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Supply chain collaboration: Impact of success in long-term partnerships

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ABSTRACT

The effects of collaborative planning, forecasting and replenishment in the performance of supply chains have been discussed in the literature. In this research paper, we posit that these effects along with other collaborative factors influence the success of collaboration in supply chains. The objective of this paper is to uncover the impact of collaborative planning, collaborative decision making of supply chain partners and collaborative execution of all supply chain processes in the success of collaboration. We used empirical analysis to validate our research paradigm. Data were obtained through a questionnaire survey of customers of a Textile company. We used confirmatory factor analysis and structural equation modelling (using AMOS). The results of the analysis confirm that the factors of collaboration impact the success of supply chains that will lead to future collaborations. Collaborative execution of supply chain plans will also have an impact on future collaborations. Companies that are interested in supply chain collaborations can consider engaging in long-term collaboration depending on the success of current collaborations. This will help SC partners to make investment decisions particular to collaboration.

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1. Introduction

Increasingly in the past three decades several companies have established collaborations with other supply chain (SC) partners. Especially after the success story of Wal-Mart's collaboration with upstream suppliers (e.g., P&G), supply chain collaboration has become one of the common norms for many companies around the world (Simchi-Levi et al., 1999). Collaboration encourages all players of SCs to engage in planning, forecasting, replenishment, information sharing, resource sharing and incentive sharing (VICS, 2002; Aviv, 2007; Toktay et al., 2000; Ramanathan and Muyldermans, 2010). Companies such as West-Marine, Procter & Gamble and Hewlett-Packard have proved the benefits of SC collaborations in terms of reduced cost, improved sales and improved forecast accuracy. 'Benefit sharing' is the key element of such SC collaborations (Toktay et al., 2000).

Several SC management practices such as Vendor Managed Inventory (Sari, 2008), Efficient Consumer Response (Andraski, 1994), Continuous Replenishment and Accurate response (Fisher et al., 1997) have been suggested in the literature to improve material and information flows in the SCs. With the arrival of the internet, new and hitherto unexpected channels for sharing information have become available to SC players. Given the increasing

complexities of information in SCs, and given the increasing sophistication in information technology and the use of the internet, a new SC management tool has emerged in the last few years focussing SC collaboration (VICS, 2002). This new tool is the so called Collaborative Planning, Forecasting and Replenishment (CPFR) framework. CPFR was introduced as a pilot project between Wal-Mart and Warner-Lambert in the mid-nineties, aiming to be highly responsive to consumer demand (Ireland and Crum, 2005). This framework exploits computer networking, information technology and other internet based technologies. Some researchers see CPFR as a second generation ECR (Seifert, 2003) to help companies to rapidly respond to consumer demand (Sherman, 1998). Despite the advantages of SC collaboration, many companies do not enter into formal collaborative arrangements due to lack of clear understanding of collaborations and its impact in long-term partnerships of profit earning (Barratt, 2004; Ramanathan et al., 2011).

In the literature on collaborative supply chains, CPFR is classified under three levels such as basic CPFR, developing CPFR and advanced CPFR (Danese, 2007; Larsen et al., 2003; ECR and Europe, 2002). Accordingly, the basic CPFR is a simple transactional relationship among SC partners. In developing CPFR, demand, order planning, promotional data and production data will be exchanged. In the highest level, advanced CPFR, supply chain partners will have transparent information sharing. The focus of these classifications is mainly on benefits of various elements of SC collaborations, e.g., cost reduction, profit, forecast

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accuracy and inventory control (Gavirneni et al., 1999; Lee et al., 2000; Aviv, 2007). Some recent research articles have focussed on the development of SC collaboration models that reflect the latest understanding of collaboration (Cao and Zhang, 2011; Nyaga et al., 2010; Ramanathan et al., 2011). According to Cao and Zhang (2011), SC collaboration will be beneficial to the parties only when all members in SC cooperate. They named 7 dimensions of collaboration as information sharing, goal congruence, decision synchronisation, incentive alignment, resource sharing, communication and joint knowledge creation. Nyaga et al. (2010) examined the SC relationships in buyer and supplier perspectives. They proved that the collaborative information sharing, joint efforts and investments lead to trust and commitments. Several other researchers insisted the importance of information sharing among SC partners (Forslund and Jonsson, 2007; Ryu et al., 2009). Byrne and Heavey (2006) highlighted the importance of forecasting and information exchange in capacitated industrial SCs.

Most of the articles discussed in the literature have described the benefits and performances of SC collaboration but failed to discuss a comprehensive view of success of SC collaboration and its impact on long-term partnerships. Hence, the objective of this research study is to expose the role of collaboration in the success of SCs and also to see the influence of success in long-term collaboration decisions. To support this study, we use three important key terms of SC collaboration from the existing literature namely collaborative planning, collaborative decision making and collaborative execution in identifying the success of collaborations (Barratt, 2004; Nyaga et al., 2010; Cao and Zhang, 2011). Various aspects of success of collaboration are further discussed in detail in the next section. We also assess future implications of successful collaborations by examining its impact in long-term partnerships.

The rest of this paper is organised as follows. In the next section, we briefly review the literature of resource based view (RBV) and resource dependent theory (RDT) to provide a theoretical foundation and underlying principle for our SC collaboration model. Based on this SC collaboration model we have developed our research hypotheses. Section 3 describes the research methodology, model development and results. Section 4 concludes with our research findings and also discusses possible future research.

2. Research background and hypotheses development

2.1. Theoretical background

Resource based view (RBV) of an organisation supports strategic involvement of various working groups using different organisational-level competencies to improve performance in order to obtain a competitive position in the industry (Barney, 1991; Rugman and Verbeke, 2002). However, identifying dynamic capabilities and skills within the organisation is a difficult task. So, it is indispensable for any company, interested in SC collaboration with other partners, to assess its own strength and weakness to decide the required level of collaboration (Gunasekaran et al., 2004; Danese, 2007). In this context, RBV encourages organisations to make use of tangible and intangible resources sensibly to have valuable, rare, inimitable and non-substitutable (“VRIN”) products or services (Barney, 1991). Supply chain collaboration is one such initiatives of RBV encouraging many SC players to share their knowledge and experiences to improve SCs.

In recent SCs, resource sharing is a vital part of many collaborative relationships (Ireland and Crum, 2005). Resource sharing among SC partners varies from tangible elements such as sharing of warehouses, machineries and logistical services to intangible elements such as information sharing and reputations.

Resource dependent theory (RDT) supports the dependency of SC players for demand information and inventory position from downstream retailers (Sarkis et al., 2011). Collective information from all SC partners is normally used for planning, production and replenishments (Ramanathan and Muyldermans, 2010). SC partners benefited from collaborations may tend to collaborate for long-term, seeking higher performance gains by depending on each other (Pfeffer and Salancik 1978). One of the basic assumptions of RDT is that supply chains cannot be responsive to the demand without cooperation and support from other SC partners. Dependency on other SC partners is unavoidable for any company to compete in the market and also to have sustainable development (Ulrich and Barney, 1984).

In 21st century, for many SCs electronic point of sales (epos) data is an ideal organisational resource to respond to customers' demand (Simchi-Levi et al., 1999; Simatupang et al., 2002). This particular resource (i.e., epos) from downstream retailers is treated as valuable assets by suppliers to produce and replenish on time. This concept of RDT on resource sharing among SC partners help—improving the overall performance of SC and leading to collaborative relationships (Zhu and Sarkis, 2004; Cao and Zhang, 2011). In collaborative SCs, information exchange is considered as a very important linkage for companies to reduce bullwhip effect and also to make collaborative forecasting (Lee et al., 2000; Aviv, 2007). Ramanathan and Muyldermans (2010, 2011) developed structural equation models to establish positive significant relationships between dependency of resources (such as SC information) and supply chain performance (planning and forecasting), using promotional sales information of a soft drink company. The authors considered planning or execution of promotional sales and forecast accuracy as success of collaboration. Success of collaboration is also measured through other indicators namely sales growth, profit and satisfaction (Cooper et al., 1999; Dube, 2004).

Meanwhile, decisions on resource sharing are major challenges in collaborative relationships. For example, it is hard to decide on—what information needs to be shared with other SC partners without affecting the privacy? and how much investment needs to be made to create such collaborations? Advanced level of SC collaboration is possible if initial involvements from SC partners results in improved SC performance (Ramanathan et al., 2011). Empirical evidence from Nyaga et al. (2010) shows that the trust among SC will lead to committed partnerships. Also, establishing trust in SC partnership is not a stand-alone process but a collective effort of all participating members. In collaborative SCs, it is crucial to plan, decide and execute the operations of SCs (VICS, 2002). Basic concepts of both RBV and RDT encourage SCs to collaborate with common trust to improve performance.

2.2. Collaborative planning

In recent competitive business world, SC planning differs widely to different businesses. Now-a-days many retail stores are running sales promotions in collaboration with suppliers to induce the market demand (Divakar et al., 2005). This requires a good planning and close collaborative support of upstream suppliers and downstream retailers (Ramanathan, 2012b). Collaborative planning of suppliers and retailers will decide the duration and type of sales promotions (Ramanathan and Muyldermans, 2010). In general, any collaborative SC (such as CPFR) framework encourages SC partners to be involved in front-end agreement on SC activities and team-work arrangements (VICS, 2002). In some businesses such as textiles and fashion-designs, the product design is normally changed in a short period of time on customers demand (Fisher et al., 1997). In this case, demand information from downstream members helps upstream suppliers to change plans such as product

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