From Viewpoint of 3C Model to Use Supply Chain Integrating to Create Competitive Advantage

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Abstract. While global environment is proceeding globalization and internationalization, traditional logistics management can not be coped with the change. Therefore, to be the winner, supply chain integrating is necessary. Domestic car manufacturers take supply chain integrating to cope with the pressure of the market in now and future, and they hope to keep the competitive advantage. In view of this, from viewpoint of 3C model, we use case study to discuss and analysis supply chain integrating on company C which is the benchmark of the car industry, and then we offer a good suggestion to car manufacturers and future study direction.

1. Introduction

With the advent of the era of knowledge economy, enterprises are facing unprecedented changes and pressures. In this new economic system, the rules of the game of competition are totally different from the past, especially the e-commerce formed after the popularity of the network, which combines partners and customers through the network, so as to improve the operating efficiency of the supply chain and quickly respond to customer needs.

In view of the past research on supply chain by scholars at home and abroad, most of them are inclined to discuss the motivation and importance of forming supply chain, the successful factors of supply chain management and supply chain performance. Few literature had made a detailed study on supply chain integration and had established a complete model framework. Therefore, we expect to achieve the following two goals: (1) we want to build a supply chain integration; (2) through the case study, we discuss the practice and effect of supply chain integration.

2. Literature review

2.1. 3C model

The earliest publication of 3C model was published in 1993 (Fernandez-Ranada & Lopez-Tello, 1993) [1], while the completion logic of theory was recorded in 1992 (Fernandez-Ranada & Lopez-Tello, 1992) [2] and some basic concepts in 1990 (Fernandez-Ranada & Lopez-Tello, 1990) [3]. The connotation of 3C theory will be briefly described below. The basic concept and value of "commonality" is to achieve the goal of reducing development costs, simplify resource management, reducing inventory and provide diversified products to customers by expanding the use of "shared materials or resources" strategy and product portfolio planning (Fernandez-Ranada & Lopez-Tello, 1993) [1]. The basic idea and value of "consumption" is to realize the mechanism of purchasing materials before they are needed through real-time market information and integrating the prediction mode of market demand, so as to achieve multiple goals such as reducing inventory level, capital preparation and discount loss of inventory (Fernandez-Ranada & Lopez-Tello, 1993) [1].
basic concept and value of "capacity" is to reduce the delayed delivery caused by shortage of materials or capacities after they receive the order and improve customer satisfaction through the application of constraint theory, i.e. carrying out resource allocation planning operation while they accept the order (Fernandez-Ranada & Lopez-Tello, 1993) [1].

2.2. Supply chain integration
Ronald (1995) considered that supply chain can create an efficient management mode through sharing and integration [4]. In addition, the benefits of implementing supply chain management could also be used as a measure or indicator to check the competitiveness of supply chain: (1) firms can eliminate redundant inventory, improve customer service level and create many benefits for strategic partners through cooperation among members of supply chain and competitive advantage; (2) through effective cooperation and communication, firms can reduce asset specific risks and market risks, and enable partners to achieve core competitiveness; (3) firms can effectively short delivery time and information sharing time, so as to eliminate redundant inventory and reduce costs; (4) firms can improve service and quality of channels and improve customer acceptance of final products; (5) due to quality and the improvement of service and the shortening of delivery time, firms can enhance the customer's confidence in the source of goods, so the sales volume will increase naturally; (6) close cooperation can be reduced the number of suppliers, thus firms can enhance the trust between members of the supply chain (Ronald, 1995) [4].

3. Research method
In view of the subject to be discussed, we consider the argument of Fernandez-Ranada, Currola-Gal & Lopez-Tello(1992) [2] which is relatively complete and representative, so on this basis, we will make further analysis and discussion. According to this direction of thinking, we puts forward the conceptual framework of Figure 1. Then, for the case company C, we will conduct actual interviews, in-depth understanding of the company’s practice and effectiveness of supply chain integration. Finally, we will combine and compare the literature theory and practice. In order to increase the practicability and value of this study, we will also find out the similarities and differences, and we provide reference for the industry.

Figure 1. Conceptual framework.

4. Analysis and discussion
4.1. The relationship between 3C model and supply chain integration elements
Commonality’s planning focuses on how to expand the use of the concept of "shared materials or resources" to plan the product mix to achieve the preset strategic objectives. In this respect, there are two main axes: (1) modular design, (2) design for assembly and maintenance. From a macro perspective, the integration of the supply chain is also the enterprise reengineering carried out by
domestic automobile manufacturers (such as company C) in full swing, but the progress and ways of each company are different. However, it is certain that all automobile manufacturers are willing to work together and deeply realize that they can’t do it. This is a big challenge for automobile manufacturers, because they will grow and thrive if they join this competition, but if they don’t do it. At this time, it is necessary to expand the use of shared materials or resources to plan the product mix. Therefore, we infer that P1: when companies pay more attention to commonality, they are more likely to achieve strategic integration goals through supply chain integration.

The core of consumption theory is "the prediction model of market demand", because one of the reasons for inventory is the wrong purchase behavior, which is attributed to the wrong evaluation of market demand. If we can make good use of this model, we can make the market demand evaluation more close to the actual situation, reduce the inventory, and control the business risk to the minimum.

For company C, DMS (Distributor's Marketing System) enables them to quickly grasp orders and see the correct sales figures from dealers every day. Because there are levels of barriers in the dealer system of the automobile industry, and company C itself has a general dealer. Just the regional management of dealers, it has to go through at least three levels: its own company, regional company and head office. Therefore, we can know the process of information transmission. It’s rather complicated. These messages were originally delivered by telephone or fax every day, but there are many errors in the process of manual copying and log in. However, these problems can be solved since the DMS was used. Even if the data is wrong, there are warning systems to inform them. Therefore, we infer that P2: when companies pay more attention to consumption, they are more likely to be transparent through supply chain integration to quickly exchange and control the right information.

Because capacity was the framework of all related enterprises in the supply chain, regardless of their production capacity, supply capacity or distribution and transportation capacity had their limitations; all resource adjustment and distribution were carried out within their limitations, which was the essence of the limitation theory. The resource adjustment and distribution plan implemented through the limitation theory can enable enterprises to receive orders. At the same time, resources were allocated so as to avoid "excessive order commitment”. According to company C’s plan for supply chain integration, it could be divided into four parts to connect the upstream, midstream and downstream resources: (1) distributor's marketing service system, (2) business process reengineering, (3) enterprise resource planning system, (4) customer relationship management. In other words, company C could plan and adjust its production capacity through this integrated system. In addition, the construction of the supply chain could not only let customers know when to pick up the car as soon as they order it, but also let the car manufacturer know all the data of each car through the tracking of after-sales service after the car was delivered, so as to care about and master the car condition of the owner at any time. Therefore, we infer that P3: when the company was more important while they considered capacity, it was more likely to coordinate and cooperate effectively through supply chain integration.

4.2. The relationship between the elements of supply chain integration and the competitiveness of supply chain

Commonality is to improve the sharing of materials through value analysis and evaluation. In other words, it is impossible for an automobile manufacturer to complete the production of a car alone, so the supply chain of the automobile industry has been started for a long time, but now the concept of the supply chain has change. Therefore, how to operate can quickly respond to customer needs, and quickly transfer and exchange information, which must be achieved through strategic integration goals. Therefore, company C in the initial stage of supply chain management, companies spend a lot of money, about hundreds of millions of yuan, and still have to pay for maintenance and calculation. However, after the completion of the goal, company C may get a lot of feedback. For example, when company C conducts supply chain integration, the overall estimate can save about 165 million yuan of
cost per year. Therefore, we infer that P4: when companies pay more attention to strategic integration goals, the more likely it is to reduce costs effectively through supply chain integration.

Consumption’s approach is to estimate the subsequent material demand mode based on the customer’s daily order demand, material items and quantity consumed. Only in the following cases, the enterprise must adjust the forecast: (1) when the new product is launched, (2) when the new material is launched, (3) when the old product is last sold, (4) when the material is canceled, (5) when the special promotion activities are carried out, (6) when the specific material is used. Avoiding the risk of price reduction, company C can systematically process and analyze the market demand based on the data collected by DMS to understand the car styles and grades that consumers like, the current popular colors and equipment, and then it consider the distribution of production volume, instead of having to "guess" the demand forecast with dealers in a fuzzy concept. After all, the forecast will be distorted. Especially now, consumers' preferences are changing rapidly. In order to meet the needs of consumers, manufacturers always take great pains, which is not enough to meet consumers’ appetite. Therefore, it is very important to carry out fast market analysis with correct figures. Because the parts of automobiles are often tens of thousands of pieces, and no screw can be produced without a screw. When there is any change in the market, the car manufacturers often make the car factories and suppliers are unprepared, while company C can make good use of the benefits of supply chain integration, and it quickly transfer the data and conclusions to downstream suppliers. In other words, when company C conducts supply chain integration, the following results will be achieved: (1) quickly and correctly know the order, (2) conduct market demand analysis through systematic processing, (3) quickly respond to customer demand, (4) shorten delivery time, quality improvement, customer satisfaction and loyalty. Therefore, we infer that P5: when the company pays more attention to rapid exchange and control of correct information, the more likely it is to effectively reduce costs through supply chain integration.

Capacity is based on the "maximum supply capacity in the supply chain" to plan and calculate the demand schedule, production schedule and delivery schedule of materials and capacity. According to these schedules or plans, the business personnel reserve specific materials and capacity to specific customers. The purchaser purchases the raw materials according to the purchase plan, that is to say, through this design, it can reduce the material shortage and the risk of over commitment to customer orders. Therefore, when company C integrates the supply chain, it can reduce the vehicle inventory from 15 days to 5 days and the parts inventory from 34 days to 18 days in terms of short-term and tangible benefits. In addition, it can create a more efficient management mode through sharing and integration. Therefore, we infer that P6: when companies pay more attention to effective coordination and cooperation, they are more likely to improve their operational efficiency through supply chain integration.

5. Conclusions and suggestions
In the past, due to the lack of demand forecasting model suitable for the short product life cycle, the enterprise did not know that its order fulfillment model formed a fault with purchasing, manufacturing and other activities. Today, the 3C model adopted by the enterprise is an operation model integrating the relationship between order fulfillment model and resource demand planning. The biggest difference between the 3C model and the traditional model is that "the 3C model only accepts orders when it is confirmed that the enterprise can do it; the traditional concept is to receive orders first and then confirm whether it can do it". However, such difference is the key to win or lose for the enterprise. Although there is no external urgent pressure, company C of the automobile industry has long been committed to supply chain integration because of the vision of the leaders, so as to win the first chance in the future competition. Moreover, in addition to the vertical integration of the supply chain, company C also wants to achieve the level integration with the relevant businesses of the group, and finally it organize into a complex and dense supply network, so as to make the relevant resources more effective application.
References

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