

Cooperation and Collaboration in Supply Chain – A Literature Review

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Abstract: The purpose for this paper is to survey and give a basic thought regarding the collaborative supply chain (CSC) and depict the significance of joint effort in supply chain. Collaborative supply chain termed coined in 1982 by “Keith Oliver” but before that collaboration exist in supply chain as cooperation and industries uses it to manage inventory and smooth movement of materials in systematic procedure and keeping track of materials at different stages of the industry. CSC characterizes when at least two associations cooperate to meet the common goals. These goals can be centered to reducing cost, enhancing client experience, or maintaining the inventory of vendors or client to reduce excess waste of materials. The questionnaire was sent to group of 50 people which consist of warehouse managers, procurement teams, purchasing teams, and different departments working in a supply chain for an industry.

Keywords: Collaboration, supply chain.

1. Introduction

As VUCA world is in progress many industries are in intense competitions in terms of delivery and customer service which makes the supply chain process more complex and untidier, to manage the supply and demand ratio industries changed their supply chain approach from simple to collaborative as it will give more clarity about the flow of materials and information from end-to-end supply chain.

VUCA world majorly impacted the industries who are producing products having shorter shelf life and are in high demand like package foods, groceries, etc. Which made them to think over the movement and stocking inventories in the warehouse to reduce cost in wastage and holding cost for the inventory. CSC is used as a strategy by industries to compete in the market in terms of less manufacturing cost and provides ability to cater the market in more effective possible way.

The basic 7R of logistics which every industry keeps in mind to cater and because of those different strategies are used in supply chain, CSC is one of them.

7R of supply chain:

1. Right Product
2. Right Place
3. Right Quantity
4. Right Condition
5. Right Time
6. Right Customer

7. Right Price

2. 7R of Logistics Explained from Industry Perspective

VUCA world has enhanced the 7R of logistics in different perspective which made the supply chain more responsive towards the lower end of the supply chain. Right Product helps the industry to give the appropriate idea about the specification needed in the market for a particular group of consumers or mass consumer to build the brand recognition in the market with the help of right product. E.g., Asian Paints started distribution of paints in sachet at the retail store for the consumers who uses paints in small quantity which build the brand image of the company and sustained it for longer time to have the brand visibility in the market. Right Place is very important in industry perspective because making a product for a particular market but delivery it to different place can impact a lot to the business as it will not help in revenue generation for the company. Right Quantity is basically connected to demand and supply ratio, if the quantity is lesser than the demand than it will be a loss in revenue generation and if the supply is greater than the demand than it will impact as increase wastage in inventory and holding cost in the warehouse. Right Condition helps in increasing customer loyalty as it makes the customer more biased towards product and utilizing it as well as it reduces the reverse logistics cost for the company. If the product is delivered in right condition to the consumer, it will not be returned that will reduce cost in reverse logistics and refurbishment of the product. Right Time is one of the main focuses of any industry as customers for products which have small shelf life does not want to wait and look for alternative product or product from different brand so delivering product at the right time is important to sustain the revenue generation from the market. Right Customer, producing products for a particular market segment is done in niche market but delivering it to right customer is important as which customer is going to use the specific product and how well they are introduced to that product so that they can consume it is important. Right Price is one of the objectives which company focuses on. Providing the product at right price is important because of which company is giving more importance to collaborative supply chain to reduce the cost in transportation

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which will directly impact on the MRP of the product.

Making all this thing happen require efforts and tools to estimate the future requirement so that industry start the product today and deliver it in the market when the demand is made.

Estimating the future demand requires lots of input from different department of the company that is from sales, finance, marketing, production, operations and supply chain team which can create a lot of hassle and when looking from the market perspective till the actual demand is transferred up the supply chain it gets quantified and the actual demand changes which is known as BULLWHIP EFFECT.

3. Bullwhip Effect

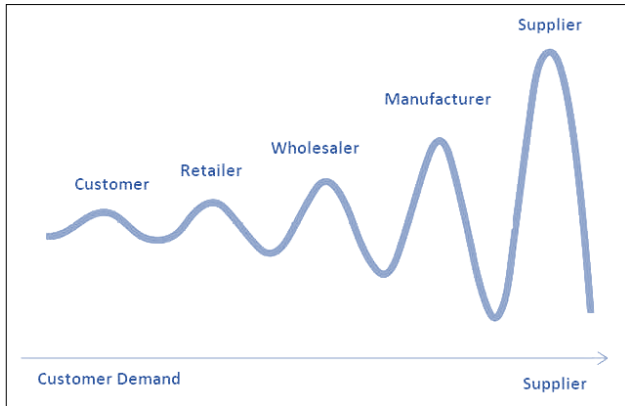


Fig. 1.

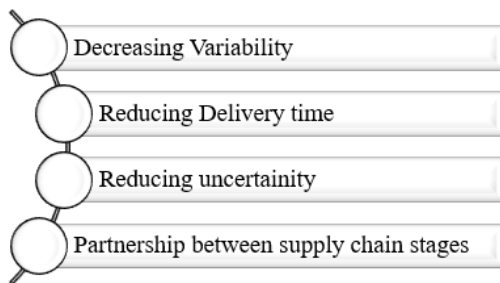


Fig. 2. How collaboration helps in eliminating Bullwhip Effect

Bullwhip effect in simple terms can be described as a minute variability in customers or market demand gets quantified as the information is transmitted back upstream in the supply chain or the magnification of demand fluctuation not the actual demand.

E.g., There is a constant demand of water bottle of 10 units but on Sunday the demand changed to 15 bottles, when retailer conveyed it to whole-seller said that demand has changed to 15 units and required 15 units of bottle but whole-seller delivers the bottle in batch of 10 bottle so according to him the demand of bottle is now 20 units. When this requirement is transmitted up the order to distributor it gets quantified as whole-seller ask to deliver 50 bottles because the lead time is large and if demand changes again then whole-seller won't be able to cater the market. When distributor see, the demand is increased to 50 units he asks for 100 units to manufacture from the company as manufacturing takes time and keeping the lead time in mind. This is how the demand fluctuation of 5 bottle changes to extra 95 bottle when the information moves up the supply chain.

Causes of Bullwhip Effect:

- Inappropriate Forecasting
- Lead Time
- Batch Ordering
- Price Fluctuation
- Mass ordering

Planning Collaboration	Yes	Type 1 Information Exchange	Type 3 Synchronized Supply
	No	Type 0 Traditional Supply Chain	Type 2 Vendor Managed Replenishment
		No	Yes
		Inventory Collaboration	

Fig. 3. Supply chain matrix

4. Literature Review

(Scholten & Schilder, 2015) This paper aims to explore how collaboration affects supply chain flexibility. Collaborative activities and their underlying mechanisms in terms of visibility, speed and flexibility are examined. It explains how specific collaborative activities (information sharing, collaborative communication, co-created knowledge, and joint relationship efforts) increase supply chain flexibility through increased visibility, speed, and flexibility. The underlying mechanisms and interactions of these factors within the supply chain network are identified and explained in this paper.

(Min, S. et al.,2005) In this paper, it shows that how joint effort and the executives has been defined as the main thrust behind powerful production network. Nevertheless, there is a genuinely boundless conviction that couple of firms have really profited by its true capacity. A review was embraced to survey the ongoing degree of store network cooperation and distinguish best practice. Similarly, it also tells that Positive collaboration-related results incorporate upgrades to proficiency, viability, and market positions for the respondents' organizations.

(Mofokeng & Chinomona, 2019) This paper talks about how the impact of organization, joint effort, and coordination on store network execution, especially inside the small and medium enterprises (SME) area. It is perceived that further developing execution has turned into a significant target of supply chains. Accordingly, techniques have been taken on as a work towards expanding execution. Among these methodologies, organization, joint effort, and combination have

been distinguished. A common benefit of these methodologies is that they work with union between parties where information and assets are pooled together and imparted to the reason for accomplishing ideal outcomes. Nevertheless, it is seen that the degree to which organization, coordinated effort and combination influence production network execution by and large is an examination void.

(Larsen. Et al., 2003) This paper shows a theoretical framework for analyzing international collaboration. It tends to show that Collaborative planning, Forecasting and Replenishment (CPFR) should be seen as a traditional approach towards the process of coordination amongst the stakeholders in a supply chain process and the process which involves step-by-step approach shouldn't be considered. This approach is suggested by the VICS. This process requires a deep understanding amongst the firms in the Danish region.

(Cao. et al.,2010) This paper shows how the firms can reduce uncertainty, cost, and build opportunities through implementing the supply chain collaboration by leveraging the knowledge and resources of the suppliers and the customers. It analyzes the characteristics and nature of the supply chain collaboration. It breaks supply chain collaboration into seven interconnecting elements – information sharing, goal, decision making, alignment, resource sharing, collaboration in communication and knowledge creation amongst the people. These measures will provide a better way of understanding the design and process of the supply chain.

(Soonhong. et al.,2005) In this paper, it is shown that how efficiency, effectiveness and the market position can be accomplished through positive collaboration. The concept of comparison such as “us vs them” is highlighted in this paper. This study is not very vast and is limited in only securing the input from one party to the collaborative relationships. But the implementation of collaboration can help in determining the change in collaboration related factors over time.

(Kampstra. et al.,2006) In this paper, three main points of supply chain collaboration are identified. First one is establishing the prerequisites for the process where the necessary things are identified and implemented for the process to happen. Second, we have to identify the starting of the process. And the last, to identify where the process will be terminated. Basically, it shows the gap between the interests in supply chain collaboration.

(Holweg. et al.,2005) The concept of Efficient Consumer Response (ECR) is demonstrated in this paper in the FMCG sector. It shows how the collaboration plays a vital role in the fast-working environment. It helps in efficient inventory management whether by the vendor or by the organization

itself. Slow progress of organizations nowadays is due to the lack of understanding of these concepts and not able to integrate external collaboration.

(Power. Damien ,2005) This paper talks about the interactions amongst the participants in a holistic way and how this helps in collaboration and information sharing through a different approach. This approach provides significant potential benefit, trading partners to think and act strategically. This is a different way of collaboration process, and it helps in better information sharing amongst the stakeholders.

(Soosay. Claudine ,2015) This paper covers many concepts such as sustainable collaboration, technology-enabled supply chains and humanitarian supply chain. It aims at the holistic approach in B2C collaborations. The interactions with the customers from a business perspective plays a very important role to reduce ambiguity. The need for multi-tier perspective is shown in this paper in collaborating with the businesses.

5. Conclusion

This paper presented an overview on collaboration in supply chain.

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