

Study on Supply Chain Management in Electronic Commerce

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ABSTRACT

Electronic commerce has been changing the operation models of firms to adjust the ever more competitive environment in the commercial field, and the new ones of cooperation among firms have been formed by it. In the globalized electronic commerce, the old and traditional models of supply chain management have faded away by being failed to fill the needs in the electronic commerce, and the new models of, therefore, should be created. Firms strive to adapt their supply chains to the electronic commerce, and they need to decide how much and in what sequence they will be investing in various supply chain efforts to leverage the benefits of the new technology. In this paper three main aspects are described. First, based on the present a comprehensive definition of supply chain management, relevant characters of it that have risen to the importance with the prevalence of electronic commerce are provided. By using the universal criteria in the Internet, the information in many directions being flowed has been already realized, so, the commercial partners can build a automatic and integral supply chain, and the chain can operate as a whole. Second, the strategies of implementing supply chain management are discussed. By applying the supply chain management in electronic commerce, the time of communication between companies has been shortened; the nicety has been realized; and the efficiency of stock and conveyance has been greatly improved. Moreover, by integrating multi-enterprise, the implementations of concurrent engineering and inventory-reinforce plan have been allowed.

Key Word: Supply Chain Management, Characters, Strategies, Electronic Commerce

1. INTRODUCTION

The rapid growth and adoption of the electronic commerce have already had a great impact on all aspects of business, including customer acquisition, marketing, human resource management, finance, information systems (IS), and operations. Supply chain management that has played an important role in traditional businesses is likely to be crucial in the electronic commerce environment as well^[1]. To survive in the competition, the companies have, especially for someone who compete in the low technical-obstacles industries, have to be closely connected with whole-sellers, dealers and retailers to reduce the cost of products and to gain a competitive edge. At during the next five years, collaboration by supply chain partners over the electronic commerce can potentially save \$223 billion with the reduction in transaction, production, and inventory costs^[2]. This could be one of the largest benefits of electronic commerce technology and many firms have already begun to realize these benefits. For example, Microsoft used a Web collaboration tool to bring the Xbox video game console to market two months ahead of schedule^[2]; Cutler-Hammer has doubled profits and increased productivity by 35% for its configured motor control centers and control panels by coordinating with customers over the electronic business^[3]; and Autoliv reduced the plant inventory by 37% by coordinating orders online with suppliers^[4]. The large potential impact of the electronic commerce on supply chain management makes its study timely and important.

2. SUMMARIZE OF SUPPLY CHAIN MANAGEMENT AND THE E-COMMERCE

2.1 The Conception of Supply Chain Management

Having a concrete understanding of supply chain management, which has been enriched in the trend of globalization of production and service, is the precondition to success of operating it. Then, what is the supply chain? A supply chain is the set of entities (such as whole-sellers, producers, retailers, transportors, and final consumers etc.) involved in the design of new products and services, procuring raw materials, transforming them into semifinished and finished products, and delivering them to the end customer. Supply chain management is the efficient management of the end-to-end process, which starts with the design of the product or service and ends with the time when it has been sold, consumed, and finally, discarded by the consumer^[5]. This complete process includes product design, procurement, planning and forecasting, production, distribution, fulfillment, after-sales support, and end-of-life disposal. The utility of supply chain management is to boost the cooperation between many entities, including whole-sellers, producers, retailers, transportors, and final consumers. The cooperation, which enables to optimize all the relations concerned with the supply chain, thus, provides the biggest value to buyers by minimizing the cost.

It is clear that supply chain management spans several functional and geographical areas, introducing

complexities both in terms of design and execution. Some of the pertinent factors that complicate supply chain management decisions include the presence of multiple agents and their sometimes conflicting incentives; uncertainty in demand, supply and production distribution process; asymmetry of information related to product design, inventory, costs, demand and capacity across the supply chain between the various parties in the supply chain; and lead time between the different entities in the supply chain. All these complexities lead to several types of inefficiencies in the supply chain: poor utilization of inventory assets^[6]; distortion of information such as the bullwhip effect^[6], high stock-outs and nonresponsive supply chains^[7]; poor customer service due to customization-responsiveness challenges^[8]; and double marginalization that leads to lower profits for the supply chain^[9]. Setting up models of supply chain management for electronic commerce in the ever developing environment is the guarantee of successful implementation.

2.2 The Conception of Electronic Commerce

Why electronic commerce can be loosely defined as IC (Internet Commerce) is because the electronic commerce process is developed by the technologies, mainly by using EDI and the Internet or other electronic medium as a channel to complete business transactions^[5]. Therefore, all the ways of exchanging information, which was not used to be transformed by Internet, are completely changed by doing it in the supply chain. They enables the scarce resources to be fully applied, the commercial taches and time period to be abridged, so, the cost cutting, efficiency rising, quality reinforcing are all realized.

Electronic Commerce consists of three areas^[6]: (1) consumer-oriented activity and (2) business-oriented activity supported by (3) the electronic commerce technology infrastructure. The technology infrastructure relates to network infrastructure, network applications, decision technologies, and software tools and applications.

3. CHARACTERS OF SUPPLY CHAIN MANAGEMENT IN ELECTRONIC COMMERCE

Internet has created opportunities to integrate information and decision making across different functional units, thereby creating a new channel for companies and buyers in supply chain that go beyond a business unit to study the extended enterprise^[5]. Supply chain management has coordinated the relationships among departments and the members in the supply chain. By applying more simple, fast, and much lower cost E-communicating way contacting whole-sellers, retailers, producers, and buyers, the relationships among departments and members in the supply chain

have been coordinated. Thus, electronic commerce has greatly elevated the role of supply chain management and analysis within a firm, and made it with the unique characters.

3.1 The Information Sharing Fully

Internet has also opened up opportunities for firms to share information and efficiently coordinated their activities with other entities reinforced in the supply chain. Integration of important data in the supply chain by fully sharing information is the guarantee to provide undistorted and timely information.

3.2 The Synchronization of Supply Chain

In the supply chain management process, companies establish more effective ways of E-communication by applying E-mail, E-meeting, E-marketing, and database integration, and integrating information systems among firms to make sure that all the nodes in the supply chain are accessed information at the same time. Therefore, the synchronization of the supply chain is realized.

3.3 The Integration of Supply Chain Management

Supply chain, with producers, whole-sellers, retailers and buyers, enables companies and other related organizations connected into a net, in which all units form a concrete strategic relationship based on sharing the universal benefits and harms^[10]. Since the shared information is unlimited by time, space and the increasing flow of it, the pattern of information transaction has become a net too. Thus, all the units in the net can trust each other more, and form a strategic alliance. The integration of supply chain management, therefore, is boosted.

3.4 The Innovation of Business Process

Supply chain management in electronic commerce has changed many aspects of business process from purchasing to logistics^[11]. This change needs every units in the supply chain, especially the core members, to operate the internal BPR (business process reengineering) from a macro-coordination. To realize the changes of business process, innovations have been made to adjust the needs of higher efficiency and flexibility for supply chain management.

3.5 The Speed of Operating Supply Chain Management

Being back up by the Internet technologies, the supply chain management enables all members in the supply chain to reduce the unnecessary and non-profit steps of the process to cut the cost. This is the ensuring to the realization of promptness and fineness.

4. THE STRATEGIES OF IMPLEMENTING SUPPLY CHAIN MANAGEMENT IN ELECTRONIC COMMERCE

To make sure the success of implementing the supply chain management, a suit of strategies should be established.

4.1 The Establishing Basic Components for Supply Chain Management

Supply chain management is the combination of art and science that goes into improving the way in which your company finds the raw components^[12]. Supply chain management needs to make a product or service, manufactures that product or service and delivers it to customers^[13]. The following are five basic components which are established for supply chain management.

4.1.1 Plan-This is the strategic portion of supply chain management. You need a strategy for managing all the resources that go toward meeting customer demand for your product or service. A big piece of planning is developing a set of metrics to monitor the supply chain so that it is efficient, costs less and delivers high quality and value to customers.

4.1.2 Source-Choose the suppliers that will deliver the goods and services you need to create your product or service. Develop a set of pricing, delivery and payment processes with suppliers and create metrics for monitoring and improving the relationships. And put together processes for managing the inventory of goods and services you receive from suppliers, including receiving shipments, verifying them, transferring them to your manufacturing facilities and authorizing supplier payments.

4.1.3 Make-This is the manufacturing step. Schedule the activities necessary for production, testing, packaging and preparation for delivery. As the most metric-intensive portion of the supply chain, measure quality levels, production output and worker productivity.

4.1.4 Deliver-This is the part that many insiders refer to as "logistics." Coordinate the receipt of orders from customers, develop a network of warehouses, pick carriers to get products to customers and set up an invoicing system to receive payments.

4.1.5 Return-The problem part of the supply chain. Create a network for receiving defective and excess products back from customers and supporting customers who have problems with delivered products.

4.2 The Process of Implementing Supply Chain Management in Electronic Commerce

4.2.1 Setting Up the Companies' ERP/MIS System.

The units in the supply chain, especially the core members, having the mature informational system, means that all the members in the supply chain have the smooth of informational flow and the internal business process, and that they can apply the connecting system of the upstream facility and the downstream facility to ensure the realization of smooth the business process. The mature and concrete informational system in a company, therefore, is the precondition for the successful implementation of supply chain management in electronic commerce.

4.2.2 Making Coordination Project between Upstream Facility and Downstream Facility in the Supply Chain.

Once the project is begun, its team should be organized by all units to confirm the technological criterion, platform, exchanging necessary data and database format together. For different units have different database format and different products' code, a transforming system according to them should be set up to let all units to be freely accessed to the utility of the supply chain. After the coordination project and the timetable are built, every unit in the supply chain is required to develop their Web Service according to itself criterion.

4.2.3 Applying the BPR for Logistics or Business Process to Meet the Requirement of Supply Chain Management in Electronic Commerce.

How much the supply chain management could benefit a company depends on how much the operating models of the company could adjust the informational needs. The desired effects of the supply chain management in electronic commerce could not be embodied, even the benefit would be cut off by the failure of coordination between both sides, if the systems between upstream facility and downstream facility in the supply chain are connected only, but the business process with it is not changed. For this reason, a full analysis of business process should be done firstly, the unefficient process deleted and integrated, and the business process redesigned to meet the need of coordination of the supply chain.

4.2.3.1 The Innovation of Business Process within A Firm.

Helped by the advanced information technologies and the thoughts of supply chain management, the internal business process of a firm has made great change^[11]. Take the relation of the business process between producing departments and purchasing department as examples. Under manual manipulation conditions, the model of sequacious engineering was applied, in which the production plans made by the firm's managers, programed by the departments to supply raw materials, asked for permission from many layers of an organization, and sent the order form to suppliers after above works done. Because the prolonging process and involving too many departments and people form out of joint, holdup and repeat, a

project would always be done through a long time. In the supply chain management, however, the original business process can be synchronized its steps and largely simplified by sharing database in a high-tech platform of information, which makes the original model of sequacious engineering transformed to concurrent engineering. For instance, the purchasing supply department can make its decision promptly by acquiring the plans according the information on the database after producing departments finishing the producing plan, by counting the raw materials cosumed necessarily and suitable parts. Furthermore, the order form can be sent directly to the suppliers through Internet or EDI in the supply chain.

Anyway, the innovation of internal business process is to meet the needs of the coordination in the supply chain, and to realize the informatinal management of whole process in the line, which embodies its effects by the intensivism of information, by the simplifying and the adjusting a firm's internal business process, and by reducing the middle-level management and many complex taches.

4.2.3.2 The Innovation of Business Process among Firms. Under the circumstance of applying supply chain management, the business process has been made much easier by the application of Internet or EDI, for many business taches done by manure labor in the past are made unnecessary or even erased with such the more modern way as E-commerce. For example, suppliers were used not to prepare for producing until receiving the order form from buyers, and after the parts being ready, so much time had been wasted. The whole producing process would be much prolonged in such a vicious circle. Under supply chain management, however, all firms are accessible to the freshest information of the production schedule to make better and timely decisions for production, supply, and delivering with Internet. At the same time, a supplier who knows the condition of consumption on the buyers' side by being informed from Internet, is capable to shorten the period of supply goods, especially during the time that the stocks are full, , and makes a full preparation before not receiving the orders from manufacturers so that the cycle is largely shortened. Because of this more effective way of coordination, the original departments, positions, and processes, which are for the jobs that can be simplified, can be considered to re-design.

The innovation of business process among firms based on the innovation of business process within a firm alter ulteriorly the business process among members in supple chain so that responses to the customers are shortened and the stronger feeling of satisfaction will be realized.

4.2.4 The Strategy of Integration Web Service Concerned with Firms to the System of Connection.

The connection between the upstream facility and downstream facility in the supply chain based on the Internet makes the concerned firms to freely exchange information, and the works of debugging and test followed the exploitation of the system operated.

4.2.5 Acquiring the Support and Cooperation from the Parners. Different from the innovation of business process within a single firm in supply chain, the innovation of business process among firms are much more difficult for changing not only the business process within a firm but also other firms', including operating interosculation and keeping touch with suppliers and distributors. Therefore, in desired condition, the innovation of business process of supply chain management should be set out from a macro prospective, and all the nodes should be synchro-reformed. In other word, the whole harmony among units, especially jointing firms in the supply chain, is the most important point, though the situations in different firms are different. Otherwise , the coordination of the supply chain would not be promised.

4.2.6 The Evaluation to the Supply Chain Management in Electronic Commerce. It is necessary to harmonize the operation models among all units of the supply chain , and to adjust the data platform to meet the realistic need in time by the evaluation to the supply chain management.

5. CONCLUSION

With the rapid development of electronic commerce and the fierceness of competition, supply chain management will have brought ever greater profits on firms^[14], provided better services and more greater values for customers, and griped more worthy opportunities of the new market in order to make give the firms an advantage over in the fierce competition^[15]. The paper shows the characters of the supply chain management in electronic commerce, which can fulfill the requirements of low-cost and flexible, and the models are applicable for many companies. As long as the problems of safety, financial ability and technology could be ensured settlement, supply chain management in electronic commerce will be made sure to embody the imponderable advantages, especally in sharing information and concurrent engineering, to be comparable to the traditional management of supply chain, and become a prevalence in the near future as a new and exciting management model^[16].

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