

The Theoretical Basis and Optimization Strategy of Global Value Chain Layout of Multinational Corporations Under the Background of Economic Globalization

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Abstract. Under the background of economic globalization, this paper explores the theoretical basis and optimization strategy of global value chain layout of multinational companies. With the continuous development of economic globalization, multinational companies in the global value chain layout more complex and become key elements affect their competitiveness. This paper firstly summarizes the theory of global value chain, transaction cost theory and comparative advantage theory, and then expounds the driving force and influencing factors of multinational companies' global value chain layout. Then, this paper analyzes the major challenges faced by multinational companies in global value chain layout, such as geopolitical risks, the rise of trade protectionism, and the acceleration of technological change. On top of this, this paper presents the layout of the global value chain optimization strategy of transnational corporations, like build flexible supply chain network, strengthen localization operation ability, promote the digital transformation, strengthening risk management, etc., and finally by case analysis to verify the feasibility and effectiveness of the proposed strategy. The results show that multinational companies should take a global perspective, combine their own advantages with the changes of the external environment, and dynamically optimize the global value chain layout to enhance the overall competitiveness and the ability to cope with uncertainty. This research make the global strategy of multinational companies and the government make relevant policy has important theoretical value and practical significance.

Keywords: Economic globalization; Multinational corporations; Global value chains; Theoretical basis; Optimization strategy.

1. Introduction

With the further development of economic globalization, the global value chain layout of multinational corporations has become the key to affect their international competitiveness, especially after the acceleration of global economic integration, because the ability of multinational corporations to allocate resources, optimize production processes and expand markets in the world directly determines their position and development prospects in the international market. The United Nations conference on trade and development (UNCTAD) data show that in 2020 the global multinational company foreign direct investment stock amounted to \$41.4 trillion, accounted for 47% of global GDP exceeds it is enough to reflect the important position of multinational companies in the global economy.

The global value chain layout of multinational companies is a complex and systematic project involving production, R&D, marketing and many other links. It requires comprehensive consideration of various factors such as resource endowment, policy environment and market demand of each country. In recent years, the rise of emerging economies and the rapid development of digital technology have brought profound changes to the pattern of global value chains. Statistics from the World Bank show that in 2019, emerging economies accounted for 41.2% of world GDP, up 15 percentage points compared with 2000. Under such circumstances, multinational companies have to continuously adjust their global value chain layout strategies to adapt to the new international economic environment.

Multinational companies have encountered many challenges in the layout of global value chains, such as intensified geopolitical risks, emerging trade protectionism and accelerated technological change, which have added uncertainties to the layout of global value chains. In addition, the outbreak of COVID-19 in 2020 has exposed the vulnerability of global value chains, making multinational

companies have to re-examine their global layout strategies. According to the McKinsey Global Institute report, about 16% to 26% of global merchandise exports may be geographically shifted in the next five years, with a total value of about 2.9 trillion to 4.6 trillion US dollars.

In this context, it is of great theoretical and practical significance to explore the theoretical basis, challenges and optimization strategies of global value chain layout of multinational companies. Therefore, this paper intends to systematically sort out the theoretical foundation of global value chain layout of multinational companies from the aspects of global value chain theory, international production compromise theory, location theory and so on, analyze the main challenges faced at present and give the corresponding optimization countermeasures, hoping to provide some reference for multinational companies to formulate global strategy and the government to formulate relevant policies.

2. Theoretical basis of global value chain layout of multinational corporations

2.1. Theory of global value chain

Global value chain theory is an important theoretical basis for the study of global value chain layout of multinational companies. It was first proposed by Gary Gereffi and other scholars in the 1990s. It focuses on the distribution and coordination of different value-added activities in the whole process of products or services from the concept stage to the final use. It also emphasizes that in the context of economic globalization, the design, production, marketing and other links of products can be dispersed in different countries and regions, thus forming a complex and huge global production network [11].

Global value chain theory to the multinational company global value chain layout provides an analytical framework, which contains the following contents: one is the value chain of the division and restructuring, because theory suggests that multinational companies can be split into different functional modules and the value chain based on the comparative advantage in the global layout so that the overall maximum efficiency. The second is the governance structure. The GVC theory focuses on the power relations and coordination mechanism among different participants, and there are various governance modes such as market, modular, relational, capture and hierarchical. The third is the upgrading path. The theory explores how value chain participants improve their position in the global value chain by means of process upgrading, product upgrading, function upgrading and chain upgrading.

The theory of global value chain has been developing and expanding in recent years, which gives multinational companies a new perspective to understand the layout of global value chain. Moreover, the World Development Report released by the World Bank in 2020 mentioned that global value chain is developing towards the direction of "short chain" and "regionalization", which forces multinational companies to be more flexible when adjusting the global layout strategy. Digital technology also in development and reshape the global value chain form, makes the multinational companies have to pay more attention to digital transition and intelligent manufacturing role [10] in the global value chain layout.

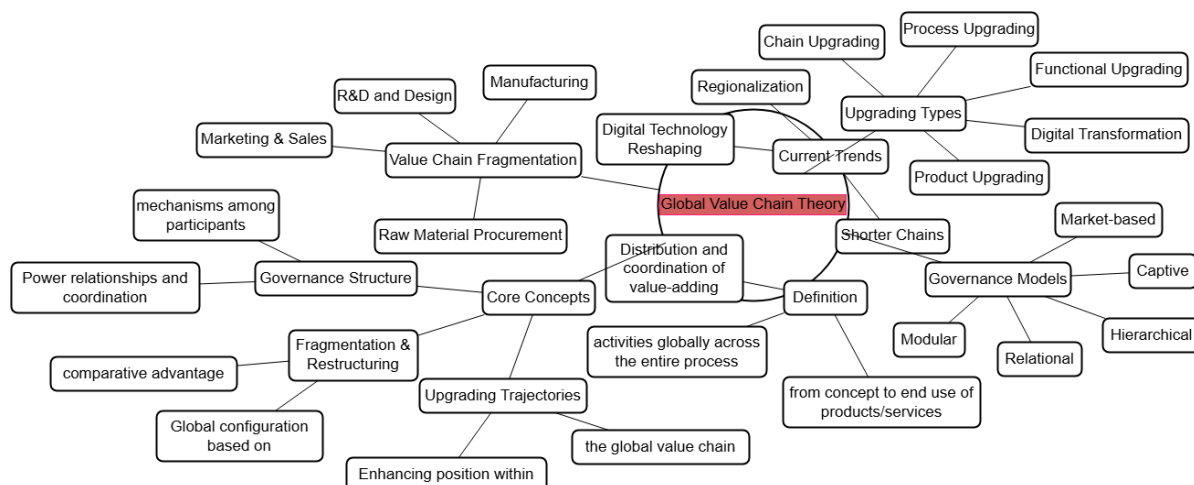


Figure 1. Theoretical framework of global value chain.

2.2. Compromise theory of international production

JohnH.Dunning put forward the eclectic theory of international production in 1977, which is also called OLI paradigm, which provides a key theoretical perspective for people to understand the global value chain layout of multinational companies. According to this theory, when multinational companies make decisions on overseas direct investment and global value chain layout, they make decisions after taking ownership advantage, location advantage and internalization advantage into consideration.

The unique competitive advantages of multinational corporations that are different from enterprises in host countries are ownership advantages, such as advanced technology, management experience, brand reputation, etc., and multinational corporations can maintain their competitiveness by virtue of these advantages in global value chain layout. Location advantage focuses on the unique advantages of the host country, such as rich natural resources, low cost labor, huge market, etc., which will affect the decision of multinational companies to locate the value chain. Internalization advantage focuses on the fact that multinational companies tend to leverage their advantages through internal transactions rather than market transactions, which can not only reduce transaction costs but also help protect core competitiveness.

The global value chain layout of multinational companies is provided with a systematic analysis framework by the compromise theory of international production. According to the data of the United Nations Conference on Trade and Development (UNCTAD), the sales volume of overseas subsidiaries of global multinational companies reached 31.3 trillion US dollars in 2019, accounting for about 36% of the global GDP. This reflects the multinational companies on the basis of OLI advantages in a global layout is a widespread practice.

As the global economic environment changes, the eclectic theory of international production continues to develop. Taking the rise of digital economy in recent years as an example, the theory pays more attention to the role of intangible assets and data in ownership advantages. Moreover, the global value chain becomes more complex, and multinational companies need to balance the three advantages more flexibly to deal with uncertainties and risks [3].

2.3. Location theory

As one of the important theoretical bases for studying the global value chain layout of multinational companies, location theory can be traced back to the agricultural location theory proposed by Johann Heinrich von Thunen, a German economist in the 19th century. Later, it was developed and perfected by Alfred Weber, August Losch and other scholars to become the theoretical system of industrial location choice. When multinational companies conduct global value chain layout, this theory focuses on how to choose the optimal geographical location for different value chain links[7].

The location theory emphasizes that the global value chain layout of multinational companies is affected by several key factors, one of which is transportation cost, because enterprises tend to choose the location that can minimize the transportation cost of raw materials, intermediate products and final products. The second is the cost and quality of labor force. Due to the differences in labor cost and skill level in different regions, it will affect the layout decisions of multinational companies in labor-intensive and technology-intensive links. Third for agglomeration effect, industry cluster can create economies of scale and knowledge spillover effect, thereby the specific value chain link to attract the multinational companies cluster areas to layout. Moreover, market scale, infrastructure, policy environment and other factors also play a very important role in location choice.

In recent years, there have been new developments in location theory in the research of global value chain layout of multinational companies. For example, the study of the World Bank in 2020 shows that the participation in global value chain is closely related to a country's geographical location, market size, institutional quality, human capital level and many other factors, and these factors work together to affect the location choice of multinational companies. At the same time, the development of digital technology is also changing the traditional concept of location advantage, because the report of the Organization for Economic Cooperation and Development (OECD) shows that digital infrastructure and digital skills are becoming an emerging location factor[13] affecting the global value chain layout of multinational companies.

3. Current situation and challenges of global value chain layout of multinational corporations

3.1. Status quo of global value chain layout of multinational corporations

In recent years, the global value chain layout of multinational companies has new characteristics and trends, and the complexity and diversity of global value chains continue to increase. According to the data of the World Trade Organization (WTO), the proportion of global intermediate goods trade in 2019 to total commodity trade reached 51%, which can reflect the fine division of labor and the high degree of globalization of value chains. Besides manufacturing, multinational companies have also built complex global networks in the service industry, research and development and other fields.

Second, the role of emerging markets in the global value chain has been rising. According to the McKinsey Global Institute report, the share of emerging economies in the global value chain increased from 20% to 30% between 2000 and 2017, especially countries such as China and India, which are not only important manufacturing locations, but also gradually become R&D centers and consumer markets. This makes multinational global layout policy to adjust[2].

Third, regional value chains are becoming more and more important. Due to the influence of trade protectionism and geopolitical factors, multinational companies have begun to pay more attention to the integration of value chains within the region. Data from the Asian Development Bank show that the intra-regional value chain trade in Asia accounted for 67% of the total trade in the region in 2019, which can reflect the trend of strengthening regional value chains.

Finally, the global value chain is reshaping the digital transformation, international data corporation (IDC) predicts that by 2023 65% of global GDP will be digital, it makes multinational companies in areas such as artificial intelligence, big data, Internet of things to speed up the layout so as to improve the efficiency of the global value chain and flexibility.

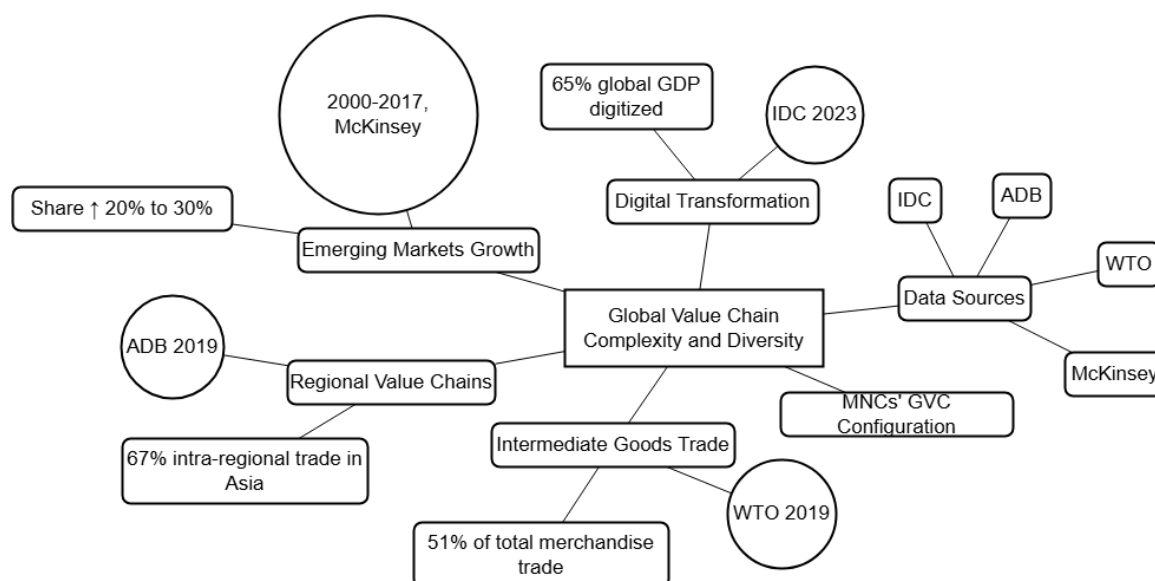


Figure 2. The current situation of global value chain layout of multinational companies.

3.2. Challenges faced by MNCS in global value chain layout

Global value chain layout brings great opportunities to multinational companies, but also makes them face many challenges. The first is the increasingly serious geopolitical risk, because in recent years, such as the US-China trade friction, Brexit and other things make the global value chain more uncertain. And a survey by the Economist Intelligence Unit (EIU) shows that 78% of multinational companies cite geopolitical risk as one [4] of the biggest challenges facing global operations.

Second, trade protectionism is on the rise. According to the World Trade Organization (WTO), the trade restrictions imposed by G20 countries in 2019 amounted to 747 billion US dollars, an increase of 27% compared with 2018, which increases the cost and complexity of multinational companies in the layout of global value chains.

Third, the acceleration of technological change poses challenges, as the development of artificial intelligence, 5G and other new technologies change the traditional mode of production and value creation, so multinational companies have to reallocate resources globally to adapt to the technology-driven changes in the industry. According to the PWC survey, 89% of ceos of multinational companies believe that technological change is a key factor in their global strategy.

In addition, the global value chain layout of multinational companies has been put forward new requirements by the pressure of sustainable development, and climate change, resource shortage and other issues have given rise to the demand of multinational companies to build greener and sustainable value chains around the world. According to the report of the United Nations Global Compact, 71% of multinational companies feel that sustainable development goals have become an important part of their global strategy.

In order to cope with these challenges, multinational companies should constantly optimize the global value chain layout strategy, so as to improve the ability to cope with complex environment and overall competitiveness. Moreover, they should find a balance between globalization and localization, efficiency and risk, innovation and tradition, and build a more flexible, resilient and sustainable global value chain system [1].

4. Strategies for optimizing the global value chain layout of multinational companies

4.1. Optimize the location selection of each link of the value chain

Under the background of economic globalization, if multinational companies want to optimize the layout of global value chains, they must first start from the location selection of each link. Because

the global economic pattern is changing and the industrial policies of various countries are also adjusting, multinational companies need to re-evaluate and optimize the geographical distribution of each link of the value chain. According to McKinsey Global Institute (MGI), about 25% of the world's export value (about 4.5 trillion US dollars) may be transferred to new countries or regions during 2015-2020, which makes the importance of optimizing the location choice more prominent.

Multinational companies need to take many factors into consideration when making location choices. They should make full use of the comparative advantages of countries or regions, such as labor cost, raw material supply, technology level and market size, and evaluate the political and economic environment, laws and regulations, infrastructure and talent pool of potential locations. They also need to consider the synergy effect with the existing value chain network and the ease of integration. For example, Apple has recently moved some production lines from China to India and Vietnam, which is not only to reduce production costs, but also to [6] diversify geopolitical risks.

To achieve this, it is necessary to build a comprehensive information collection and analysis system to timely grasp the changes in the global economic environment and emerging opportunities.

4.2. Strengthen the coordination and integration of global value chains

In the optimization of global value chain layout, coordination and integration among various links are crucial. Due to the global dispersion of value chains, multinational companies have more difficulties in coordination and face more challenges in integration. PWC's 2021 Global CEO survey shows that, According to PWC's 2021 Global CEO Survey, 76% of the surveyed ceos believe that improving the coordination and flexibility of global value chains is one of the top priorities in the next three years, which shows that strengthening coordination and integration has become a strategic priority for multinational companies.

To achieve effective coordination and integration, multinational companies can adopt the following strategies: first, build a unified global management platform to enable the efficient flow of information, resources and decisions, which can be achieved by advanced enterprise resource planning (ERP) systems and supply chain management software. The second is to standardize business processes and quality management systems to ensure consistency and efficiency across global operations. Secondly, we should build a talented team with global vision and cross-cultural management ability to promote communication and cooperation between different regions and departments.

In addition, multinational companies need to attach importance to the construction of flexible organizational structure such as matrix management or network organization to adapt to the complex situation of global value chain, and to achieve real-time monitoring and optimization of global value chain with the help of digital technology and big data analysis, just like the "control tower" system of P&G to achieve end-to-end visual management of global supply chain. Thus, coordination efficiency and response speed [12] can be greatly improved.

4.3. Enhance the innovation capability and flexibility of the value chain

With the globalization of the global economy and the rapid iteration of technology, it is crucial for multinational companies to enhance the innovation and flexibility of the global value chain if they want to achieve long-term development. According to the 2022 research report of Boston Consulting Group, among the 1500 large enterprises in the world, the enterprises with outstanding performance in value chain innovation and flexibility have a profit growth rate of 40% higher than their peers on average. It can be seen that innovation and flexibility have an important impact on corporate competitiveness.

In order to enhance the innovation capability of the value chain, multinational companies can take the following measures: build a global innovation network to integrate innovation resources and talents, such as setting up a global R&D center to attract excellent talents from all over the world to promote cross-cultural innovation. In addition, open innovation should be carried out with suppliers, customers and other partners to explore new technologies, new products and new business models.

In addition, we set up an internal innovation incentive mechanism to encourage employees to put forward innovative ideas and participate in [8] innovative projects.

MNCS can consider the following strategies to enhance the flexibility of value chains: First, they can use modular design and production methods to enhance the configurability of products and production lines. Second, build a diversified supplier network and production base to enhance the ability to cope with market changes and risks. Third, the use of digital technologies, such as artificial intelligence and the Internet of Things, to make production and supply chains intelligent and resilient, just as Siemens has greatly improved [9] the flexibility and efficiency of production with the concept of "digital factory".

If multinational companies want to better adapt to the rapid changes in the global market and maintain long-term competitive advantages, they need to continue to improve their innovation and flexibility.

5. Conclusion

Under the background of economic globalization, this study explores the theoretical basis and optimization countermeasures of the global value chain layout of multinational corporations. It is found that the current international economic environment is complex and changeable, and multinational companies are faced with many challenges such as geopolitical risks, rising trade protectionism, and accelerating technological change, which deeply affect the layout of global value chains.

In the face of these challenges, this paper puts forward a series of optimization strategies, such as optimizing the location selection of each link of the value chain, strengthening the coordination and integration of the global value chain, improving the innovation ability and flexibility of the value chain, etc. The core of this strategy is to build a flexible and diversified supply chain network, enhance the localized operation ability, promote digital transformation, strengthen risk management and other aspects. The results show that multinational companies should dynamically optimize the global value chain layout according to their own advantages and external environment changes from a global perspective, so as to enhance the overall competitiveness and the ability to cope with uncertainty.

The understanding of global value chain layout of multinational companies has been deepened by this study and relevant theories have been applied more widely under the background of current economic globalization, which is the theoretical contribution of this study. In practice, multinational companies can take the research results as valuable reference when formulating global strategies and the government can also get inspiration from it when formulating relevant industrial policies and international economic policies. Future research can further explore the differences of global value chain layout in different industries and enterprises of different sizes, as well as the impact of emerging technologies on the process of global value chain reconstruction.

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