven perspective, enterprises collect, store, analyze, and mine data from the entire production process, product lifecycle, and supply chain through business systems dispersed in design, production, procurement, sales, operations, and finance departments, ensuring that all departments within the enterprise work together with the same data, so as to realize the optimization of the processes of production, business, management, and decision-making through data value reengineering and improve the efficiency of enterprise production and operation.Optimize the production, business, management and decision-making processes through data value reengineering, and improve the production and operation efficiency of the enterprise.

3. Structural Optimization of New Quality Productivity in Data-driven Industries

The positive effects of technological progress are paramount, and the changes brought about in social production are sector-wide.Under the joint action of digital resources, digital regulation and digital development, artificial intelligence can serve as a "meta-productivity" to promote the development of the "first productive force" and become the engine of new quality productivity.Digital productivity is a new type of human ability to transform nature, which is triggering fundamental changes in the way human beings perceive

new laws, discover new phenomena, and create new things, and will inevitably have a profound impact on industrial innovation, economic development, and social governance.^[3]The biggest change of digital productivity to human society is the continuous digitization of the physical world on which human beings rely for survival through technologies such as digital twins and the establishment of virtual mirrors in cyberspace, which is characterized by real-time efficiency, zero marginal cost, flexible architecture and other features and advantages, bringing great convenience to industrial innovation.

It will fundamentally reshape the labor mode, production organization mode, social organization operation and social system system of human society, forming a new type of digital intelligent infrastructure, and then shaping the new form of human civilization,which will be an important manifestation of the growth of technology. The development of digital productivity,on the other hand, puts more emphasis on the coordination of multi-species products embedded in the long tail to meet the personalized needs of customers under the conditions of resource sharing, as well as the division of labor between enterprises and industries to bring economic benefits, which is a pursuit of a multi-species product cost of a weakly incremental scope of the economic model. After the digitalization to complete the data organization way change, and then become an important driving force of economic total factor productivity improvement.Now,the multiplier effect and superimposed effect of digital, empowering the entire process of all sectors of the social economy, bringing about digital transformation, network reconfiguration and intelligent enhancement.

In the development of the economy of scope brought about by digital productivity,fundamental changes will occur in the way production is run, the mode of organization and management, and the way services are provided. First, the production mode is flexibilized. The development of digital productivity, so that the traditional mechanized mode of production is replaced by automated mode of production, automated mode of production to further liberate human beings from heavy physical labor; rigid mode of production to flexible mode of production change, so that enterprises can be flexible and timely according to the market changes in a manufacturing system to produce a variety of products; so that the large-scale centralized mode of production into a personalized on-demand production On-demand production mode, breaking the contradiction between industrialization and

personalization, to achieve the industrialized means and efficiency of manufacturing personalized products.

Second,organization and management flexibility. The development of digital productivity, the formation of ubiquitous, timely, accurate information interaction, significantly reduce information, evaluation, decision-making, supervision, default and other transaction costs, bringing profound changes in the form of business organizations, processes, mechanisms, subjects, and promote the emergence of a new zero-work mode, bringing a people-oriented organization and work: the traditional employment model from "enterprise - employee". The traditional employment model is transformed from "enterprise-

employee"to"platform-individual", replacing the traditional management mode with self-organization mode, breaking the top-down sectional structure of the enterprise, and liberating the productivity of individuals to the greatest extent possible; promoting the formation of flexible organization, responding to market demand and environmental changes quickly; promoting the rise of new zero-work mode, bringing a people-oriented organization and work style.^[4] Promote the formation of flexible organization to quickly respond to market demand and cope with environmental changes; promote the formation of borderless organization to build cross-industry, cross-field, cross-body industrial ecosystem.

Third, the integration of service mode. The development of digital productivity has brought unprecedented cross-border integration, and the integration of information technology has profoundly changed the business model of the service industry, which has given rise to the take-away mode in the catering industry, the birth

of Internet hospitals in the medical industry, and the development of e-commerce, which is a new industry that changes the way of life, under the background of the Internet, with the combination of retailing and logistics; the integration of the manufacturing industry and the service industry has broken the industrial boundaries, and the manufacturing enterprises have shifted their value chain from manufacturing-centered to service-

centered. The integration of manufacturing and service industry breaks the industrial boundaries, manufacturing enterprises will change the value chain from manufacturing-centered to service-centered, and the service elements and service products occupy an increasingly important position in the input and output of the manufacturing industry.^[5]

4. Functional Expansion of New Quality Productivity In Data-driven Industries

With the rapid development of the Internet, big data, artificial intelligence and other technologies, the global economy is entering a new stage with digitization at its core.Digitization has become an important driving force to promote productivity development, China should grasp this historical opportunity to accelerate the construction of a national integrated arithmetic network, and promote the construction of China's one-style modernization of the digital pedestal.Artificial Intelligence (AI) is a collection of disruptive and cutting-edge technologies, the core of future industries, the wind vane of scientific and technological innovation, and the key engine and key variable of new productivity.Artificial intelligence forms new productivity by empowering various industries.^[6]

Vigorously promote the industrialization of artificial intelligence technology. China's economy has shifted from a stage of high-speed growth to a stage of high-quality development, and is at a critical stage of transforming the mode of development, optimizing the economic structure, and transforming the growth momentum. In the new development stage, we want to cultivate a new engine of economic development and build a new pattern of international and domestic double-cycle development, which have put forward new demands for the development of new industries and transformation of traditional industries using new-generation artificial intelligence technology.^[6]At the same time, China has significant advantages in the development of Al in terms of massive data, huge market scale and rich application scenarios.

Therefore, it is necessary to closely focus on the new needs, focus on giving full play to China's unique advantages, vigorously cultivate new AI products and services, actively promote the industrialization of AI technology, and build a development pattern of benign interaction between scientific and technological innovation and industrial application innovation.^[7]Adhere to the position of enterprises as the main body of innovation, accelerate the transformation of scientific and technological achievements and industrial technological innovation, plan and lay out a large number of high-tech industries, build a scientific and technological innovation center with international influence, cultivate and develop emerging industry clusters, effectively integrate innovative resources, vigorously attract and nurture" specialized, special and new "enterprises, and lead the formation of new quality productive forces with the development of new AI industries. The development of new industries with artificial intelligence will lead the formation of new productivity.

5. Conclusion

First of all, the construction of a national integrated arithmetic network is the key to promoting the development of China's digital economy. Arithmetic power is a new type of productivity in the era of digital

economy,and is the core infrastructure to support the development of China's digital economy.Through the construction of a national integrated arithmetic network, it can realize the optimal allocation of arithmetic, improve the efficiency of arithmetic utilization, reduce arithmetic costs, and thus promote the rapid development of China's digital economy.^[8]

Secondly,the national integrated arithmetic network helps to enhance China's scientific and technological innovation capability.Scientific and technological innovation is the core driving force for productivity development, and arithmetic power is an important infrastructure to support scientific and technological innovation. ^[9]Through the construction of a national integrated arithmetic network, it can provide strong arithmetic support for scientific research institutions and enterprises, help them overcome technical problems faster, promote scientific and technological innovation, and thus enhance China's scientific and technological strength.

Again, the national integrated arithmetic network can help promote the upgrading of China's industrial structure. In the era of new productivity change, industrial structure upgrading has become an inevitable trend of China's economic development. Building a national integrated arithmetic network can provide strong digital infrastructure support for various industries, help enterprises realize digital transformation, improve industrial competitiveness, and promote China's industrial structure in the direction of high-end and intelligent development.

Finally, the national integrated arithmetic network can help enhance China's competitiveness in the global digital field. Against the backdrop of increasingly fierce global digital competitionChina should accelerate the construction of a national integrated arithmetic network and promote the construction of a modernized digital base in China, so as to enhance China's competitiveness in the global digital field.

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