The Transmission Logic of Digital Supply Chain to Operational Capacity and Enterprise Performance

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Abstract: This article focuses on the transmission logic of digital supply chains on operational capabilities and enterprise performance, elaborates on the connotation and characteristics of digital supply chains, and analyzes their impact on operational capabilities, including optimizing inventory management, enhancing logistics efficiency, and strengthening collaborative operations. Explore the mediating role of operational capabilities in the improvement of enterprise performance. Research shows that digital supply chains can effectively promote the improvement of enterprise performance by enhancing operational capabilities, providing theoretical support for enterprises to implement digital supply chain strategies.

Keywords: Digital Supply Chain; Operational Capacity; Enterprise Performance; Conduction Logic

1. Introduction

In the contemporary digital era, information technology is advancing at an unprecedented speed, bringing about profound changes to the operational paradigms of businesses and the competitive dynamics of the market. As a pivotal component of enterprise operations, the digitalization of the supply chain has emerged as a crucial strategy for enterprises to bolster their competitive edge [1]. The digital supply chain harnesses cutting-edge technologies, including the Internet of Things, big data analytics, and artificial intelligence, to facilitate seamless information exchange, cooperative functioning, and smart decision-making across all supply chain stages. This, in turn, boosts the supply chain's efficiency, adaptability, and responsiveness [2]. Operational capacity refers to an enterprise's ability to generate profits by utilizing various assets, reflecting the level of its management and operation. Enterprise performance is a comprehensive reflection of the business benefits and the achievements of its managers within a certain period of time, and it is the ultimate goal that enterprises pursue [3]. Exploring the transmission logic of digital supply chains on operational capabilities and enterprise performance helps enterprises deeply understand the value of digital supply chains, formulate scientific and reasonable strategic decisions, and achieve sustainable development.

2. Literature Review

2.1 Research Related to Digital Supply Chain

A digital supply chain refers to the comprehensive upgrade and transformation of all links in the supply chain by using digital technologies, achieving digitalization, networking and intelligence of the supply chain [4]. Scholars at home and abroad have conducted extensive research on digital supply chains. From a technical perspective, digital supply chains leverage Internet of Things (IoT) technology to achieve real-time tracking and monitoring of goods, predict market demand and optimize supply chain plans through big data analysis, and utilize artificial intelligence for intelligent decision-making and automated operations [5]. From a management perspective, digital supply chain emphasizes the collaborative cooperation among all participants in the supply chain, breaks down information silos, and achieves information sharing and business collaboration. For instance, some research indicates that digital supply chains can achieve transparency in the supply chain, enhance its visibility and controllability, and thereby reduce supply chain risks.

2.2 Research Related to Operational Capacity

Operational capacity is an important aspect of enterprise management and operation. Operational capacity indicators mainly include inventory turnover rate, accounts receivable turnover rate, total asset turnover rate, etc. [6]. These indicators reflect the efficiency and effectiveness of enterprise asset operation.

Research shows that good operational capacity can enhance the efficiency of a company's capital utilization, reduce costs and strengthen its profitability. For instance, a higher inventory turnover rate means that enterprises can sell their inventories quickly, reduce inventory overstock and lower inventory costs [7].

2.3 Research Related to Enterprise Performance

Enterprise performance is the focus of attention for enterprises, and there are numerous influencing factors. Scholars have conducted research on enterprise performance from both internal and external factors. Internal factors include a company's strategic planning, organizational structure, management level, technological innovation, etc. External factors include market environment, industry competition, policies and regulations, etc. Research shows that digital supply chains, as an important factor within enterprises, have a significant impact on enterprise performance. For instance, a digital supply chain can enhance an enterprise's response speed, meet customer demands, and thereby increase its market share and profitability [8].

2.4 Research on the Relationship between Digital Supply Chain, Operational Capacity and Enterprise Performance

At present, research on the relationship between digital supply chains, operational capabilities and enterprise performance is gradually increasing. Some scholars believe that digital supply chains can directly enhance enterprise performance by improving supply chain efficiency, reducing costs, and strengthening innovation capabilities. Some scholars have also pointed out that digital supply chains indirectly affect enterprise performance by influencing operational capabilities. Digital supply chains optimize inventory management, logistics distribution and other links of enterprises, enhance operational capabilities, and thereby improve enterprise performance. However, at present, a systematic research framework for the transmission logic of digital supply chains on operational capabilities and enterprise performance has not yet been formed, and further in-depth exploration is needed.

3. The Connotation and Characteristics of Digital Supply Chain

3.1 The Connotation of Digital Supply Chain

A digital supply chain involves leveraging digital technologies to conduct an all-encompassing enhancement and restructuring of every stage within the supply chain, thereby attaining its digitization, networking, and intelligent capabilities. It spans the entire supply chain continuum, encompassing suppliers, manufacturers, distributors, retailers, and ultimately reaching end consumers. By integrating information technology, it dismantles the information silos that characterize traditional supply chains, enabling real-time information dissemination and collaborative operations among all supply chain stakeholders. The digital supply chain transcends mere technological implementation; it represents a revolutionary supply chain management paradigm and operational philosophy. It prioritizes a customer-centric focus and harnesses data-driven decision-making to foster supply chain agility, flexibility, and sustainability.

3.2 Characteristics of Digital Supply Chain

The digital supply chain enables real-time information sharing among all participants in the supply chain by establishing a unified information platform. Suppliers can promptly understand the production plans and inventory conditions of manufacturers, manufacturers can accurately grasp the supply status of raw materials, and retailers can obtain real-time demand information from consumers. Information sharing enables all links in the supply chain to be closely connected, reduces delays and errors in information transmission, and enhances the collaborative efficiency of the supply chain.

The digital supply chain has shattered the isolated operational framework among participants in the conventional supply chain, fostering a collaborative ecosystem. By facilitating information exchange and integrating business processes, all stakeholders within the supply chain can now work together seamlessly across product design, production scheduling, and logistics distribution, collectively adapting to market shifts and customer needs. For example, suppliers can engage in the product design phase alongside manufacturers, offering insights and recommendations on raw materials to enhance product quality and manufacturability.

Leveraging big data, artificial intelligence, and other advanced technologies, digital supply chains analyze and mine the vast amounts of data generated throughout the supply chain, providing robust support for decision-making. By analyzing and forecasting historical data, businesses can accurately anticipate market demand, refine production plans, and optimize inventory control. Real-time monitoring of supply chain operations enables enterprises to swiftly detect issues and risks, allowing for timely adjustments and optimizations. This intelligent decision-making approach ensures that supply chain decisions are more scientific, precise, and responsive.

The digital supply chain is highly flexible and agile, capable of responding quickly to market changes and customer demands. Through information sharing and collaborative operation, all participants in the supply chain can adjust production plans and logistics distribution schemes in real time, shorten the product delivery cycle, and enhance customer satisfaction. For instance, when market demand suddenly increases, enterprises can promptly adjust their production plans, increase raw material procurement and production output, and meet market demand in a timely manner.

4. The Impact of Digital Supply Chain on Operational Capacity

4.1 Optimize Inventory Management

The digital supply chain has optimized inventory management through information sharing and data analysis. Enterprises can have real-time access to information such as inventory levels and inventory turnover conditions. Based on market demand forecasts and production plans, they can rationally arrange inventory replenishment and allocation. On the one hand, a digital supply chain can reduce inventory overstock and lower inventory costs. By accurately predicting market demand, enterprises can avoid overproduction and inventory overstock, reduce the occupation of inventory funds and inventory losses. On the other hand, a digital supply chain can enhance inventory turnover and improve the efficiency of capital utilization. By optimizing inventory management, enterprises can accelerate the turnover speed of goods, shorten the inventory turnover cycle, and thereby enhance the efficiency of capital utilization and profitability.

4.2 Enhance Logistics Efficiency

The digital supply chain, by leveraging technologies such as the Internet of Things and big data, has achieved intelligence and efficiency in the logistics process. By installing sensors on goods, enterprises can track the transportation location, status and other information of the goods in real time, achieving full-process monitoring of the logistics process. On the one hand, a digital supply chain can optimize logistics distribution routes and reduce logistics costs. Through the analysis and mining of logistics data, enterprises can select the optimal logistics distribution routes, reduce transportation mileage and time, and lower logistics transportation costs. On the other hand, a digital supply chain can enhance the accuracy and timeliness of logistics and distribution, and improve customer satisfaction. By monitoring the logistics process in real time, enterprises can promptly identify problems in logistics and take corresponding measures to adjust and solve them, ensuring that goods can be delivered to customers on time and accurately.

4.3 Strengthen Collaborative Operation

The digital supply chain has dismantled the information silos that once isolated participants in the traditional supply chain, paving the way for seamless collaborative operations. Through the establishment of an integrated information platform, all stakeholders within the supply chain can now share information instantaneously, enabling joint planning and decision-making processes.

During the product design phase, suppliers can actively engage in the manufacturer's design initiatives, offering valuable insights and recommendations regarding raw material performance, thereby elevating the overall quality and manufacturability of the final products. In the production planning stage, manufacturers can work hand-in-hand with suppliers and distributors to devise rational production schedules and raw material procurement strategies, taking into account market demand forecasts and current inventory levels.

Furthermore, during the logistics and distribution phase, retailers can collaborate closely with logistics providers to fine-tune delivery plans, enhancing the efficiency and effectiveness of the entire logistics and

distribution network. This collaborative approach minimizes delays and errors in information transmission across the supply chain, boosting its responsiveness and adaptability, and ultimately enhancing the operational prowess of the enterprises involved.

4.4 Improve the Production Process

Digital supply chains, with the aid of advanced information technology, have achieved the intelligence and automation of production processes. By introducing intelligent manufacturing systems, enterprises can achieve automated control of equipment and real-time monitoring of the production process. On the one hand, a digital supply chain can enhance production efficiency and reduce production costs. Intelligent manufacturing systems can achieve a high degree of automation in the production process, reduce manual operations, increase production speed and quality, and thereby lower production costs. On the other hand, a digital supply chain can enhance the flexibility and adaptability of production and meet the demands of personalized customization. Through digital technology, enterprises can quickly adjust their production plans and processes, achieve small-batch and multi-variety production, and meet customers' personalized customization demands.

5. The Mediating Role of Operational Capacity in Enhancing Enterprise Performance

5.1 The Relationship between Operational Capacity and Enterprise Performance

Operational capacity refers to an enterprise's ability to generate profits by utilizing various assets, reflecting the level of its management and operation. Good operational capacity can enhance the efficiency of a company's capital utilization, reduce costs, strengthen its profitability, and thereby improve its performance. For instance, a higher inventory turnover rate means that enterprises can sell their inventories quickly, reduce inventory overstock, lower inventory costs, and enhance the efficiency of capital utilization. A higher accounts receivable turnover rate means that enterprises can recover payment for goods in a timely manner, reduce bad debt losses and increase the speed of capital recovery.

5.2 Mediating Mechanism of Operational Capacity

Digital supply chains enhance the operational capabilities of enterprises by optimizing inventory management, improving logistics efficiency, strengthening collaborative operations, and improving production processes. The improvement of operational capabilities will, in turn, have a positive impact on the performance of enterprises. Specifically, digital supply chains optimize inventory management, reduce inventory overstock and inventory costs, and increase inventory turnover rates, thereby enhancing the capital liquidity and profitability of enterprises. It has enhanced logistics efficiency, reduced logistics costs, improved the accuracy and timeliness of logistics distribution, strengthened the market competitiveness of enterprises, and thereby increased the market share and sales revenue of enterprises. It has strengthened collaborative operation, enhanced the response speed and flexibility of the supply chain, better met customer demands, improved customer satisfaction, and promoted the long-term development of the enterprise. The production process has been improved, production efficiency and quality have been enhanced, production costs have been reduced, the competitiveness of the enterprise's products has been strengthened, and thus the performance of the enterprise has been improved. Therefore, operational capacity plays a mediating role between digital supply chains and enterprise performance.

6. Conclusion

This paper explores the transmission logic of digital supply chains on operational capabilities and enterprise performance. The research indicates that digital supply chains possess characteristics such as information sharing, collaborative operation, intelligent decision-making, and flexibility and agility. Digital supply chains enhance the operational capabilities of enterprises by optimizing inventory management, improving logistics efficiency, strengthening collaborative operations, and improving production processes. The improvement of operational capabilities will have a positive impact on enterprise performance. Operational capabilities play a mediating role between digital supply chains and enterprise performance.

Although this study has conducted a preliminary

exploration of the transmission logic of digital supply chains on operational capabilities and enterprise performance, there are still some deficiencies. For instance, this study mainly conducts analysis from a theoretical perspective and lacks the support of empirical research. During the research process, the discussion on the specific technologies and application scenarios of digital supply chains was not in-depth enough. Future research can further conduct empirical studies to verify the transmission logic of digital supply chains on operational capabilities and enterprise performance. Conduct in-depth research on the specific technologies and application scenarios of digital supply chains to provide more targeted suggestions for enterprises to implement digital supply chain strategies.

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