

Summary of Research on Incentive Contract Design of Logistics Service Supply Chain

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Abstract

The problem of insufficient incentives for functional logistics service providers by logistics service integrators seriously hinders the development of logistics service supply chains. The article expounds the conceptual research situation of logistics service supply chain, summarizes the research status of incentive contract of logistics service supply chain, and discusses its future research direction.

Keywords

Logistics service supply chain, Research Summary, Research direction.

1. The concept of logistics service supply chain

As early as 2004, American scholar Lisa M. Ellram et al. wrote " Council of Supply Chain Management Professionals", indicating that service departments are important in supply chain management and gave The general model of the service supply chain [1]. This signifies that the service supply chain has been formally proposed and continues to receive the attention of many researchers. As an important part of the service supply chain, the logistics service supply chain has also attracted the attention of scholars. However, because the current research on the logistics service supply chain in China is still in its infancy, and the logistics service supply chain itself involves many nodes, the operating environment For issues such as complexity, related research has not yet formed a system, and the concept has not yet formed a unified definition. The Council of Supply Chain Management Professionals (CSCMP) believes that logistics services should be completed by many logistics node companies in the supply chain. No single logistics node company has the ability to independently complete the logistics service process. Tian Yu (2003) first stated that the logistics service supply chain is composed of integrated logistics service provider suppliers→ integrated logistics service providers→ manufacturing and retail enterprises, and the supply chain model led by integrated logistics service providers[2]. On the basis of this research, Yan Xiuxia, Sun Linyan et al. (2005) further define the logistics service supply chain as rounding a core enterprise of logistics services chain, On the basis of this research, Yan Xiuxia, Sun Linyan et al. (2005) further define the logistics service supply chain as the core enterprise of logistics services, using modern information technology to control the chains' logistics, information flow, capital flow, etc. In order to achieve service value and user value The value-added process [3]. Cui Aiping and Liu Wei (2008) added the definition of logistics service supply chain on the basis of previous studies, including the integration of service capability management, service process management, service performance management and customer value management [4]. Liu Wei and Gao Zhijun (2012) summarized the connotation and structure of the logistics service supply chain, and proposed that the theoretical basis of the logistics service supply chain is the enterprise logistics network, and the research paradigm of the logistics service supply chain is the service-leading logic [5]. Furthermore, Gao Zhijun and Liu Wei (2014) pointed out that in the logistics service supply chain, logistics integrators propose solutions based on customer requirements, while integrating the resources of service providers, customers and intermediaries to achieve value

creation [6]. Song Zhigang and Zhao Qilan (2015) conducted in-depth research based on the perspective of supply, showing that the logistics service supply chain has gradually formed a theoretical framework in terms of management elements, structural systems, interest coordination, and value creation [7]. Gao Zhijun and Zhu Weiping (2017) concluded that the logistics service supply chain is a part of the product supply chain. As a core enterprise, the logistics service integrator integrates capabilities, value flow and logistics relationships, and finally realizes the "five flows" integration of the service flow, Information flow, capital flow, knowledge flow and value flow on the logistics service supply chain. [8].

According to the above-mentioned literature analysis, although scholars have studied the relevant concepts of the logistics service supply chain from different focuses, they still have a basic unified consensus, that is, the logistics service supply chain is based on the customers' logistics service needs. And the core enterprise Logistics integrators provide logistics customers with solutions and integrate the logistics capabilities of various functional logistics providers to achieve value-added logistics services, and ultimately meet the needs of customers for logistics services. Its basic structure can be summarized as: The three-level model of logistics service provider → logistics service integrator → logistics customers.

2. Research status of incentive contracts in logistics service supply chain

Information asymmetry exists between upstream and downstream enterprises in the logistics service supply chain, which is easy to cause moral hazard and adverse selection problems. Carlos and other scholars (2001) pointed out that incentive payment can effectively improve the moral hazard and adverse selection problems caused by information asymmetry [9]. Laffont (2002) proposed in his classic book "The Theory of Incentives" that an incentive mechanism with market benchmark signals can effectively solve the problem of moral hazard between upstream and downstream enterprises in the logistics service supply chain [10]. Based on this, many scholars at home and abroad have gradually studied the effective incentives of service integrators to service providers to ensure that service providers actively cooperate and work hard to provide customers with satisfactory logistics services.

2.1. Current status of foreign research.

Frank et al. (2001) designed a service pricing model for the logistics service supply chain. The analysis of the model shows that the revenue sharing contract can incentivize the participants to actively cooperate to a certain extent [11]. ARCELUS. F. J et al. (2006) studied the coordination problem between manufacturers and service providers in the secondary logistics market under the uncertain service demand, and proposed a regression policy of manufacturers share the risks of logistics service providers [12]. Zhou et al. (2007) used the Stackelberg game model to analyze the use of price-quantity strategies by a single manufacturer and retailer under random demand to solve the coordination problem between enterprises [13]. Spinler et al. (2006) applied option contracts in the production capacity decision-making of non-storable goods, and analyzed the optimal strategy of both parties in the logistics service transaction when the spot market and the contract market exist at the same time [14]. YU (2011) studied the incentive mechanism and coordination mechanism in the secondary logistics service supply chain on the basis of the revenue sharing contract [15]. Liu et al. (2013) constructed a three-level logistics service supply chain nonlinear programming model, and obtained the optimal revenue sharing coefficient [16].

2.2. Current status of domestic research.

Compared with foreign countries, domestic scholars are more inclined to use principal-agent theory to study the incentive contract design of logistics service supply chain. Gao Zhijun, Liu Wei, etc. (2012) used entrusted agent to design the customer's double-layer entrusted-agent

incentive model for the safety and quality of the logistics service supply chain to motivate integrators and providers to work hard in their respective tasks [17]. Dai Ying, Song Han, etc. (2013) focused on the principal-agent problem and incentive selection of logistics service integrators under asymmetric information, indicating that the provider's service capability and effort are important factors in the design of optimal reward incentive contracts [18]. Lu Anwen and Jing Wenjun (2015) introduced customer evaluation of service quality into the incentive contract design of logistics service supply chain, and studied the influence of customer evaluation on the incentive effect of effort degree and others of integrators and providers [19]. Yuan Daoming (2015) builds a principal-agent incentive model with different risk preferences for logistics service integrators and logistics service providers, and analyzes the impact of risk aversion on the proportion of revenue sharing, the enterprise's respective effort level and revenue [20]. Wu Xiaoyan et al. (2016) studied the influence of incentive mechanism and punishment mechanism on the service quality improvement behavior of logistics service providers, and concluded that only when the incentive mechanism and punishment mechanism are combined, can the service provider be more effectively motivated to perform logistics service quality Improvement [21]. Ge Caihong et al. (2018) based on the multi-task principal-agent cooperation mechanism of the logistics service supply chain, analyzed the relationship between task observability, input cost and its impact on incentive efficiency, and proposed that the introduction of integrator supervision can effectively stimulate The level of effort of the service provider for each task [22]. Gao Lingjie (2018) constructed a quality and safety incentive model for logistics subcontractors, and analyzed the impact of logistics subcontractors' effort cost coefficient and safe operation capability on the effort level of safety tasks [23]. Lu Anwen and Liu Jiaqi (2019) construct a multi-task principal-agent model of information technology and information sharing. The analysis shows that the integrator's information sharing incentive strategy for providers can effectively encourage providers to achieve logistics information technology standardization and strengthen information exchange [24].

According to the summary and analysis of the above-mentioned literature, on the one hand, most scholars tend to study how logistics service integrators can incentivize providers to improve their efforts level and achieve optimal output. But in fact, the output of the logistics service supply chain is jointly determined by the provider's ability and effort level [18] [19]. It is difficult to achieve long-term growth in logistics output if the provider is solely motivated to work hard without improving the logistics operation capability. On the other hand, scholars' research is mostly based on the perspective of corporate "self-interested people" to design incentive contracts. However, a series of experiments in behavioral economics and sociology have shown that human behavior is boundedly rational, and people are not only concerned Self-interest when making decisions. but also pay attention to the fairness between the interests of others and self-interest [25-27]. Therefore, when the upstream and downstream enterprises of the logistics service supply chain have various behavioral preferences, if the factors of limited self-interest of enterprises cannot be integrated into the theory and model research of the supply chain, the research results will lack accurate qualitative and practicality.

3. Research trend of incentive contract design

3.1. Increase consideration of learning effects

Learning effect is a common phenomenon in daily life. In the process of principal-agent, due to the existence of learning effect, the utility function of the agent will change, which will affect the incentive effect [28]. The factors that trigger the learning effect mainly include: First, the increased proficiency of enterprise workers under repetitive working conditions, thereby increasing work efficiency; second, the company continues to improve production technology

and increase production efficiency; third, the company's The continuous improvement of the production process has reduced the replacement and assembly time and increased the production efficiency; fourth, the enterprise improves the design of the product, reduces unnecessary functions, and improves the production efficiency [29]. Based on the above four factors, the existence of enterprise learning effect brings a unified effect, that is, the increase of enterprise production efficiency, which also can be expressed as an increase in the production capacity of the enterprise.

The learning effect is an important source of enterprise technological progress [30]. Therefore, many scholars have introduced learning effects into the supply chain for research. Elmaghraby (1990), Jaber et al. (2003), Alamri et al. (2007) studied the impact of learning effects on the optimal production batch size of a firm [31,32,33]. Shen Tiesong and Xiong Zhongkai (2004) considered the learning effect to affect the production and demand of enterprises at the same time, and gave the optimal production decision of the supply chain manufacturer by constructing a mathematical model [34]. Xu Jianteng and Bai Qingguo (2014) established a mathematical model for the decision-making of the secondary supply chain system of perishable products based on the learning effect of manufacturers and distributors, and proved the existence and uniqueness of the system's optimal strategy [35]. Fu Kaikai and Chen Zhixiang (2015) studied the JIT production-zero inventory problem, which composed of a manufacturer and a retailer with a learning effect in the production process [36]. he above research mainly considers the influence of learning effect on the production process, and some scholars have studied the influence of learning effect on enterprise utility. Bai Qingguo and Xu Xianhao (2015) discussed the problem of dual-channel supply chain with learning effect. Research shows that when the learning effect exists in the supply chain system, the system can get more profits [37]. Lu Fen, Xu He et al. (2019) constructed a two-period master-slave game model with cost learning effects under traditional channels and dual channels, and studied the influence of learning rate in different channels and the differences and commonalities in decision-making. The results show that the increase in learning effect is beneficial For manufacturers, consumers and the entire supply chain [38].

Although the above literature has studied the impact of learning effects on the output of the supply chain from different perspectives, it is not difficult to generalize the way it affects: learning effects improve the output efficiency of the enterprise, thereby increasing the output of the entire supply chain. In the logistics service supply chain, logistics service providers are the direct providers of logistics services, and the improvement of their logistics capabilities is conducive to directly increasing the output of logistics services. Therefore, the integrator should change the perspective of incentives. It should not only encourage providers to work hard, but also encourage them to continuously improve logistics technology, logistics equipment and logistics operation methods, so as to improve logistics service capabilities and increase logistics service output of the supply chain.

3.2. Increase consideration of fairness preferences

For a long time, a large number of game experiments conducted by behaviorists and economists have shown that participants are limited self-interest when making decisions, and have a fair preference. The specific manifestation is: participants are not only concerned about maximizing their own benefits, but also about others' benefits. And concerned about the fairness of the distribution of material benefits or behavior motives [25, 26, 27]. In 1993, Rabin first introduced the concept of fairness preference into game theory and behavioral economics analysis [39]. Since the operation of the supply chain will be affected by various behavioral preferences, if the actual decision-making behavior of the enterprise cannot be combined with the supply chain model and theoretical research, the accuracy and practicality of the research will be very limited [40]. Based on this, the issue of the influence of fairness preference on the

decision-making behavior of supply chain node enterprises has attracted the attention of many scholars at home and abroad. Gui et al. (2007) introduced fairness preference into the coordination study of a two-stage supply chain composed of retailers and suppliers, and found that manufacturers can use the fairness preference of retailers to coordinate the overall supply chain [41]. Demirag et al. (2010) further consider the non-linear demand function, the retailer's fairness preference affects supply chain coordination [42]. On this basis, Ho et al. (2014) studied the impact of retailers' horizontal and vertical fairness preferences on the supply chain [43].

In terms of research by domestic scholars, Liu Jian et al. (2015) established a game model between service providers and service integrators based on the fair preference behavior of service integrators [44]. Ma Xuesong et al. (2017) constructed an emergency management model of the service supply chain based on the fairness preferences of service providers and customers and the value of service cooperation [45]. Zhang Cuihua and Xing Peng (2017) established a game model of logistics service supply chain quality decision-making considering the horizontal and vertical fairness preferences under the condition of multi-period quality penalty changes, and studied the impact of fairness preference on service supply chain quality decision-making [46]. Yan Fei (2017) focused on the horizontal fairness preference among providers, and constructed a dual principal-agent model of logistics service supply chain [47]. Wang Chaosheng, Zhou Yan, etc. (2018) established a service supply chain network equilibrium model considering fairness preference and quality, and studied the fair preference behavior of service providers [48]. Tan Chunqiao and Li Bo (2019) studied the impact of the fairness preference of integrators and providers on the optimal decision-making of the logistics service supply chain under the cost-sharing contract and the cost-sharing-two tariff combination contract [49]. Du Ni et al. (2019) considered the fair preference behavior of members in the logistics service supply chain, and constructed a logistics service supply chain quality defect commitment strategy model under the Nash bargaining fair preference [50].

To sum up, fair preference behavior will affect the coordination between various node enterprises, and then affect the development of the supply chain. Similarly, in the logistics service supply chain, the behavior of logistics node enterprises is inevitably affected by the fairness of income distribution. In this regard, logistics service integrators should include analysis of provider fairness preferences in the incentive contracts provided to logistics service providers This influencing factor. This will help the research conclusions have more accuracy and practical guiding significance.

3.3. Consider both learning effects and fairness preferences

At present, a few scholars have simultaneously introduced learning effects and fairness preferences into the design of incentive contracts in the principal-agent framework. Ma Guowang and Meng Weidong (2017) studied the design of incentive contracts with learning effects and fairness preferences under the framework of a principal-agent framework by improving the HM principal-agent model of the purely self-interested assumption in traditional economics [28]. On this basis, Fan Ruguo, Cao Min, etc. (2019) combined the learning effect and fairness preference with the actual situation of government incentives enterprises for energy conservation, and established a principal-agent energy conservation incentive contract between the government and enterprises [51]. The core of the principal-agent theory is to solve the problems caused by information asymmetry between participants, and there is significant information asymmetry between upstream and downstream enterprises in the logistics service supply chain. Therefore, based on the previous review of learning effects and fairness preferences, and further combining the characteristics of the logistics service supply chain node enterprise relationship, such as competition, cooperation, etc., and then introducing the characteristics of learning effects and fairness preferences of the enterprises themselves into

the principal-agent model, Studying the impact of relevant parameters on the output of logistics services and the effect of provider incentives, which can be a further research direction.

References

- [1] L.M. Ellram, W.L. Tate and C. Billington: Understanding and Managing the Services Supply Chain, *Journal of Supply Chain Management*, Vol. 40 (2004) No.3, p.17-32.
- [2] Y. Tian: Research on Supplier Selection in the Construction of Service Supply Chain, *System Engineering Theory and Practice*, Vol. (2003) No.2, p.13-56.
- [3] X.X. Yan, L.Y. Sun and K.C. Wang: Research on Characteristics and Performance Evaluation of Logistics Service Supply Chain Model, *China Mechanical Engineering*, Vol. 16 (2005) No. 11, p.969-974.
- [4] A.P. Cui, W. Liu and X. Zhang: LSSC basic theoretical framework, *Journal of Shanghai Maritime University*, Vol. 29 (2008) No.1, p.1-6.
- [5] W. Li, Z.J. Gao: Logistics Service Supply Chain: Theoretical Framework and Research Paradigm, *Business Economics and Management*, Vol. (2012) No.4, p.19-25.
- [6] Z.J. Gao, W. Liu and J. Gao: The value co-creation mechanism of logistics service supply chain under service-led logic, *China Business and Market*, Vol. (2014) No.11, p.71-77.
- [7] S.Z. Gang, Z.Q. Lan: Research on the Supply Chain of Logistics Services—Change of Perspective from Supply to Demand, *Business Economics and Management*, Vol. (2015) No.3, p.14-22.
- [8] Z.J. Gao, Z.W. Ping and S.D. Chen: Research on the Integration of Logistics Service Supply Chain, *China Business and Market*, Vol. 31 (2017) No.10, p.46-54.
- [9] C. Vidal, M. Goetschalckx: Understanding and Managing the Services Supply Chain, *General Information*, Vol. 129 (2001) No.1, p.134-158.
- [10] J. Laffont, D. Martimort: *The Theory of Incentives* (New Jersey: Princeton University Press, America 2002).
- [11] Y.C. Frank: Analysis of third-party warehousing contracts with commitments, *European Journal of Operational Research*, Vol. 6 (2001) No.21, p.603-610.
- [12] F.J. Arcelus, Kumar S: Evaluating manufacturer buy back policies in a single period two echelon framework under price dependent stochastic demand, *Omega*, Vol. 36 (2006) No.5, p.808-824.
- [13] Y.W. Zhou: A comparison of different quantity discount pricing policies in a two echelon channel with stochastic and asymmetric demand and information, *European Journal of Operational Research*, Vol. 181 (2007) No.5, p.686-703.
- [14] S. Spinler, A. Huchzermeier: The valuation of options on capacity with cost and demand uncertainty, *European Journal of Operational Research*, Vol. 171 (2006) No.3, p.915-934.
- [15] Y.U. Hai-Hong, N. Liu: Coordination of Revenue Sharing Contract in Service Supply Chains with Incentive Mechanism, *Mathematics in practice & Theory*, Vol. 41 (2011) No.12, p.69-79.
- [16] W.H. Liu, X.C. Xu, A. Kouhpaenejad: Deterministic approach to the fairest revenue-sharing coefficient in logistics service supply chain under the stochastic demand condition, *Journal of Shanghai Maritime University*, Vol. 66 (2013) No.1, p.41-52.
- [17] Z.J. Gao, W. Liu and Z.W. Ping: LSSC safety and quality incentives under customer rewards and punishments, *China Business and Market*, Vol. 33 (2012) No.3, p.46-51.
- [18] Y. Dai, H. Song and Z.L. Lin: Research on Incentive Mechanism of Logistics Service Supply Chain Based on Principal-agent, *Logistics Technology*, Vol. 32 (2013) No.13, p.363-365.
- [19] A.W. Lu, W.J. Jing: Research on Incentive Mechanism of Logistics Service Supply Chain Considering Customers' Evaluation of Service Quality, *Journal of Commercial Economics*, Vol. (2015) No.1, p.166-174.
- [20] D.M. Yuan: Research on Incentive Mechanism of Logistics Service Supply Chain under Different Risk Preference Combinations, *Logistics Engineering and Management*, Vol. (2015) No.09, p.98+135-137.

- [21] X.Y. Wu, S.C. Lu: Design of incentive and punishment mechanism based on LSSC quality improvement, *Statistics and Decision*, Vol. (2016) No.24, p.42-45.
- [22] C.H. Ge, B.F. Ji: Research on Multi-task Cooperation Mechanism of Logistics Service Supply Chain, *Journal Of Zhejiang Shuren University*, Vol. 18 (2018) No.1, p.53-59.
- [23] L.J. Gao: Research on Security Incentive Mechanism of Logistics Operation Based on Principal-agent Theory, *Logistics Engineering and Management*, Vol. 40 (2018) No.10, p.131-134.
- [24] A.W. Lu, J.Q. Liu: Research on Incentive Strategy of Information Sharing in Logistics Service Supply Chain, *Science and Technology Management Research*, Vol. 39 (2019) No.07, p.228-232.
- [25] R. Forsythe, J.L. Horowitz and N.E. Savin: Fairness in simple bargaining games, *Games and Economic Behavior*, Vol. (1994) No.6, p.347-369.
- [26] J. Agell, P. Lundborg: Theories of pay and unemployment: survey evidence from Swedish manufacturing firms, *Scandinavian Journal of Economics*, Vol. 97 (1995) No.2, p.295-307.
- [27] R. Fahr, I. Bernd: Fairness as a constraint on trust in reciprocity: earned property rights in a reciprocal exchange experiment, *Economics Letters*, Vol. 66 (2000) No.3, p.273-282.
- [28] G.W. Ma, W.D. Meng, J.S. Dai: Principal-agent contract design based on mutual fairness preference and learning effect, *Systems Engineering-Theory & Practice*, Vol. 37 (2017) No.6, p.1548-1556.
- [29] T.T. Sun: The impact of carbon emission reduction policies on enterprise production and emission reduction behaviors from the perspective of learning effects (Ph.D., Nanjing University of Aeronautics and Astronautics, China 2017), p.9.
- [30] K.J. Arrow, *The economic implications of learning by doing*, Palgrave Macmillan UK, Vol. 29 (1971) No.3, p.155-173.
- [31] S.E. Elmaghraby: Economic manufacturing quantities under conditions of learning and forgetting (EMQ/LaF), *Production Planning and control*, Vol. 1 (1990) No.4, p.196-208.
- [32] M.Y. Jaber, M. Bonney: Lot sizing with learning and forgetting in set-ups and in product quantity, *International Journal of Production Economics*, Vol. 83 (2003) No.1, p.95-111.
- [33] A.A. Alamri, Z.T. Balkhi: The effects of learning and forgetting on the optimal production lot size for deteriorating item with time varying demand and deterioration rates, *International Journal of Production Economics*, Vol. 107 (2007) No.1, p.125-138.
- [34] T.S. Shen, Z.K. Xiong, Y.Z. Zhang: Optimal Production Strategy of Supply Chain Based on New Products, *Chinese Journal of Management Science*, Vol. 12 (2014) No.2, p.54-59.
- [35] J.T. Xu, Q.G. Bai, Y.Z. Zhang: Study on Optimal Strategy of Secondary Perishable Product Supply Chain with Learning Effect, *Systems Engineering-Theory & Practice*, Vol. 33 (2013) No.5, p.1167-1174.
- [36] K.F. Fu, Z.X. Chen: Research on JIT Production-Zero Inventory Optimization Considering Learning Effect and Quality Defects, *Chinese Journal of Management Science*, Vol. 23 (2015) No.S1, p.543-550.
- [37] Q.H. Bai, X.H. Xu: Research on Inventory Strategy of Dual-channel Supply Chain with Learning Effect, *Chinese Journal of Management Science*, Vol. 23 (2015) No.2, p.59-69.
- [38] F. Lu, H. Xu and P. Zhou: The Impact of Cost Learning Effect on Supply Chain Channel Decision, *Chinese Journal of Management Science*, Vol. 27 (2019) No.6, p.53-63.
- [39] M. Rabin: Incorporating Fairness into Game Theory and Economics, *American Economic Review*, Vol. 83 (1993) No.5, p.1281-1302.
- [40] R. Croson: Experimental Economics and Supply Chain Management, *Interfaces*, Vol. 23 (2002) No.5, p.74-82.
- [41] T.H. Gui, J.S. Raju and Z.J. Zhang: Fairness and Channel Coordination, *Management Science*, Vol. 53 (2007) No.8, p.1303-1314.
- [42] O. Caliskan-demirag and Y.H. Chen and J.B. Li: Channel coordination under Fairness Concerns and Nonlinear Demand, *European Journal of Operation Research*, Vol. 23 (2014) No.2, p.1-6.
- [43] T.H. Ho, X. Su, Y. Wu: Distributional and Peer-induced Fairness in Supply Chain Contract Design, *Production and Operations Management*, Vol. 20 (2010) No.3, p.1-6.
- [44] J. Liu, S.L. Shu: Service supply chain coordination contract considering fairness concerns, *Control and Decision*, Vol. 031 (2015) No.1, p.98-104.

- [45] X.S. Ma, R.Q. Chen: Emergency coordination strategy of service supply chain based on fairness concerns and service cooperation value, *Control and Decision*, Vol. 032 (2017) No.006, p.1047-1056.
- [46] C.H. Zhang, P. Xing and J.L. Zhu: Research on Quality Supervision and Cooperation of Logistics Service Supply Chain Based on Fairness Preference, *Journal of Industrial Engineering and Engineering Management*, Vol. 31 (2017) No.04, p.164-170.
- [47] F. Guo: The Influence of Horizontal Fairness Preference on Collaborative Operation of Logistics Service Supply Chain, *Journal of Highway and Transportation Research and Development*, Vol. 034 (2017) No.004, p.139-145.
- [48] C.S. Wang, Y. Zhou, J. Liu: Research on Decision-making of Service Supply Chain Network Equilibrium Considering Fairness Concern and Quality, *soft science*, Vol. 32 (2018) No.5, p.132-138.
- [49] C.Q. Tan, B. Li and C.S. Cui: Research on Logistics Service Supply Chain Coordination Considering Corporate Social Responsibility under Fair Concerns, *Control and Decision*, 1-13[2020-03-13].<https://doi.org/10.13195/j.kzyjc.2018.1706>.
- [50] N. Du, S.C. Zhou: Research on Commitment Strategy of Quality Defects in Logistics Service Supply Chain under Fair Concern, *Operations Research and Management Science*, Vol. 28 (2019) No.07, p.34-43.
- [51] R.G. Fan, M. Cao and J.Q. Sun: The impact of enterprise learning effect and fairness preference on energy-saving incentive mechanism, *technical economy*, Vol. (2019) No.38, p.117-125.