Redefining the Meaning of Production Relations in the Context of the Digital Economy

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Abstract: This paper adopts a perspective centered on the digital economic environment to define the concept of traditional production relations. It achieves this by conducting a comprehensive analysis of existing relevant literature. Additionally, the paper explores the boundaries of the connotation of production relations within the context of the digital economy. Furthermore, it proposes a mechanism that elucidates the influence of the digital economic environment on production relations. Lastly, the paper uncovers the underlying patterns governing the evolution of production relations within the digital economic climate.

Keywords: digital economic environment, production relations, connotations, evolutionary mechanisms

1. Introduction

The digital economy is increasingly supplanting the traditional economic model in various economic sectors due to the extensive utilization of digital technology. Consequently, production relations, which constitute a fundamental aspect of economic activities, are undergoing remarkable transformations and advancements in tandem with the progress of the digital economy. The exponential growth of the digital economy has not only significantly influenced the conventional industrial structure and business model but has also introduced a novel mechanism for the evolution of production relations. The transformation of production relations in the context of the digital economy holds significant implications for contemporary society and economy. It is crucial to comprehend and comprehend its essence and evolutionary mechanism, as it bears practical significance in achieving high-quality economic development within the digital economy framework and fostering its overall growth.

There is a large body of existing research centered around changes in production productivity in the context of the digital economy[1][2], these studies are still scattered, and the conclusions vary significantly between studies[3]. For example, in the study of productivity in the context of the digital economy, some scholars believe that the digital economy has contributed to the improvement of productivity[1], while others believe that the potential misjudgment of the digital economy has led to a slowdown in productivity[4], and the "productivity paradox" that the rapid development of industries related to digital technology has not led to a significant increase in productivity has been confirmed in the United States, the United Kingdom, and Japan, among others [5]. Although some

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scholars have attempted to explain the problem in terms of the "installation phase" and "deployment phase" of digital technology development [6], the "productivity paradox" has not been well resolved with the further development of the digital economy. Therefore, we need to consider the issue from a new perspective. With the development of technology, digital technology, as an essential innovation of our time, has been included in the consideration of factors of production and is expected to replace labor in the factors of production [7]. Another generally accepted issue is the need for a clear definition of the shift in the connotation of relations of production in the context of the digital economy. The fast-growing digital economy has given rise to different interpretations of productive forces and relations of production, which makes it challenging to introduce a framework that can cover relations of production in the context of the digital economy. This makes it challenging to introduce a framework that can cover production relations in the context of the digital economy. Hence, the primary aim of this scholarly article is to redefine the semantic implications of production relations through the systematic examination of the evolutionary mechanism of production relations within the framework of the digital economy. Additionally, this study seeks to establish a comprehensive and impartial descriptive framework that can serve as a basis for discussing production-related matters within the digital economy context.

2. Connotation of production relations in the context of the digital economy

2.1. Impact of the digital economy environment on production relations

Karl Marx defined the concept of "relations of production" in 1847: "The social relations through which people carry out production are the social relations of production, and the relations of production change in accordance with the changes and development of the material means of production and the productive forces[8]." After that, Karl Marx, in his work "(Critique of Political Economy) preface" to the concept of production relations, added: "people in their own lives in the social production of a certain, inevitable, not their will to shift the relationship, that is, with their material productive forces of a certain stage of development that is appropriate to the production relations[8]." This study posits that the conventional theoretical framework, which considers the productive forces as the primary components of the relations of production, has been disrupted due to the intricate nature of socio-economic growth. The scope of the relations of production has expanded beyond the confines of the material production system within the social production process. It now encompasses the "relations of economic interests" and "relations of economic power" within the modern economic framework system.

The digital economic environment refers to an entirely new economic environment formed by the cross-fertilization of information technology and economic development, which is characterized by the digitization, networking and intelligence of productive forces and the datatisation of factors of production and which has brought about new changes in production relations [9]. Although the digital economy has brought significant changes to the production, consumption and distribution of the national economy, the conceptual discussion of the digital economy has led to the "New Solow Paradox"[10], , the digital economy can be seen everywhere but cannot be conceptualized through specific macroeconomic indicators. This paper argues that the concept of the macro digital economy refers to the portion of economic output obtained entirely or mainly through digital technology. The digital economy, in a narrower sense, includes the information economy and the Internet economy brought about by the development of ICT. The digitization of the economic environment has led to fundamental changes in the relations of production, posing both challenges and opportunities for the reality of production.

2.2. The Expansion of the Connotation of Production Relationships in the Digital Economy Environment

The investigation into the expansion of connotation and evolutionary mechanisms of production relations within the context of the digital economy is a subject matter that is presently garnering considerable interest and is expected to persist as a focal point within the field of economics[11]. The exponential expansion of the digital economy has not only brought about a novel interpretation of production relationships but has also posed new challenges to the governing mechanisms responsible for its development.

"production relations" refers to the relationships within the material production system during social production. The term "digital economy" encompasses both the aggregate of "economic interest relations" and "economic power relations" within the contemporary economic framework system. The aspects discussed below predominantly signify the meaning of production relations within the framework of the digital economy milieu.

To commence, the production relationships within the digital economy have augmented the extent to which the many components of production are structured and coordinated. In a conventional economy, the allocation of production factors is predominantly determined by the central framework of economic operations. Nevertheless, under a context defined by a digital economy, the composition of production elements exhibits a significantly broader range. As an example, the advent of crowdsourcing platforms has facilitated the participation of individuals in the production process through online means, enabling the sharing and efficient allocation of resources[12][13].

Furthermore, within the framework of the digital economy, production interactions have expanded the range of organizational work structures. In a conventional economic system, the central entity overseeing economic activities primarily has the responsibility of organizing and managing the workforce[14]. Conversely, in the context of a digital economy, the composition of the workforce is characterized by more flexibility and diversification[15]. The advent of telecommuting has emancipated the labor force from temporal and spatial limitations, facilitating remote collaboration through online platforms. These advancements have together bolstered the efficacy of work. Artificial intelligence (AI)-driven technologies have instigated a novel wave of productivity revolution. ChatGPT and Midjourney serve as illustrative instances of this phenomenon. Furthermore, integrating data, algorithms, and arithmetic has led to increased productivity in data-driven processes for the transformation and management of production and labor. This shift from process-driven output to data-driven production has resulted in the optimization of overall business processes and the emergence of data-driven capabilities as a novel productivity driver.

Once again, the interactions involved in the manufacturing processes within the digital economy serve to expand the boundaries of the market. The determination of market boundaries in a traditional economy is primarily influenced by the geographical location of a business and the costs incurred in conducting transactions. However, in a digital economic landscape, these considerations have a diminished impact on delineating market boundaries. Digital technology has enabled individuals to engage with information about supply and demand at any given time and location. Furthermore, it has facilitated the establishment of multiple production relationships, allowing individuals to assume diverse roles within several production contexts simultaneously. Moreover, the process of globalization and market integration has been facilitated by the utilization of digital technologies.

Furthermore, the production linkages inherent in the digital economy have increased the proliferation of economic agents' organizational structures. The term "enterprise" can highlight the contrasting organizational forms of businesses in the traditional and digital economies. In the conventional economy, companies primarily use a vertical integration approach, whereas, in the digital economy, businesses predominantly adopt a platform orientation approach[16]. The

proliferation of the digital economy has facilitated the adoption of platform-based production structures by firms, enabling them to derive additional value through the reintegration of previously utilized resources.

3. Impact of the digital economy environment on production relations

3.1. Shift in the pattern of production relations

The term "relations of production" refers to the material production system relations during social production. The references of production also refer to the sum of "economic interest relations" and "economic power relations" within the modern economic framework system. The relations of production are an essential component of both social and economic life. The mode of production relations is continually shifting to adapt to the requirements and pressures of the new era, which the rapid development of the digital economy has brought on. The alteration of production relations is primarily expressed in the following areas within the context of the digital economy.

The widespread adoption of digital technology has led to production relations that are both more informational and more astute. The conventional form of production relations frequently depends on physical labor and the accumulation of experience; as a result, it is very susceptible to the influence of human variables. In contrast, the production process in the digital economic environment makes extensive use of a wide variety of cutting-edge technologies and instruments, which results in production relations that are both more scientific and efficient. For instance, the deployment of artificial intelligence, analysis of large amounts of data, and several other technologies can increase production efficiency while also lowering costs and promoting the coordination and optimization of production relations.

3.2. The contribution of digital technologies to the transformation of production relations

Regularly updating digital technology is a crucial aspect of the digital economic landscape and is pivotal in facilitating the evolution of production relationships. This element constitutes a fundamental component within the digital economic landscape. In the realm of the digital economy, the widespread adoption of digital technology has significantly transformed the manner and content of production interactions, resulting in profound consequences for the nature of these relationships and the processes by which they develop.

The transformation in production relations is facilitated by the technical assistance offered by digital technology. In the context of a digital economy, the continuous advancement and evolution of digital technology serve as a powerful means of technical assistance for the modernization and restructuring of production linkages. The utilization of digital technology on a broad scale enhances the intelligence, automation, and efficiency of the manufacturing process, hence resulting in improvements in both production quality and efficiency. For example, the utilization of intelligent robots in industrial operations enables the completion of repetitive and arduous tasks, hence resulting in cost savings associated with human labor and a reduction in effort exerted, ultimately leading to an improvement in production efficiency. The integration of digital technology not only enables the adaptable and personalized development of production relationships but also addresses the diverse needs of end users.

The advent of digital technology has led to a transformation in the structure of production relations. In the realm of a digital economy, the widespread adoption of digital technology has brought about a significant change in the configuration of production relationships. The extensive integration of digital technology has driven the transformation above. Conventional production relations primarily revolve around the central body of economic activity, serving as their focal point. These relations effectively allocate resources and generate value through internal organizational mechanisms and

exterior market interactions. The advent of digital technology has significantly transformed the structure of production relations within the digital economy, shifting it from a traditional linear and centralized model to a more networked and decentralized one. The transformation occurred due to the shift of the digital economy from an analog state to a digital form. The advent of digital technology has facilitated enhanced collaboration between economic actors and their suppliers, partners, and customers through the use of network platforms and digital supply chains. This phenomenon leads to the emergence of a novel form of production relations, distinguished by the presence of sharing economies and platform economies.

	Traditional relations of production	Production relations in the digital economy
Changes in relations and patterns of production	manual operation; accumulation of experience; fixed organisational structure and division of labour; closed production activities;	production relations are more coordinated and optimised; they are organised in more flexible and diverse forms; and cross-border cooperation and resource sharing are the norm;
Changes in the mode and content of production	Resource allocation and value creation through internal organisation and external markets;	Formation of new, closer and more accessible production relations;
Changes in social structures and power relations	Business as a leading force;	Individuals and small businesses are involved in the process of value creation and distribution;

Table 1: Comparison of differences in production relations in the context of the digital economy

4. Conclusion

This paper undertakes a comprehensive examination of the meaning and evolutionary process of production relations within the digital economy environment. This paper provides a broad definition of production relations in their traditional sense and further explores the expansion of this notion within the framework of the digital economy. Furthermore, this study aims to elucidate the defining attributes and implications of production relations within the context of the digital economic landscape, thereby uncovering the underlying mechanisms via which the digital economic environment influences production relations. The systematic examination and evaluation of existing scholarly research achieves this objective. This study also conducts comprehensive investigations into the evolutionary patterns of production relations within the framework of the digital economy environment. The research findings suggest that the presence of digital technologies in the economic landscape has a positive impact on production relations, promoting their development and evolution.

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