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Under the New Development Pattern, the Analysis of the Impact of Service-oriented Intermediate Inputs on China's Manufacturing Industry's High-end Integration into the Global Value Chain

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Abstract

The 20th National Congress of the Communist Party of China proposed, "Accelerate the construction of a new development pattern and focus on promoting high-quality development." Under the new dual-cycle development pattern, Chinese manufacturing will actively participate in the global cycle and achieve high-end integration into the global value chain. Service-oriented intermediate inputs, driven by highly specialized product upgrades, play a crucial role in extending the global value chain. This offers insights into the high-end integration of Chinese manufacturing into the global value chain. This article provides a theoretical analysis of industry research and development investment and product quality, examining the impact mechanism of service-oriented intermediate inputs on China's manufacturing industry's high-end integration into the global value chain. It aims to enrich the theoretical content of service-oriented intermediate inputs in manufacturing and provide a basis for policy formulation in China's high-end integration into the global value chain under the new development pattern.

Keywords

New Development Pattern; Service-oriented Intermediate Inputs; Global Value Chain.

1. Introduction

The 20th National Congress of the Communist Party of China proposed, "Accelerate the construction of a new development pattern and focus on promoting high-quality development." Under the new development pattern, Chinese manufacturing will participate in the international cycle based on a well-functioning domestic cycle, achieving high-end integration into the global value chain. Service-oriented intermediate inputs, with a focus on high-tech talent for technological innovation and value-added creation in branding and marketing services, have a positive impact on the technological complexity and quality of export products, to some extent, helping China's manufacturing industry ascend to the high end of the value chain. Therefore, in the context of the new development pattern, service-oriented intermediate inputs play a crucial role in guiding the high-end integration of China's manufacturing into the global value chain. The "Outline of the Fourteenth Five-Year Plan for National Economic and Social Development of the People's Republic of China and the Long-Range Objectives Through the Year 2035" emphasizes "accelerating the building of a manufacturing powerhouse and a quality powerhouse, promoting deep integration between manufacturing and modern services." Despite the rapid development of the service sector in China and its higher GDP output compared to manufacturing, the level of service-oriented intermediate inputs in manufacturing is currently at 38.7%, indicating significant room for growth. The role of service-oriented intermediate inputs is a dynamic and evolving process. In the initial stages of

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investment in service-oriented inputs, when manufacturing companies incur additional costs to adjust service elements and internal resource allocation, this may create a "crowding-out effect" on technological innovation and value creation. However, as the initial phase is surpassed, the mechanisms of service-oriented intermediate inputs will gradually contribute to product upgrade effects. Therefore, the relationship between service-oriented intermediate inputs and the high-end integration of manufacturing into the value chain may not be linear and requires further examination. Furthermore, under the new development pattern, the implementation of green development principles and environmental regulations is an inevitable choice. This will place new demands on the technological innovation and value-added product creation capabilities of enterprises, which may, in turn, affect the role of service-oriented intermediate inputs in manufacturing. Therefore, the research question addressed in this project is: What is the mechanism behind the role of service-oriented intermediate inputs in the high-end integration of manufacturing into the global value chain?

2. Current Research Status and Development Trends at Home and Abroad.

This project focuses on service-oriented intermediate inputs and their impact on the high-end integration of China's manufacturing into the global value chain. Below, we will discuss the current research status both domestically and internationally, identify shortcomings in existing research, and use this as a basis to propose research questions.

2.1. High-end Integration of Manufacturing into the Global Value Chain.

The high-end integration of manufacturing into the global value chain refers to the transformation and upgrading of manufacturing, elevating it to high-value-added areas within the global value chain, such as research and development, design, branding, and marketing. The position in the global value chain often serves as an indicator of a manufacturing industry's value chain positioning. Many scholars have explored the factors influencing the position in the global value chain. For instance, Chen Kaijun et al. (2014) found that countries that create higher value-added are more likely to be positioned at the high end of the value chain, thereby enhancing their position in the global value chain. Other scholars (Vandermerwe, 1988; Liu Bin et al., 2016) suggest that countries with rich knowledge and technological high-end elements are often situated at the high end of the global value chain, while those relying on primary factors tend to be at the low end of the value chain[1-2]. Additionally, other researchers (Liu Bin et al., 2019) have examined the impact of factors such as trade barriers and the openness of the service sector on the position of manufacturing in the global value chain[3]. Given that the indicator of the position in the global value chain reflects the dynamic changes in the ascent of manufacturing within the value chain and the economic connections between the domestic manufacturing sector and the global value chain, this study will use the position in the global value chain as a quantitative indicator to evaluate the high-end integration of manufacturing into the global value chain.

2.2. Research on the Relationship between Service-oriented Intermediate Inputs and the High-end Integration of Manufacturing into the Global Value Chain Currently.

Most domestic and international research focuses on the upgrading of manufacturing in the global value chain. However, there is limited research from the perspective of service-oriented intermediate inputs regarding China's high-end integration into the global value chain. Relevant research can be categorized into the following areas: In terms of cost, some scholars (Roger V. Schmenner, 2009; Wang Yongjin et al., 2010) argue that service orientation in transportation and financial services in manufacturing can help adjust production factors, alleviate liquidity constraints, reduce time and transaction costs[4-5]. Zhou Dapeng (2013),

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based on the Cobb-Douglas production function, found that service orientation in manufacturing reduces coordination costs in value chain segments by increasing the density of knowledge-based service elements, thereby promoting industrial upgrading to the high end[6]. Xu Zhenxin et al. (2016), using service intensity and informatization capability as research angles, both found that service-oriented intermediate inputs can reduce fixed production costs for enterprises[7]. In terms of production efficiency, Liu Bin (2016) and others found that marketing network services assist companies in overcoming the "productivity threshold" for exports to different countries, expanding their export market reach, and enhancing their ability to embed in higher-end segments of the industrial chain[8]. Similarly, Peng Jizong et al. (2022) suggest that excessively high or low levels of service orientation are not conducive to improving the overall factor productivity of green manufacturing enterprises in China[9]. Nicola et al. (2017), from a supply chain perspective, analyze how companies use service-oriented intermediate inputs to accumulate human capital and refine production processes, leading to increased labor productivity[10].. In terms of adding domestic value to exports, Grobar and Walker (1993) argue that productive services act as carriers of human capital and knowledge capital, indirectly promoting the increase in domestic value added to manufacturing exports,from the perspective of trade value-added, found that service orientation in manufacturing increases the technological complexity of downstream linked manufacturing exports, resulting in more trade gains[10]. Some scholars (Liu Bin et al., 2016; Lv Yue et al., 2018), using input-output table databases (WIOD), construct domestic value-added indicators, with input services being an important component of a country's trade benefits after its manufacturing is embedded in the global value chain.

2.3. Literature Review

Through a review of the research findings of domestic and international scholars, it is evident that service-oriented intermediate inputs primarily promote value chain upgrading through paths related to cost, production efficiency, and domestic value-added. This reflects that service-oriented intermediate inputs are a trend and a key driver for the upgrading of the global value chain and are also a natural choice for China's high-end integration into the global value chain. However, current research still has the following shortcomings: Domestic scholars have not yet studied the characteristics of the relationship between service-oriented intermediate inputs and the high-end integration of manufacturing into the global value chain.Economic impact analysis of service-oriented intermediate inputs lacks in-depth analysis of both technological innovation, which is inclined toward high-tech talent, and the value-added creation associated with highly specialized service-oriented inputs.Therefore, this project will focus on addressing the above two issues in order to enrich the theoretical content of service-oriented intermediate inputs in manufacturing and provide a basis for policy formulation in China's high-end integration into the global value chain under the new development pattern.

3. Theoretical Analysis of How Service-oriented Intermediate Inputs

Drive the High-end Integration of Manufacturing into the Global Value Chain Product upgrading is a key way to extend the ends of the global value chain, with product technological complexity and product quality being important evaluation indicators (Humphrey et al., 2002). This project believes that service-oriented intermediate inputs promote the upgrading of product technological complexity and product service quality through the paths of high-tech talent contributing to technological innovation and branding and marketing services adding value to products. This, in turn, facilitates the improvement of the division of labor in the global value chain for manufacturing. The project intends to analyze the mechanisms at play using a combination of the learning effect and path dependence effect, providing a theoretical foundation for empirical analysis. Service-oriented intermediate inputs enhance product

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technological complexity through a focus on high-tech talent contributing to technological innovation. Knowledge serves as the source of technological innovation, and specialized talent plays a crucial role in transforming knowledge into new technologies. The service elements within service-oriented intermediate inputs come from knowledge-intensive and technology-intensive service sectors such as transportation services and financial services. The resources in these service sectors, with an absolute advantage, consist of specialized talent with higher learning and creative abilities, which are conducive to the "softening" of manufacturing and promoting technological innovation. On one hand, the learning effect, based on the concept of "learning by doing," suggests that during the process of service-oriented intermediate inputs, specialized talent is better equipped to flexibly utilize their knowledge reserves to solve new problems and propose solutions. This promotes knowledge increment and expands the space for technological innovation, laying the foundation for increasing the technological complexity of products. On the other hand, the service-oriented innovation in high-tech sectors related to manufacturing is particularly active. High-tech service industries focus on the innovation and upgrading of manufacturing technology, and they concentrate advanced research institutions to establish high-tech development zones such as Zhongguancun Science Park and Shanghai High-Tech Industrial Development Zone. They also facilitate the spillover of technological expertise within the manufacturing industry. This enables traditional industries to transform and upgrade their "soft" elements, imitate, absorb, and innovate to improve their own technological research and development levels, ultimately maximizing the increase in product technological complexity and extending the value chain of manufacturing to higher ends. Developed Western countries have similarly consolidated and strengthened their positions in the upstream segments of the global value chain by accumulating and leveraging the technological innovation advantage of service-oriented intermediate inputs in manufacturing.

Service-oriented intermediate inputs enhance product service quality through a focus on adding value to products via branding and marketing services, expanding international market share. In the modern consumption model, consumers seek good service experiences and personalized products. This trend forces companies to place higher demands on their product production models, leading to a "path dependence" effect. This fundamental shift is characterized by an increase in product value-added, serving as a "critical node" for extending the global value chain. Service-oriented intermediate inputs, driven by changes in market demand characteristics, engage in branding and marketing services to increase product value and improve service quality. In terms of branding services, with the development of information services, companies can outsource digital service analysis of transaction data to obtain insights into the evolution of consumer preferences. This allows companies to track and predict changes in consumer selection sets, enhance value through horizontal differentiation and vertical functional innovation, and expand their market share by establishing and growing their product brands. Regarding marketing, companies leverage the advertising and marketing functions of business services to design and guide the evolution of consumer preferences, ultimately reducing customer costs and transaction costs to achieve product value enhancement. Additionally, input services facilitate the promotion and popularization of crowd-sourced research and development models for multinational corporations. This allows different market participants to engage in brand content creation, maximizing market recognition of products and establishing a strong "Chinese brand" international competitive advantage, thereby enhancing the division of labor in the global value chain for manufacturing.

4. Conclusion

Through literature reading and theoretical analysis, it can be understood that service-oriented intermediate inputs play a driving role in both ends of the manufacturing sector's integration

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into the global value chain. The key pathways include: service-oriented intermediate inputs enhancing product technological complexity through a focus on high-tech talent contributing to technological innovation and extending the influence on the research and development and innovation end; service-oriented intermediate inputs adding value to products through branding and marketing services, focusing on improving product service quality and optimizing customer structure. Therefore, under the new development pattern, in order to continue promoting the high-quality development of manufacturing, service-oriented intermediate inputs are a necessary upgrade approach.

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