Analysis of Dimension Division, Influencing Factors and Governance Performance of Supply Chain Governance Mechanism

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Abstract—As the main content of supply chain governance, supply chain governance mechanism is an important way to restrain potential opportunistic risks among supply chain nodes and to coordinate the relationship of supply chain nodes. The implementation of the supply chain governance mechanism is conducive to the innovation and sustainable development of the supply chain. Based on this and relevant literatures at home and abroad, this study first expounds the concept of supply chain governance mechanism. Next, the study summarizes the dimensions of supply chain governance mechanism, and analyzes the factors that influence the choice of supply chain governance mechanism. It further summarizes the governance performance generated by different supply chain governance mechanisms. Finally, it points out the shortcomings of existing research and prospects the future research hotspots.

Keywords—Supply chain governance mechanism; Dimension division; Influencing factors; Governance performance

I. INTRODUCTION

The competition in the 21st century has shifted from competition between enterprises and enterprises to competition between supply chains and supply chains. The globalization of the economy and the internationalization of cooperation have made the efficient supply chain an important part of the sustainable development of enterprises. The introduction of the “Guiding Opinions on Actively Promoting Supply Chain Innovation and Application” and the first mention of the “modern supply chain” concept emphasize the importance of supply chain development. At the same time, the development of the supply chain has been upgraded to the national strategy. However, in the process of actual cooperation of supply chain enterprises, there are potential opportunistic risks in the supply chain node enterprise, due to the lack of information between enterprises and the limited rationality of decision makers, which is not conducive to the overall development of the supply chain. Based on the existence of opportunistic behavior among supply chain enterprises, scholars have proposed corresponding solutions, the most important of which is to avoid the opportunistic risks between enterprises through supply chain governance. The research goal of supply chain governance is to suppress opportunism and coordinate relations [1]. The governance of the relationship between different members of the supply chain is achieved through the governance mechanism [2]. Therefore, in-depth study of supply chain governance mechanism has important theoretical and practical significance.

In view of this, based on the existing research literatures on supply chain governance mechanisms at home and abroad, this study aims to analyze and summarize the current scholars' definition of the supply chain governance mechanism, the division of dimensions, the impact factors and governance performance. It also reveals the shortcomings of current research and the prospects for the future.

II. THE CONCEPT OF SUPPLY CHAIN GOVERNANCE MECHANISM

Supply chain governance mechanism refers to the organization's use to control interactions with other organizations, reduce the risk of other organizations implementing opportunistic behavior, protect the organization's transaction-specific investment, and promote the maintenance of relationship between organizations, which is a combination of a series of macro behavioral norms and micro-operational rules and is the key to maintaining supply chain membership. The choice and design of governance mechanisms is one of the core contents of supply chain governance [1, 3]. As early as 1996, Dyer defined the governance mechanism as institutional arrangements to govern transactions by controlling opportunism. The supply chain governance mechanism is a transcendence of complex regulatory regulation, which provides organizational guarantee for effective coordination and cooperation of the common needs or interests of supply chain members [4]. Governance mechanism can affect the transaction cost and coordination cost between organizations, affect the willingness of organizations to participate in value creation, and play a key role in the relationship governance between different organizations in the supply chain [5].

As the research deepens, the concept of sustainability is integrated into the supply chain governance mechanism. That is, the sustainable supply chain governance mechanism is proposed. Gimenez and Sierra (2013) defines a sustainable supply chain governance mechanism as a practice or practice for managing supplier relationships with the aim of improving the sustainability performance of suppliers [6]. Marco Formentini and Paolo Taticchi (2016) further enriched this concept on this basis. He believes that the Sustainable Supply Chain Governance Mechanism (SSCGM) is a practice,
According to the internal and external governance of the supply chain, based on the institutional theory in economics, the governance mechanism is divided into the external legality mechanism and the internal efficiency mechanism. With regard to the efficiency mechanism, the institutional theory in economics points out that decision makers use their own utility maximization as their decision-making goal. The mechanism behind it is the efficiency mechanism. The legality mechanism refers to the original intention of organizational structure design to meet the expectations of the elements in the institutional environment [14]. Among them, the efficiency mechanism includes technical support, information sharing, risk sharing, and revenue sharing; Legitimacy mechanisms include policy guidance, legal control, information disclosure, and green consumption [15-16].

For supply chain governance implemented by suppliers upstream of the supply chain, the supply chain governance mechanisms used include supplier evaluation and supplier cooperation [17], supplier selection and supplier development [18].

B. Segment based on the uniqueness of the supply chain

In addition, with the continuous advancement of research depth and breadth, according to the different research needs and empirical background, the dimension division of supply chain governance mechanism has unique characteristics. For example, Wen'an Pan et al. (2012) proposed a governance mechanism for cluster supply chains, which is mainly divided into macro and micro mechanisms. The macro mechanisms include trust mechanism, reputation mechanism, cultural mechanism and joint sanctions mechanism. The micro-mechanism covers entry barriers, incentive constraints, decision coordination, and information feedback mechanisms [19]. Hua Feng et al. (2017) explored two supply chain governance mechanisms: partnership management and virtual integration [20]. Xiao Li et al. (2017) discussed the supply chain intelligent governance mechanism based on blockchain technology, including intelligent contract mechanism, consensus mechanism, reward mechanism, security transparent mechanism, sharing mechanism, cooperation mechanism, autonomous mechanism and hierarchical structure mechanism [21].

In addition, based on the sustainability concept of supply chain or the theory of corporate social responsibility, Jinhua Li et al. (2016) pointed out that the supply chain social responsibility integrated governance model includes four governance mechanisms: supervision mechanism, evaluation mechanism, assistance mechanism and incentive mechanism [22]. This mechanism is a powerful complement to the current supply chain core companies relying on a strong position to force partners.
IV. FACTORS AFFECTING THE CHOICE OF SUPPLY CHAIN GOVERNANCE MECHANISM (ANTECEDENT)

The research of governance mechanism is to solve practical problems. The choice and application of governance mechanisms of different dimensions lies in the factors that influence which mechanism is chosen. That is the selection factors of supply chain governance mechanism. Based on the research background and purpose, the existing research explores and analyzes the different influencing factors in the process of supply chain governance mechanism selection.

A. Asset specificity

The specificity of an asset, that is, the specificity of the use of an asset, refers to the extent to which an asset can be allocated for other purposes or used by others without loss of production value, including the specificity of the location, the specificity of tangible assets, the specificity of human capital, the specificity of risky investment, and the specificity of intangible assets such as brands. Jing Yuan et al. (2012) examined the impact of asset specificity on contract governance. The empirical analysis showed that asset specificity has a significant positive impact on contract governance [23]. Poppo et al. (2008) based on empirical studies in China show that asset specificity is positively related to relationship governance. At the same time, asset specificity weakens the positive correlation between relationship governance and transaction performance [24].

B. The uncertainty of transaction

The uncertainty of the transaction has a significant impact on the choice of the longitudinal trading contract mechanism in the supply chain [25]. Carson et al. (2006) empirically studied the impact of environmental uncertainty on relationship governance performance. The research results show that internal rules such as trust in relationship governance can improve the flexibility of post-adjustment, thus helping enterprises to better adapt to changing circumstances [26].

C. Trading frequency

The frequency of the transaction is the number of transactions. The frequency of transactions between the two parties (the research enterprise and other companies in the supply chain) has a greater impact on the corporate choice contract governance mechanism. The increase in trading frequency reduces the use of formal contracts by the parties [27]. Repetitive transactions prompted companies to sign a more detailed, more formal contract. Lazzarini et al. (2004) examined the impact of transaction frequency and contract cost on contract selection, and further verified the complementary relationship between informal contract and formal contract [28].

In addition, Williamson pointed out that contract governance regards human nature as self-interest (lack of governance mechanism will produce opportunistic behavior). Therefore, a clear contract should be established to manage trading activities. The contract represents the commitment of both parties to take specific actions in the future. The more complex the contract is formulated, the more detailed the procedures and procedures for commitments, obligations, dispute resolution are [29]. In addition, some studies have found that the scale of cooperation between enterprises has a positive impact on the clear contract governance mechanism and the standardized contract governance mechanism. The expansion of cooperation scale will increase the utilization rate of the two governance mechanisms [30].

V. GOVERNANCE PERFORMANCE OF SUPPLY CHAIN GOVERNANCE MECHANISMS (CONSEQUENCE)

The exploration of the performance of supply chain governance mechanism is based on the choice and application of supply chain governance mechanism. The measurement of the performance of the supply chain governance mechanism lies in the dimension division of the governance mechanism.

A. Governance performance of contract governance mechanism

Focusing on the governance performance of the contract governance mechanism, the existing research mainly focuses on the following situations: The first is to emphasize the positive role of governance [31-32]. That is to say, the supply chain contract governance mechanism has a positive impact on potential opportunistic risks and cooperation performance among supply chain enterprises. Second, the governance performance generated by contract governance is negative. The clearer the terms of the transaction contract, the worse the supplier's response to customer flexibility and transaction output performance [33]. In addition, some studies have shown that contract governance has different governance performance in different situations. Output-based contracts have a significantly negative impact on conflicts between buyers and suppliers. Behavior-based contracts have a significantly positive impact on conflicts between buyers and suppliers [12].

B. Governance performance of relationship governance mechanism

On the research of the governance performance of the relationship governance mechanism, on the one hand, the governance performance is positive. For example, Ruilong Yang et al. (2004) argue that in a strong relationship network, repeated transactions with suppliers can reduce transaction costs, so relationship governance can increase transaction value and improve economic efficiency [34]. In the alliance, relational capital can help companies to acquire the technical knowledge of alliance members, and also help their core knowledge to be free from the threat of opportunistic behavior and lose their competitive advantage [35]. On the other hand, it is a negative governance effect. Jing Yuan et al. (2007) found that the strong relationship governance of vertical transactions hinders the acquisition of innovative knowledge and capabilities to a certain extent, and that relationship governance has a negative impact on the environmental changes that slow down economic growth [36].

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C. The interaction governance performance of supply chain contract governance mechanism and relationship governance mechanism

Compared with the study of single governance mechanism, some scholars have compared the two mechanisms of supply chain contract governance and relationship governance. The conclusions are roughly divided into the relationship of complementarity, mutual replacement or mutual loss.

First, for the argument of complementary relationship, Dan Shi et al. (2015) pointed out that in a secondary supply chain where a manufacturer is in a leading position, relationship and contractual hybrid management can closely link manufacturers and suppliers within a valid range, achieve greater profitability through formal quality management and achieve supply chain coordination through common quality efforts [37]. Jiasen Jia et al. (2015) pointed out that the key to promoting long-term cross-organizational collaboration lies in achieving a balance of governance mechanisms based on relationships and contracts [38]. Secondly, in terms of the interaction between the two, in the strategic level of supply chain knowledge coordination, the positive promotion of relationship governance is more significant. Due to the special attributes of knowledge exchange, in the current Chinese cultural context, the higher the degree of contract governance, the more unfavorable to the sharing and innovation of knowledge, which is not conducive to the realization of knowledge collaboration [39]. Further analysis of Ki-Hyun UmPan et al. (2018) shows that corporate performance with contract governance yields better transaction cost advantages. Collaboration between supply chain and contract governance yields better transaction cost advantages than relationship governance [40]. From the relational life cycle, in the exploration phase, contract control has a positive impact on cooperation performance; In the growth and maturity stages, relationship control is positively related to collaborative performance, while the impact of contract control is negligible; In the recession phase, the impact of contract control and relationship control on collaboration performance is not significant [41].

In addition, some scholars have found that formal contracts may hinder or even affect the ability to govern relationships. That is, the interaction between the two is negative for the overall performance of supply chain governance [42].

D. Governance performance of other governance mechanisms

The impact of two supply chain governance mechanisms, namely, partnership management and virtual integration, on supply chain capabilities is reflected in that there is a significant positive correlation between the two supply chain governance mechanisms and the supply chain capabilities of partnership management and virtual integration. However, the interactions between the two governance mechanisms have little effect on the supply chain capabilities [12].

Suppliers choose this governance mechanism to reduce the risks involved in potential relationships and to help select suppliers that meet buyer requirements. The supplier development mechanism enhances trust among supply chain members, reduces the number of contracts, develops supplier capabilities, and eliminates opportunistic behavior [43-44].

VI. CONCLUSIONS AND RESEARCH PROSPECTS

Although the existing research on supply chain governance mechanisms has achieved fruitful results, there are still deficiencies. Specifically, first, the existing research on the process of supply chain governance factors acting on supply chain governance behavior is lacking. Secondly, most of the existing research only examines the governance performance of various governance mechanisms, ignoring the analysis of the process of action. In addition, regardless of the influencing factors or governance performance, the research method is single, and most scholars' research is analyzed by exploring the relationship between variables.

In view of this, in the future, we can conduct in-depth research on supply chain governance mechanisms from the following aspects.

A. To strengthen the research on the influencing mechanism of the influencing factors of the supply chain governance mechanism

Specifically, the first is to identify the impact mechanism of different influencing factors of which governance mechanism to choose when implementing supply chain governance; The second is to construct an overall analysis framework for the pre-factors of the supply chain governance mechanism to present the full impact of the supply chain governance mechanism; The third is to strengthen the research on the influencing factors and influence mechanism of the supply chain governance mechanism in China's situation, so as to improve the level of China's manufacturing supply chain, especially the international manufacturing supply chain and promote its diffusion. Because of the institutional distance between different countries, the behavior of companies embedded in them will be different.

B. To strengthen the research on the governance mechanism of the governance performance of supply chain governance mechanism

In the past, a large number of studies have explored the governance performance of different supply chain governance mechanisms. What is the specific mechanism for the establishment of positive or negative governance performance? Faced with the current three-dimensional goal of economic performance, environmental performance and social performance of enterprise development, how can supply chain core enterprises achieve sustainable development of supply chain by selecting governance mechanism and implementing governance? These are the key issues for the supply chain governance mechanism to obtain governance performance.

C. To strengthen the research on the behavior process of the implementation of supply chain governance mechanism

The existing literature has limited research on the occurrence, development, and value acquisition of supply chain governance mechanisms. Future research should strengthen the behavioral process of supply chain governance mechanisms to better understand supply chain governance mechanisms. Specifically, future research should strengthen vertical case studies of supply chain governance mechanisms and multi-case comparative studies to identify differences in supply chain governance mechanisms at different stages and in different
industries (such as manufacturing and services) and their causes.

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