

Research on the Strategy of Enterprise Value Chain Integration under the Background of Digital Era

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Abstract: In the context of the digital era, firms' value chains are integrated during the digital transformation process. Based on the background of the digital economy, this research looks at the factors that influence corporate value chain integration and the associated tactics. When undergoing digital transformation, enterprises need to consider how value chain integration will be impacted by data, changing client demands, digital technology innovation, and corporate globalization. In addition, this study suggests four matching integration strategies based on the four previously mentioned criteria.

1. Introduction

Digital technology is the main force behind the transformation of human civilization in the digital age. It also has an impact on modes of production, governance, and lifestyle. As the trend of integrating the actual economy and the digital economy becomes increasingly apparent, people's interest in the role that digital technology plays in promoting economic development is growing.



Figure 1: Statistics of China's Digital Economy Market Scale in 2018-2021

As seen in Figure 1, China's digital economy is expanding. China became the second-largest digital economy in the world in 2022, with a total value of 50.2 trillion yuan. With its 41.5% GDP

contribution and 10% annual growth rate, it is a major driver of future sustainable economic growth. Due to the rapid development of the Internet, big data, cloud computing, block chain, and other technologies, the digital economy is currently playing a key role in restructuring global factor resources, redefining the global economic structure, and changing the pattern of global competition. The digital economy has led to a widespread trend of promoting digital transformation. The digital economy is now a major driver of China's economic resurgence. In examining the digital economy within the framework of the complete historical development cycle, a counter-cyclical fluctuation cycle is evident, which holds great importance in steering future expansion.

As a result of the broader globalization trend, an increasing number of businesses decide to expand their markets, manage their supply chains, and manufacture internationally in order to meet the end objective of cost optimization through enterprise resource integration. Simultaneously, globalization has created a multicultural atmosphere and worldwide competitiveness, as well as new difficulties for businesses. Due to the swift advancements in information technology, businesses are quickening the process of digital transformation by utilizing big data, cloud computing, and other advanced technologies to create an intelligent and digital value chain. Enterprises can improve production efficiency and optimize supply chain management through digital value chains. An increasing number of businesses use networks to collaborate with partners, suppliers, and customers in order to share resources, assume risks, and create collaborative projects. Businesses are becoming more and more concerned about protecting the environment, and while integrating value chains, they take social responsibility and environmental protection into account to attain mutually beneficial environmental and economic outcomes. Simultaneously, during the value chain integration process, businesses are paying an increasing amount of attention to customer needs. This includes becoming more customer-oriented, better meeting consumer needs, and increasing customer loyalty.

2. Literature Review and Development

2.1 Literature related to digital economy

With the quick advancement of information technology since the turn of the century, the digital economy has progressively risen to prominence. At the start of the twenty-first century, China's digital economy started to take shape. Since 2013, China has formally incorporated the growth of the digital economy into its national plan. Data is the core component and contemporary information technology is the primary tool in the new economic structure known as the "digital economy," which is built on digital technology. It consists of the two fundamental elements of digital industrialization and industrial digitalization, and it is increasingly significant in advancing China's economic growth. On a macro level, the digital economy has given the growth of China's economy fresh life. According to Li Xiaohua's research from 2019, the digital economy has the traits of subversive innovation and rapid expansion and is steadily emerging as a significant engine for the transformation of both new and old kinetic energy in China's economy.^[1] The rapid expansion of the digital economy can offer better matching mechanisms and innovation incentives for the development of China's modern economic system, according to Jing Wenjun et al.'s (2019) discussion of the relationship between economic growth and the digital economy from multiple perspective.^[2]

On the micro level, digital transformation can significantly improve the economic benefits of enterprises. Qiu Ying et al. (2019) analyzed the network connection effect and cost saving effect of digital economy in the process of upgrading the value chain of small and medium-sized enterprises, and discussed the dynamic mechanism of digital economy in promoting the value chain of small and medium-sized enterprises.^[3] Zhang Yanping and Ling Dan (2022) brought the digital economy into the analysis framework of the global value chain (GVC), and described the upgrading characteristics of GVC from the dual dimensions of breadth and height. They found that the digital economy can fundamentally change the spatial layout and value distribution of each link of GVC.^[4] To sum up, the

digital economy has become an important engine of economic development in contemporary China, and its impact on the value chain of enterprises is becoming more and more profound. In the future, we should pay more attention to the development of digital economy, actively promote the digital transformation of industry, and promote the fair and inclusive development of digital economy, so as to achieve more efficient industrial upgrading and transformation.

2.2 Literature research on digital transformation

With the vigorous development of digital economy, enterprises adjust themselves in the environment of digital economy. Digital transformation is the only way for enterprises to gain more competitive advantages in the digital economy. He Fan (2019) deeply studied the performance improvement effect of digital transformation of real enterprises through the data of a shares from 2012 to 2017, and the results showed that digital transformation significantly improved the economic benefits of real enterprises. This improvement is mainly achieved through the application of digital technology to reduce costs, improve the efficiency of asset use and enhance innovation capabilities.^[5] Wang Xiaoli and Xing Yunli (2023) said that digital transformation is a digital innovation of business processes and management methods of traditional enterprises, forming digital marketing, digital production and other digital marketing methods to meet the needs of the development of digital economy.^[6] In the process of enterprise digital transformation, it is inevitable to encounter a variety of problems. Under the general direction of enterprise digital transformation, the enterprise value chain has gradually embarked on the road of digitalization. In the aspect of value chain, enterprises realize the digital development of value chain through the way of value chain integration.

2.3 Literature research on value chain and its integration

The concept of supply chain was first put forward by Porter in 1985. Porter divided the daily production and operation activities of enterprises to create value into basic activities and supporting activities. With the passage of time, more and more scholars have improved the concept of supply chain on the basis of Porter. With the trend of globalization, the United Nations Industrial Development Organization has defined the concept of global supply chain. Global value chain mainly refers to a global cross-enterprise network organization that links production, sales and other processes in order to realize the value of goods or services. It covers a wide range, including the whole process from raw material procurement, transportation, production and distribution to final consumption and recycling.

From the perspective of value chain integration, many scholars have also conducted in-depth research. Yang Xiyong (2018) proposed to achieve accurate positioning of enterprises through in-depth research and analysis of the value chain, highlight and strengthen the strong parts of the existing value chain, reduce the weak links, and consider the internal and external links of the value chain, so as to help enterprises make correct decisions in the integration of the value chain.^[7] With regard to the way of value chain integration, Yan Mengle (2019) sorted out the way of supply chain integration into three ways through research: contraction, extension and expansion of the value chain. Shrinking the value chain, for example, by outsourcing some non-core production processes to save the available resources of enterprises, enterprises can achieve the asset-light model and enhance their market competitiveness. Extending the value chain meets its own development needs through vertical integration of upstream and downstream in the supply chain. Usually, the horizontal value chain also becomes the expansion of the value chain, through the alliance between enterprises or the establishment of partnerships, the formation of scale effect is ultimately reflected in the cost reduction of operating costs. Enterprises thus enhance the voice of upstream and downstream suppliers or end consumers in the value chain.^[8] Pang Ailing (2019) proposed that value chain integration is a dynamic and cyclical process, so enterprises must constantly adjust according to market and business trends,

so as to help enterprises compete differently in the market.^[9] Su Yingshan et al. (2020) analyzed the role of value chain integration and optimization in enterprises from the perspective of value chain, and considered that value chain integration and optimization is an important direction of enterprise management.^[10] Wu Mingqiu (2021) made an in-depth analysis of the key links in the supply chain, such as suppliers and channel providers, and combined the research results with the development strategy of the enterprise to ensure that the enterprise can be promoted in a period of time.^[11]

2.4 Comprehensive review

After sorting out the above literature research, it is not difficult to find that domestic and foreign scholars have done more comprehensive and profound research on digital economy and value chain integration, and the theoretical research on value chain is more mature. However, there is little research on the integration of digital economy, digital technology and value chain in the literature at home and abroad. Therefore, we still need to step up research on how to combine digital technology with value chain integration and how to integrate value chain integration into the digital age.

3. The influencing factors of enterprise value chain integration in the digital age

With the vigorous development of digital economy, in the process of digital transformation of enterprises, the value chain, as the core part of enterprises, needs to be innovated through integration, so that enterprises can gain greater competitive advantage and more profit space in the market by integrating the value chain. In addition, there are many factors that need to be considered in the value chain integration in the process of enterprise digital transformation. The following is an in-depth analysis of the factors that affect the value chain integration:

3.1 Digital technology innovation

Digital technology innovation promotes the integration of enterprise value chain. Geng Jingzhu, Du Mingwei and Liu Wenge (2023) said that in the context of the impact of global informatization, digital technology has gradually become the key to reshaping the division of labor in the global value chain, and is also an important factor in changing the global competition pattern.^[12] First of all, digital technology innovation can improve production efficiency and operational efficiency through automation and intelligence. For example, enterprises achieve automatic collaboration and intelligent scheduling between devices through the Internet of Things technology, saving production costs and labor costs in production, and achieving significant improvement in production efficiency, thus promoting the integration of the value chain. Finally, digital technology innovation can provide collaborative and cooperative platform and tools for value chain integration, and promote collaborative innovation of enterprises in all links of the value chain. Through the digital platform, enterprises can efficiently communicate with cooperative enterprises, break down information barriers, jointly develop new products, and realize resource sharing and risk sharing as to further integrate the value chain and improve the innovation ability and market competitiveness of enterprises. For example, Amazon uses digital technology to integrate product production, supply chain and sales links. Through digital warehouse management system and logistics tracking technology, Amazon has successfully achieved fast and accurate order processing and efficient delivery services. At the same time, Amazon provides comprehensive sales and operation support for customers and enterprises through technologies such as online market and cloud computing services.

3.2 Data-driven

Data-driven value chain integration. Li Tang (2020) and others proposed that big data and block chain technology can help enterprises improve the trust between the upper and lower enterprises by

predicting the changes in the supply chain in advance, thus further promoting the transformation and upgrading of the supply chain from the "induction-reaction" mode to the "prediction-execution" mode, and improving the responsiveness of the supply chain in the market.^[13] Zhao Chenyu (2021) and others said that the promotion of digital empowerment in many aspects of innovation, such as technological innovation and product innovation, can also promote the productivity of enterprises and promote the integration of value chains.^[14] First of all, data-driven decision-making is more reasonable. Through the analysis and research of the data, enterprises can obtain more accurate and comprehensive market information, market competitor information and consumer demand information, so as to make more accurate strategic planning and decision-making. It is conducive to helping enterprises quickly understand market changes and customer needs, optimize products and services according to demand, improve market competitiveness and promote value chain integration. Secondly, data-driven enterprise operation optimization. By analyzing and mining the data collected by enterprises, enterprises can find potential risks and challenges, as well as bottlenecks and problems in the operation process, and help enterprises improve operational efficiency through optimization and improvement. As a fashion retailer, Zara uses data-driven value chain integration to integrate design, production and sales. By collecting and analyzing the data and development trend of the sales market in real time, Zara quickly adjusts product design and production plans according to the data to meet consumer demand and reduce the risk of excessive inventory.

3.3 Changes in consumer demand

Changes in consumer demand affect value chain integration. Eugenia and Julia (2018) took small and medium-sized enterprises as the research object, and concluded that consumers at the bottom of the pyramid play an important role in promoting social development, thus promoting the integration of enterprise value chain.^[15] Qi Liangqun et al. (2022) said that meeting market demand is one of the main purposes of enterprise service. The main characteristics of the market include the diversity of market demand, which also requires enterprises to improve their competitiveness through value chain integration such as mergers and acquisitions.^[16] From the perspective of product research and development, the change of consumer demand can promote enterprises to carry out product innovation and development. This requires close collaboration between suppliers, manufacturers and the company's professional R & D team to ensure that the process of product design, manufacturing and delivery meets customer needs. From the perspective of product production and manufacturing, the change of consumer demand requires enterprises to adjust the production and manufacturing process, optimize the production process and improve production efficiency. Through timely communication with manufacturers and suppliers, ensure that production related materials and components can be supplied on time and in quantity to meet the individual needs of consumers. From the perspective of supply chain management, changes in consumer demand may lead enterprises to find new suppliers and adjust the current supply chain to meet customer requirements for new products or improve the speed and efficiency of product delivery. At the same time, supply chain integration can ensure the timely satisfaction of consumer demand by establishing close cooperation with suppliers and sharing information and resources. Nike, as a well-known sports brand, has launched a customized shoe service. Consumers can customize their own sports shoes according to their preferences. Customized sports shoes are completed in an integrated value chain from design to production.

3.4 Global layout

Global layout accelerates the integration of enterprise value chain. Zhou Yunyan and Huang Zeye (2020) proposed that under the trend of globalization, the important link of the development of the value chain of the circulation industry is the development of the value chain. If the circulation industry wants to play a key role in economic development, it must make full use of value chain integration

and play an important role in economic development through value chain integration.^[17] With the prevalence of digital economy, the business scope of enterprises is no longer limited to China, and many enterprises have begun to carry out global layout. Enterprises achieve global layout through acquisition or merger, which is conducive to faster access to more market resources and strategic advantages, and accelerate the integration of enterprise value chain. By cooperating with local companies in countries or regions, enterprises can establish partnerships, jointly develop market resources and accelerate the integration of the value chain. This kind of cooperation can be multifaceted, not only in the industry, but also in cross-industry cooperation and exchanges. For example, McDonald's is a global chain of fast food enterprises, through the global layout to accelerate the integration of the value chain. McDonald's has established a global supply chain and logistics network, which integrates food procurement, processing and distribution. These integrations enable McDonald's to achieve a unified product delivery, improve product quality and supply chain efficiency, and adapt to the consumption habits and taste needs of different regions.

4. Enterprise Value Chain Integration Strategy in the Digital Age

Under the background of the digital age, digital technology has become an important factor affecting the development of enterprises. Under the background of the influencing factors of enterprise value chain integration in the digital age analyzed above, four corresponding value chain integration strategies are put forward:

4.1 Value chain integration strategy based on digital technology

First of all, from the perspective of the supply chain, we use digital technology to collect, analyze and share the relevant data of the supply chain, to achieve real-time visualization and intelligence of the supply chain, to help enterprises better predict demand, optimize inventory and logistics management. Secondly, the use of the Internet of Things and automation technology, through the link and implementation of supervision of production equipment, sensors and other high-tech equipment, can achieve real-time production data synchronous collection and further analysis, optimize production planning and improve production efficiency. Thirdly, the Internet and mobile technology are used to provide products and services to consumers online through the Internet, so as to achieve seamless online and offline convergence. Enterprises establish e-commerce platforms, digital marketing and social media promotion to better understand consumer needs, provide personalized and customized products and services, and diversify product marketing channels.

4.2 Value chain integration strategy based on digital-driven

Firstly, cloud platform and big data analysis technology are used to integrate the relevant data of suppliers, manufacturers, distributors and customers to realize the visualization and intelligent management of supply chain. Second, companies can build digital supply chain platforms. Through the establishment of e-commerce platform, customers and suppliers are directly linked together, customers put their needs on the platform, suppliers directly supply products according to their needs, improve the efficiency of transactions, and bring more profits to enterprises. By realizing online interaction and collaboration between suppliers, enterprises can change traditional communication methods, avoid supply interruption caused by information exchange errors, and improve the reliability and efficiency of the supply chain.

4.3 Value chain integration strategy based on changes in consumer demand

First, companies study the changes in consumer demand. They conduct market research or consumer insights to gain insight into changing consumer needs and preferences. Through

questionnaires or post-consumer evaluation, focus group discussions, social media analysis and other ways to understand customer needs in depth, and accept feedback and opinions from consumers in all aspects. Secondly, the enterprise value chain is analyzed in depth. Through the SWOT analysis and the five forces model, the advantages and disadvantages of the enterprise value chain are analyzed. The activities and resource allocation in each link of the supply chain are evaluated through various in-depth analysis methods to assess whether they can match the changing needs of consumers. Thirdly, the value chain should be reorganized. Through internal optimization, external cooperation or outsourcing, we can redesign and integrate all aspects of the supply chain. According to the change of consumer demand, adjust or reorganize the value chain of enterprises, and ultimately achieve the purpose of providing consumers with the desired products and services. Finally, we should establish a good customer relationship management system and keep close communication and communication with consumers at all times. It can provide customers with personalized services and solutions through customer feedback and after-sales complaints, improve customer service satisfaction and enhance consumer loyalty to the brand.

4.4 Value chain integration strategy based on global layout

First of all, from the perspective of supply chain integration, establishing a global supply chain, enterprises can achieve global procurement of raw materials or components in this way, to reduce costs and improve the stability of the supply chain. In addition, the supply chain can be integrated through mergers or acquisitions to improve the efficiency and flexibility of the supply chain. Secondly, in terms of production layout, enterprises choose the best production location in the world to achieve the effect of reducing production costs to the greatest extent. By establishing global production bases and partnerships with other overseas local companies, enterprises can make full use of production resources and technological advantages around the world to improve product quality and production efficiency. Finally, in terms of sales and market integration, enterprises can establish sales and market networks on a global scale to better meet the needs of different markets around the world, improve product sales and market share. The trend of globalization helps enterprises to better establish cooperative relations with local enterprises in target markets, jointly develop emerging markets, and further expand the sales advantages of products in the market.

5. Conclusion and Enlightenment

This paper takes the digital economy as the background, takes the value chain integration strategy as the main research content, mainly analyzes the current development trend of digital economy at home and abroad, and enterprises improve their competitiveness through value chain integration in the process of digital transformation. Under the background of the digital age, there is a lack of theoretical basis for enterprises to integrate the value chain, and there are many problems to be solved. The conclusions of this paper are as follows:

First, companies can use digital technologies to collect, analyze and share relevant data across the value chain. In terms of production, high-end technologies such as the Internet of Things are used to realize production automation and intellectualization, and supply chain visualization. Enterprises establish e-commerce platforms, digital marketing, social media promotion, multi-channel understanding of consumer needs, and integrate the value chain according to changes in demand.

Second, companies build digital platforms. By establishing a supply chain digital management platform, enterprises can integrate relevant data of important links in the value chain to achieve digital supply chain management. At the same time, enterprises can establish an enterprise digital platform to reduce the communication barriers between the upstream and downstream of the value chain, conduct in-depth communication on the enterprise digital platform, contact the upstream and downstream in time when facing risks, make appropriate adjustments to production, sales and other links, and improve the ability to resist risks.

Third, enterprises can conduct research on changes in consumer demand and conduct in-depth analysis of the enterprise value chain. Companies use questionnaires, focus group discussions, social media analysis and other ways to deeply understand customer needs and understand changes in customer needs from various aspects. With the prevalence of big data, the current situation of enterprise value chain is analyzed through SWOT analysis and five-force model, and the activities and resource allocation in each link of the value chain are analyzed in depth to evaluate whether they can match the changing needs of consumers.

Fourth, the company establishes a global production base, establishes partnerships with other overseas local companies, and recruits and trains outstanding talents globally. In the current environment of globalization, we should integrate the value chain with the company's global strategic layout. The company establishes a global sales and marketing network and integrates human and organizational resources through cross-border mergers and acquisitions.

Fifthly, under the environment of the digital age, enterprises can improve their operational efficiency, strengthen the cooperation between the various links of the supply chain and innovate the marketing mode through the integration of the value chain. However, enterprises are also facing many challenges in the process of integration, many factors will have a certain impact on the value chain integration, for these enterprises should actively develop appropriate strategies to adapt to the development trend of the digital age.

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