Collaborative Planning, Forecasting, and Replenishment

Research Paper

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WHAT IS CPFR?

Collaborative Planning, Forecasting and Replenishment (CPFR) is a tool used to enhance the supply chain that should optimally yield in lower inventories, logistic costs and create efficiency in the whole supply chain to all participants. CPFR uses cooperative management in sharing key information about the supply chain between suppliers and retailers (sellers and buyers) who work together to satisfy the needs of the end customer. The origins of the model date back to 1995 initiated by Wal-Mart, Cambridge University and software and strategy firm Benchmarking Partners, after which it was introduced to Voluntary Interindustry Commerce Standards Committee (VICS) to be the international standard. Today over 300 companies have implemented the model and numerous case studies show inventory reductions of 10-40% across the supply chain and improvements of in-stock products by 2-8%\(^1\). The following graph represents the collaboration activities of buyer and seller\(^2\):

\[\text{End customer}\]

1. **Strategy & Planning**

2. **Demand & Supply Mgmt**

3. **Execution**

4. **Analysis**

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**WHAT ARE THE TYPICAL TASKS PERFORMED UNDER CPFR?**

In more detailed description of CPFR, the four collaborative activities are divided into 8 tasks – two for each collaborative activity:

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<th>Collaborative activities:</th>
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CPFR uses cooperation and information sharing continuously in all phases starting from strategy and planning to the execution phase. In the early phase, Collaboration Arrangement is a process where the buyer and seller set up the scope of the framework, define common goals and responsibilities. After the arrangement process is finished, both parties should form a Joint Business Plan, where significant events affecting supply and demand are identified. In the next phase, consumer demand is forecasted in the Sales Forecasting task that can be further used to build a Order Planning/Forecasting schedule, where the inventory lead times, current inventories, logistic restrictions and other factors affecting the planning are mapped.

In the execution phase, Order Generation is used transform forecasts to firm demand after which Order Fulfillment is the process of actually producing, shipping and stocking the goods. Finally, in the Analysis phase, Exception Management and Performance Assessment are used to constantly monitor any sudden changes in quality, provide key metrics to evaluate the success of the business goals and to monitor the trends in the industry that can help to change the strategy more quickly if necessary.
WHAT ARE THE BENEFITS OF CPFR FOR RETAILERS?

CPFR provides many valuable benefits for retailers. The benefits include better store shelf stock rates, lower inventory levels, higher sales, and lower logistics costs. Store shelf stock rates refer to the rate by which products are replaced on the store shelf after they are purchased. According to AMR Research (2001), retailers who implemented CPFR saw store shelf stock rates improve by two to eight percent on average. Having a better store shelf stock rate is beneficial because retailers are able to adjust to customer demand much more quickly and efficiently and can replace purchased products more quickly than retailers who have not implemented CPFR. This leads to higher customer satisfaction and increased profits for the retailer. Inventory level refers to the on-hand inventory that a retailer has on location, or in close vicinity. AMR Research (2001) asserts that retailers who implemented CPFR saw a decrease in inventory levels by ten to forty percent, on average. Having lower inventory levels reduces storage costs and increases available space. Free space can be used for store expansion. Having a lower inventory level also frees up some cash, which can be used in other business ventures. Sales refers to the exchange of a good in return for monetary compensation. AMR Research (2001) says that retailers who implement CPFR saw an increase in sales by five to twenty percent. This is important because increased sales can lead to increased profits. The whole purpose of a retailer is to maximize profits. Maximizing profits increases the financial strength of the retailer, allowing it to invest its’ profits in different business ventures, allowing for expansion. “Logistics is the management of the flow of goods, information, and other resources in a repair cycle between the point of origin and the point of consumption in order to meet the requirements of customers. Logistics involves the integration of information, transportation, inventory, warehousing, material handling, and packaging, and occasionally security.”\(^3\) AMR Research (2001) asserts that retailers who implemented CPFR saw logistics costs decrease by three to four percent, on average. Having lower logistics costs is important because it

\(^3\) Wikipedia. Internet: http://en.wikipedia.org/wiki/Logistics
increases overall retailer revenues. It also frees up more on-hand cash that can be invested into different areas of the retailer’s business, which can ultimately lead to increased productivity.

WHAT ARE THE BENEFITS OF CPFR FOR MANUFACTURERS?

CPFR also provides many benefits for retailers. More specifically, these benefits include lower inventory levels, faster replenishment cycles, higher sales, and better customer service. Inventory levels refer to the amount of product that the manufacturer has on hand, or in close vicinity. AMR Research (2001) says that manufacturers who use CPFR reduce inventory levels by ten to forty percent, on average. This frees up space as well as on-hand cash. The space can be used for other things and can reduce storage costs. The increase in on-hand cash gives the manufacturer more flexibility and buying power. “The replenishment cycle occurs at the retailer/distributor interface and includes all processes involved in replenishing retailer inventory. It is initiated when a retailer places an order to replenish inventories to meet future demand. A replenishment cycle may be triggered at a market that is running out of stock or detergent or at a mail order firm that is low on stock of a particular shirt.”.⁴ According to AMR Research (2001), manufacturers that implement CPFR increase the efficiency of their replenishment cycles by twelve to thirty percent, on average. This is important because it allows for the retailer to quickly adjust to changes in demand and variety. This increase in efficiency makes the manufacturer a more desirable business partner, and can ultimately increase profitability. Sales refers to the exchange of a good in return for monetary compensation. AMR Research (2001) states that manufacturers who use CPFR increase their sales by two to ten percent, on average. This increase in sales is important for the manufacturer because it makes the manufacturer more profitable. The main goal of a company is to become as profitable as possible. “Customer service is the provision of service to customers before, during, and after a purchase,” (Wikipedia, Customer service). According to AMR Research (2001),

⁴ http://www.sbaer.uca.edu/Publications/supply_chain_management/pdf/05.pdf
manufacturers who use CPFR increase their customer service ratings by five to ten percent, on average. This is important because higher customer service ratings equate to higher sales and profits. If a manufacturer is known for having good customer service, new clients are more likely to approach the manufacturer for new manufacturing contracts, which also increases profits.

**WHAT ARE THE CHALLENGES FOR CPFR?**

The implementation of CPFR does not come without challenges. There are many different challenges associated with implanting CPFR. Barratt and Oliveira (2001) identified some challenges that include no shared targets, having a trading partner that focuses on the traditional supply chain steps, and not on the exception/review process, and not having adequate information technology/expertise. In addition, Fliedner (2003) identified other challenges such as the lack of trust in sharing sensitive information, the lack of internal forecast collaboration, and fragmented information-sharing standards.

**WHAT ARE THE NEXT STEPS FOR CPFR?**

As the dynamics of supply chain and consumer demand patterns change, CPFR needs to adjust accordingly. There have been signs that in the retail industry the dominance of the biggest players increases and the supply chain becomes more complex. This has implications to the suppliers that are often fragmented into numerous different smaller suppliers. Therefore, next step for CPFR would be to include multiple Tiers to the model, where all the suppliers could communicate and share information not only with the retailer but with each other at the same time.

In addition, the importance of a fully functional system is highlighted in an environment, where the consumer demand and interest in different products changes rapidly and increased market competition has made it easier to change to competitor’s products. To make the model more flexible, next step
would be to increase the importance of transportation in the model by including outside logistics firms into the system of CPFR. In the end, every good model becomes obsolete if it lacks flexibility.