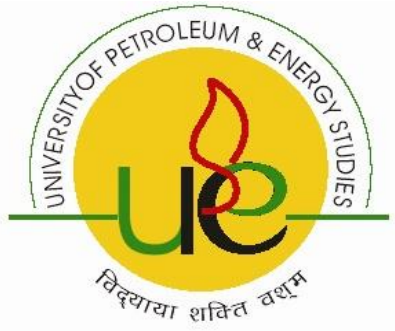


**Study of Collaborative Planning Forecasting and Replenishment and Challenges
after Implementation**

**Dissertation Submitted in the partial Fulfillment of
MBA (Logistics & Supply Chain Management) Degree**



Under the Guidance of:

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MBA (Logistics & Supply Chain Management)

(2013– 2015)



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Study of Collaborative Planning Forecasting and Replenishment and Challenges after Implementation Dissertation Submitted in the partial Fulfillment Of MBA (Logistics & Supply Chain Management) Degree Under the Guidance Of: Dr. Saurabh Tiwari Submitted by: - Sarthak Dixit Roll No.: - R60021304 SAP ID: - 500027636 MBA (Logistics & Supply Chain Management) (2013 – 2015) DECLARATION In the partial fulfillment Of MBA (Logistics & Supply Chain Management) course, the dissertation report titled "Study of collaborative planning forecasting and replenishment (CPFR) - opportunities and challenges after implementation" submitted to the University Of Petroleum & Energy Studies, Dehradun, Uttarakhand, by Mr. Sarthak Dixit, is bonafide work carried out by him under my guidance and supervision. From the best of my knowledge this particular work should not be submitted anywhere else. He has made a dedicated and earnest effort to accomplish the dissertation work. I wish him best of luck for his desired future endeavors. Dr. Saurabh Tiwari College Of Management & Economic Studies UPES, Dehradun Uttarakhand.

ACKNOWLEDGMENT I would like to hereby acknowledge that the work and guidance which I did for partial fulfillment of my MBA, I may not be able to complete this report, I would like to thanks Dr. Saurabh Tiwari my mentor for the guidance and support that I have received. I am grateful to Mr. Aman Dua my course coordinator for his encouragement, cooperation benevolent guidance, and critical appreciation which helped me in completion of my report on the "Study of Collaborative planning forecasting and replenishment and challenges after implementation". Sarthak Dixit MBA (Logistics & Supply Chain Management) University Of Petroleum & Energy Studies College Of Economics & Management Studies Executive Summary Indian Organizations are looking for collaboration with supply chain partners to cope up with the increasing uncertainty of supply networks, globalization of business proliferation of product variety and shortening of product life cycles. Top performing supply chain possesses three very different qualities. They are – Agility, Adaptability and Alignment. The above qualities cannot be attained without collaboration, optimization and connectivity. The recent technological advances in IT have made it possible to make supply chain lean and

Declaration

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I wish him best of luck for his desired future endeavors.

Dr. Saurabh Tiwari

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MBA (Logistics & Supply Chain Management)

University of Petroleum & Energy Studies

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Executive Summary

Indian organizations are looking for collaboration with supply chain partners to cope up with the increasing uncertainty of supply networks, globalization of business proliferation of product variety and shortening of product life cycles. Top performing supply chain possesses three very different qualities. They are – Agility, Adoptability and Alignment.

The above qualities cannot be attained without collaboration, optimization and connectivity. The recent technological advances in IT have made it possible to make supply chain lean and thin. IT provides some tools for supply chain and of them is CPFR (collaborative, planning, forecasting and replenishment). CPFR model was developed by SCOR (Supply Chain organization) and “at its essence, CPFR is a set of business processes that helps eliminate demand and supply uncertainty through improved communication between supply chain trading partners”. CPFR is a model to develop collaboration and this to happen there should be a complete integration between manufacturer, their suppliers, shipper, and logistics partner. The primary benefit of integration is that all business units and supply chain partners share the same data, synchronize action and minimize distortions and bullwhip effect in demand management”. The objective behind CPFR extends considerably beyond simply enhancing existing replenishment strategies. As its name suggests, it offers further integration of the processes of planning and forecasting. Worthwhile CPFR results may be achieved by focusing on added value areas of potential such as promotions, new product introductions and critical items (items that are directly affected by changes in consumer demand).

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Introduction

CPFR – Collaborative Planning, Forecasting and Replenishment – is a cross-industry initiative designed to improve the supplier/manufacturer/retailer relationship through co-managed planning processes and shared information. It is an integrated supply chain method to improve efficiency through direct collaboration between all trading partners with the ultimate focus on the consumer.

in the past, inventory strategies such as Vendor Managed inventory (VMI), Supplier Managed Inventory (SMI) or Continuous Replenishment Program (CRP) focused on collaboration for efficient replenishment. However, these strategies only addressed one aspect of the supply chain, neglecting other considerations such as planning and forecasting. The focus of CPFR is wider and its objectives more ambitious. The objective behind CPFR extends considerably beyond simply enhancing existing replenishment strategies. As its name suggests, it offers further integration of the processes of planning and forecasting. Worthwhile CPFR results may be achieved by focusing on added value areas of potential such as promotions, new product introductions and critical items (items that are directly affected by changes in consumer demand).

A key factor for excellence in CPFR is the ability and willingness to share data. Shared data enables CPFR participants to act on opportunities, issues and misunderstandings. It facilitates also a fast and thorough understanding of the challenges amongst partners. Based on the arrangements chosen between trading partners, the following information may be exchanged:

- Business plan
- Promotion plan
- New product introduction information
- Inventory data
- POS data and forecast
- Production and capacity plan
- Lead-time information Supply Chain Methods (e.g. CRP) CPFR

Collaboration and partnering between firms is an increasingly common approach for enterprises to discover and sustain shared competitive advantages. Requiring mutual commitment, trust and common goals and objectives as well as communication and cooperation, collaborative partnership occurs through extensive social, economic, service and technical relationships over time. A collaborative partnership is an inter-enterprise concept developed and practiced between multiple independent organizations in a vertical relationship within a supply chain. Benefits of partnering are usually maximized only when retailers decide on the type of partnership they want to accomplish.

Based upon the orientation of the partners and the depth of collaboration, there are two types of partnering, namely, strategic partnering and operational partnering. Supply chain management has traditionally focused on operational aspects of the supply chain addressing issues like throughput, flow time, waiting time, costs and flexibility. The issue of collaboration and partnerships as an approach to gain competitive advantage is still in its infancy. This leads to Collaborative Planning, Forecasting and Replenishment. The underlying premise of CPFR is “*win-win for all*” rather than traditional “*win for one and loss for others*” approach with the following guiding principles:

- Focus on consumers and orientation towards value chain success.
- Development of single shared forecast of demand that drives planning across the value chain.
- Joint commitment to shared forecast through risk sharing.

Difference between Current Supply Chain Methods and CPFR

Current Supply Chain Methods

Separate plans for Supplier, Manufacturer and Retailer

Order Generation based in history (Shipments, DC level sales, or POS data)

Reactive

Focused on execution

Goal is to cut company costs

Related to inventory management

Works on efficient inventory replenishment only

Several forecasts for Supplier, Manufacturer and Retailer

CPFR

Shared plans developed jointly for Supplier and Manufacturer, Manufacturer and Retailer, and Supplier, Manufacturer and Retailer in a three-way implementation.

Order Generation based in forecast, using DC/POS

data, promotion planning and other marketing activities

Proactive

Focused on planning

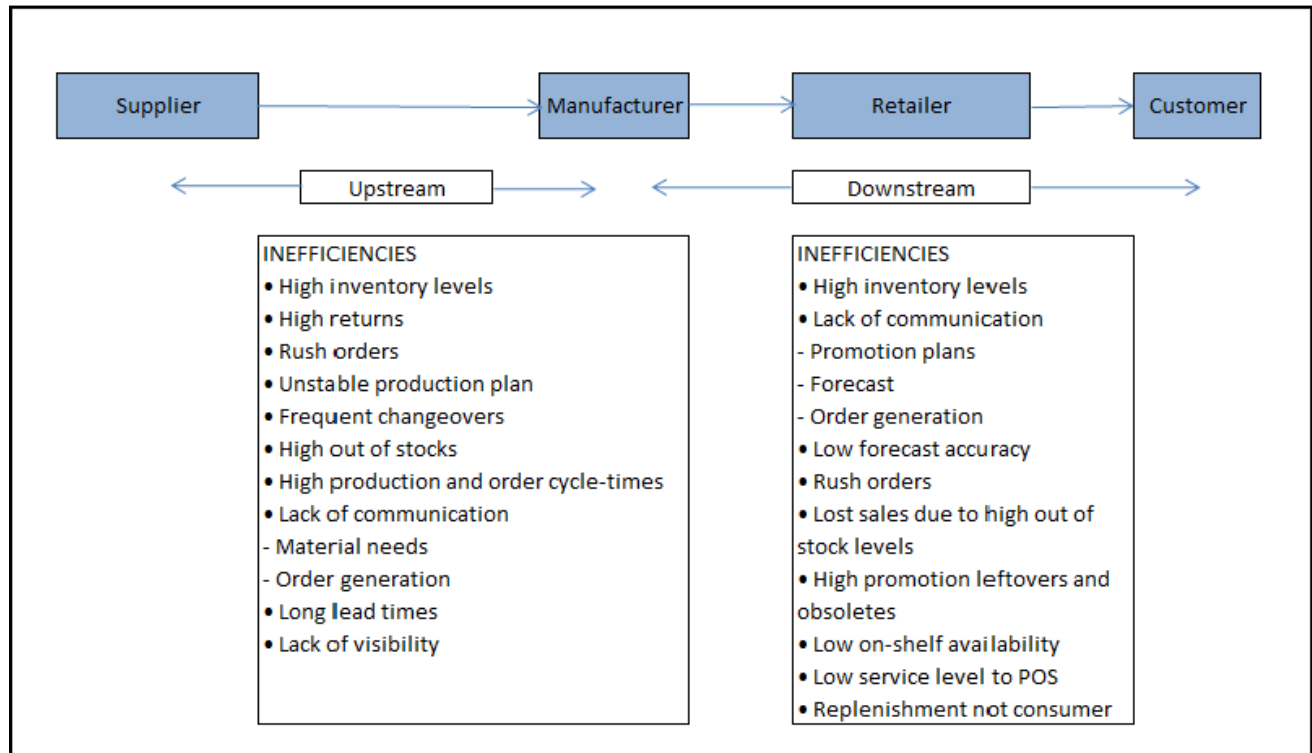
Goal is trading partners' revenue growth

More related to category management

Works on promotion, product introduction, inventory levels and replenishment all the way to the shelf effectiveness

Single shared sales forecast based on collaborative process

Problems with Current Supply Chain Models



Benefits of CPFR

1. Improved responsiveness to consumer demand

The reduction of out-of-stocks and shorter cycle times leads to a more responsive and reliable supply chain, thereby improving on-shelf availability and increasing consumer satisfaction. CPFR helps put the right product in the right place at the right time.

2. Greater forecast accuracy with single shared forecast

Sharing a single forecast along the supply chain enables participants to benefit from potential synergies and brings together trading partners' efforts. Depending on their position in the supply chain and supply chain activities, trading partners may have different views of the market and information, as well as varying consumer data, experiences and research data. Combining this knowledge is the foundation for greater forecast accuracy. Once planning processes are aligned, time horizons may be broadened in order to increase visibility and reaction time.

3. Improved relationship between the trading partners

The relationship will improve when collaboration takes place. Trading partners will gain a better understanding of their respective businesses by regularly exchanging information and establishing direct communication channels. Overall, the greatest benefits are to be gained from creating a 'win-win' situation.

4. Increase in sales

Collaboration on planning and forecasting potentially reduces out-of-stocks, lost sales and increases on-shelf availability, i.e. putting the right product in the right place at the right time. These improvements lead to an increase in sales to the consumer, which consequently means increased sales for all supply chain partners.

5. Inventory reduction

One reason for maintaining inventory is to compensate forecasting inaccuracy. Increased forecast accuracy facilitates a decrease in the safety stock, reducing inventory levels and increasing on-shelf availability.

6. Cost reduction

By aligning the production schedule with the agreed forecast, costs can potentially be reduced by decreasing set-up times, effort duplications and variations. Reduction in inventory will subsequently reduce capital costs, handling and administration costs.

7. Improved production capacity utilization

A more accurate forecast leads to more efficient production capacity utilization as planning information is more reliable.

Challenges

Many of the challenges around implementing CPFR are similar to those faced by companies wishing to implement ECR. The principles established by ECR around developing trading partnerships also apply to CPFR implementation.

1. Selection of CPFR Partners

Trading partners who wish to collaborate with each other need to assess the potential relationship according to anticipated, realistic benefits, pertinent to common business goals, organizational and cultural issues. For a successful relationship, a 'close fit' on these aspects is preferred, or some indication that the potential exists to develop a relationship with joint objectives and goals.

2. Senior Management Buy In

Senior management must assume the role of CPFR sponsor for each of the trading partners to ensure that the necessary resources (Human Resources, Technical infrastructure, Time and Project Budget) are prioritized and dedicated to the project.

3. Trust Based Relationship

CPFR involves sharing sensitive information. To take full advantage of the benefits of CPFR, trading partners need to create a relationships founded on trust. Sharing sensitive data and close collaboration demands reliability. CPFR should not be seen as a tool to develop a good relationship; rather, it can help to enhance a good, existing trading partner relationship.

4. Confidentiality

Sharing sensitive data reinforces the need to define rules around confidentiality. Confidentiality agreements should document common understanding around areas where confidentiality is paramount between the trading partners. Companies should also be aware of their responsibilities regarding competition law at a national, European and global level.

5. Detailed Definition of Systems' Capabilities

For the success of CPFR is a key to collaborate at the same data level. In particular, best practice would be to collaborate at the lowest data level; sharing promotional plans, forecasts and replenishment orders per trading unit and per point of sales.

6. Internal Reward Structure

The reward structure within each organization needs to be aligned with the objectives of the CPFR initiatives in order to ensure the desired behaviors of all involved parties.

7. Cultural Change

Internal and external collaboration requires a mindset change. Traditional trading partner relationships which have grown over a period of time must prove themselves capable of flexibility in order to adapt to the collaborative approach.

- industry standards for data exchange
- interoperability between exchanges.

- Technology as an enabler. Although CPFR is about business processes, it is clear that significant levels of technology will facilitate the smooth implementation of CPFR. Furthermore, technology becomes a key enabler in the process of reaching critical mass with CPFR.

Literature review

<u>Authors</u>	<u>Context</u>	<u>Inference</u>
Accenture	A guide to CPFR implementation	<ul style="list-style-type: none">• Opportunities and challenges in implementing CPFR• Benefits of CPFR
Tuomas Toiviainen & Jeffrey Hansen	CPFR-research paper	<ul style="list-style-type: none">• Tasks performed under CPFR• Benefits of CPFR for retailer and manufacturers
Tonya Boone & Ram Ganeshan	The impact of CPFR on Supply Chain Performance: A Simulation Study	Comparison of CPFR with traditional record point system
Mehdi Fasanghari, Farzad Habibipour Roudsari and S. Kamal Chaharsooghi	Assessing the impact of information Technology on Supply Chain Management	Impact of IT in SCM, on logistics and on purchasing

<u>Authors</u>	<u>Context</u>	<u>inference</u>
R Prasad	IT enabled supply chain	<ul style="list-style-type: none"> • IT framework • Supplier relationship management • Customer relationship management
Quing Zang	Essentials for information Coordination in Supply Chain Systems	<ul style="list-style-type: none"> • impact of information on supply chain • Policy of information sharing. • Essentials for information coordination.
Jaana Auramo; Jouni Kauremaa; Kari Tanskanen	Benefits of IT in supply chain management – an explorative study of progressive companies	<ul style="list-style-type: none"> • Functional role of IT in SCM

Research Objectives

- To study the process of CPFR implementation.
- To study the cases of CPFR implemented company.
- To study the challenges after implementation of CPFR.

CPFR Model

The CPFR model provides a general framework for the collaborative aspects of planning, forecasting and replenishment processes.

1. Strategy and Planning establish the ground rules for the collaborative relationship.
2. Demand and Supply Management projects consumer (point-of-sale) demand, as well as order and shipment requirements over the planning horizon.
3. Execution Place orders, prepare and deliver shipments, receive and stock products on retail shelves, record sales transactions and make payments.
4. Analysis Monitor planning and execution activities for exception conditions. Aggregate results, and calculate key performance metrics. Share insights and adjust plans for continuously improved results.

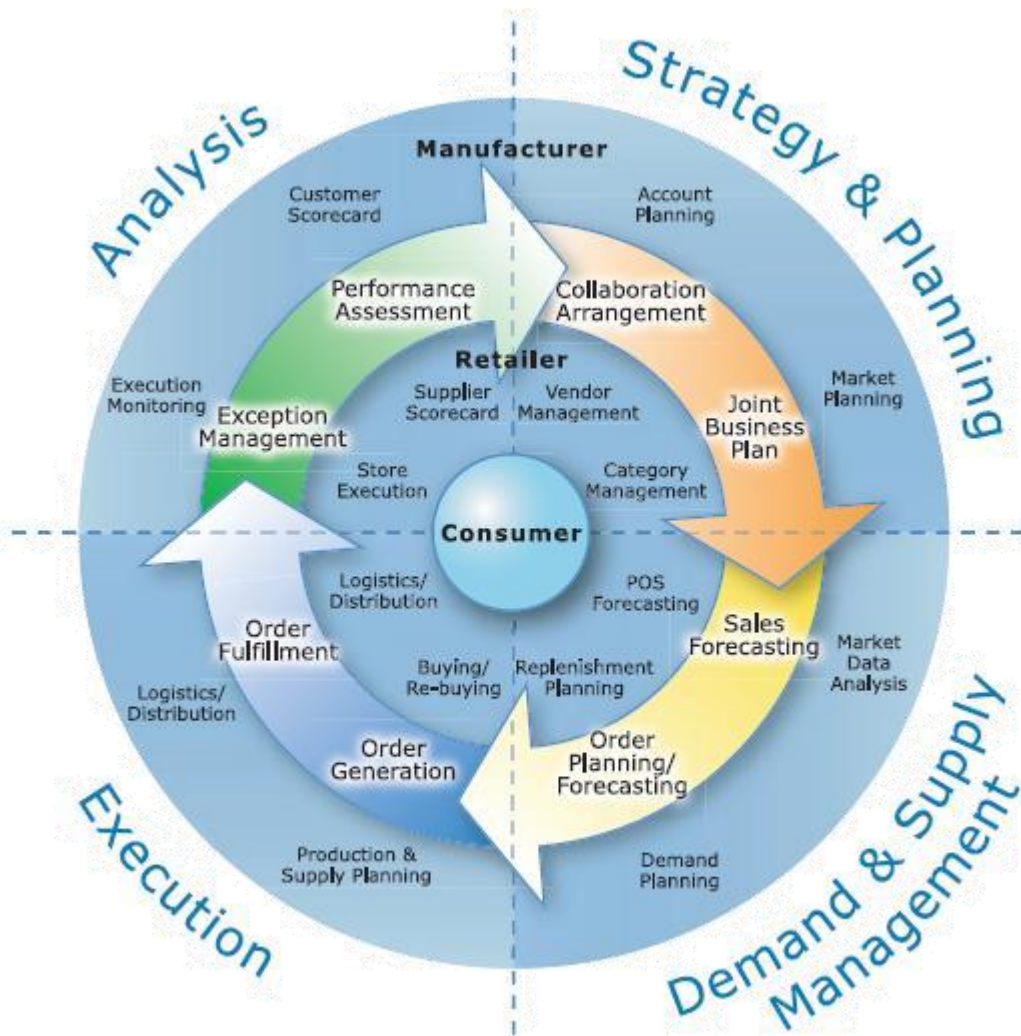
While these Collaboration Activities are presented in logical order, most companies are involved in all of them at any moment in time. There is no predefined sequence of steps. Execution issues can impact strategy and analysis can lead to adjustments in forecasts.

Retailer Tasks	Collaboration Task	Manufacturer Tasks
	Strategy & Planning	
Vendor Management	Collaboration Arrangement	Market Planning
Category Management	Joint Business Plan	Account Planning
	Demand & Supply Management	
POS Forecasting	Sales Forecasting	Market Data Analysis
Replenishment Planning	Order Planning/Forecasting	Demand Planning
	Execution	
Buying/Re-buying	Order Generation	Production & Supply Planning
Logistics/Distribution	Order Fulfillment	Logistics/Distribution

According to VICS Association, CPFR is a nine-step process model consisting of

1. Developing collaboration agreement
2. Creating joint business plan
3. Creating sales forecast
4. identifying exceptions for sales forecast
5. Resolving collaborating on exception items
6. Creating order forecast
7. identifying exceptions for order forecast
8. Resolving / collaborating on exception items
9. Generating orders

CPFR is a strategic partnership initiative that is an ongoing and long term relationship between partners for achieving strategic goals that delivers value to customers and profitability to all collaborating partners. Successes in strategic partnership initiatives like CPFR depend largely on successful collaboration and partnership. In strategic partnering relationships partners perceive each other as an extension of their own enterprise.

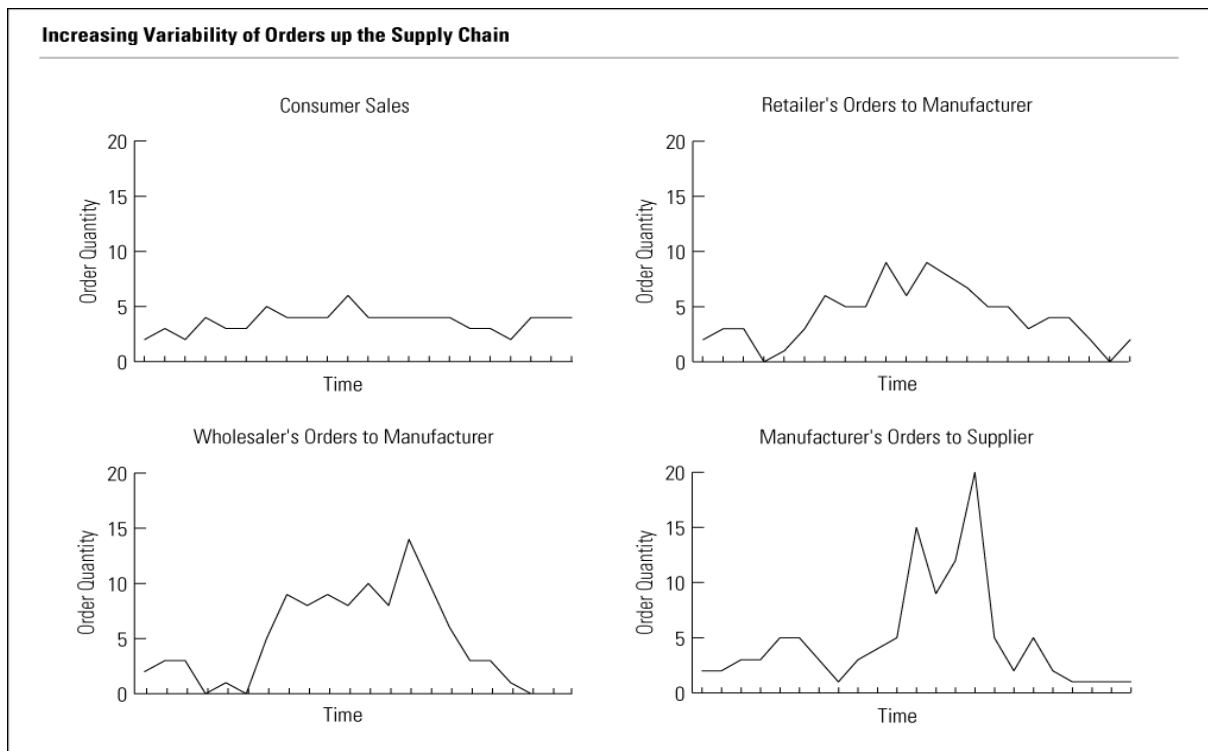


The CPFR Generic Model consists of the three stages: Planning, Forecasting and Replenishment. Associated steps are illustrated in table below:

Stage	Steps	Description	Data Shared
Planning	1. Develop Collaboration Arrangement 2. Create Joint Business Plan	<ul style="list-style-type: none"> • Definition of collaboration areas • Description of collaboration objectives and framework • Definition of responsibilities 	<ul style="list-style-type: none"> • Business plan • Organizational information Items • Category information, such as definition, roles, strategies, tactics
Forecasting	3. Create Sales Forecast 4. identify Exceptions for Sales Forecast 5. Resolve/Collaborate on Exception Items. 6. Create Order Forecast 7. identify Exceptions for Order Forecast 8. Resolve/Collaborate on exception items	<ul style="list-style-type: none"> • Create and share sales forecast • identify and resolve exceptions to agree on the sales forecast • Create and share order forecast • identify and resolve exceptions to agree on the order forecast 	<ul style="list-style-type: none"> •Events •Promotion plan •New product information •individual forecast •Forecast constraints •Lead time •Logistics data •Current inventory •Inventory in transit •Inventory strategies
Replenishment	9. Order Generation	<ul style="list-style-type: none"> • Generate committed order from agreed order forecast 	<ul style="list-style-type: none"> • Order data

Bullwhip effect and CPFR

The Bullwhip Effect (or *Whiplash Effect*) is an observed phenomenon in forecast-driven distribution Channels. The oscillating demand magnifies upstream in a supply chain due to communication of distorted information from one end of a supply chain to the other can leading to tremendous inefficiencies. The lack of trust among trading partners results in high degree of demand uncertainty & variability.



The term "bullwhip effect" was coined by P&G , the phenomenon holds true for virtually every organization whose product or service involves multi-level supplier relationships, regardless of the industry.

Causes of Bullwhip effect

We have identified four major causes of the bullwhip effect. Each of the four forces in concert with the chains infrastructure and the order managers' rational decision making create the bullwhip effect.

1. **Demand forecast:** Every company in a supply chain often does product forecasting for its Production scheduling, capacity planning, inventory control, and material requirements planning based on the order history from the company's immediate customers. Every player in the supply chain projects the demand pattern separately based on what he or she observes. Behavioral factors such as the perceptions and mistrust of players also plays a vital role in order quantity.
2. **Order batching:** When a player in supply chain receives an order it does not immediately places the order with its suppliers. It often hatches or accumulates demands before issuing an order. instead of ordering frequently, companies may order weekly, biweekly, or even monthly.

There are many common reasons for an inventory system based on order cycles? Often the supplier cannot handle frequent order processing because the time and cost of processing an order can be substantial. Suppose the manufacturer receives order monthly from its distributors. The stream of orders will be highly erratic. There is a spike in demand at one time during the month, followed by no demands for the rest of the month. Periodic ordering amplifies variability and contributes to the bullwhip effect.

3. **Price fluctuation:** Manufacturers and distributors periodically have special promotions like price discounts, quantity discounts, coupons, rebates, and so on. All these promotions results in price fluctuations. The results are that customers buy in quantities that do not reflect their immediate needs; they buy in bigger quantities and stock up for the future. When a product's price is low (through direct discount or promotional schemes), a customer buys in bigger quantities than needed. When the product's price returns to normal, the customer stops buying until it has depleted its inventory. As a results, the customer's buying pattern does not reflect its consumption pattern, and the variation of the buying quantities is much bigger than the variation of the consumption rate.
4. **Rationing and shortage gaming:** When product demand exceeds supply, a manufacturer often rations its product to customers. In one scheme, the manufacturer allocates the amount in proportion to the amount ordered. Knowing that the manufacturer will ration when the product is in short supply, customers exaggerate their real needs when they order. Later, when demand cools, orders will suddenly disappear and cancellations pour in.

Counteract the Bullwhip effect through CPFR

A basic requirement of CPFR is the reliance upon the data exchanged between partners. Therefore, before activities such as ordering and delivery can accurately occur, data must be exchanged and synchronized to ensure alignment between the trading partners.

A Framework for Supply Chain Coordination initiatives

Causes of Bullwhip	information Sharing	Channel Alignment	Operational Efficiency
Demand Forecast Update	<ul style="list-style-type: none"> •Understanding system dynamics •Use point-of-sale (POS) data •Electronic data interchange (EDI) •Internet •Computer-assisted ordering (CAO) 	Vendor-managed inventory (VMI) Discount for information sharing Consumer direct	Lead-time reduction Echelon-based inventory control
Order Batching	Electronic Data interchange (EDI) Internet ordering	Discount for truckload assortment Delivery appointments	Reduction in fixed cost of ordering by EDI or electronic commerce Computer assisted Ordering (CAO)
Price Fluctuations		Continuous replenishment program (CRP) Everyday low cost	Everyday low price (EDLP) Activity-based costing (ABC)

CPFR by Foreign Companies

Kimberley- Clark Corporation and Rite Aid Corporation Company in Brief:

Kimberly-Clark is a leading manufacturer of family and personal-care products, with brands that include Huggies, Kleenex, Kotex, Pull-Ups and Scott. Worldwide revenues of Kimberley-Clark amount to \$19.1 billion.

Rite Aid is a drugstore retail chain in US. It is the 3rd largest drugstore chain with more than 4781 stores across US.

Business Challenge:

Kimberly-Clark was the key trading partner for Rite aid. The challenge for these companies was to improve the sales while improving inventory positioning at retail stores and wholesale distribution centres. In order to do so there was a need to collaborate. The collaboration need was sensed in the areas of joint-business planning and sales forecasting, enhanced time-phased order planning, generation and fulfilment. Also the situation demanded improvement in the ability to anticipate demand and recognize trends as they occur. Rite Aid had to meet continuously meet consumer demand, as well as remain a leader in the competitive drugstore industry by striking a balance between maximizing sales opportunities and maintaining supply chain costs. The ability to collaborate with its trading partners helped Rite Aid immensely to overcome this business challenge.

In order to achieve these goals Collaborative Planning, Forecasting and Replenishment (CPFR) program was implemented.

CPFR implementation and Result's:

Rite Aid's and Kimberly-Clark's collaboration initiative has resulted in:

- Reduced inbound and outbound costs improved
- joint-business planning and sales forecasting
- Enhanced time-phased order planning, generation and fulfilment
- Reduced inventory levels
- improved ability to anticipate demand and recognize trends as they occur

As results of better collaboration with Rite Aid, Kimberly-Clark is maintaining improved annual service levels of two to three points. Rite Aid's collaboration program comprises approximately 50 supplier partners. Result's that have been achieved across the retailer's entire supplier community include:

- Four-point improvement in distribution center-to-store service
- levels up to a 17 percent decrease in days of supply.

- Partners benefit from a 50 percent reduction in out-of-stock rates compared to non-partners

Since 2001, the retailer's Collaborative, Planning, Forecasting and Replenishment (CPFR®) program has reached critical mass adoption with approximately 50 partners. Rite Aid learned from earlier collaboration efforts with other suppliers that it needed to compress the implementation timeframe for Kimberly-Clark to be fully functional on the CPFR program.

Both companies had a strong desire to begin reaping the rewards of a collaborative relationship, and all of Rite Aid's distribution centers for all of Kimberly-Clark's SKUs were in production in half the typical timeframe.

Rite Aid's CPFR deployment model enables trading partners to participate in its collaboration program very quickly and with minimal technology investment. Rite Aid and Kimberly-Clark leverage key steps of the VICS CPFR model, participating in monthly meetings to ensure the program remains on target. As results, they are able to create a single, shared demand forecast. By collaborating on this forecast, both partners apply their knowledge to the supply chain, thus improving joint-business planning, sales forecasting, time-phased order planning, order generation and fulfillment, as well as enhanced exception and performance management. Sharing data has also resulted in reduced inbound and outbound costs.

In addition, the companies can now jointly forecast and replenish their respective businesses to reduce unnecessary buffer stock and lost sales while optimizing production planning in an effort to satisfy consumer demand. Kimberly-Clark is maintaining improved annual service levels of two to three points. The company has enhanced its supply chain visibility, increased planner productivity and efficiency, as well as improved communication.

Access to Rite Aid's data provides Kimberly-Clark with complete visibility into the retailer's advertisement and promotional plans, as well as its forecast by item and by distribution center. As results, the manufacturer can view information for on-hand and on-order plans, which can be tied back into its planning and merchandising processes.

- Rite Aid's CPFR program has surpassed critical mass with 50 suppliers, and the CPFR program with Kimberly Clark is a shining example. They derive a single, time-phased shared forecast for sales and orders
- As results, Rite Aid's sales of Kimberly-Clark products increased, while inventory decreased by 13%. Fill rates have improved from an already strong level by 8%.
- Rite Aid's CPFR partners as a group achieve half the out-of-stock rates of non-CPFR suppliers. They also have service levels 4% higher, inventory reductions of up to 17%, and a reduction in merchandise returns of 37%.
- When Kimberly-Clark initially implemented CPFR with Rite Aid, it was up and running on all 14 Rite Aid DCs and in all 200 SKUs in three months. The project also entailed implementing JDA software.
- Rite Aid shares its ad plan and POS data with Kimberly-Clark along with SKU-level forecasts inventory levels, and ad plans for each DC. Kimberly-Clark recommends forecast improvements to Rite Aid, and together they have avoided \$1.2 million in out-of-stocks.

Warner-Lambert and Wal-Mart

Company Background:

Warner-Lambert Company, former diversified American corporation that manufactured products ranging from pharmaceuticals to candy. It became part of U.S. Pharmaceutical conglomerate Pfizer Inc. in 2000.

Wal-Mart Stores, Inc. is an American public corporation that runs a chain of large discount department stores and a chain of warehouse stores? In 2010 it was the world's largest public corporation by revenue, according to the Forbes Global 2000 for that year. Wal-Mart, headquartered in Bentonville, Arkansas, is the largest majority private employer and the largest grocery retailer in the United States.

Business Challenge:

In Warner-Lambert's case, Wal-Mart's promotions created large swings in consumer demand, which Warner-Lambert was unaware of prior to CPFR. Warner-Lambert maintained substantial inventory as a hedge in order to prevent supplies from running out of stock. Wal-Mart and Warner-Lambert independently calculated the demand they expected six months in advance.

CPFR implementation and Result's:

Collaboration between the two companies was the only way to overcome the problem. The partners shared the information, as well as the weekly forecast, and they worked together to resolve variations between their forecasts on a weekly basis. Wal-Mart began placing orders six months in advance, instead of nine days, so that Warner-Lambert was able to construct a smoother production plan. This allowed Warner-Lambert to maintain production based on consumer demand for Listerine rather than maintaining sufficient stock. Wal-Mart's in-stock position improved and sales increased, while inventories dropped. Additionally, Warner-Lambert's supply management improved substantially. Optimal applications of CPFR occur when, for example, many other retailers join Wal-Mart in sharing their projected demand with Warner-Lambert. Combining demand forecasts from many retail customers makes it possible for Warner-Lambert's production plans to be much better aligned with total market demands.

Benefits Observed due to CPFR implementation,

- drastically improved reaction times to consumer demand
- higher precision of sales forecasts
- direct and lasting communication
- improved sales
- inventory reduction
- reduced costs

Kraft Foods and J. Sainsbury PLC

Company in Brief:

- Kraft is a food manufacturer with more than 70 brands such as Kraft cheeses. The company employs around 36,000 people in North America. 1999 sales were 19 billion.
- J. Sainsbury PLC is one of the world's leading retailers and includes Sainsbury's supermarkets and Sainsbury's banks. This company serves more than 15 million customers in the UK and US, offering fresh food and a wide choice of products for the home.

Challenges:

- 'Out of stock' scenarios were leading to enormous increase in 'lost' sales.
- Unacceptably high levels of inventory across the total Kraft and Sainsbury's supply chain

Implementation:

To overcome the challenges both the companies started working on a pilot project involving CPFR practices. Twenty branded and own label coffee SKUs were selected for the pilot in the United Kingdom. The pilot involved 10 regional distribution centers from Sainsbury's and one distribution center for Kraft. The pilot included standard and promotional lines for these twenty coffee SKUs. The relationship focused on a weekly collaboration, where Sainsbury's and Kraft share promotional plans and four-week time horizon forecasts.

Measurement of Result's:

The results of the pilot are based on the following Key Performance indicators that measured the overall performance of the relationship between Kraft and Sainsbury's:

- On-shelf availability- increased by 20%
- Store sales- Witnessed heavy increase
- Forecast accuracy
- Kraft inventory
- Own label inventory
- Sainsbury's inventory at store and distribution center level
- Service level from Kraft to Sainsbury's DCs and from Sainsbury's DCs to store
- Obsoletes (promotion leftovers) from major promotions.

Superdrug and Johnson and Johnson

Company in Brief:

Superdrug operates more than 700 stores throughout the United Kingdom, offering its customers an average of more than 6,000 product lines with over 900 stores.

Johnson & Johnson is a global American pharmaceutical, medical devices and consumer packaged goods manufacturer founded in 1886. Johnson & Johnson's brands include numerous household names of medications and first aid supplies.

Challenges:

Major challenge was related to trimming inventory so that it would more closely match sales. In addition, Superdrug wanted to improve forecast accuracy and looked forward to an improved relationship with their trading partner—in this pilot's case, J&J.

Implementation:

Superdrug chose J&J not only due to compatibility of systems, people and strategy, but most importantly, due to the similar culture of the two companies. Before launching the pilot, Superdrug developed a clear blueprint of the trading partners' roles and responsibilities to make sure that their own strategy and structure were aligned with the CPFR process. They also developed a detailed plan to capture both the benefits and the costs of the pilot. Superdrug began the pilot process in April 2000 and by May 2000 the front-end agreement and joint business plan were agreed to and signed between the two companies.

Benefits:

- Many problems were avoided since Superdrug was able to highlight future issues and resolve them with their trading partner.
- CPFR also gave Superdrug access for the first time to a range of previously unavailable data such as suppliers' sales and order forecasts.
- Superdrug also found that communications were improved with their supplier through the weekly conference call, which resulted in J&J's profile within Superdrug being raised, and conversely, Superdrug's profile was raised within J&J.

Measurable results:

- 13 percent average reduction in Stock, at Superdrug's distribution centre, for the lines that were collaborated on.
- Warehouse availability increased by 1.6 percent.
- Superdrug's forecast accuracy, which they thought was good before the trial began, saw an improvement of 21 percent.

- Superdrug also saw RDC cover (Present Stock On Hand/Last Week's Sales) reduced by 23 percent for those J&J's product lines that were subject to CPFR. Moreover, RDC cover during the pilot period increased by 11.8% for those product lines not subject to CPFR.

West Marine

West Marine is an American company based in Watsonville, California which operates a chain of boating supply and fishing retail stores

Today, West Marine has over 300 stores in 38 states, Puerto Rico and Canada. The company carries more than 50,000 products, ranging from the rope that started it all, to the latest in marine electronics. In addition to its retail stores and Port Supply wholesale divisions, the company serves boaters in more than 150 countries worldwide through its mail order and internet divisions.

Challenges:

West Marine's supply chain was more complex than the supply chains of most specialty retailers. The company had an enormous number of SKUs to manage. It also had extraordinarily complicated inventory requirements that were necessitated by the seasonal nature of its business. Every spring West Marine expanded the amount of inventory in its stores and DCs by 20 to 30 percent to prepare for peak season. Given the wide variety of products offered by West Marine, the company also had almost 1,000 vendors to manage in 2003. Each vendor differed in the number and types of products it supplied, its level of sophistication, the capabilities of its supporting infrastructure, and its responsiveness to West Marine's needs. Some were mom-and-pop suppliers that struggled to keep up with West Marine's orders. Others were marine divisions within large organizations (like 3M Marine) that recognized West Marine's importance as a customer, but faced product delays and other barriers because of cross-divisional management challenges (these divisions were often smaller off-shoots of a company's main business and were, accordingly, treated like "second-class" departments within their own organizations). To complicate the supply chain further, West Marine's promotions came into play, with advertising decisions having a tremendous impact on the volume and timing of products needed in the stores.

Implementation:

Given the extent of its supply chain challenges, West Marine recognized that it needed long-term, holistic solutions that would require a significant investment of time and resources. The leadership team put a halt to all store expansion to relieve some of the immediate pressure on the supply chain, and to enable the management team to focus all of its energy on identifying and fixing its underlying supply chain problems. Critical importance was placed on improving end-to-end supply chain visibility and effectiveness, driving down related costs, and improving the level of supply chain collaboration within and outside West Marine. Through increased collaboration, the company hoped to transition out of its reactionary mode of fighting perpetual supply chain related fires, and begin to more proactively anticipate and prevent issues from arising.

Convinced that CPFR would help the company repair its supply chain and achieve these desired results, the West Marine management team committed itself to implementing the approach. While CPFR defined at a high level how trading partners should work together to plan, forecast, and manage replenishment, it did not dictate who fundamentally owned the process. Instead, different options enabled companies to make this determination based on the competencies, resources, and systems of

the involved parties. importantly, the retailer and the manufacturer would both have input into all stages of the process. However, a single entity would ultimately take ownership for their execution.

Once West Marine had implemented the structural, process, and information system changes necessary to make significant internal supply chain improvements, the company was ready to begin collaborating more directly with its suppliers. West Marine's goal was to more proactively consult with its vendors on shared forecasts and other supply chain issues to further improve fulfillment and sales. To get started, West Marine hand-picked a group of 12 suppliers to be part of its initial pilot. These suppliers tended to be large vendors that were struggling with supply chain issues of some sort (e.g., late or incomplete shipments). The category management teams met with the vendors one-on-one to introduce the CPFR approach and make plans for its adoption. These sessions were characterized by honest, fairly blunt discussion about West Marine's desire to have the best supply chain in its class. Specific goals and expected performance levels were clearly spelled out. Vendors were asked directly to commit to these goals, although the company chose not to require formal, written agreements.

Benefits:

- From piloting CPFR-based program with a handful of suppliers, West Marine has now extended it to 200 suppliers and more than 20,000 items, representing more than 90 percent of procurement spend.
- More than 70 of our top suppliers load the West Marine order forecast directly into their production Planning systems.
- in-stock rates at stores have come close to our goal of 96 percent in every store every week—even during our peak season.
- Forecast accuracy has risen to approximately 85 percent.
- On-time shipments are now consistently better than 80 percent.

CPFR by Indian Companies

Godrej Consumer Products Ltd CPFR implementation

in India, Godrej Consumer Products Ltd (GCPL) is implementing CPFR, under the nomenclature CPFR, as a part of its IT initiative, which also includes a Business-to-Employee (B2E) portal and Customer Relationship Management (CRM).

Where there is a successful integration strategy, there is enterprise value. At its very core, a well-executed supply chain project offers a single window into business and distribution, consolidates systems and processes, and provides quick and accurate information on secondary sales at the point of distribution. This is precisely what Godrej Consumer Products (GCPL) achieved through project

" **Sampark**" a distributor management system used for stock management, billing to retailers, accounting and report generation.

The objective of implementing Sampark was to reduce the working capital of distributors. This in turn would give a better return on investment leading to more coverage and hence more sales. Sampark is currently being used by 300 distributors who account for 67 percent of the company's sales. GCPL has made an investment of approximately Rs 1 Cr. and the company plans to extend its reach to around 400 distributors spread across the country.

The basic issues were:

- Product-wise sales and inventory information was available to the central marketing and planning team at the 'state' level and not at the 'distributor' level.
- 'Overstocked' distributors who were looking to reduce service levels.
- Out-of-stock situations due to unexpected demand not visible till the month end.
- inability to build accurate plans at a frequency better than monthly plans.

How did 'Sampark' come about?

GCPL chose MFG/PRO as its ERP package in 1995. By 2000, the company was reaping benefits in terms of RoI (Return on investment). However, the company wanted to extend its ERP to external business partners, and was keen on deploying a system which had pre-defined business logic. To achieve this, the company asked Accenture to study its systems and draw up an IT roadmap. One of the outcomes of the study was CPFR (Collaborative Planning, Fore-casting and Replenishment) to achieve better integration between distributor and C&F (Clearing and Forwarding) agents.

For GCPL, achieving a single view of the various distribution points became the ultimate goal in integrating the distributor management system (DMS) with the ERP system. The management believed that this could significantly reduce the time and cost of cross-referencing or maintaining multiple databases.

With Sampark, the company wanted to store data centrally on a day-to-day basis. The C&F agents enter all their daily transactions into a centralized MFG/PRO database. Stock-related data which has been dispatched to the distributor is also available. The system gives the closing stock figure available at the distributor's warehouse. The distributor in turn collates all the data, generates an order and passes it on to the C&F agent. The next day, the distributor gets a bird's eye view of the C&F dispatches that are in transit.

The central ERP database brings together data from the distributor and the C&F agents. All necessary details of invoices, receipts, goods received note and dispatches made are available through the centralized engine.

Regular replenishment

Since the data is stored in a centralized database, the DMS not only captures secondary data of sales and stock with the distributors but also goes a step further in replenishing stocks. GCPL's initiative to connect distributors with core business processes has generated results because it was influenced by both business objectives and technological realities.

The company today has achieved the initial objective of reduction in the working capital of the distributors. This in turn gives a realistic view of the inventory levels to be maintained. The system builds a bridge between GCPL and its distributors, which is a win-win situation for both, as the company has instant access to information about the distributor's inventory levels. In this way, distributors are not required to keep excess stock.

Benefits from Distributors Management System-Sampark

- Faster and accurate information on secondary sales at distribution points.
- Reduction in inventory levels.
- Accurate forecasting, better sales and production planning.
- Used by 300 distributors that account for 67 percent of sales.
- Reduces the working capital of distributors, which translates into direct business benefits
- Helps GCPL obtain retail information on a real-time basis that gives a clear idea about market Demand for individual products.

Godrej also implemented projects following projects under CPFR

SAHAYOG:

Project to connect with the suppliers, which was an extension of *SAMPARK*

Benefits that GPCL obtained from it:

- improved Order tracking of Vendors/suppliers
- Reduction in dispatch lead time
- Quick settlement of outstanding

SAMPOORNA

- Extending the replenishment to the last link in the supply chain, thereby improving the efficiency.
- 30% time save in Order taking process at the retailer
- Increase in accuracy level of billing information.
- Better reach of all the range of Products.

Thus it is a **trio of SAMPARK-SAHAYOG-SAMPOORNA**. And a real-time visibility for total end-to-end distribution would be there for GCPL across the Supply Chain.

Hewlett-Packard

Hewlett-Packard's hard copy products (ink jet printers and laser jets) are characterized by a short product life measured in months and sometimes in weeks. Product which remains in the channel after a SKU becomes obsolete is returned to HP for disposal. Accurately gauging future demand for production minimizes lost sales opportunities as spikes in demand occur, and minimizes the amount of obsolete product returned.

CPFR provides a mechanism for Hewlett-Packard's trading partners to receive information on overall channel inventories from HP, and for them to provide HP with information on future sales activity that will be significantly different from past activity.

Pilot Objectives

- Develop an efficient and secure process for near-real-time collaboration on sales, inventory, planned promotions, and planned production between HP and its primary distributors.
- Reduce overall channel inventory while ensuring adequate stock levels and inventory distribution in order to support base and promotional sales at individual distributors, while minimizing returns at product end-of-life.

Scope

The initial scope was limited to 63 actively managed SKUs of product with irregular demand, short product life cycles, and, as a category, a high level of returns. The initial pilot was limited to aggregate demand for each Tier One distributor and not taken down to the distributor's individual distribution centres. Production scheduling for all of the SKUs was managed using i2 and order fulfilment was performed using SAP. The supply for the SKUs was managed by a single HP planner.

Resources involved

The management of Hewlett-Packard's Channel Logistics and Fulfilment organization provided strong support for the development work on the CPFR pilot. Support for the i2 integration and rollout to the Tier One distributors was championed by both the product planning and channel marketing groups within Hewlett-Packard. Without the strong support of the channel marketing organization, the CPFR pilot would not have been successful.

No staffing was added to support the pilot. The CPFR technology developed enabled HP's existing planners to work more productively. Many hours were saved from prior paper- and spreadsheet-based processes, which were both error-prone and labor-intensive.

Project Challenges

The two primary resource issues were IT support and data cleanup. Traditional IT silo support does not have the range of skills required for the development and deployment of web technology. A web application's operation requires the successful operation and optimization of servers, database instances, the corporate network with its hubs, routers, firewalls, proxy servers, Java virtual machines, JDBC or ODBC connectivity, etc. If corporate IT compartmentalizes the management of each of these functions, it becomes very difficult to optimize performance or troubleshoot problems.

The CPFR implementation and support at HP required the creation of a team of individuals with diverse skills and a desire to learn new skills. The usual sharp line between development and production support is less clear with web applications, which are under constant development as technology changes and user expectations and requirements grow.

Methodology

On a daily basis, EDI sales and inventory data was received from the distributors and loaded into i2 and the CPFR database. On the weekend, the i2 planning engine used this information to generate a forecast for the succeeding weeks.

On Monday and Tuesday, the Hewlett-Packard planners reviewed the forecast and determined if there was sufficient existing channel inventory and production capability to meet the demand forecast. The forecast was fed to CPFR and a suggested ship quantity, by distributor by week, was fed into SAP. The shipment quantities were for a specific production planning horizon; the i2-generated shipment quantities, after collaboration, became the order quantities.

From Wednesday through Friday, the distributors were able to review the forecasts and send to HP any adjustments for a planning period for a given SKU. Along with the new value they selected a reason code and entered comments. The new value, reason code, and comments were automatically loaded into the CPFR database.

Each night, a program ran on the CPFR database and all current forecast changes—with the original value, new value, reason code, and comments—were sent as e-mails to the product planners. All changes made by a distributor during the day were aggregated into a single e-mail message. The following morning the planner was able to review the messages and determine whether the suggested changes needed action, or whether the changes could be met by the current overall production plan.

Changes for SKUs without an adequate supply in the channel were responded to on a case-by-case basis, with confirmation of the new shipment quantities communicated back to the distributors. Adjustments for SKUs with greater than a preset week's supply of inventory in the channel as a whole were automatically incorporated into the production and shipment schedules for the coming weeks.

Summary of Pilot Effectiveness

The pilot was extremely effective in several key areas:

- The business process and benefits were demonstrated to a wide audience within HP.
- The required infrastructure changes were identified and have been put into place.
- The required technology to make this an efficient and secure process was fully developed with four iterations, and now provides a model for future development of business applications tied both to internal systems and to the internet.

The CPFR implementation at Hewlett-Packard was developed in a manner that would support both external forecasts generated by distributors as well as internal forecasts generated by HP's product lines. In some instances, the distributor was better able to generate a forecast, and in others, a particular product line or division had the better system.

It was critical to the acceptance of CPFR across all of HP's business units to have a technical implementation that could support a wide variety of business process designs, irrespective of who generated the forecast and regardless of whether the forecast was for sales or orders.

It was recognized that despite other business operation differences between HP's divisions and marketing channels, the data and collaboration involved was much the same. CPFR became a common

ground for merging diverse data sources that could be shared both internally across organizational boundaries and externally with HP's distributors and logistics providers.

Trading Partner Relationship Changes

The principal change in the relationship was an increased trust that the supplier/ manufacturer–HP in this instance–would deliver the goods as committed and on time. By providing distributors with a deeper look into HP's supply capabilities and overall channel inventories, HP engendered greater trust that its actions were well-considered and appropriate. The pilot also put more emphasis on ensuring that the data being exchanged was accurate and complete. This has changed the way HP processes EDI inventory data received from the distributors to reflect more accurately the product available for sale.

The overall collaboration process, with web tools, database alerts, and internet access, has become much more efficient. As a result, the HP planners, distributors' buyers, and inventory managers are able to focus more on improving business.

Procter & Gamble

Procter & Gamble has operations in more than 140 countries with over 127,000 employees, and with worldwide net sales greater than \$78.9 billion. Its 300 brands reach nearly six billion consumers. Procter

& Gamble's seven Global Business Units include baby care, beauty care, fabric & home care, feminine protection, food & beverage, health care, and tissues & towel.

Objectives

Procter & Gamble's CPFR focus is to build on the current success of the Continuous Replenishment Program (CRP). CRP has delivered greater than 99% service levels, and has reduced customer distribution center inventories by as much as 50% in customers representing over 40% of our U.S. and European businesses.

While these accomplishments are substantial, they fall dramatically short of delivering the ECR promise of products available at the lowest cost to the consumer. Conservative estimates based on published studies show 8% to 10% out-of-stocks still exist in retail stores, along with excessive inventory costs throughout the supply chain. All become additional costs to the consumer.

P&G is deploying CPFR to enable creation and integration of consumer demand data. This will trigger product flow from our manufacturing plants to our customers' DCs, from the customers' DCs to their retail store shelves, and ultimately from the store shelves into consumer homes.

The primary objective of these pilots is 100% product availability on the store shelf, while simultaneously reducing inventory requirements in the retail stores, customer distribution centres, and P&G plants. Eventually, P&G expects to produce and ship in response to a consumer demand signal. These pilots will test and validate methods that can help achieve this.

Methodology

The key understanding is that CPFR is not a technology. It is a process. To test and deploy new processes, our CPFR pilot partners agreed to three core activities:

1. Document and map the current supply chain processes for product and data flow.
2. Assess the current CPFR capability.
3. Create a joint action plan to address improvement opportunities.

Supply Chain Lead-Time Mapping of Product and Data Flow

Together, team members from both companies traced product movement and the signals that triggered it. All of the processes were mapped, and the time lag between processes and triggers was measured from the point that a package was scanned at retail to the point new product was replenished on the shelf.

CPFR Capability Assessment

Once the partners understood the supply chain process, there was no easy way to translate the supply chain improvement opportunity into CPFR action. The CPFR Capability Assessment was developed and used in some pilots to assign a numeric value to each of the CPFR key processes. The actual scoring verified the understanding from the supply chain mapping, and directed the creation of a CPFR process improvement plan. Much of the information in this assessment was compiled from previous ECR Scorecard documentation.

Joint Action Plans and Testing

This step combined the first two steps into a test plan. It was documented and approved by the team sponsors, and the process improvement testing and documenting began. Historical POS data was

collected on the test category (limited number of SKUs) and the POS data was continuously analyzed using actual orders and shipments.

Resources involved

P&G:

1. Overall corporate champion/sponsorship team
2. CPFR Project Managers: Business and Technical
3. Customer Business Development Team: Sales Account Executive, Logistics, Systems and Retail Operations Managers.
4. Data Analysts: Two analysts for formatting and evaluating the 830 order forecasts and the POS data received separately.
5. Category Demand Planner

Customers:

1. Company Champion/Sponsor
2. Overall Project Leader
3. EDI Business and Technical Managers
4. Demand Forecasting Managers
5. Category Manager/Purchasing Manager
6. Warehouse & Retail Operations Managers

Learning and Result's

All CPFR pilots recognized the need for a partnership founded both on trust and on the ability and willingness to share information on processes and systems. A joint learning process would lead to understanding how to improve difficult-to-improve business results. It would not be a quick action to increase sales.

The companies involved in the P&G pilots are all competitors within their respective marketplaces, yet have agreed to associate their involvement in the CPFR pilot with P&G. This demonstrates the importance that each company has placed on the value of CPFR to its future success. Once the processes are understood and institutionalized, a critical mass of partnership involvement between manufacturers and retail distributors will be essential.

All CPFR pilots recognize CPFR as a process, not a technical solution. To be successful, the existing process must become simplified, streamlined, or standardized. Once this is accomplished, the process needs to become repeatable and scalable so technology can deliver broad-scale capability. If an existing process is delivering average results, technology will enable broad-scale mediocrity.

Lead Time Mapping & Capability Assessment Learning

All partnerships agreed on the need to reduce retail out-of-stocks, while simultaneously managing the inventory levels required to remain in stock. Lead-time process mapping offered the fastest understanding of the supply chain processes and their results.

The value of this analysis was directly proportional to the detail of the documentation, which highlighted where product movement was delayed and pinpointed its causes. Non-value-added activity is anything the consumer would be unwilling to pay for, and the process provided insight into the non-value-added activity in customer and manufacturer systems and processes. The activity was charted; before/after time analysis identified the loss for each delay.

The results of the process mapping indicated a lead time range of 8.5 to 14.0 days to replenish product. In the very early stages of most P&G CPFR pilots, it was feasible to remove at least one day from the entire replenishment cycle. In the case of the 8.5-day cycle, this represented nearly 12% improvement. In other instances, at least 20% replenishment cycle time improvement was identified.

The CPFR Capability Assessment method found most productive was to have the manufacturer team members reach consensus on the scores separately from the retail customer team. Once each company reached its consensus, the two companies reviewed each question together to agree on the score. Primary differences were documented along with the rationale for each score.

This assessment process identified areas that needed immediate attention or that could be sequenced later in the CPFR process improvement. Two important concepts were critical to understanding:

1. All four activity areas must be maximized to fully realize CPFR benefits.
2. Partnering companies must have the flexibility to decide process priority.

Whirlpool Corporation

Whirlpool Corporation is the world's leading manufacturer and marketer of major home appliances, with annual sales of over \$ 18 billion, 70,000 employees and nearly 50 manufacturing and technology research centres around the world.

Historically, the Logistics Department at whirlpool was regarded as the stumbling block to achieve sales targets. Forecast misses were often blamed on poor supply chain execution and inaccurate predictions of demand. Forecast accuracy and demand variability were identified as two main critical challenges.

The opportunity presented by the CPFRR process was hard to miss. The overall desired state was to have a Whirlpool or trade partner hosted collaboration hub that would act as a single point of storage for all forecast related data, shared between Whirlpool and its trade partners in highly secured environment.

One of the prerequisites for a successful CPFRR pilot is generating buy-in. Given the nature of the project, Whirlpool needed both an internal buy-in (from whirlpool) and an external buy-in (from its trade partners). To generate buy-in following approach was used:

Internal: Developed a benefit case with baselines and targets for key metrics targeted for improvement, as well as what would be the financial gains once they are achieved.

External: Whirlpool recognized the value of existing collaborative processes with the trade partner. incremental value from accelerating and sharpening the focus of existing collaborative processes through the formal use of CPFRR process and technology was projected.

Whirlpool selected i2's supply Chain Collaborator as a CPFRR software, primarily for similar functionality, user friendly and to support Whirlpool's strategic partnership with i2.

The CPFRR process was adopted to suit the needs of trade partners. Whirlpool found this very useful, as it encouraged the incorporation of the unique needs of our pilot trade partners within this process. The following examples illustrate how whirlpool tailored the process to meet these needs.

Retailer A's needs related to short order to deliver lead times, order quantities that were very responsive to short term shifts in the market demand, and direct to store delivery from Whirlpool regional distribution centres. in response to these needs, the collaborative team decided to focus on store sales forecasts, without any frozen periods or partial commits. Wider tolerance levels were used on the forecast mismatch flags, to accommodate numerous collaboration points at the location level.

Retailer B had longer order lead times and direct deliveries from Whirlpool factory distribution centres to the retailers' regional distribution centre. The process was focused on store sales forecast collaboration, with four week out commits to supply against the forecast. in parallel with these supply commits, the retailer committed to order against the supply commit quantity. in addition, the retailer's ordering system was tied to the CPFRR hub, allowing order quantities to default to the collaboratively set volumes. Narrower tolerance levels were used on the forecast mismatch flags, because of the relatively fewer collaboration points.

Results:

Forecast accuracy improvement targets were exceeded in all cases. Before the CPFR implementation, the forecast error was around 70% which, post CPFR came down to around 44%.

Whirlpool and its trade partners also saw a reduction in week to week order variability, resulting in smoother demand on production lines and deployment systems, because, as forecasts improved and as trade partners found themselves in a reactive mode much less frequently, the corrective component of the order variability was significantly reduced.

in addition, the retailer and Whirlpool forecasts came significantly closer over time. To improve accuracy levels, forecast mismatch alert parameter thresholds have been narrowed. The reduced thresholds generate the same number of exceptions as before, which allows for improved accuracy and makes the most of phone time with trade partners.

Beyond the hard, quantifiable results, there were intangible benefits to CPFR. There was significant improvement in one to one relationships between the collaborating parties in both companies. The culture of collaboration process design that developed was useful in collaboratively putting other process improvement projects into action with other parties. Regular reviews of CPFR process gave better understanding of each other's problems and motivated them further.

Challenges After implementation of CPFR in India in E-commerce sector

Electronic commerce, commonly known as **E-commerce** or **ecommerce**, is trading in products or services using computer networks, such as the internet. Electronic commerce draws on technologies such as electronic funds transfer, supply chain management, mobile commerce, and internet marketing, online transaction processing, electronic data interchange (EDI), inventory management systems, and automated data collection systems. Modern electronic commerce typically uses the World Wide Web for at least one part of the transaction's life cycle, although it may also use other technologies such as e-mail.

E-commerce businesses may employ some or all of the following:

- Online shopping web sites for retail sales direct to consumers
- Providing or participating in online marketplaces, which process third-party business-to-consumer or consumer-to-consumer sales
- Business-to-business buying and selling
- Gathering and using demographic data through web contacts and social media
- Business-to-business electronic data interchange
- Marketing to prospective and established customers by e-mail or fax (for example, with newsletters)

IT TOOLS AND Technologies'

Information is essential to making supply chain and logistic decisions because IT provides the global scope needed to make optimal decisions. Best in class companies' worldwide have successfully used sophisticated IT systems to streamline process and enable effective decision making. There are many IT tools that are used by companies are: Collaborative Planning Forecasting and Replenishment (CPFR), Enterprise Resource Planning (ERP), Customers Relations Management (CRM), Supplier Relation Management (SRM), Radio Frequency identification (Rifled), internet, and Web-browser website.

CPFR Tool: CPFR is a set of business processes that helps eliminate demand and supply uncertainty through improved communication between supply chain trading partners". Nine CPFR is a model to develop collaboration and this to happen there should be a complete integration between manufacturer, their suppliers, shipper, and logistics partner. The primary benefit of integration is that all business units and supply chain partners share the same data, synchronize action and minimize distortions and bullwhip effect in demand management". This integration would require technology platforms such as ERP, SRM or CRM platforms or legacy systems connected through web service.

Challenges after implementation of CPFR

It is the biggest challenge to remove human errors there are lots of cases when due to human errors are responsible for increasing inventory or logistics cost. Some errors are described below:

1-**Miss-route**: when customer orders the product, they fill wrong pin-code of their area due to which it goes to wrong distribution center and when they find it, the product is again sent back to mother hub by correcting pin code.

Effect: Increase in logistics cost and long time needed to deliver the product to customer.

2-**Re-schedule**: Customers have freedom to reschedule their product delivery date, in this case when we reschedule the product till that specific date product will be hold for delivery.

Effect: increase in inventory cost.

3-**Product miss-match**: Customers needed the same product of same color that they saw on website but sometimes it happens that seller packed something different from it then customer requests for replacement that product is picked up from customers place and the ordered one will be delivered.

Effect: Company is bearing logistics cost for the product sent by buyer as well as the replaced product in the same cost in which the product was booked.

4-**Incomplete address**: During booking of the product some customers not fill their full address, in this case delivery executive calls on the number provided by the customer and get the correct address but if the provided address is not on route on which he is then the product is delivered next day on the address provided by him.

Effect: company has to bear the cost for holding the product as well as its increased logistics cost.

5-**Wrong update**:

There are some issues that Indian customers always due to which collaboration and planning fails, you can't change these customers and some issues are listed below which are also responsible for increasing the logistics cost and inventory holding cost to company are:

- COD (cash) not ready.
- Ordered by mistake
- Someone ordered on my behalf and I don't need
- Fake orders

6-**Price drop of product**:

Customers are too much aware now days after ordering the product they look for the prices of the product they ordered and in case the cost goes low they order the product once again and canceled the high cost product.

Effect: companies are bearing logistics cost of the two products for a single consumer.

Technical issues:

As a part of POS customers are provided an option to pay by card at your own place, delivery executives have POS machines with them which not works due to signal issues and the products are undelivered or customer cancels the or request to reschedule the delivery.

Effect: logistics cost is increased on the same product as well as holding cost also increase in this case and in case customer cancels the order then companies have to bear the loss i.e. the amount included in packing and logistics of the product.

Research Methodology

Type of Research Design: Descriptive Research Design

It attempts to describe and explain problem of the present CPFR system issues by using questionnaires and observations to fully describe the challenges after implementation of CPFR with example and to focus on better opportunities.

Type of Data

Primary data: industry questionnaire & observations

Secondary data: Report, Articles & Journals

Sampling Unit- Officials involved in supply chain industry.

Sample size: 10

Primary Research on CPFR on Indian Companies

To understand the different problems in implementing and after implementing CPFR in India and potential benefits from it, a questionnaire was prepared and sent to different corporate working in supply chain operations of different companies.

Both Quantitative and Qualitative data was collected to perform the primary research on Indian corporate.

Questionnaire

CPFR (Collaborative Planning, Forecasting and Replenishment) is a cross-industry initiative designed to improve the supplier/manufacturer/retailer relationship through co-managed planning processes and shared information. It is an integrated supply chain method to improve efficiency through direct collaboration between all trading partners with the ultimate focus on the consumer. We are doing a project to understand the opportunities & challenges of CPFR implementation in India.

Name (Optional) _____

Organization * _____

Work Experience (in Years)

Barriers after CPFR implementation

Please indicate the extent to which the following items serve as a barrier to your organization's after implementation of CPFR

	Does not apply	Very High Barrier	Somewhat of a Barrier	Little Barrier	No Barrier
Lack of Trust with Trading Partners					
Lack of internal Communication					
Cost of implementation					
internal Process Change					
Lack of Training					
Lack of Human Resource					

Findings

The data collected from respondents for **potential barrier** in CPFR implementation is aggregated in the table below

Barrier/Rating	Very High Barrier	High Barrier	Somewhat Barrier	Little Barrier	No Barrier	Grand Total
Cost of Implementation	5	10	2	8	6	31
Internal Process Change	6	7	9	4	5	31
Lack of Human Resources	5	8	12	6		31
Lack of Internal Communication	10	9	7	5		31
Lack of Scalability	7	4	9	11		31
Lack of Sustained Executive Support	11	8	12			31
Lack of Training	6	3	5	10	7	31
Lack of Trust with Trading Partners	9	14	8			31
Grand Total	59	63	64	44	18	248

Analysis:

From the responses obtained from respondents and the grading done on several parameters i found that Lack of Trust with Trading Partners and Lack of internal Communication are two major barriers for the CPFR implementation in India.

Conclusion

While CPFR with its origins in US is a great concept and is revolutionizing the business practices across different industries, companies in India can reap great benefits by adopting it early on with the kind of boom expected in consumer product industry and can gain a significant competitive advantage for their firms.

Buyers benefit by way of reduced prices and synchronized operations. Buyers who enter into Collaborative relationships get better service levels and long-term price reductions as collaboration involved connect two businesses to jointly share in the risks and the rewards of the transaction. Observations shared by the respondents about this initiative:

- CPFR will be used strategically with strategic channel partners.
- Relationship-building is a major element of CPFR.
- Vendor-managed inventory will be more prevalent than CPFR given partner capabilities and Roll.
- Soft benefits in terms of communication are valued and seen as big wins across initiatives.

Respondents said CPFR is no longer a false promise but is a real strategy that can bring real results. Companies said CPFR is now a strategic initiative to be used with trading partners that met specific criteria. However, respondents noted that CPFR is not an initiative for all categories or all products.

The organizations most experienced in CPFR report that its benefits are replicable. They note that a key attribute of this process is the reward of getting closer to trading partners. This closer relationship confers not only a better understanding of the partner's business and better inter-company communications, but it also provides a strategic advantage in the marketplace.

The beat for CPFR implementation to date has been conservative. Concern over the availability of technology to support the process caused many to proceed cautiously.

Training is singled out as an issue warranting attention. CPFR requires an adjustment in communication Patterns and different skill sets. Companies actively engaged in CPFR activities are adjusting their expectations and use of internal resources while assessing the best way to implement this new initiative. The CPFR model requires commitment and true collaboration.

Recommendation:

Miss route: More options of locality or colonies should be introduced as the options on the websites under the single pin code so that customers should be accurate during filling of the address.

Reschedule: Customers should be provided with the option of delivery timings and days when customers need delivery.

Product miss-match: At the sellers place ordered product should be checked before picking it from seller's place so that the error in miss-match should be reduced.

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