Frontiers in Economics and Management Volume 1 Issue 1, 2020
ISSN: 2692-7608 DOI: 10.6981/FEM.202001_1(1).0002

Optimization of Contracts for Logistics Service Supply Chain Considering Customer Information Feedback

Yue Zhang

Chongqing university of posts and Telecommunications, Chongqing 400065, China.

Abstract

Information asymmetry and lack of customer information feedback exist in the logistics service supply chain, which leads to problems such as low logistics service levels in the supply chain. Through combing the relevant literature, this paper clarifies the concept and composition of the logistics service supply chain, and the research on the information feedback between the subjects of the physical service supply chain, and finds that there are still deficiencies in the research of customer information feedback in the logistics service supply chain. Propose specific ideas for integrator and provider contract design optimization.

Keywords

Customer information feedback, Logistics service supply chain, Contract optimization.

1. Introduction

The derivation of national policies and the changes in the market competition situation have caused people to pay attention to the supply chain from the traditional product supply chain to the service supply chain. In the logistics service industry, the logistics service supply chain with integrated management mode has received attention. more and more. The basic model of the logistics service supply chain is logistics service providers-logistics service integrators-customers, among which logistics service integrators are at the core, purchasing logistics services from logistics service providers through methods such as service outsourcing, and then providing customers with individuality And high-quality logistics services, and logistics service providers are responsible for providing logistics services. Logistics service integrators and logistics service providers work together to complete logistics services for customers, which can solve the problems existing in small and medium-sized enterprises such as scattered resources, single service types, and low service quality. Therefore, the logistics service supply chain is centered on integrators. By integrating the resources and capabilities of the entire supply chain, it provides customers with integrated, personalized and all-round logistics services to achieve the goals of reducing logistics costs, improving efficiency, and increasing revenue. In the context of the rapid increase in the level of information technology in the logistics industry, the development of the logistics service supply chain not only caters to the country's policy guidelines, but also promotes the development of the logistics service industry, which can effectively improve the level of logistics services; at the same time, it continues to provide customers with personalized Logistics services also conform to the mainstream of social needs.

However, the logistics service supply chain model has been developed late in our country, and the knowledge and application of the logistics service supply chain is not perfect in academic and practice. Affected by the traditional product supply chain, integrators and providers lack a sense of cooperation and cannot carry out a good cooperation output; logistics companies have a backward information technology level and cannot accurately grasp the ever-changing market needs by collecting customer feedback. Service resources cannot be accurately matched

ISSN: 2692-7608 DOI: 10.6981/FEM.202001_1(1).0002

with customer needs; poor information transmission and lack of customer information feedback between supply chains make it difficult for service integrators to integrate resources and capabilities, and it is difficult to control the service level of providers due to the unique attributes of services The nature of different types of services will trigger input conflicts from service providers, leading to problems such as low logistics service efficiency and poor service quality. These problems have led to the slow development of the logistics service supply chain in China. The main reasons for these problems are the information asymmetry between the service integrator and the service provider and the lack of customer information feedback in the supply chain, which makes the service integrator unable to coordinate logistics The resources and capabilities of the service supply chain lack effective incentives for service providers.

Based on the above-mentioned problems, this article intends to sort out related scholars' research on logistics service supply chain incentive coordination and logistics service supply chain information feedback incentive coordination through literature review, and find out the research deficiencies through literature review. Thus, the specific ideas for the optimization of contract design between integrators and providers are put forward.

2. Definition of Logistics Service Supply Chain Concept

As a sub-part of the service supply chain, the logistics service supply chain is still in its infancy, just like the service supply chain. For the definition of the logistics service supply chain, the academic circles have not yet reached a unified understanding, but many scholars have defined the logistics service supply chain separately from different research perspectives. The American Association for Supply Chain Management believes that all companies cannot complete the entire logistics service logistics process alone, so the logistics service supply chain is a process involving multiple companies with different functions. Tian Yu (2003) pointed out that there is a logistics service supply chain model that is different from the traditional supply chain in the operation of enterprises. The integrated logistics service provider is the core, and the supplier of the integrated logistics service provider is connected with the manufacturing and retail enterprises. And so on, constructed a logistics service supply chain model, and conducted supplier selection analysis with this model. Shen Chenglin (2005) put forward that the logistics service supply chain is based on integrated logistics service provider enterprises as its core to provide comprehensive logistics services, and believes that the logistics service supply chain model is a functional logistics enterprise—integrated logistics service provider—manufacturer— Distribution retail enterprises. Foreign scholar Choy K L (2007) put forward that the basic structure of the logistics service supply chain is a functional service provider-logistics service integrator-customer. Liu Wei (2012) and others analyzed the connotation, structure and operation of the logistics service supply chain, and put forward the research paradigm of the logistics service supply chain. It is believed that the logistics service supply chain is an organizational network chain composed of logistics outsourcing parties, integrated logistics service providers, service subcontractors, and outsourcing business partners. From the perspective of integration, Gao Zhijun (2017) and others believe that the logistics service supply chain is based on logistics integrators, and comprehensively manages and operates functional logistics service providers, logistics integrators and customers in the supply chain.

Through combing the above literature, it is found that different scholars have different definitions of the logistics service supply chain due to different research angles, which leads to the lack of a unified understanding of the definition of logistics service supply chain. However, the understanding of the basic structure of the logistics service supply chain is the same, that is, the logistics service supply chain is mainly composed of logistics service integrators, logistics service providers and customers. Among them, the integrator is at the core of the logistics

ISSN: 2692-7608 DOI: 10.6981/FEM.202001_1(1).0002

service supply chain. The service capabilities of the supply chain are integrated, and logistics service providers provide logistics services to meet customer needs. Therefore, this article combines the viewpoints of the above scholars and believes that the logistics service supply chain is mainly composed of logistics service integrators, logistics service providers and customers, who participate in the entire logistics service process. The basic model is: logistics service provider-logistics service integrator-customer.

3. Logistics Service Supply Chain Management

The logistics service supply chain is to provide customers with integrated services. It requires integrators to integrate resources and capabilities, and also requires service providers to provide logistics services to customers. Therefore, the logistics service supply chain is a whole, and the logistics service supply chain is rational Effective management is very necessary. The current research on logistics service supply chain management mainly focuses on service provider management research, logistics service supply chain integration research, and logistics service supply chain coordination mechanism research.

For service provider management research, the main research focuses on the establishment of provider evaluation indicators and provider selection methods. Regarding the establishment of evaluation indicators, foreign scholar Ken Ackerman (2003) established an evaluation system based on information exchange, inventory management, and multiple comprehensive capabilities, and selected service providers based on this system. Jiang Huili (2008) built an evaluation index system for service providers based on the research of Fourth Party Logistics in order to solve the difficulty in selecting service providers. Hao-tien Liu (2009) comprehensively established an evaluation index system for logistics service providers based on various factors such as market environment, service price and quality, and service efficiency. Ding Rui (2012) summarized the influence of various factors on the selection of providers, using multiple indicators such as informatization, efficiency, and quality, to build a new evaluation index system for logistics service providers in the current environment. Du Bingzhi (2017) discussed the management of service providers in the supply chain environment, and examined the evaluation indicators of service providers from many aspects. In terms of provider selection methods, Tian Yu (2002) used analytic hierarchy process and comprehensive evaluation method, combined with actual cases, to conduct research on provider selection methods. Du Guangzhong (2008) uses a combination of linear programming methods and case studies to study the selection of logistics service providers. Li Hongmin (2014) and others used empirical and ANP methods to study the problem of provider selection. Luo Qian (2017) and others used prospect theory to study provider selection in the environment of logistics service supply chain. MLF Cheong (2017) and others used integer linear optimization model and sub-gradient optimization algorithm for service provider selection research.

For the study of logistics service supply chain integration, Flynn (2010) and others included logistics supply chain integration in the entire supply chain integration, and summarized supply chain integration as customer integration and supplier integration. Zhao Yarui (2012) discusses supply chain integration in terms of the incentives of integration and the impact of integration on corporate performance. Li Fengting (2014) and others proposed that supply chain integration has three levels of integration between supply chains: cooperation, coordination, and collaboration. Liu Jiaku (2016) built an integrated mode of logistics service supply chain based on the level of ability. Gao Zhijun (2017) and others constructed a logistics service supply chain integration structure model from the logical thinking of the integration's antecedents, processes, and results based on the previous research.

Aiming at the research on coordination mechanism of logistics service supply chain, the main research focuses on two aspects: capacity coordination and benefit coordination. In terms of

ISSN: 2692-7608 DOI: 10.6981/FEM.202001_1(1).0002

capacity coordination, Liu Weihua (2007) constructed a logistics service supply chain model with order task allocation and cooperation quantity coordination based on the different logistics service capabilities of supply chain members. Yan Fei (2009) combined the logistics service supply chain environment to study the dynamic process of collaborative growth of enterprises in centralized decision-making, and constructed a collaborative growth model. Zhu Weiping (2012), etc., in the three-level logistics service supply chain environment, according to different service capabilities, build a quantitative coordination model and conduct quantitative coordination research. LIU W (2015) et al. conducted a coordination study on the ordering strategy of the logistics service capability of the logistics service supply chain under the condition of demand update. In terms of benefit coordination, Cachon (2005) et al. constructed a profit model through the two factors of fixed price and variable price and conducted systematic analysis. Combining with other contracts, they found that revenue sharing contracts can better distribute profits among members. Meng Lijun (2014) built multiple models such as centralized decision model, Stackelberg master-slave coordination model and revenue sharing model, and studied the coordination problem of logistics service supply chain through comparative analysis of multiple models. Zhang Cuihua (2017), etc., established a quality supervision and collaboration benefit model taking into account the factors of integrator supervision quality and supplier integrity cooperation. Tan Chunping (2017) and others constructed a dual-task principal-agent incentive model for fourth-party logistics parks and logistics companies, and put forward specific incentive strategies through analysis. Lu Anwen and Wang Ru (2018) compared revenue-sharing contracts and tournament contracts, comprehensively considered the two-way moral hazard in the logistics service supply chain and the existence of multiple agents, and studied the contract coordination between integrators and providers. Zhang Jianjun (2019) and others constructed a logistics service supply chain benefit coordination model from two perspectives: decentralized decision-making and centralized decision-making. Qin Xinghong (2019) and others established a decision model that considers customer service expectations and service quality costs, and analyzed the competition and cooperation strategies between supply chain members. Li Enji (2019) introduced the supervision mechanism into the principal-agent model incentive mechanism under consideration of fairness preference conditions. The research found that the company's utility can be improved.

In summary, the current research on logistics service supply chain mainly focuses on service provider management research, logistics service supply chain integration research, and logistics service supply chain coordination mechanism research. With the rapid development of the logistics industry, Research on the coordination mechanism of the supply chain is gradually increasing. Related research has achieved certain results, but due to the short development time of logistics service supply chain, there are still many deficiencies in the research of logistics service supply chain. Due to the asymmetry of information, when integrators coordinate their interests, scholars usually establish a game coordination mechanism between integrators and service providers, often neglecting the role of information feedback between the main body of the customer and the supply chain. In fact, the logistics service supply chain serves customers, and customers play an important role in the coordination of interests. Therefore, when the coordination mechanism is studied, the subject of the customer and relevant information feedback should be taken into consideration.

4. Logistics Service Supply Chain Information Feedback

The information feedback in the logistics service supply chain mainly includes the information feedback between the provider and the integrator and the customer's information feedback on the integrator. Scholars have done corresponding research in these two aspects. Among them,

ISSN: 2692-7608 DOI: 10.6981/FEM.202001_1(1).0002

the main focus is on the research on the information feedback between the provider and the integrator, and there is less research on the information feedback from the customer to the integrator.

(1) Overview of research on information feedback from providers and integrators. In terms of the information feedback between the provider and the integrator, the integrator and the provider have a two-way information feedback relationship. The integrator will feed back the integrated customer resources and demand information to the provider, and the provider will provide information about its own capabilities and the status of its customers. The logistics services and other information provided are fed back to the integrator, so scholars mostly conduct related incentive studies from the perspective of information sharing. When Kulak (2005) and other studies select service providers, integrators should establish corresponding selection indicators based on the provider's information feedback. Liang Jing (2005) conducted research on the incentives of logistics outsourcing systems from the perspective of information sharing, and found that information sharing can better motivate agents to choose the actions desired by the client. Yang Shanlin et al. (2011) established a logistics service supply chain information sharing mechanism and found that information sharing can effectively improve the overall operational efficiency of the logistics service supply chain. Zhang Yuxi builds a cold chain logistics multi-task incentive model from the perspective of information sharing, and studies the impact of information sharing costs on information sharing behaviors between service providers. Wu Xiaoyan (2016) and others conducted a study on the incentive model of service quality improvement in the logistics service supply chain, and found that the information sharing between integrators and providers can help avoid opportunistic behaviors of providers. Li Xiaoping (2019) and others conducted research on the construction of logistics service supply chain information platform through blockchain technology. Lu Anwen and Liu Jiaqi (2019) introduce information technology and information sharing into the multi-task principal-agent model, and conduct research on information sharing incentive strategies between integrators and providers.

The above scholars conducted corresponding incentive coordination research on the information feedback between service integrators and service providers from the perspective of information sharing, and obtained corresponding research results. The research found that the information feedback between integrators and providers was added to the incentive contract design This will increase the revenue of the entire logistics service supply chain. However, these studies ignore the important role of customer information feedback. The entire logistics service supply chain is to provide customers with logistics services. Customers have the most real and important logistics service information. Therefore, customer information should also be considered in the design of incentive contracts. Feedback.

(2) Overview of research on customer information feedback. In terms of customer information feedback, it is mainly that customers give feedback to service integrators based on their own logistics service information. Scholars have also done corresponding research in this area.

In the research on the coordination of customer information feedback in enterprises, Lu Bingmei (2000) applied the analysis of the service triangle theory to believe that enterprises should take the needs and opinions of customers into consideration and establish a customer-centric service model. Luo Pinliang (2001) introduced subjective performance evaluation and objective performance evaluation into the single-task principal-agent model, discussed the application of incentive mechanisms in state-owned enterprises, and found that the introduction of subjective evaluation can reduce the agent's opportunistic behavior. Shao Min (2003) analyzed the impact of different performance evaluation methods and performance feedback methods on corporate incentive effects in the feedback incentive model, and proposed relevant measures to improve performance feedback. Panayides (2005) conducted research on the positioning of the relationship between logistics service companies and customers, and

ISSN: 2692-7608 DOI: 10.6981/FEM.202001_1(1).0002

believed that adding customer information would improve the company's revenue. Research on customer information feedback in the enterprise has concluded that introducing customer information into the coordination mechanism will improve the performance of the enterprise.

In the traditional supply chain research on the coordination of customer information feedback, Huang Zhining (2003) conducts incentive studies on supply chain performance by establishing a customer service performance evaluation index system. Wang Gang (2007) and others conducted in-depth research on the information feedback mechanism of the supply chain by constructing a dynamic information feedback model, and proposed feedback methods to improve the overall performance of the supply chain. Zhong Zuchang (2008) and other studies found that adding customer information feedback can improve the effectiveness of the incentive mechanism, but it has not been analyzed and verified by constructing a model. R. Glenn Richey (2010), etc., through empirical analysis methods, analyzed how to introduce various feedback information to improve the efficiency of the entire supply chain through the coordination of individual supply chain members. Gui Liangjun (2015) In the supply chain environment, combined with information feedback to construct a performance evaluation index system suitable for the supply chain.

In the coordinated research on customer information feedback in the logistics service supply chain, Macleod (1998) and other studies found that when an agent undertakes multiple tasks, subjective performance evaluation should be taken into consideration in the incentive design. Chen Hongmei (2013) conducted research on the construction of coal logistics service supply chain information sharing platform from the perspective of information flow, and explored the role of customer information feedback in it. Wang Xiaoqian (2013) analyzed the literature and concluded that taking customer demand information into account in the service supply chain can improve the scientific decision-making of integrators. Tang Zhiying (2013) added customer evaluation of service in the form of external supervision variables to the single-task principal-agent model, and explored the impact of introducing customer information feedback into the incentive model on the design of incentive mechanism. Lu Anwen and Jing Wenjun (2015) introduced the customer's evaluation of service quality into the single-task principal-agent model in a fixed output scenario, and conducted research on the design of incentive mechanism for the logistics service supply chain. Tan Chunqiao (2016) et al. responded to the customer's information feedback as loss aversion, and constructed an integrator's quality commitment decision-making model to analyze the impact of customer feedback on the quality commitment decision-making model. Zhu Weiping (2016) et al. used a multi-task principal-agent model to optimize the incentives of the service supply chain, and proposed the idea that the introduction of subjective evaluation can help solve provider input preferences and improve system performance. Jia Peng (2018) built a five-dimensional logistics service supply chain performance evaluation index system on the basis of the four-dimensional balanced scorecard, and optimized the index system.

5. Summary

The research on customer information feedback in the logistics service supply chain is relatively late, mainly based on the corresponding research on the basis of the enterprise and the traditional supply chain, and there are relatively few studies on the logistics service supply chain. Most scholars use qualitative research methods to establish a corresponding indicator system for comprehensive evaluation. They also analyze the importance of customer information feedback from the perspective of information flow. They mainly put forward the importance of customer information feedback to the performance of the supply chain. Information feedback as an endogenous variable is rarely studied for model building and analysis. Some scholars introduced customer information feedback into the single-task

ISSN: 2692-7608 DOI: 10.6981/FEM.202001_1(1).0002

principal-agent model for incentive coordination analysis, but did not introduce it into the multi-task principal-agent model for related incentive studies, and they all added customer information feedback as a one-dimensional variable to the incentive model In practice, the value of customers is not only one-dimensional but multi-dimensional. There are literatures suggesting that the introduction of subjective evaluation into the multi-task principal-agent model is helpful to improve the supply chain performance, but the model construction and analysis are not carried out. Therefore, customer information feedback is introduced into the multi-task principal-agent model in a multi-dimensional form for incentive coordination research Is a feasible idea.

References

[1] Ellram L M,Tate W L,Billington C. Understanding and Managing the Services Supply Chain [J]. Journal of Supply Chain Management,2004,40(3):17-32.

[2] ChoyKL,Li C H.Managing uncertainty in logistics service supplychain[J].International Journal of Risk Assessment and Management,2007,7(1):19-25.

[3] Aghazadeh S M. How to choose an effective third party logistics provider[J]. Management research news, 2003, 26(07): 50-58.

[4] Liu H T, Wang W K. An integrated fuzzy approach for provider evaluation and selection in third-party logistics[J]. Expert Systems with Applications, 2009, 36(03): 4387-4398.

[5] CHEONG MLF, BHATNAGAR R, GRAVES SC. Logistics network design with supplier consolidation hubs and multiple shipment options[J]. Journal of Industrial & Management Optimization, 2017,3(1):51-69.

[6] FLYNN B,HUO B,ZHAO X. The impact of supply chainintegration on performance：a contingency and configuration approach[J]. Journal of management,2010(1):58-71.

[7] LIU W,LIU X,LI X. The two-stage batch ordering strategy of logistics service supply chain with demand updates[J]. Transportation research part E,2015(8):65-89.

[8] Cachon GP,Lariviere MA. Supply chain coordination: Strengths and limitations[J]. Management Science,2005,51(1):30-44.

[9] Kulak O,Kaharaman C. Fuzzy multi-attribute selection among transportation companies using axionmatic design and analutic hierarehy process[J]. Information Science. 2005(8), 191-210.

[10] PANAYIDES P M, MEKO S. Logistics service provider-client relationships[J]. Transportation Research Part E. 2005(41), 179-200.

[11] R. Glenn Richey Jr, Mert Tokman, Dalela V. Examining collaborative supply chain service technologies: a study of intensity, relationships, and resources[J]. Journal of the Academy of Marketing Science, 2010, 38(1):71-89.

[12] MACLEOD W, BENTLEY, JAMES M. Motivation and Markets[J]. The American Economic Review, 1998, 8(6):388-411.