

Review of Research on Coordination Performance Evaluation of Logistics Service Supply Chain from the Perspective of Customer Value

Anwen Lu, Ying Huang ^{a,*}

Chongqing University of Posts and Telecommunications, Chongqing 400065, China

^ahywork@outlook.com

Abstract

The key factor of profit for logistics service supply chain lies in whether it can lead its own coordination mechanism to improve service ability so as to provide customers with satisfactory products or services. Performance evaluation system plays an important role in improving customer service level of logistics service supply chain. At present, the research on customer value is mainly divided into two parts: the main part of the enterprise and the main part of the customer. In the aspect of the performance evaluation of the logistics service supply chain, it mainly includes: performance evaluation system of the logistics service supply chain, logistics service supply chain Performance Evaluation Method Research and Logistics Service Supply Coordination. Based on these researches, we can study the performance evaluation of logistics service supply chain coordination from the perspective of customer value.

Keywords

Customer value; logistics service supply chain; coordination performance; review.

1. Introduction

Organizational behavior and competitive strategies are determined by the performance appraisal system in the market [1]. So Logistics service supply chain performance evaluation system plays an important role in improving the customer experience. It can track the performance of past and ongoing logistics service supply chains and find out the deficiencies in the work, then to improve it. Logistics service supply chain performance evaluation is a systematic project should be based on specific evaluation to determine different evaluation objects, indicators and method. This paper studies the problem of coordination performance of logistics service supply chain focusing on customer value. This paper proceeds as follows. Rather than specifically researching partnerships, core competencies, inventory management or cost control from a micro point of view, it analyzes how the logistics service supply chain adjusts itself to better internal coordination and more flexible adaptation to customers from a macro perspective of customer value. The existing research on customer value and the coordination performance of the logistics service supply chain is summarized. The research frame of the performance evaluation of the logistics service supply chain coordination from the customer perspective is proposed.

2. Customer Value Research

Ample researches have been conducted regarding customer value which can be generally divided into two categories. The first category is based on customers, which study the value that enterprises provide to customers, to perceive the related services and products provided by enterprises from the perspective of customers[2]; The second category is based on enterprises, which research on the relative importance and contribution value of customers to the enterprise enables enterprises to provide products, services and solutions to customers of different values for the purpose of maximizing long-term benefits [3]. The customer value mentioned in this article belongs to the first category, so only to the customer as the main customer value to explore.

Customer value is dynamic. Zeithaml (1988) study shows, the perception of value is subjective. Different customers have different expectation values for different products. The same customer may have different expectation values for the same product at different time nodes [4]. Raval (1996) proposed that customers have their specific values, preferences, and financial resources. These factors affect the customer's perceived value [5]. Research by Gardial et al. (1994) shows: customer perception of value is divided into "buying" and "in use" two stages. The perception of value in these two phases is quite different. This confirms the value of perception varies with time nodes and customers' feelings [6]. Parasuraman (1997) think in the process of customers transfer from the first purchase to short-term customers to long-term customers, they will evaluate the value of the full and abstract development and their focus will evolve from the attribute hierarchy to the result hierarchy and the full hierarchy [7]. Dong Dahai (2004) proposed that customer value is dynamic which reflects the customer value of the product and service evaluation and the perception of the environment is constantly changing. The dynamic of customer value is manifested in two aspects: (1) The elements of customer value show a shift in change, that is, when some of the old elements gradually fade away or even disappear, some new elements will emerge and demonstrate their importance in value perception; (2) The customer will evaluate the performance of the enterprise on the value of the gradual change [8]. Hua Zhaohong (2007) studied dynamic customer value from three dimensions: vertical, horizontal and cross. She summarized the trends and laws of customer value and the reasons for the changes, then she found that dynamic customer value will show up with different trends over time, and there are still differences and convergences in geographical areas [9].

Customer value has a hierarchy. Woodruff (1997) constructed a customer value hierarchy model based on cognitive logic. The model divides the expected value of customers' "path-result" patterns from low to high into three layers, The first layer, customers will give priority to the specific properties of products and performance considerations; The second layer, in the process of purchasing products and using products, customers will form expectations and preferences based on the product attributes expected results; The third layer, the highest level, customers expect expectations of the realization of their goals to achieve the ability to form expectations [10]. Derived from the highest level of the hierarchy table, customer goals determine the significance of the result under certain circumstances. The ordering of the importance of the results leads the customer in the order of importance of the attributes and their utility. In certain circumstances, the customer's goals, results, expectations of the product attributes were evaluated, and ultimately form a comprehensive value of the feelings as shown Figure 1.

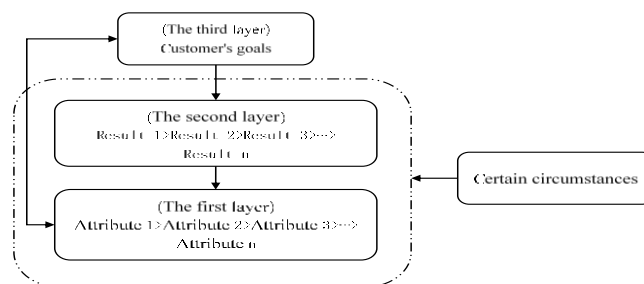


Figure 1 Customer value hierarchy diagram

3. Research on Coordination Performance Evaluation of Logistics Service Supply Chain

Logistics service supply chain is evolved from the service supply chain. It is a mesh supply and demand cooperation structure that enhances the collective competitive advantage and strengthens the cooperation. It integrates logistics service integrators as the core, integrates the logistics capabilities of logistics service sub-contractors, centrally optimizes service processes, integrates logistics resources and provides customers with flexible logistics services. In 1998, Stanley pointed out that

the organization's behavior and competitive strategy in the market are determined by the performance evaluation system [1]. Therefore the establishment of coordination performance of logistics service supply chain plays an important role in improving the customer service level of logistics service supply chain. Because the logistics service supply chain coordination performance evaluation started relatively late. Most of the relevant researches proposed relevant methods based on the supply chain performance evaluation system combined with the characteristics of logistics service supply chain coordination. The following will review the literature on supply chain performance.

4. Research on Coordination Performance Evaluation Index System of Logistics Service Supply Chain

In 1998, Benita M. Beamon divided the indicators of supply chain performance into qualitative indicators and quantitative indicators. Qualitative indicators include flexibility, information flow, logistics integration, supplier performance, effective risk management and customer satisfaction. Quantitative indicators include customer response and cost[11]. In 2000 Stefan Holmberg pointed out that managers should pay enough attention to the problem of the cross-impact of performance between enterprises and enterprises and the overall supply chain [12]. 1996 Supply Chain Association released a supply chain operation reference model(SCOR). The SCOR model in 2000 derived indicators for evaluating supply chain performance, of which the first level contained 10 measures. In 2002, based on the four dimensions of customer orientation, financial value, internal processes and future development, Ma Shihua established the supply chain performance evaluation index system [13]. 2004 Gunasekaran & Patel detailed analysis of the various stages of the supply chain process, such as planning, supply, assembly, distribution and more. He subdivided strategic; tactical; executive level indicators; established a supply chain performance evaluation matrix [14]. 2005 Fu-ren Lin proposed from the average cycle time L_v , order fulfillment and timely rate and product cost measured in three aspects based on trust mechanism[15]. In 2009, Khan established a logistics performance evaluation index based on financial indicators, customer service level, flexibility and response from the perspective of logistics outsourcing [16]. In 2010, through the method of questionnaire, Liu Li developed the supply chain performance scale from the four dimensions of supplier performance, customer response speed, flexibility and cost[17]. In 2013, Zeng Mingang discussed the impact of information sharing on supply chain performance and built a theoretical model of supply chain design and integration as a mediating variable [18]. In 2014, Ge Huahua divided the performance evaluation system of supply chain from three levels: result layer, operation layer and support layer. According to the theory of matter element, this paper combined the performance evaluation of supply chain and Wuyuan to build the performance evaluation system of supply chain [19]. In 2015, Dai Jun constructed the performance evaluation system of sustainable supply chain. He divided the evaluation index into four level indicators of operational performance, environmental performance, social performance and economic performance and used the structural equation model to simulate and determine the weight of the indicator [20]. In 2017, Li YuFeng constructed a smart supply chain evaluation system and evaluation indicators include management awareness, planning, purchasing, production, flexibility and wisdom. The research shows that the level of performance of the enterprise's smart supply chain is positively correlated with the degree of intelligence in the supply chain [21].

4.1 Study on the Performance Evaluation Method of Logistics Service Supply Chain Coordination

Supply chain performance evaluation is actually a multi-objective, multi-index evaluation problem. At present, there are many ways to solve the problem of multi-objective evaluation, including Structural Equation Model; Logical Deduction; Clustering Analysis; Case Analysis; Factor Analysis; Path Analysis; Regression Equation; Balanced Scorecard; Data Envelopment Analysis; Analytic Hierarchy Process; Fuzzy Comprehensive Evaluation and so on, as Table 1. Structural equation method is the most commonly used method. In 2016, He Yiqing adopted a G1-DEA and TOPSIS-gray relational analysis method[22].

Table 1 Evaluation method of supply chain performance

Research methods	Literature
Structural Equation Model	Gwyn(1998) ; Kenneth & Amelia(1999) ; Theodor(2000) ; kwei & Theodore & Carol(2001) ; Brian(2004) ; Shawnee & Ram & Morris & Brian(2005) ; Suhong(2006) ; Liao Chenglin(2008) etc.
The Balance Score Card	Kleijnen(2003) ; Ma Shihua(2003) ; Li Yongxiang(2006) ; Yu Wei(2007) ; Wai (2008) ; Jalali & Naini (2010) etc.
Path Analysis	David(2004); Eng & Antony (2005) etc.
Fuzzy Comprehensive Evaluation	Liu Xiaoqun(2006); Guo Mei(2007); Zhang Tianping(2009); Zhang Bixi(2014); Juan(2016) etc.
Grey Correlation Analysis	He Yi Qing(2016) etc.

4.2 Research on Logistics Service Supply Chain Coordination

Logistics service supply chain is a chain from the logistics service provider to the logistics service integrator to the logistics service demand side chain structure of supply and demand cooperation[23]. Logistics service integrators as the core of the chain structure, it will use modern information technology to integrate the flow of funds, logistics, information flow chain and unified control in order to achieve customer value and service value. At present, there are many researches on the coordination of logistics service supply chain in academia, and most of the researches focus on the mechanism of participating in the interests of inter-subject through contract coordination. Common contracts include Wholesale Price Contract; Repurchase Contract; Revenue Sharing Contract; Subsidy Contract; Quantity Flexible Contract; Option Contract and so on.

Lariviere and Porteus established the simplest contract model of Wholesale Price and gave it a systematic exposition[24]. The model includes variables such as production cost, wholesale price, retail price and market demand, and suppose the wholesale price is constant. However, the final research shows that the wholesale price contract can not achieve the supply chain collaboration. Therefore, the wholesale price contract needs to be integrated into other contracts In order to achieve the overall expectations of the supply chain to maximize. Padmanabhan made a systematic statement of the repo contract and analyzed whether the strategy was adopted by the manufacturer and the conclusion shows that it is more appropriate to adopt the contract when the time demand is determined or the market demand is low [25]. Cachon confirmed that when there is a correlation between stochastic demand and price, the use of revenue sharing contract can achieve supply chain collaboration [26]. Cachon studied the interaction between the quantity of elasticity and the prediction sharing in the Flexible Quantity Contract, and considered that the seller in the supply chain can better forecast the demand than the supplier [27]. Corbet studied the quantity discount strategy under asymmetric information and the results show that the best performance can be achieved under the whole information supply chain system[28].

5. Summary

In recent years, many researches have been conducted on supply chain performance and logistics service supply chain coordination. In supply chain performance, the general research is the design and evaluation method of index system, and with the changes of the times constantly revised evaluation index and its weight, evaluation method also with the continuous improvement and development. In the field of logistics service supply chain coordination, most of the research is to establish various mechanisms to improve the collaboration within the supply chain to make the process more efficient and standardized. However, there are few studies on the indexes and methods

of coordinating the performance evaluation of logistics service supply chain from the perspective of customer value. Research on the performance evaluation of logistics service supply chain coordination from the perspective of customer value will effectively supplement the existing supply chain performance evaluation theory and will further enrich and improve the theory of logistics service supply chain management. The coordination of logistics service supply chain based on customer value should not only consider the interests of logistics service providers and logistics service integrators in the supply chain, but also consider the performance problems of the entire logistics service supply chain as a whole coordinated under the premise of customer value. Therefore, Service quality, customer relationship, service revenue, three indicators as a customer value perspective of logistics service supply chain coordination performance evaluation. The evaluation of the coordination performance of logistics service supply chain under the perspective of customer value can not be accurately expressed by mathematical analysis methods because the indicators are most likely to contain indicators of qualitative and subjective perception. In summary, we can use the Questionnaire Method to select indicators, and Fuzzy Analytic Hierarchy Process to determine the index weight.

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