

A Study on Information Sharing in Logistics Supply Chains within E-commerce Environments

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Abstract — In the network economy era, it is vital to operate more efficiently and create more value in the e-business environment which has involved ever more companies. They are concerned with the supply chain management which occupies an increasingly important position. The e-commerce technology presents new features and trends on how to build and improve the supply chain, how to integrate the supply chain as a single whole which is highly competitive and has become an important topic for research. In this paper, the system knowledge base provides a deeper understanding of the nature of e-commerce and supply chain and its management. Based on the analysis of the impact of electronic commerce, and focusing on the supply chain under the premise to build e-commerce environment, we discuss the principles, policies and method to provide reference for corporate design and supply chain information sharing in e-commerce. This will provide scientific and business information quickly into the economy, and promote the economic value of e-commerce in the whole economy with extensive and real implementation.

Keywords -- Logistics Supply Chain Management, E-commerce, Information Sharing

I. INTRODUCTION

With the rapid development of the world economy, the global digital, networked, information technology has become the main characteristics of the times, we have exposure to a rapidly changing information technology and consumer demand increasingly diverse era [1]. Internet-based e-commerce makes the economic activities and economic behavior of producers, consumers and all types of market institutions and other economic agents can rely on a network or on a network directly, so that the economic life of the production, exchange, distribution and consumption look. In theory and practice in the field of management theory and methods of e-commerce environment, supply chain management will undoubtedly become a hot spot [2-3].

In the e-commerce environment, enterprise management model evolved from a single enterprise-based management model to the management model based on the extended enterprise, this business model emphasizes the core business and the most outstanding enterprises to establish strategic partnership, business trust these companies to complete part of the work then focus and resources, by redesigning business processes, so that the enterprise can create special value, do more good than its competitors business-critical work, which not only greatly improve the competitiveness of the enterprises, but also the supply Other companies in the chain can benefit [4]. The main problem to be solved in the enterprise then turned into the supply chain issues, namely how to effectively integrate and use the information provided by a number of business issues.

Information sharing can effectively alleviate the supply chain bullwhip effect and promote coordination. Internet-based e-commerce not only between supply chain nodes to achieve a high degree of integration and sharing of business information, and in turn become a tool for supply chain

management, and give a new meaning to the supply chain management [5]. Therefore, the goal of e-commerce concern is how to use a new e-commerce business model to change the operation of the supply chain, with a strong e-commerce technology to improve operational efficiency of the supply chain. So the supply chain in the environment of e-commerce today is bound to be change and development.

E-commerce on people's lives a significant impact. It not only changed the traditional corporate business and sales, but also changed the internal and external environment of the supply chain, how to implement the new environment coordinate the supply chain is a hot issue in today's supply chain management research. Contract mechanism and information technology is to achieve effective coordination of the supply chain in two ways. Contract to establish a good working relationship among supply chain members, information sharing can effectively alleviate the supply chain bullwhip effect and promote coordination. Logistics has become operational activities in the supply chain, an important part of the e-commerce environment, logistics and distribution activities is very important.

II. E-COMMERCE AND SUPPLY CHAIN INFORMATION SHARING

Information sharing between supply chain refers shared among members of the supply chain affect the overall performance of information, to coordinate the members of the decision-making and behavior, to achieve the efficient functioning of the supply chain, that indicate the information sharing does not mean sharing all the information enterprise, just sharing information that is significant impact on the overall performance of the supply chain. Since the premise of supply chain companies exist as a separate entity, so companies cannot be all of the information shared in the supply chain, the risk that the essential requirements of

independence not only as individuals, but also to prevent information leaks caused. In the supply chain information flows include the following [6-8]:

Inventory information. The most common corporate as inventory information, information sharing model currently established mostly to optimize inventory for the purpose. Supply Chain common share inventory information in a coordinated manner, whereby the lower inventory levels and reduce inventory volatility. By sharing inventory information enables inventory in the supply chain between the rational distribution, so as to avoid recurrence of such incidents. In addition to the supply chain inventory information sharing of Xi Bu, share inventory information may also take place in the competition between the supply chain.

Demand information. Supplier production planning and capacity planning vendors deliver information on demand, twisted information needs, on the one hand to make the supplier was unable to rationalize production led to inventory or cannot supply, on the other hand so that the seller because the amount of which may cause exaggerated order poor supply relationships, or unable to meet the customers the opportunity cost. Sharing demand information, can effectively solve this problem. If the company shared data vendors, enables the company to periodically analyze sales environment, including trends, preferences and distribution, in order to determine the level of production and reduce costs.

Sales forecasting information. When vendor managed inventory, vendors will be delivered to the supplier inventory decisions, but this approach also has limitations. In the vendor's inventory maintained at a certain level, when the stock is below this level, the supplier will promptly its replenishment, the appointment to the order quantity to the sales provider. In some other cases, vendors previously set a maximum stock threshold, as long as the stock does not exceed the threshold, the number of product suppliers to add to their value can be arbitrary. Sellers reason for setting this constraint, aims to prevent overstocking suppliers add. However, when the supplier of the sales forecast accuracy exceeds vendors, such restrictions impede both sides share information on sales forecasts.

Production planning information. Production planning information shared between material suppliers and manufacturers, can help manufacturers to replenish material resources, can also help material suppliers promptly adjust the material procurement plan and schedule distribution program. The chip unit and computer peripheral equipment manufacturers and manufacturers Motorola's share of production planning, so that it can better arrange the production.

Order information. Development of e-commerce, making demands in order to show the way, to grasp the order information, can speed up processing of orders, so as to better serve our customers. Such as courier companies and electricity supplier companies to share order information, courier companies to provide customers with fast delivery service.

III. LOGISTICS SUPPLY CHAIN ANALYSIS UNDER THE ELECTRONIC COMMERCE

E-commerce is not one or two companies of thing, but on a common economic functioning of the supply chain of many members. This requires the supply chain from the perspective of the overall planning of the overall activities of the supply chain system, and deal with the relationship between the various companies in the supply chain, and not a single individual enterprises seek to optimize economic activity, should seek to optimize the entire supply chain. The operation of the supply chain is a systematic operation, in addition to traditional storage, transportation, packaging and other logistics services, on the epitaxial extended upstream to the market research, forecasting, purchasing, cost analysis and order processing, extending down to logistics and distribution, logistics consulting and training, selecting and planning the distribution scheme, payment collection and billing, inventory control strategies other value-added activities; increase in the implications of the role of the supply chain to support the marketing decision-making [9]. E-commerce supply chain under effective method is to use a series, with modern information technology to integrate suppliers, manufacturers, distributors, retailers and service providers, so that goods can produce the exact number of market demand and accurate time delivery to the exact location. Supply chain organizations are quickly established between industry supply chain and industry contacts, supply chain organization network is the trend, and has become an important feature of modern logistics supply chain. Networked supply chain can provide timely information to the members of the supply chain to meet market requirements for enterprises to speed up the reaction. Meanwhile, in order to guarantee fast product sales, comprehensive logistics support, supply chain also need to have a sound, a sound network. Logistics activities in the supply chain between network nodes and node consistency and systematic maintain optimal inventory levels throughout the supply chain and distribution organization to provide timely assurance. Supply chain network to form a key link in the industry supply chain, supply chain member companies for the purpose, outline both the supply chain network. E-commerce supply chain network model in Figure 1.

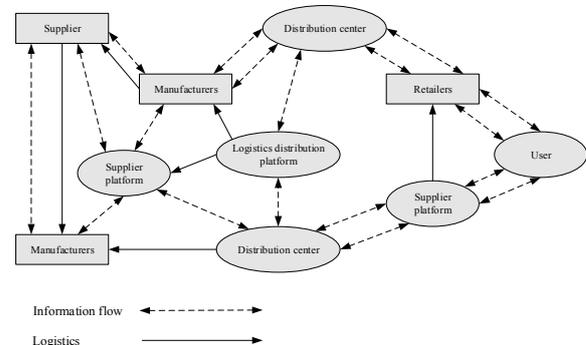


Figure 1. Logistics supply chain network model under the e-commerce.

In the e-commerce activities, the supply chain should quickly capture and accurate identification of consumer

demand information, and on this basis, the rapid accumulation and integration of resources has the best economic efficiency and core competitiveness of members common goal-driven alliance, through the formation of a high degree of flexibility in dynamic, market acumen, reflecting the rapid and innovation value network, consisting of more lean and efficient overall combat team, synchronized cooperation in information sharing and real-time interaction. Meanwhile, according to changes in the external environment and timely dynamic adjustment and reconstruction of the existing supply chain to ensure that living in a stable position in the market space. Supply Chain e-commerce era is an integrated supply chain, design and operation of an efficient supply chain for each enterprise is crucial [10]. Supply chain, the rebuild in e-commerce is inevitable, is the source of the supply chain a competitive advantage. From the point of view of supply chain to build e-commerce has great potential and value of the supply chain.

Successful companies have been using only the Internet as a communication beyond simple transactions and superficial level, professional e-commerce companies should further the development of Internet applications, the future supply chain restructuring will be intelligent direction. First of all, intelligent decision support system of e-commerce should have to evaluate alternative contract terms, to facilitate the rapid agreement between the parties, the contract signed by monitoring e-commerce system, warranty fulfillment. Secondly, intelligence will become the framework of price movements of capital and supply chain management of the bridge. Supply chain operations should also be optimized to reflect the income according to different product types and user partition obtained. Therefore, the price and supply chain decisions as in the past will not be independent, it should be well integrated, this is another way to inject intelligence in supply chain management. Finally, intelligence allows e-commerce market design collaboration. In the network of today, all the design ideas, new product concept, design and manufacturing interfaces, new materials, alternative materials and marketing are available through e-commerce market to help achieve. Reorganization of the supply chain plays its due role in the field of design collaboration.

IV. THE ESTABLISHMENT OF INFORMATION-SHARING SYSTEM

On the logistics service supply chain, integrated logistics services business (referred to as integrators) are generally integrated logistics company, to complete and to assume a number or even all of the logistics function. Functional logistics companies (referred to as supplier) only undertake and complete one or several logistics functions, such as transportation, warehousing, distribution processing, distribution, and packaging. Integrators and service contract logistics customers, their custom aggregate demand for logistics services in whole or significant part of the value-added integration services [11]. At the same time, focusing on business development and process reengineering, to develop a variety of best practices, such as product sales forecasting, packaging, transportation, storage, etc., depend

on their own efficient information processing capabilities, and ultimately to improve the efficiency of logistics operations and reduce logistics costs. However, due to the logistics is a cross-sectoral, cross-sectoral industrial complex, involving a variety of modes of transport railways, highways, waterways and air transport, but also involves port supervision, business, land, taxation and other related departments and other information. Thus, on a global scale, even though the larger integrators, nor confined to use their own assets, but should by virtue of its good logistics service supply chain information sharing system, shown in Figure 2, effectively balance and coordination Supplier of logistics facilities and equipment, give full play to the advantages of each partner.

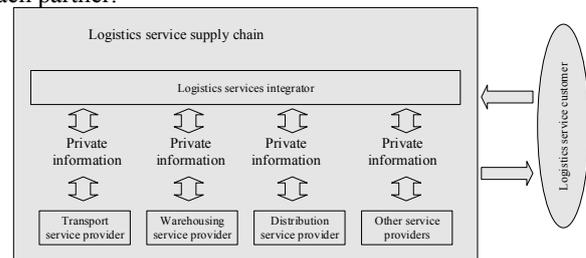


Figure 2. The structure of the logistics service supply chain information sharing system.

Of course, accurate and reliable information sharing is the foundation of supply chain logistics services, efficient operation, and therefore the supply chain integrators need multiple vendors report's private information, then touch and distribute information in accordance with the actual situation. But because suppliers are independent interest entities only from their own interests, to report information to their advantage, causing integrator's private information obtained directly unrealistic or too costly. At this point, integrators must design information to induce suppliers to provide real incentives, to maximize the best interests of the whole supply chain logistics services. Collaborative e-commerce platform based on supply chain integration to integrate all available resources. Collaborative e-commerce platform in the enterprise to produce the final product is defined as a core business, the core business is defined as the supply of spare parts business for suppliers. 'E-commerce platform as a neutral party e-commerce platform for enterprises to enter the information related to the review and certification. E-commerce platform for the development of certain evaluation, peer vendors delivery capability, delivery times, vendor sales of a series of indicators to evaluate and regularly publish evaluation results for all companies looking for suppliers and vendors provide a fair and objective basis. Core business can find their own suppliers and vendors in the e-commerce platform to provide relevant information. Paralysis can be exchanged between enterprises through certain criteria directly without going through the e-commerce platform, as shown in Figure 3.

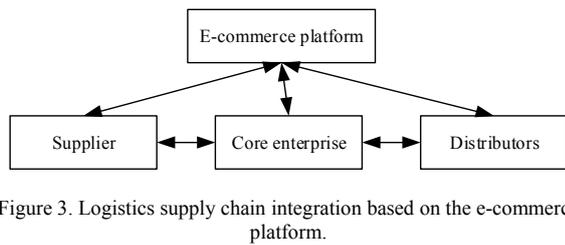


Figure 3. Logistics supply chain integration based on the e-commerce platform.

This model can solve the problem of asymmetric information in the supply chain, and increasing the agility and openness of the supply chain, it is possible the formation and dissolution of the supply chain at any time, easy to construct dynamic alliance, greatly reducing the supply chain implementation costs.

V. MODELING OF COOPERATION IN SUPPLY CHAINS

The layers of producers and retailers compete in a non-cooperative way, but the partners in individual supply chains can profit from cooperative decision making. The strategic partnership means cooperation and coordination of actions through the supply chain. The strategic partnerships change material, financial and information flows among participants in the supply chain. The way of information sharing is changed by information centralizing using information technology. The expected result is mutually beneficial, win-win partnership that creates a synergistic supply chain in which the entire chain is more effective than the sum of its individual parts. Supply chain partnership leads to increased information flows, reduced uncertainty, and a more profitable supply chain. The general supplier–customer relations in supply chain can be taken as centralized or decentralized. The partnership relations are based on supply contracts. Contracts provide a means for bringing the decentralized solution to the centralized solution. Contracts also facilitate long-term partnership by delineating mutual concessions that favor the persistence of the relationship, as well as specifying penalties for non-cooperative behavior. The contracts are evaluated by multiple criteria as price, quantity, costs, time and quality. There are different approaches to modeling multi-criteria negotiation processes to reach a consensus among partners. A cooperative decision making requires free communication among agents and gives synergic effects in a conflict resolution. The basic trend in the cooperative decision making is to transform a possible conflict to a joint problem. Some basic ideas of formal approaches of problem solving can be introduced to cooperative decision making. There are two aspects of the problem solving—representation and searching. The state space representation introduces the concepts of states and operators. An operator transforms one state into another state. A solution could be obtained by a search process that first applies operators to the initial state to produce new states and so on, until the goal state is produced. Communication between producers and retailers can be provided through information sharing (see Figure 4). The proposed model is a discrete dynamic model and the

cooperation of units is based on contracts and formal agreements achieved in negotiation process.

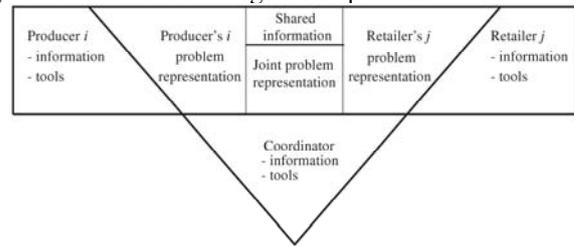


Figure 4. Communication through information sharing.

The flow network represents the supply chain network with information, material and financial flows between partners. The Petri network is used to coordinate asynchronous events of different units in the supply chain and to model negotiation process. The neural network serves as an instrument for inductive learning of negotiation strategies. Producers and retailers in individual supply chains negotiate contracts about prices, quantities, costs, time, etc. The double marginalization problem can be generalized and producers and retailers negotiate the profit-sharing contracts.

VI. BUILD E-COMMERCE LOGISTICS SUPPLY CHAIN INFORMATION SHARING MODEL

Through the use of e-commerce, you can successfully implement the entire agricultural supply chain logistics information sharing, and to achieve a minimal cost to provide the best value and the best service for the logistics of consumers, so that the operation of lifting the entire logistics supply chain efficiency and economic benefits greatly increased the likelihood of becoming a reality. At the same time, advanced information network technology undoubtedly achieve supply chain information sharing provides a strong objective criteria. Through the use of information technology to improve the possibility of farmers, suppliers and wholesalers and retail end customers link together, and conducive to the realization of all aspects of agricultural product logistics, real-time tracking, effective control and full management, so as to realize the sharing of resources and information sharing.

Moreover, and other advanced information technologies currently in overseas agricultural supply chain has been very widespread use. Practice shows that both the production enterprises, government control department, or third-party logistics companies, are available through publishing and query all kinds of related information. By addition, the information is neurogenic agricultural product logistics, so only in agricultural prenatal, delivery and postpartum well to storage, transport, processing and marketing and other aspects of both timely and accurate processing of logistics information capabilities premise one can accurately respond to market changes. And now, due to the logistics industry information network is not perfect, not smooth communication channels, combined with farmers living in scattered this situation, make a lot of difficult to timely and accurate information collection and transmission, severely affected the logistics industry supply chain efficiency.

Therefore, the information network technology to be widely adopted, and by combining it with a modern logistics system to speed up the construction and take full advantage of e-commerce, to build the logistics industry logistics information network management system, to achieve information sharing logistics industry supply chain.

From the current development status, the paper supply chain situation, supply chain information sharing status, and impact analysis of supply chain information sharing and other factors, can be constructed to achieve the logistics industry supply chain information sharing of effective models. We build e-commerce-based supply chain information sharing model diagram shown in Figure 5. This mode is the specific application of point to point mode. The model has five major retailers dedicated repository information base material suppliers to establish a dedicated information database farmers established dedicated repositories core enterprises to establish a shared information base established distributors to establish a dedicated information database. While materials suppliers, distributors and retailers mutual sharing of information between them, were shared core business shared database according to their own privileges.

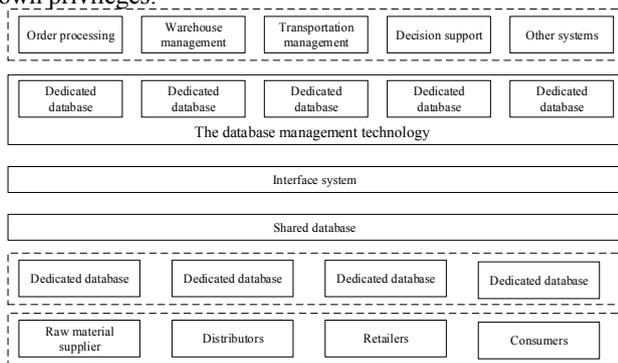


Figure 5. the logistics supply chain information sharing mode of e-commerce.

Enterprise Management Practice shows that employees work enthusiasm has unique culture are often higher, consciousness responsibility are often more intense, between employees tend to have a higher propensity to cooperate, at present, to establish good corporate culture has become promote enterprises to effectively run and maintain the vitality of enterprises an effective way. As for the supply chain, it can be regarded as an expansion of the business, so the logistics supply chain, the supply chain by promoting cultural construction, efforts to form a good supply chain culture will undoubtedly improve supply chain sense of cooperation members, improve information open, information-sharing initiative, in turn, can promote effective information sharing.

VII. CONCLUSION

With the development of modern information technology and the environment in the economic globalization, supply chain management more and more importance in enterprises. In the new situation, the competition among enterprises has

been transformed by a competition between individual enterprises to competition between supply chains. Shorter product life cycles, diverse customer needs, companies recognize that the supply chain management to achieve the goal of improving customer satisfaction, it is critical collaborative supply chain, only a concerted functioning in order to improve the overall competitiveness of the supply chain. Based on the understanding of the nature of e-commerce as well as on the basis of supply chain collaborative management of the overall knowledge on the analysis of the impact of electronic commerce on supply chain collaboration. It clarified the meaning of supply chain collaboration, range. By analyzing the impact of supply chain collaboration contributing factors and barriers to e-commerce environment is proposed supply chain collaboration strategy.

Meanwhile, the paper analyzes the supply chain coordination and information sharing relationship, noted Information sharing is the key to supply chain collaboration. By analyzing the supply chain collaborative information sharing and information integration issues, proposed the establishment of supply chain collaboration platform for data integration idea of this nature in-depth understanding of e-commerce and supply chain and supply chain management system based on the understanding, first Supply chain management theory and practical application into the background and within the framework of e-commerce, systems analysis and elaboration of the e-commerce supply chain changes and features influence and supply chain, comparing the traditional supply chain and e-commerce supply chain The distinction, proposed to design and build e-commerce supply chain under the precondition of the key issues, design strategies, principles and method steps, in order to facilitate a profound understanding of the supply chain, promote the further development of supply chain theory and practice. Due to time constraints and capabilities, only preliminary findings and programs, but to really be effective applied to numerous business management practice, there are a lot of further research work waiting for us to explore and practice.

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