



Mechanism and Path of the Technical Innovation Driven Transformation of China's Foreign Trade Development-- From the Point of View of Social Reproduction Process

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Abstract. Over 40 years after China's open-up, China's foreign trade has developed dramatically. However, there is a big gap between China's foreign trade development and that of western developed countries, especially in terms of quality benefit and competitive edge. In 2015, Chinese government proposed the implementation of innovation driven development strategy, which is an inevitable choice facing the new round of technical competition and industry competition around the globe. Under this background, from the point of view of social reproduction process, this paper made deeper analysis of the mechanism, dynamic evolution and path of the technical innovation driven transformation of China's foreign trade development. The paper holds that technical innovation can promote the transformation of foreign trade development mode by way of advancing industrial optimization and upgrading, creating cross-border e-commerce and promoting consumption innovation.

Keywords: Technical Innovation, Foreign Trade Development Mode, Mechanism, Path.

1 Introduction

With the in-depth development of economic globalization, technical elements have been incorporated into the open economic system, and more and more attention has been paid to it. Grossman (1991) Construct an endogenous product cycle model of a leading country, a follower country and an imitator country , and analyze the trade patterns in different equilibrium states; Empirical studies by Coe and Helpman (1997) , Blomstrom (1999) , etc. show that international trade is an important channel for knowledge and technology transfer; Krugman (1979) constructed a North-South trade model based on Vernon's (1966) product cycle hypothesis, researching It is believed that technology transfer is achieved not through FDI but through imitation. A large number of theoretical and empirical studies show that developing countries can promote their technical progress and independent innovation through foreign trade,

and technical innovation will further promote the development of foreign trade. However, Schmitz (2004) believes that international trade has not promoted the improvement of developing countries' technical capabilities, mainly because the foreign trade of developing countries is concentrated in labor-intensive sectors or industries. Nevertheless, in today's world, technical innovation still determines the international competitiveness of countries in the world.

At present, China's economy is in a transitional period and is evolving into a high-end and high-end stage. The economic development mode is changing to quality and efficiency-based intensive growth, the development momentum is changing to a new growth point, and economic development has entered a new normal of medium and high-speed growth. Relying on the mode of driving economic development such as factors and investment is no longer sustainable, and the implementation of the innovation-driven development strategy must be accelerated. Therefore, in-depth analysis of the mechanism and path of technical innovation driving the transformation of foreign trade development mode is not only conducive to clarifying the role and status of technical innovation in the transformation of foreign trade development mode, but also conducive to deepening supply-side reform, promoting the transformation of China's foreign trade structure, Expand the depth of China's foreign trade industry and enhance China's foreign trade competitiveness, thereby promoting the transformation and development of China's foreign trade, and realizing China's transformation from a large foreign trade country to a trade power.

2 The mechanism for technical innovation to drive the transformation and development of China's foreign trade

Modern economics believes that the production of commodities depends not only on the quantity and cost of traditional production factors such as labor, capital, land and entrepreneurship, but also how to properly and reasonably combine the above production factors, namely: Technical innovation. This is because technical innovation can solve the problem of scarcity of economic resources to a certain extent, and at the same time, it can also achieve the maximization of output and the diversification of varieties under a certain scale of factors. In fact, with the acceleration of the process of economic globalization and the rapid development of the knowledge economy, the impact of technical innovation on the scale, speed, trade structure, trade pattern, trade flow and trade mode of international trade has become more and more obvious and level determine a county's trade competitiveness to a certain extent.

From the perspective of the process of social reproduction, "a certain production determines certain consumption, distribution, exchange and a certain relationship between these different elements; of course, production also depends on other elements in its unilateral form". Technical innovation drives foreign trade. The key and core of transformation and development lies in the decisive role of technical innovation in the process of social reproduction.

Technical innovation (product innovation, process innovation) has changed the mode of production, improved the level of social production and development, accelerated the decline of traditional industries and the rise of emerging industries, led to the optimization and upgrading of industries, significantly enhanced the international competitiveness of products, and the structure of foreign trade commodities. Significant improvement, thereby promoting the transformation of foreign trade development mode; technical innovation, especially information technology innovation, has changed the way people exchange, gave birth to cross-border e-commerce, shortened the distance between producers and consumers, and expanded the availability of traded products scope, resulting in the reduction of international transaction costs, the improvement of international trade efficiency, and the increase of international trade benefits, which promotes the optimal allocation of global resources, thereby promoting the transformation and upgrading of foreign trade, and further promoting the transformation of foreign trade development methods; technical innovation, especially those fundamental technical innovations, Created and developed a new social consumption demand or new social consumption mode, and promoted consumption innovation: changed the consumption mode, improved the consumption level, changed the consumption concept (sustainable consumption mode), and these changes improved the development level of the entire social production, which in turn drives the transformation and development of foreign trade. Mechanism of the technical innovation driven transformation of China's foreign trade development is shown in Figure 1.

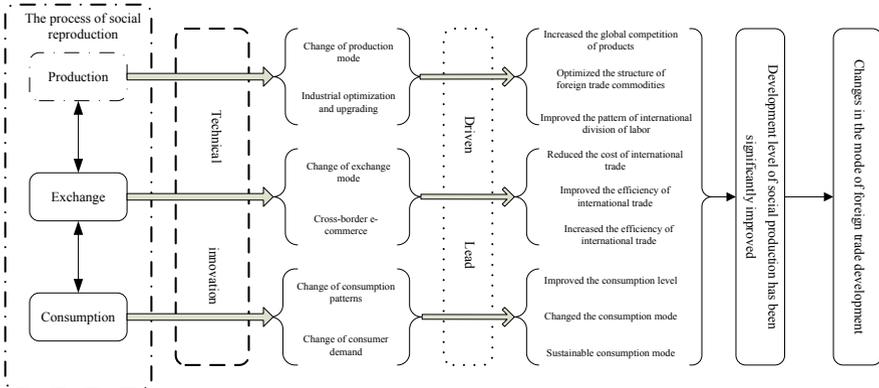


Fig. 1. Mechanism of the technical innovation driven transformation of china's foreign trade development

3 The path for technical innovation to drive the transformation and development of China's foreign trade

3.1 Change the mode of production: promote the optimization and upgrading of the industry and enhance the international competitiveness of products

Technical innovation promotes the adjustment and optimization of economic structure, and determines the speed, scale, quality and efficiency of economic development. Its most prominent performance is industrial optimization and upgrading. Specifically, technical innovation mainly promotes industrial optimization and upgrading through changing the three industrial structural systems, enhancing industrial competitiveness, improving the "technical gold content" of the service industry, promoting the transition of industries along the global value chain. While technical innovation promotes industrial optimization and upgrading, it also has a synergistic innovation effect in the field of international trade, changing the structure of international trade commodities and improving the competitiveness of international trade commodities.

3.1.1 Industrial optimization and upgrading promote changes in the structure of international trade, which in turn drives the transformation and development of foreign trade.

The industrial structure is the foundation of the international trade structure, which determines the level of a county's international trade structure, and the international trade structure is a reflection of the industrial structure and guides the changes of a county's industrial structure. In a sense, the higher the level of industrial structure, the higher the level of international trade structure. Therefore, industrial optimization and upgrading will change the structure of international trade, and promote the transformation of international trade structure to a high level of knowledge, high technology content, and high benefit, and these are precisely the focus of the transformation and development of foreign trade. Therefore, industrial optimization and upgrading the trade structure promotes the transformation and development of foreign trade.

3.1.2 Industrial optimization and upgrading have improved international competitiveness, which in turn drives the transformation and development of foreign trade.

The key to the transformation of foreign trade development mode is to improve the international competitive advantage relying on technology, brand, quality and service. Industrial optimization and upgrading have significantly increased industries with high knowledge, high technology, and high capital, and promoted the expansion of the production of intermediate products with relatively high knowledge and technology content, resulting in a reduction in the input of tangible factors such as labor, and the investment in intangible factors such as knowledge and technology. Increase, reduce the unit energy consumption of products, improve the benefit of products, and

extend to both ends of the global value chain, thereby enhancing a county's initiative and control in the global value chain, making a county's role in the global market. Influence and competitiveness have been significantly improved, thereby promoting the transformation and development of a county's foreign trade.

3.1.3 Industrial optimization and upgrading promote the rational allocation of resources and other elements, thereby driving the transformation and development of foreign trade.

The essence of the transformation of foreign trade development mode is to change from the competitive advantage that mainly depends on cost, resources and labor force to the international competitive advantage that depends on technology, brand, quality and service that is: replace resources, labor force with the input of technology, brand, service and other elements and other elements of input. To complete this transformation, we must reduce the dependence on resources, labor and other factors, thereby reducing the excessive dependence on low cost and low price advantages. Industrial optimization and upgrading has promoted the transfer of resources and other factors from the industrial sector with low production efficiency to the industrial sector with high production efficiency, and the free flow between industries and within each industry, thus realizing the rational allocation of resources and other factors, which in turn leads to foreign trade. The savings in the use of factors such as departmental resources and the reduction in unit energy consumption of foreign trade products will promote the transformation and development of foreign trade.

3.1.4 Industrial optimization and upgrading reduce international trade friction, which in turn drives the transformation and development of foreign trade.

Industrial optimization and upgrading have significantly increased a county's knowledge, technology, and differentiated products, improved the quality and grade of a county's products, and improved a county's position in the division of labor in the global industrial chain, thereby reducing the need for competition with other countries. Product competition has reduced international trade friction and improved international trade relations; at the same time, industrial optimization and upgrading have enhanced China's core competitiveness, the quality of foreign direct investment has been significantly improved, and the ability to integrate global resources has been continuously enhanced. The all-round cooperation of China has been continuously embedded in the middle and high end of the value chain, which has effectively reduced trade friction, and made the development of China's foreign trade more stable and healthy, thereby promoting the transformation and development of foreign trade.

3.1.5 Industrial optimization and upgrading promote the transformation of demand structure, which in turn drives the transformation and development of foreign trade.

Although a county's industrial structure is subject to a county's demand structure, the industrial structure will also promote qualitative changes in the demand structure to a certain extent. A county's demand structure, scale and internationalization affect

the county's international competitiveness. Industrial optimization and upgrading accelerates the transfer of a county's production and investment to high-level social demand sectors, resulting in a high-end social demand structure. If a county's demand structure is global, discerning and growing, then the county's export products will also turn to high-end with the changes in the social demand structure, which will significantly enhance the competitive advantage of the county's products in the international market. And then promote the transformation and development of foreign trade.

3.2 Change the way of exchange: promote cross-border e-commerce and improve the efficiency and effectiveness of foreign trade

Cross-border e-commerce brought about by technical innovation is the cross-border integration of international trade and the Internet, which is the result of the development of e-commerce beyond customs. With its global integration, digital transmission, and paperless operation, cross-border e-commerce has led to fundamental changes in traditional international trade, improved the efficiency and effectiveness of foreign trade, and promoted the transformation and development of foreign trade.

3.2.1 Cross - border e-commerce simplifies the international trade process, improves the efficiency of international trade, and then drives the transformation and development of foreign trade.

The rapid development of Internet technology promotes the transformation of international trade activities from traditional offline transactions to online transactions, which simplifies the business process of international trade and promotes the adjustment and innovation of trade models, namely: cross-border electronic business. Cross-border e-commerce brings unparalleled advantages with its global integration, instant communication, and paperless operation. The data shows that there are more than 30 kinds of documents involved in a single international trade business under the traditional trade method, and there are more than 100 written documents in addition to the duplicates; while in cross-border e-commerce, EDI is used to replace written documents, which makes the communication between the two parties more convenient, Fast and with lower transaction costs. At the same time, cross-border e-commerce can effectively reduce the delay time between buyers and sellers due to processing related documents, reduce unnecessary errors caused by repeated data input, and promote the improvement of international trade efficiency and effectiveness.

Cross-border e-commerce promotes the transformation of business flow, logistics, capital flow and information flow from the traditional bilateral to multilateral direction, showing a network structure, that is: through the trading platform of country A, the payment and settlement platform of country B, and the payment and settlement platform of country C. The logistics platform realizes direct trade between other countries, thereby promoting the upgrading of professional foreign trade services.

3.2.2 Border e-commerce has promoted the development of "Internet companies", and the main body of international trade has changed, which in turn drives the transformation and development of foreign trade.

The Internet makes the acquisition of information faster, more convenient, and more abundant. For buyers and sellers engaged in international trade, the process and method of information collection, sorting, and analysis have undergone qualitative changes. There has been a fundamental shift in the decision-making process, allowing buyers and sellers of cross-border e-commerce to transact directly across intermediaries.

Cross-border e-commerce has transferred the place of transaction of goods or services to the Internet, which has fundamentally shortened the spatial distance between goods and service providers and consumers. Network-based international trade is more inclined to trade choices on a global scale, and the geographical direction of international trade has changed from inter-country and inter-regional to globalization. Under the traditional international trade system, the import and export of goods or services must be carried out by trading companies with fixed operating sites; however, the development of Internet technology has broken this traditional and fixed model and promoted the development of "Internet companies". As long as there is one network and one line, without going through an intermediary company, it is possible to communicate and negotiate with buyers or sellers around the world in real time, and then reach a transaction.

3.2.3 Cross-border e-commerce overcomes the limitations of time and space in traditional international trade, promotes the innovation of international trade operating mechanisms, and drives the transformation and development of foreign trade.

Cross-border e-commerce breaks the boundaries between countries, regions and countries and regions, opens up new online international trade markets, promotes the innovation of global trade operation mechanisms, closely links countries around the world, and promotes. The process of global economic and trade integration.

The new global trade operation mechanism formed by cross-border e-commerce breaks through the limitations of time and space, overcomes the disadvantages of the traditional trade operation mechanism in terms of location and other aspects, promotes the free flow of information in the global market, and reduces the cost of The possibility of monopoly caused by information asymmetry makes transactions between buyers and sellers faster and more convenient; at the same time, global buyers and sellers can communicate and exchange in real time through the network, which improves the accuracy and effectiveness of trade decisions and promotes trade efficiency. The improvement has enhanced the competitive advantage in international trade.

3.2.4 Cross - border e-commerce realizes zero-distance connection between manufacturers and consumers, promotes the reform of international trade and marketing methods, and drives the transformation and development of foreign trade.

Cross-border e-commerce realizes zero-distance connection between enterprises and consumers in different countries or regions through a third-party cross-border e-commerce service platform, which promotes the reform of international trade marketing methods, and makes most of the intermediate links in traditional international trade (such as import and export service providers, wholesalers, retailers, etc.) are cut, resulting in the cost of these intermediate links becoming part of the commission of the e-commerce platform, part of the profit of the manufacturer, and part of the “welfare” of the consumer, thus forming a manufacturer “Win-win” for third-party cross-border e-commerce service providers and consumers.

For example, Yiwu Global Online Goods Center, jointly constructed by Yiwu Municipal Government and Dunhuang.com, involves more than 70,000 merchants and tens of millions of products in Yiwu. Buyers from all over the world can directly place orders through this platform, relying on the integrated online and offline warehousing and logistics systems, payment and service systems, so that all online ordered goods can be sent directly from Yiwu to all over the world, and the product competitiveness is significantly enhanced. The transformation and upgrading of traditional foreign trade has been realized.

3.2.5 Cross - border e-commerce promotes the transformation of foreign trade enterprises to small orders, more production, and brands, which in turn drives the transformation and development of foreign trade.

Cross-border e-commerce promotes the small-scale, refined and repetitive transactions between sellers and buyers in different countries or regions, which leads to the fact that most of the orders in cross-border e-commerce are small batches or even single pieces. The international financial crisis in 2008 led to great changes in the traditional overseas procurement model, from long-term, large-volume procurement to short-term, small-batch procurement in the consumer goods sector. This makes the traditional foreign trade “container” type of large-value transactions replaced by “fragmented” import and export trade in small batches and multiple batches. For example, in traditional international trade, it takes 60-80 days to complete an order with a transaction value of about 150,000 US dollars, and a 10% deposit is required for the factory; now it only takes 3-5 days to complete an order with a transaction value of about 1,500 US dollars. Then pay the deposit, and there are such orders every day, zero inventory, high turnover, hundreds of thousands of orders are directly supplied to buyers all over the world every day.

The rapid development of cross-border e-commerce has intensified the competition in global trade, especially in terms of high-knowledge and high-value-added products, “personalization” and “customization” have become new trends in the development of foreign trade e-commerce. For example, Shenzhen Kaijuyuan Technology Co., Ltd. integrates online and offline resources to achieve the organic unity of online and offline, with monthly sales exceeding 2 million US dollars.

3.3 Change consumption patterns: promote consumption innovation and enhance the connotation of foreign trade development

Technical innovations, especially those fundamental technical innovations, promote profound changes in social consumption needs or methods, and develop and form a brand-new social consumption demand or method. This new consumption demand or method is characterized by its unique technical characteristics and Advantages play an exemplary role in society, leading the trend of consumption demand in the whole society, and promoting the optimization and upgrading of social and economic structure. The concentrated expression of such optimization and upgrading, of course, is the change in the consumption demand or mode of the whole society, that is, consumption innovation. Consumption innovation is the fundamental change in social demand and social and economic structure, resulting in the formation of new consumption needs and consumption patterns, making consumption more personalized consumer objects more fashionable, product life cycles shortened, and consumption patterns tending to be intelligent, etc. Characteristics, which lead to the adjustment and optimization of foreign trade product structure, which in turn drives the transformation and development of foreign trade.

3.3.1 Consumption innovation drives the transformation and development of foreign trade by causing changes in consumer demand.

British economist Marshall believes that the ultimate regulator of all needs is the needs of consumers. In the process of consuming existing products, people continue to satisfy their own desires and solve their own needs, and at the same time generate new desires and put forward higher requirements, thereby promoting the innovation of social production. People's continuous consumer demand prompts enterprises to continuously improve production processes or processes, promote the research and development of new products, promote the increase of product varieties, product quality, and product performance, and enhance the core competitiveness of enterprises. It will promote the improvement of technical innovation of enterprises, lead to the improvement of the technical content or benefit of products, promote the adjustment and optimization of foreign trade product structure, and then promote the transformation and development of foreign trade.

At the same time, consumer demand will also evolve from low-level to high-level with the continuous development of technology, from a single material need to a spiritual, cultural, material and other diversified needs. This will effectively promote the optimization and upgrading of the industry, and continuously improve the quality and grade of products, thereby significantly increasing the technical content and benefit of products, showing the trend of ecologicalization and high-tech, and then promoting the sustainable development of foreign trade.

3.3.2 Changes in consumption levels drive the transformation and development of foreign trade.

The level of consumption is an evolving dynamic process, showing diversity and multiple layers. The Engel coefficient is an indicator that reflects the level of consumption. The higher the consumption level, the lower the Engel coefficient; the lower the consumption level, the higher the Engel coefficient. Changes in consumption levels will cause changes in the consumption structure, which will lead to changes in the industrial structure. That is, people's new consumption structure will require the society to provide people with new products, and the society needs to adjust and optimize the industrial structure in time according to this requirement, eliminate backward industries, and promote the emergence of new industries, so that this higher level of consumer demand. The result is the emergence of new industries and the development of technical innovation, thereby promoting the transformation and development of foreign trade.

At the same time, the improvement of consumption level also means that the opportunities for people to choose when they consume are greatly increased. First, people have put forward new requirements for the appearance, performance and types of products, which will help to improve and enhance the ability of technical innovation; second, the ability of consumers to choose innovative products will be further improved, which will help improve technical innovation. The innovative market environment enhances the motivation of enterprises to carry out technical innovation activities, thereby improving the development level of the entire social production, and also promoting the transformation and development of foreign trade.

3.3.3 Sustainable consumption (consumption model) drives the transformation and development of foreign trade.

Sustainable consumption is a brand-new consumption concept -driven concept and model, which responds to the needs of harmonious, orderly and healthy development of man, nature and society. Evolving consumption that contributes to sustainable development strategies. It advocates the principle of thrift and moderation requires people's consumption needs not to exceed the capacity of society, nature, and the environment, and respects the organic unity of psychological, spiritual, and social needs, so as to achieve low consumption and efficient use of resources and waste. Low emission and high recycling of materials, low pollution and optimal protection of the environment, and then promote the development of ecological resource recycling. At the same time, with the continuous deepening of consumers' understanding of many environmental problems brought about by consumption, people's consumption concept will also change accordingly, and the demand for ecology and other aspects will expand.

Consumers, as judges of products, determine the fate of products. Therefore, enterprises must adapt to the mode of sustainable consumption, consider environmental factors in product development, production, sales, recycling and other links, pay attention to the improvement of resource utilization, reduce waste discharge, and achieve intensive production. Improve the competitiveness of products, thereby improving the economic efficiency and benefits of the entire society, promoting the

transformation of social production methods, realizing the sustainable development of human society, and then promoting the transformation and development of foreign trade.

4 Conclusions and Policy Recommendations

4.1 Conclusion

The rapid development of technical innovation has led to the decline of traditional industries and sectors, and at the same time has led to the emergence of a series of emerging industries and sectors, changed production methods, promoted industrial optimization and upgrading, and made profound changes in the structure of international trade commodities. The competitive advantage of trade products has been significantly enhanced; technical innovation has spawned cross-border e-commerce, changed international trade methods, reduced international transaction costs, improved international trade efficiency, increased international trade benefits, and promoted the optimal allocation of global resources; technology innovatively develops a new social consumption demand or new social consumption mode, promotes consumption innovation, makes consumption highlight the pursuit of personalization, more fashionable consumption objects, shortened product life cycles, and intelligent consumption methods. Need to change the foreign trade-marketing model. Only by actively integrating into the global innovation network, absorbing and integrating global innovation resources, and forming new advantages with technology, brand, and service as the core competitiveness, can China's foreign trade be promoted from low-quality and low-price to high-quality and high-price, and large import and large export to excellent import and excellent quality. Through transformation and development, China has moved from a major foreign trade country to a trading power.

4.2 Policy Suggestions

4.2.1 Accelerate the promotion of technical innovation capabilities and levels.

4.2.1.1 Increase R&D investment and promote technical innovation.

R&D investment is the basis for the transformation and development of foreign trade. One is to encourage enterprises to increase investment in research and development, and to provide policy support such as tax reduction and low-interest loans for innovative enterprises with large investment in research and development; In this regard, we can learn from the experience of the United States in promoting technical innovation; third, the government should increase investment in R&D and continuously increase the proportion of R&D investment in GDP. There is still a big gap between developed countries and us.

4.2.1.2 Improve the ability of technology introduction, digestion, absorption and re-innovation.

Enterprises are the main body of technical innovation. It is necessary to give full play to the dominant position of enterprises in the market, strengthen the guiding role of the government, encourage enterprises to introduce urgently needed and applicable technologies, give preferential policy support in taxation and financing to enterprises that digest, absorb and re-innovate, and renew some important key technologies. Innovative enterprises should be given certain financial support to speed up the construction of an open and integrated technical innovation promotion system, so as to realize a virtuous circle of technology introduction, digestion, absorption and innovation.

4.2.1.3 Strive to embed the global R&D network and enhance the ability to integrate global scientific research resources to promote technical innovation.

In the context of R&D globalization, a global R&D network led by multinational corporations is being formed, which has a profound impact on the world's technical layout and innovation landscape. Under such circumstances, a country can promote technical innovation and seize the commanding heights of global high-tech only by actively embedding itself in the global R&D network, continuously improving its ability to integrate global scientific research resources, and giving priority to obtaining and using global innovation resources. First, it is necessary to fully absorb and learn from the existing scientific research achievements and advanced technologies in the world, and on this basis, encourage enterprises to carry out secondary development and innovation, strive to achieve breakthroughs in key technologies, and gradually narrow the technical gap with developed countries; Support enterprises to attract high-level scientific research talents on a global scale, continuously promote the optimization of the structure of scientific research teams, promote the flow and sharing of information, knowledge, technology and other resources, and strive to improve the ability and level of research and development; third, encourage enterprises to expand globally The R&D center realizes the interaction and integration of global R&D, reduces the cost of R&D, and improves the pertinence, practicability and forward-looking of R&D. Fourth, it supports scientific research institutes to carry out various forms of global cooperation in production, education and research, and encourages researchers to actively participate in global research and development. International R&D design and exchange, and improve my county's right to speak in the global R&D field.

4.2.2 Focus on cultivating a new foreign trade-marketing model.

4.2.2.1 Focus on the middle and high-end links of the value chain, develop and form unique advantages.

Promote the reform of the product-centered agency marketing model, adapt to the requirements of personalized, fashionable, and rapid consumption, highlight the consumer-centered marketing concept, and closely focus on the mid-to-high-end links of the value chain to guide and serve consumption. To meet the needs of consumers, to

provide consumers with personalized services, to continuously attract consumers by providing unique products, to form a professional service model, and to create unique advantages.

4.2.2.2 Promote the construction of virtual supply chain and continuously enhance the competitiveness of enterprises.

Form a virtual supply chain with consumers as the core for business operations, promote the transformation of the organizational structure of the enterprise to a flattening by means of information, continuously integrate the business processes within the enterprise, strengthen the interaction and collaboration with the outside of the enterprise, so as to improve the understanding of continuous changes. The ability to respond to the needs of consumers, to meet the needs of customers to the greatest extent, and to continuously enhance the competitiveness of enterprises.

4.2.2.3 Accelerate the promotion of overseas investment strategies and participate in the international division of labor at a higher level.

Further optimize the market of China's foreign direct investment, give full play to the advantages of the local market, promote investment in technology-intensive industries, continuously develop new technologies and new products in accordance with the requirements of consumers, improve the technical content of my county's foreign direct investment projects, and effectively change my county's products. In order to realize the rational allocation of resources, promote the optimization and upgrading of my county's industrial structure, and participate in economic globalization and international division of labor at a deeper and higher level.

Acknowledgement

This research was financially supported by the Humanities and Social Sciences Foundation of Shandong (Grant NO. 2021-YYJJ-11).

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