

Knowledge sharing is flexible for the enterprise: a moderated mediation model

Liu zhaofen

I. Research background

1. 1 Research motivation

The competitive environment of diversified demand and economic globalization has put forward more requirements for the products and services of enterprises, especially in the current context of the global epidemic of the new crown virus, and the business operation is facing a more severe and unstable social environment. In order to face such new challenges, supply chain flexibility capabilities have become an important source of competitive advantage for enterprises, and enhancing supply chain flexibility is conducive to enterprises to better cope with the uncertainty environment and market risks. From a system point of view, knowledge determines flexibility, knowledge-based supply chain, can make it achieve the goal of overall optimization, knowledge management plays an important role in improving supply chain flexibility ^[1]. Since the cooperation between supply chain enterprises is based on the division of functions, each node enterprise has its own special information flow mode and technology, the difficulty and cost of knowledge information flow between them will increase, how to open up the information technology barriers between supply chain enterprises, so that the entire supply chain becomes a collaborative whole, is an effective way to improve the flexibility of the supply chain ^[2], this kind of viscosity that affects the technical knowledge of enterprises in the process of knowledge sharing between supply chain enterprises is called the barrier attribute of technical knowledge. It can be seen that there is a close relationship between knowledge sharing, the barrier attribute of technical knowledge and the flexibility of the supply chain.

In addition, some scholars believe that there is also a relationship between the size of enterprises and the sharing of knowledge between enterprises and the flexibility of supply chains. Large-scale enterprises are often slow to respond to changes in the external environment due to their own organizational hierarchies and cumbersome transmission of information, while smaller enterprises can often respond more quickly in the face of changes in the external environment, and the transmission of information is more rapid and accurate.

Directly study the relationship between enterprise knowledge sharing and supply chain flexibility in the supply chain. There are certain technical risks, and it is necessary to break the "black box" of knowledge sharing on the flexible process of the supply chain, clarify the attributes of knowledge and technical barriers and the role of enterprise scale in it, and provide reference ideas for enterprises to improve the flexibility of the supply chain.

1. 2 Research questions

From the perspective of knowledge sharing between enterprises in the supply chain, this study attempts to explore the impact of knowledge sharing on supply chain flexibility through empirical research methods, and secondly, explores the intermediary role of revealing the attributes of technical knowledge barriers, and verifies and analyzes the regulatory role of enterprise scale on knowledge sharing and supply chain flexibility.

1. 3 Research implications

(1) Theoretical significance. First of all, this paper starts from the knowledge sharing of enterprises in the supply chain, analyzes the role of knowledge sharing in promoting the flexibility of the supply chain, broadens the research extension of flexible management of the supply chain, and enriches the research system of the flexibility of the supply chain of enterprises. Secondly, this paper explains the intermediary role of technical knowledge barrier attributes between knowledge sharing and supply chain flexibility, and conducts exploratory research on the regulatory role of enterprise scale in knowledge sharing and supply chain flexibility, which makes up for the theoretical gap in the research on supply chain flexibility.

(2) Practical significance. Based on the analysis of the relationship between enterprise knowledge sharing and supply chain flexibility in the supply chain, this study further analyzes the role of the attributes of technical knowledge barriers and the size of enterprises in the relationship between the two. It can help enterprises cope with the operational risks caused by environmental uncertainty through knowledge sharing through collaborative sharing, so as to provide reference ideas for enterprises to improve the flexibility of the supply chain, in order to provide some substantive help for knowledge sharing activities between supply chain enterprises.

II. Literature review

1. 4 Supply chain flexibility

Slack^[3] first proposed the concept of supply chain flexibility, believing it to be an ability to respond to customer needs in a timely manner. In China, Li Guo and Ma Shihua^[4] believe that supply chain flexibility refers to resource sharing, business integration and optimization and process collaboration between enterprises in the supply chain, and ultimately achieving the goal of meeting customer needs at low cost. Supply chain enterprises in the face of external market uncertainties, supply chain flexibility is an important source for enterprises to gain competitive advantage, supply chain flexibility is a kind of supply chain function by two or more supply chain function subjects customer-centric response ability, is to meet the changes in customer needs to a greater extent in an immediate and cost-effective manner. According to the above research theory on supply chain flexibility, this paper believes that supply chain flexibility is the ability of enterprises to respond to uncertainty, including other efforts to improve their ability to respond.

1. 5 Knowledge sharing for supply chain enterprises

In order to improve their ability to respond quickly to the market, supply chain enterprises will strengthen the collaboration between enterprises, enhance the speed and accuracy of information transmission of enterprises in the supply chain, and thus produce a knowledge sharing process. Zhou Jinbo and other^[5] people believe that knowledge sharing specifically refers to the choice of knowledge by enterprises according to their needs and wishes, and then their own knowledge resources are accepted, understood and mastered by each other through coding and other means, and the ownership of knowledge in this process is jointly owned by both parties to the sharing. From the perspective of knowledge sharing between supply chain enterprises, this paper interprets knowledge sharing as the willingness of enterprises in the chain to expand and operate knowledge. Driven by the consistent goal and win-win interests, enterprises in the chain trust each other, and through knowledge transformation, their knowledge resources can be contacted and identified by other knowledge subjects, so that the knowledge in the supply chain can have an amplification effect and enhance the utilization value.

1. 6 Attributes of technical knowledge barriers

Vonhipple^[6] defines "information stickiness" as "information stickiness". Similarly, it also produces the stickiness of the knowledge mentioned above. Technical knowledge can be divided into 3 categories: scientific level, industry-specific and enterprise-specific, of which the sharing of technical knowledge at the scientific level is relatively easy, and the transfer of knowledge exclusive to enterprises is more difficult. This article studies the technical knowledge that is exclusive to the enterprise.

1. 7 Business size

The scale of an enterprise refers to the degree to which laborers, factors of production, etc. are concentrated in the enterprise. The size of the business is usually expressed in terms of the number of employees employed by the enterprise or the operating income of the enterprise. The flow of production factors in larger enterprises is more easily restricted, and often more slow to respond to changes in the external environment due to the complexity of organizational levels and cumbersome information transmission. Small-scale enterprises may have stronger supply chain flexibility in the face of environmental uncertainties, making timely adjustments to meet customer needs at a faster pace.

III. Hypothesis development

1. 8 Knowledge sharing and supply chain flexibility of supply chain enterprises

The knowledge sharing and dissemination among supply chain enterprises is conducive to improving the knowledge level of the entire supply chain, thereby improving the overall competitive advantage of the supply chain. Knowledge sharing and knowledge transfer between member enterprises in the supply chain make mutual information communication more timely, and the production, logistics and sales functions are no longer limited by time and geography, effectively avoiding the "knowledge damage" caused by the filtering of knowledge. Whether it is inventory information related to logistics activities, distribution information, order volume, order cycle, and market information related to sales activities, it can be easily searched from the information network^[7]. According to the supply chain information network, each node enterprise can integrate and reconfigure different resources across the enterprise boundary, optimize the service level, and improve the operation efficiency, so that the enterprise has strong flexibility, which can increase the timeliness and accuracy of enterprise decision-making. In summary, the knowledge sharing between supply chain enterprises positively affects the flexibility of the supply chain of enterprises by establishing a supply chain information network and quickly and accurately transmitting information. This article presents the following assumptions:

H1: Knowledge sharing among supply chain companies positively affects supply chain flexibility.

1. 9 The intermediary role of technical knowledge barriers

In the process of operation and management, each enterprise has its own unique resources and strength in terms of technology and information, and the allocation of resources it has is different depending on the size of the enterprise. In the process of collaborative cooperation, each subject will also retain the exclusive attributes of its own information technology to a certain extent, so there will be certain difficulties in knowledge sharing and information collaboration of enterprises in the supply chain. Due to the different division of labor among the member enterprises in the supply chain, the technical knowledge shared between enterprises has the exclusive nature of the enterprise, which is the long-term research and creation of the enterprise in the field, and if it leaves the technical environment and time and space background of the enterprise, it will reduce its ability and efficiency to create new value^[2]. Therefore, if the knowledge information in the supply chain is to be quickly transmitted, the flexibility of the supply chain is improved by solving the technical knowledge barrier. In summary, the following assumptions are proposed:

H2: The nature of technical knowledge barriers plays an intermediary role between knowledge sharing

and supply chain flexibility.

1. 10 The regulating role of enterprise size

In the context of dynamic changes in the environment, supply chain enterprises need to have rapid market response capabilities, which is a big challenge for the management of enterprises, large-scale enterprises, due to their management level, complex organizational structure, knowledge information in the speed of enterprise flow is limited, information feedback and dissemination speed is reduced, organizational management is more cumbersome. For small-scale businesses, businesses can respond more sensitively and quickly to environmental changes. It can be seen that smaller enterprises can make corresponding measures in a more flexible way in the face of uncertain market conditions and respond quickly to customer needs, so small-scale enterprises have stronger supply chain flexibility.

According to the resource base theory and stakeholder theory, large-scale enterprises have richer disposable resources, and mutual trust and information sharing technology between enterprises are conducive to optimizing the allocation of supply chain resources, improving the resilience of the supply chain to environmental uncertainty, thereby improving the flexibility of the supply chain. Due to their limited resources, small enterprises may have less voice and less influence in the process of solving supply chain technical information problems and information sharing in the process of improving the flexibility of the supply chain. Based on this judgment, the larger the size of the enterprise, the stronger the positive correlation between the solution of the technical knowledge barrier problem and the flexibility of the supply chain. Therefore, this article presents the following assumptions:

H3a: Business size plays a negative role in regulating between knowledge sharing and supply chain flexibility.

H3b: The size of the enterprise plays a positive role in regulating the nature of technical knowledge barriers and the flexibility of the supply chain.

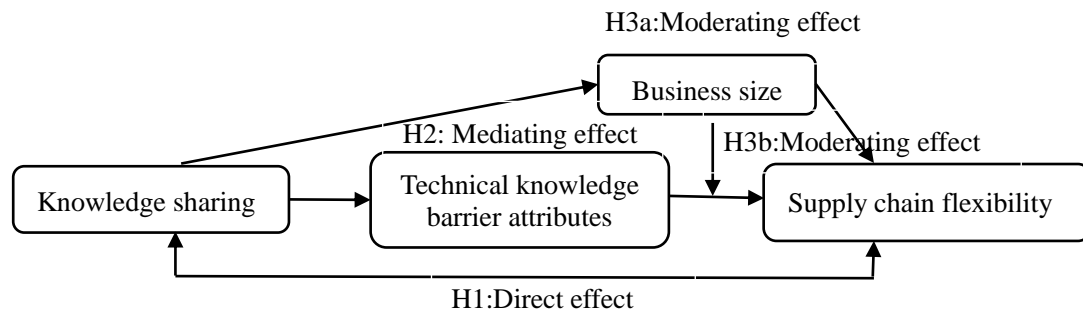


Figure 1 : Model of relationship between knowledge sharing and supply chain flexibility

IV. Research methods

1. 11 Scale design

The sample data for this study was derived from questionnaires conducted by companies. It is obtained through two channels: enterprise actual research and online questionnaire collection. On the basis of the existing relevant research, the variable measurement scale of this study is designed, and the questionnaire of this study is combined with the questions related to the basic information of the enterprise.

Knowledge sharing: Drawing on the research results of Zhang Peng^[8], the Likert 5-level scoring method is adopted, which includes three observed variables: value compatibility between enterprises, mutual trust between enterprises, and the ability of enterprise knowledge externalization.

Attributes of technical knowledge barriers: This paper draws on the research of Zhang Xumei ^[2], using the Likert5 level scoring method, which contains three observation variables: enterprise exclusivity, path dependence, and modularity.

Supply chain flexibility: This article draws on Vickery's ^[9] research. Using the Likert 5-level scoring method, it contains four observation indicators: comprehensive ability to handle reverse logistics, flexible transportation methods and transportation routes, providing logistics value-added services within a certain range, and being able to respond quickly to market information.

Enterprise size: This paper draws on the research of Li Yu and Zhang Yao^[10], and selects the indicators of enterprise operating income to measure the size of the enterprise, which is divided into four levels.

Control variables: enterprise age, number of employees, business type.

1. 12 Data Collection

The sample demand of this study is not limited to the type of enterprise, the age of the enterprise, through the online and offline field research two channels to collect questionnaires, in order to ensure the rationality of the sample data, this study is divided into two stages of pre-investigation and formal research for questionnaire survey work.

1. 13 Data analysis

After data collection, a preliminary analysis of the obtained data is performed, including reliability analysis and validity analysis of scales.

1. 14 Hypothesis testing

On the basis of the descriptive statistical analysis and simple correlation analysis of the sample, this study mainly tests the direct effect, mediation effect and moderation effect by using the SPSS macroprogram Processv2.16 and Bootstrap methods, takes the number of employees, the age of the enterprise and the type of enterprise as the control variables, establishes the relationship model between the variables, and verifies the theoretical hypothesis.

V. Conclusions

Possible research conclusions are: (1) Knowledge sharing has a significant positive impact on the flexibility of enterprise supply chains. Improving the knowledge sharing ability of supply chain enterprises is an effective way to improve the flexibility of supply chain; (2) The attributes of technical knowledge barriers play an intermediary role between knowledge sharing and supply chain flexibility, pointing out that the impact of knowledge sharing on supply chain flexibility can play an indirect role through an intermediate mechanism to solve the problem of technical information barriers; (3) Regarding the regulatory role of enterprise scale, the scale of enterprises plays a negative role in regulating between knowledge sharing and supply chain flexibility, and the larger the scale of enterprises, the weaker the positive correlation between knowledge sharing and supply chain flexibility; The scale of the enterprise plays a positive role in regulating between the attributes of technical knowledge barriers and the flexibility of the supply chain, the larger the scale of the enterprise, the more powerful the resources and strength of the enterprise, and the more convenient the collaboration between the information technology between the enterprises, the stronger the relationship between the two.

VI. Management implications

Supply chain flexibility based on knowledge sharing is an effective management method for the development of modern society, for the rapid changes in the operating environment of supply chain enterprises, as well as the change of consumer preferences, enterprises should apply flexible management methods, constantly adjust and optimize business processes, strengthen information sharing, exchange and learning with

member enterprises, at the same time, the supply chain uses modern information technology transmission, in the knowledge network to achieve agile and rapid decision-making, more flexible and effective market feedback, improve resilience and flexibility. In addition, we must also pay attention to the size of the enterprise, and when choosing partners, the impact of the scale of the enterprise cannot be ignored.

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