

Logistics and the supply chain management commerce essay

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The purpose of this chapter is to critically review the literature based on the work that already has been done in the field of the dissertations research. The target of the literature review is to set the thesis between the borders of existing knowledge by identifying most of the material that could be useful for the specific project (Fisher and Buglear, 2007). Thus a variety of academic journals and books that related with the forecasting processes and the planning practices for forecasting improvement have been selected and utilised. Specifically, firstly the importance of forecasting and the available forecasting methods have been identified. Secondly the forecasting methods criteria have been presented and explained. Finally, two best planning practices have been classified and described, which can improve the forecasting processes.

2. 2 Preface to Forecasting and Definitions

Forecasting is one of the oldest management activities. In biblical times there were frequent allusions to seers and prophets. Nowadays it is becoming increasingly necessary for companies to make forecasts; those that do not give the opportunity to their competitors a distinct advantage. No forecasting is a main cause of most of today's business failures. In the past, goods could be sold on company reputation alone and forecasting was not too important. In today's more competitive times, sentiment does not apply, and firms that do not attempt to make an accurate forecast on which to base their future production will find it increasingly difficult to survive (Lancaster G. A. & Lomas R. A., 1985). Forecasting is important for many aspects of the modern business. Organisations make plans which become effective at some point in the future so they need information about prevailing circumstances (Waters, 2003). This information must be forecast; but unfortunately

forecasting is a difficult situation and despite its importance, progress in many areas has been limited (Waters, 2003). According to literature forecasting can be defined: "Forecasting is predicting, projecting, or estimating some future event or condition which is outside an organization's control and provides a basis for managerial planning" (Golden J. et. al, 1994, p. 33)" Forecasting is generally used to predict or describe what will happen (for example to sales demand, cash flow, or employment levels) given a set of circumstances or assumptions" (Waddell D., et. al, 1994, p. 41)"

Forecasting is a projection into the future of expected demand, given a stated set of environmental conditions" (Mentzer J. T. & Moon M. A., 2005, p. 9)

2. 3 Importance of Forecasting

The expanding globalization of business, the continuing move from push to pull manufacturing, and the rise in consumer oriented economies, have led to a much more complex forecasting world (Lapide, 2006). Forecasters are being asked to create plans for expanding geographies, increased numbers of sales channels, and broader, more diverse, and shorter life cycle product lines. This complexity means that markets are more dynamic and the business environment is not stable (Lapide, 2006). Forecasting is important in a wide range of planning or decision making situations. It is essential to mention those perspectives that forecasting can become a useful tool for management in many departments of an organization. In marketing, a number of decisions can be improved significantly by linking them with reliable forecasts of market size and market characteristics (Makridakis and Wheelwright, 1989). For example, a company that produces and sells appliances should be able to forecast what the demand will be for each of its products by geographic region and type of

consumer (Makridakis and Wheelwright, 1989). In production an essential need of forecasting is the area of product demand. This relates with the both prediction of volumes mix so as the organization can plan its production schedule and organize appropriate its inventories (Makridakis and Wheelwright, 1989). Another area that the recent years have linked a lot with forecasting is finance and accounting. These departments must forecast cash flows and the rates at which various expenses and revenues will occur " if they are to maintain company liquidity and operating efficiency" (Makridakis and Wheelwright, 1989). The importance of forecasting has become more widely acknowledged in recent years due to the changes in the economic environment. Marketing practitioners regard forecasting as an important part of their jobs. For example, Dalrymple (1987), in a survey among 134 US companies, found that 99% prepared formal forecasts when they developed written marketing plans. In Dalrymple (1975), 93% of the companies sampled indicated that sales forecasting was ' one of the most critical' aspects, or a ' very important' aspect of their company's success. Jobber, Hooley and Sanderson (1985), in a survey of 353 marketing directors from British textile firms, found that sales forecasting was the most common of nine activities on which they reported (Armostrong J. S. et. al, 2005). Winklhofer et. al (1996) notes some basic factors that caused the importance of forecasting for the organizations in recent years: The increasing complexity of organizations and their environments led to difficulties for decision makers to include all the factors relating to the future development of the organization into account; Organizations have moved towards more systematic decision making that involves explicit justifications for individual

actions, and formalized forecasting is one way that these actions can be supported; The progress of the forecasting methods has enables not only forecasting experts but also managers to understand and use these techniques.

2. 4 Forecasting Methods

Moving on, the next step is to present and to analyze the forecasting methods. Forecasting methods can be divided in three basic categories: a) Quantitative or Statistical b) Qualitative or Judgmental c) Time Horizon

2. 5 Quantitative or Statistical

Quantitative

Forecasts rely on mathematical models and assume that past data and other relevant factors can be combined into reliable predictions of the future (The Journal of Business Forecasting, fall 2000). In preparing a quantitative forecast it should begin with a number of observed values, past data, or observations (Makridakis and Wheelwright, 1989). These observations may represent many things, from the actual number of units sold to the cost of producing each unit to the number of people employed (Makridakis and Wheelwright, 1989). Quantitative Forecasts can be divided into two alternative options; projective and casual.

2. 5. 1 Projective Methods

These methods based on historical data set and they are known as time-series. These can be used to identify systematic, seasonal variations in the data, cyclical patterns, trends and growth rates of the trends (Korpela J. et. al, 1996, p. 162). Time-series analyze the data to determine which patterns exist and then built an appropriate forecast equation (Mentzer T. and Mark A. M., 2005). The main forecasting techniques included in this category are moving averages, exponential smoothing and a model for trend and seasonality. A short review of these methods follows.

Moving Average

Moving average includes the calculation of the average of the sample and then

forecast the next period having as a driver this average. They are suitable method in order to predict from a series of data which has shown regular historical patterns and where there is a long series. Also they are suitable of predicting seasonal sales but they can't predict accurate rapid changes in markets. Exponential Smoothing Exponential smoothing is the most popular and cost effective of the statistical methods. It implements the principle that recent data should be weighted more heavily and 'smoothers' out cyclical fluctuations to forecast the trend (Armstrong J. S. et. al, 2005). It based on the idea that as data gets older it becomes less relevant and should be given less weight (Waters, 2003). In order to make this calculation it is needed the old average, the actual new demand and a weighting factor (Wild, 2002).

Model for seasonality and trend The techniques that have been discussed so far have assumed that the basic underlying pattern of the past sales data has been horizontal. Waters (2003) proposes a model for use in case of seasonality and trend in the demand. Demand can be divided in separate parts and more specifically: a) underlying value, which characterizes the main demand that should be adjusted for seasonality and trend b) trend which is the change in demand, c) seasonality which is the cyclical variation around the trend and finally d) noise which is a random effect. So the formula for this method is: $2.5.2$ Casual Methods The basic philosophy behind the casual methods is to use refined and specific information concerning variables to develop a relationship between a lead event and the event being forecasted (Korpela J. et. al, 1996, p. 162). The basic assumption is that there is a discernible relationship between the forecasted variable and a measurable independent variable (Lancaster G. A. & Lomas R. A., 1985). A

typical example of casual methods is regression method. Regression Method By using a regression method the demand forecast is based on a correlation of one event to another. The use of regression method requires a large amount of data for the forecast variable and the casual variables. 2. 6 Qualitative or Judgmental Qualitative Forecasts (The Journal of Business Forecasting, fall 2000) are based on opinions, knowledge and skills rather than more formal analysis. They are used where there is no historical data. These types of forecasts are one of the simplest and widely used forecasting approaches available (Makridakis and Wheelwright, 1989). It is based in the corporation of the executives by discussing and deciding as a group what their best estimate for is for the item to be forecast (Makridakis and Wheelwright, 1989). The most important judgmental methods are Delphi, Market Surveys and Historical Analogy. Delphi In the Delphi method at least two rounds of forecasts are obtained independently from a small group of experts. This group can be between five and twenty experienced and suitable experts and poll them for their forecasts and reasons (Armstrong J. S, et. al, 2005). The experts never actually meet and typically do not know who the other panel members are (Wisniewski, 2006). After each round, the experts' forecasts are summarized and reported back to the experts (Armstrong J. S., 2006). The cycle can go on from a second to a third round and so on if appropriate (Lancaster G. A. & Lomas R. A., 1985). The Delphi method attempts to collect experience and judgement of a group of experts. Typically the Delphi method is used to produce a narrow range of forecasts rather than a single view of the future (Wisniewski, 2006). Market surveys Logic dictates that the most sensible approach to preparing a sales

forecast might be ask one's customers (Lancaster G. A. & Lomas R. A., 1985). It is a simple matter to ask customers what their likely purchases will be for the period it is desired to forecast. So companies make surveys in order to collect these data from a group of customers and then by analysing their answers can make the forecasts. This method is " best used when the number of users is small, when they are likely to state their purchasing intention with reasonable accuracy and when the forecaster knows the extent of competition in the market-place and the company's likely share of the total market" (Lancaster G. A. & Lomas R. A., 1985, p. 131). Historical Analogy Under limited circumstances it may be possible to produce forecasts based on observed patterns of some similar variable in the past (Wisniewski, 2006). The concept of this method based on the ' product life-cycle' which assumes that the most of the products follow the reasonable stages of introduction, growth, maturity, decline (Lancaster G. A. & Lomas R. A., 1985) as the figure 2. 1 shows. The product life-cycle theory has been applied in many industries and has proved useful in identifying future strategies for products and services (Lancaster G. A. & Lomas R. A., 1985).

MaturitySales/ProfitDeclineGrowthIntroductionTimeFigure 2. 1: Product life cycleSource: (Wisniewski M. (2006), Quantitative Methods for Decision Makers (4th Edition), Prentice Hall, p. 295)2. 7 Time HorizonForecasts can be classified in terms of time span they cover in the future. The basic types of time horizon forecasts are long-term, medium-term and short-term (Korpela J. et. al, 1996, p. 161). The long-term forecasts cover a time span of 3-10 years and they are used in the analysis of fixed commitments and can be characterized as strategic decisions. The medium-term forecasts are made

for one year to support production planning in the face of highly cyclical demand and can be characterized as tactical decisions. Finally short-term forecasts cover a time of one week to three months and they are used to control manufacturing levels and stock replenishment in the face of short demand variation. Short-term forecasts are concerned for operational decisions (Korpela J. et. al, 1996; Waters, 2003). 2. 8 Forecast

ErrorInaccurate forecasts are the single most common problem that every company faces. Nowadays due to the rise of the technology there are many events or areas that can be predicted such as 1) seasonality, 2) average relationships, 3) average cyclical patterns, 4) emerging technological trends and their influence and many other factors. But on the other hand because future is something unknown there are always situations that are very difficult to predict such as 1) special events, 2) competitive actions or reactions, 3) sales of new products, 4) the start and depth of recessions, 5) changes in trends, 6) changes in relationships or attitudes, 7) and technological innovations (Makridakis and Wheelwright, 1989). Golden J. et. al, 1994, indicates three ways-aspects that can reduce the forecast error by taking into consideration the followings: Knowing the market: take the pulse of those who will actually buy and use the product. Be independent. Deflate forecasts for a margin of safety. It is generally known that every forecaster knows that he/she should measure forecast errors. Most of them do it however only for the reason to see how well they are doing. The important is to measure forecasting errors for two primary reasons: to learn from them and to manage demand risk (Lapide L., 2007). Regarding learning from them, forecasts errors should be analyzed to access where errors are too

high or have gotten to large so that more focus can be placed in those areas for improvement (Lapide L., 2007). Regarding managing for demand risk, users of the forecast need to know how accurate they are in order to leverage risk management strategies designed to mitigate the risk (Lapide L., 2007).

2.9 Forecasting methods criteria

When carrying out market demand forecasts, one often confronts with the problem of the inappropriate selection of a forecast method. It should be noted that in every actual forecast situation methods have their advantages and disadvantages, hence, it is important to define and analyse forecast method selection criteria (Pilinkiene, 2008). The selection of the forecast method should be based at least on several criteria taking into account forecast method applicability and additional things proposed by researchers such as a) forecast accuracy degree, b) time span, c) amount of necessary initial data, d) forecast costs, e) result implementation and applicability level (Pilinkiene, 2008). According to Cox and Mentzer study (Table 2. 1) (1984; cited by Mentzer and Kahn, 1995) identified accuracy (92%) and credibility (92%) as top criteria for choosing a forecast technique.

Criteria

Sample Size

% Important

Accuracy 20592
Credibility 20692
Customer Service Performance 19977
Ease of Use 20675
Inventory Turns 19855
Amount of Data Required 20546
Cost 20541
Return on Investment 19935

Table 2. 1: Top criteria for choosing a forecast technique

(Source: Mentzer J. T & Kahn K. B., (1995) 'Forecasting Technique Familiarity, Satisfaction, Usage, and Application', *Journal of Forecasting*, vol. 14, p. 474)

An important research made by Yokum and Armstrong (1995) (Table 2. 2) which based in a survey among 322 experts in forecasting so as to identify the most important criteria. There were 94 researchers, 55 educators, 133 practitioners (i. e. forecast preparers) and 40 decision makers (i. e. forecast users). From this study 'accuracy' was the dominant criterion -rated 6. 2 on average-, next was 'timeliness' in providing forecasts, and cost savings resulting from improved decisions'. After that five other criteria rated based on 'ease' such as 'ease of use'. Mean agreement rating

	Decision Maker (DM)	Practitioner (PR)	Educator (ED)	Researcher (RS)
Accuracy	6. 206	6. 206	6. 106	6. 096
Timeliness in providing forecasts	5. 89	5. 97	5. 92	5. 87
Cost savings resulting from improved decisions	5. 75	5. 97	5. 62	5. 66
Ease of interpretation	5. 69	5. 82	5. 67	5. 89
Flexibility	5. 58	5. 85	5. 63	5. 35
Ease in using available data	5. 54	5. 79	5. 44	5. 52
Ease of use	5. 54	5. 84	5. 39	5. 77
Ease of implementation	5. 41	5. 80	5. 36	5. 55
Incorporating judgmental input	5. 11	5. 15	5. 19	5. 12
Reliability of confidence int.	4. 90	5. 05	4. 81	4. 70
Development cost (computer, human resources)	4. 86	5. 10	4. 83	5. 02
Maintenance cost (data storage, modifications)	4. 73	4. 72	4. 73	4. 75
Theoretical relevance	4. 40	3. 72	4. 43	4. 20

*denotes significantly higher ratings (p <0. 05) for column group versus group/s listed in superscript

Table 2. 2: Importance of criteria in selecting a forecasting technique (scale- 1 ‘ unimportant’ to 7 ‘ important’)

(Source: Yokum, J. & J. S. Armstrong (1995) ‘ Beyond Accuracy: Comparison of criteria Used to Select Forecasting Methods’, International Journal of Forecasting, 11, p. 593)

2. 10 Planning Practices for Improving Forecasting

After the analysis of the available forecasting methods and their selection criteria the next step is to propose some planning practices that can improve forecasting, It is known that these practices are not necessary best fit with every company and before someone wants to implement them an evaluation of company’s core practices should be made. That can help a company to identify its advantages and disadvantages in order to survive in today’s tough market environment and with the help of these practices can become the leader of the market. The complexity and uncertainty that exist in the today’s business environment creates many problems to every function of a company. This also affects supply chain management which its initial target is to meet the needs of the final consumer by supplying the right product at the right place, time and price (Helms et. al, 2000). This complexity makes the concept of accurate and effective forecasting an elusive target. Many companies are, however, making significant, improvements by using an approach that supports and facilitates the concept of supply chain management by improving the forecasting practices (Helms et. al, 2000). So the planning practices that can improve forecasting are: a) Sales and Operation Planning (S&OP) and b) Collaborative Planning Forecasting and Replenishment (CPFR). These practices will be analyzed and explained in the following subchapters.

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2. 10. 1 Sales and Operation Planning

Sales and Operating Planning (S&OP), is a cross-functional process that brings together teams of individuals on a routine basis to plan for where businesses are going on a operational/tactical basis and is considered a supply chain best practice (The Journal of Business Forecasting, 2005; Lapide, 2006). Sales and Operations Planning (S&OP) has emerged as a powerful decision-making tool for executives and managers (Wallace et. al, 2005). It is a set of decision making process that 1) balances demand and supply, 2) links a company's day-to-day operations with its strategic and business plans and 3) integrates operational planning with financial planning (Wallace et. al, 2005). Each team member brings to the process a specific perspective during the development of supply and demand plans/forecasts (Lapide, 2006). Each S&OP team member may have to generate, review and revise demand forecasts that reflect the aspects of a business with which they are most familiar (Lapide, 2006). Sales and Operation Planning, leverages Supply-Demand Matching, an operating principle that involves balancing supply and demand over time in order to satisfy demand, optimize operations, and minimize wasted resources (The Journal of Business Forecasting, 2005). Under an S&OP process, a company's sales and marketing plans are aligned with the plans of operations, logistics, manufacturing, and procurement in order to jointly optimize future demand-supply operations. It is a process from which the final ' constrained' and ' unconstrained' demand forecasts are developed and then used to drive operational planning activities (The Journal of Business Forecasting, 2005). By far the most important element in order to implement S&OP is the

mindset and the attitudes of the people and the changes that need to be made in that regard (Wallace, 2010). Other elements such as software tools, data and the specifics of the process may be essential, but they're of far less significance. Taking this as a standard the point is that a successful implementation of S&OP is a matter of change management. The amount of change is significant. It's not a matter of doing something better; it's about doing things differently-to be better (Wallace, 2010). In order to understand S&OP process in is important to present and explain the four fundamentals which are demand and supply, volume and mix figure 3. Volume (How much?, Rates, Product families)

Supply

Demand

Mix (Which ones?, Timing/Sequence, Products/SKU's)Figure 3: The Four FundamentalsSource: Wallace T. & Stahl B., (2005), ' Sales & Operation Planning- The Next Generation', pp. 6)Sales and Operation Planning is a tool to balance demand and supply at the volume level. It deals with rates of sales and production, aggregate inventories and backlogs. It is typically expressed in product families or other aggregate groupings; it answers the question ' how much'. At the mix level the concern is about with which individual products run first, second, third and which customer orders will ship when. It answers the question ' which ones' giving the details (Wallace et. al, 2005). Another important mission for Sales and Operation Planning is to tie together the company's operational plans with its financial plans. The financial plans represent, critically important evident, to deliver X amount of revenue and profit dollars for a specific period of the year. These

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commitments are made to some very important people such as the corporate office, the board of the directors, the Wall Street and ultimately to owners of the business: the stockholders (Wallace et. al, 2005). On the other hand, the operational plans focus on things like procurement, production, sales, inventories and so on. When these operational plans are not aligned with the business and financial plans, there is a disconnect. Implementing Sales and Operations Planning in a business the benefits will be essential and immediate. These benefits can be categorized into two groups, the hard benefits and the soft benefits. As far as it concerns the hard benefits these can be the following (Wallace et. al, 2005): Higher Customer Service, by improving the ability to ship on time and complete at a higher rate than before S&OP. Lower Finished Goods Inventories, by doing a better job of shipping to customers with lower, not higher, inventories. Shorter Customer Lead Times, through an enhanced ability to manage the customer order backlog and keep it at a low level. More Stable Production Rates, due to the ability to predict the future shifts in customer demand sooner and thus make smaller adjustments to production rates. Higher Productivity, by avoiding extreme swings in production volumes with their attendant layoffs and rehiring. Moving on to the soft benefits these include (Wallace et. al, 2005): Enhanced Teamwork, at both the executive and operating management levels, resulting from the holistic view of the business that S&OP provides. Better Decisions, by decreasing effort and time. S&OP offers, increases effectiveness which improves the quality and the structure of decisions on demand and supply issues. Greater Accountability and Control, due to the backward and forward visibility that S&OP provides.

2. 10. 1. 1 Examples of Implementing Sales and Operation Planning

a) Coca-Cola Midi (CCM): This is a regional manufacturing division of Coca-Cola located in France, producing soft drinks concentrates and juice beverages bases for Europe, Asia and Africa. CCM manufactures over 700 SKU's, encompassing 79, 000 tons. S&OP was implemented at CCM when the plant was started in 1991. S&OP is for CCM the backbone for planning, manufacturing and supply-chain activities. S&OP enables disciplined and formalized communications across the company, and between all the suppliers, partners and customers. b) Eli Lilly & Company: This global pharmaceutical company has over \$14 billion in sales with 37, 000 employees, and inventories of \$1. 7 billion. Their 65 products are sold in 8000 different SKU's, into 164 countries, through 130 sales affiliate divisions. Each of these sales affiliates maintains forecasts and inventory replenishment orders over a 24 month horizon. This complex supply chain requires extensive efforts in the area of global supply chain management, with S&OP guiding the demand and supply management efforts, and providing a forum to manage, improve and communicate change effectively. S&OP has provides the vision, communication and decision making function to plan carefully and start creating new products across multiple markets. It also has been an

2. 10. 2 Collaborative Planning Forecasting Replenishment (CPFR)

Collaborative planning forecasting and replenishment (CPFR), is a revolutionary business practices where in trading partners use technology

and a standard set of business processes for Internet-based collaboration on forecasts and plans for replenishment (KJR Consulting, 2002). CPFR can be categorized into these collaborative business practices that enabled trading partners to have visibility into one's other critical demand, order forecasts and promotional forecasts. The objective of CPFR is to improve efficiencies across the extended supply chain, reducing inventories, improving service levels and increasing sales (KJR Consulting, 2002). Wal-Mart and Warner-Lambert embarked on the first CPFR pilot, involving Listerine products, in 199. In their pilot, Wal-Mart and Warner-Lambert used special CPFR software to exchange forecasts. Supportive data, such as past sales trends, promotion plans, and even the weather, were often transferred in an iterative fashion to allow them to converge on a single forecast in case their original forecast differed (Avin Y., 2001). As a result of CPFR implementation Warner-Lambert's service levels increased from 87% to 98%, while the lead times to deliver the product decreased from 21 to 11 days (Boone T. et. al). Also this pilot was very successful, having as a result an increase in Listerine sales and better fill rates, having also a reduction on inventory investment (Avin Y., 2001). The key idea behind CPRF is that the trading partners (retailer and manufacturer), work together in order to produce a common forecast. Both the retailer and the manufacturer collect market intelligence on product information, store programs etc., and share it in real-time over the Internet. In most cases, the retailer owns the sales forecast; if the manufacturer agrees with the forecast, automatic replenishments are made to the retailer via predetermined business contracts so that a specific level of inventory or customer service is maintained (Boone T. et. al). In the case that the retailer

and the manufacturer can't agree on the forecasts or if there are exceptions, such as unusual demand season or a store opening, the forecasts are reconciled manually. An important point is before the implementation of CPFR when the partners should agree on several key questions such as how to measure service levels and stock-out, how to set inventory and service targets (Boone T. et. al). The difference between CPFR and other business process tools and initiatives, such as Efficient Consumer Response (ECR), is that the other models require critical mass before any benefits are realized. Promotional plans and the business goals are the most famous areas of collaboration between the trading partners. After that order/replenishment plans, inventory status and sales forecast seems to be very critical themes for this relationship.

2. 10. 2. 2 CPFR Benefits

There have been recorded and identified many benefits of CPFR. The CPFR documents that are available on the VICS Committee sites show that there is a 30%-40% improvement in forecast accuracy, significant increases in customer service, sales increase between 15% and 60% and reduction in days of supply 15%-20% (Sheffi Y., 2002). AMR Research (2001) reported a range of benefits that came through CPFR implementation in many companies and there are divided into retailer benefits and manufacturer benefits as it is shown in table 2. 3.

Retailer Benefits

Typical Improvement

Better store shelf stock rates 2% to 8%
Lower inventory levels 10% to 40%
Higher sales 5% to 20%
Lower logistics costs 3% to 4%

Manufacturer Benefits

Typical Improvement

Lower inventory levels 10% to 40%
Faster replenishment cycles 12% to 30%
Higher sales 2% to 10%
Better customer service 5% to 10%

Table 2. 3: Typical CPFR Benefits

Source: Sheffi Y.,(2002), ‘ The value of CPFR’, RIRL Conference Proceedings

As far as it concerns the retailers benefits the highest is the reduction in inventory levels which has a drop from 10% to 40%. After that the increase in sales from 5% to 20% is another essential benefit. On the other hand the manufacturers benefits relate again with a elimination in inventory levels from 10% to 40% and also it offers a faster replenishment cycles from 12% to 30%. In accordance with a questionnaire constructed by KJR Consulting and sent via e-mail to 130 GMA (Grocery Manufacturers of America) companies that have implement CPFR best practice a great range of benefits raised that can indicate the importance of CPRF for the modern complexity businesses. These benefits have been categorized in the following Figure 2.

- 1.

Figure 2. 1: Anticipated Benefits of CPFR

Source: KJR Consulting, (2002), ' CPFR Baseline Study- Manufacturer Profile', Grocery Manufacturers of America

From the figure 2. 1 the improvement in forecast accuracy looks like the most important benefit that comes from the implementation of CPFR. Also the improvement in internal communication, the increase in sales and the improvement in the relationship between the trading partners are some other very essential benefits of CPFR.

2. 10. 2. 3 Examples of CPFR Implementation

On December 2001 Superdrug decided to implement CPFR in collaboration with Johnson & Johnson (J&J). Superdrug operates more than 700 stores throughout the UK, offering its customers an average of more than 6, 000 product lines. It came to CPFR with the goal of 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 (Sheffi Y., 2002). After the implementation of CPFR and through a reasonable period of installation the results show (Sheffi Y., 2002): 13% reduction in stock, at Superdrug's distribution centers Warehouse availability increased by 1. 6% Superdrug's forecast accuracy, saw an improvement of 21% Sears, Sara Lee, and Warner Lambert are some other examples of companies satisfied with their forecasting results from CPFR implementation. Through internal and external efforts they succeed to reduce time, cost and slack from their supply chains and are now in a better position to coordinate inventory levels with changing demand (Helms et. al, 2000). Also Heineken USA used CPFR and the results were an important

reduction in order cycle time from 12 weeks to 4 or 5 weeks (Helms et. al, 2000). That means fresher products and happier customers, the goal of supply chain management. As the board of Reynolds Wrap said ' that even a 1 percent improvement in forecasting can translate into millions of dollars in savings' (Fryer, 1997, p. 140; cited by Helms et. al, 2000, p. 396).

2. 11 Conclusion

Taking into consideration all the above and finishing with the literature review chapter the target was three-fold. First of all to identify and discuss the importance of forecasting for the modern business environments and critically evaluate the need to implement the forecasting methods to the core business processes. Second, a presentation of the most famous and available forecasting techniques and their criteria have been analyzed so as to get a holistic view about them that can be used by an organization in order to improve its performance. Finally two best planning practices, the Sales and Operation Planning and the Collaboration Planning Forecasting and Replenishment were described and explained in order to indicate to the companies these planning practices that can improve the forecasting operations in relation with the focal company Olympos S. A. that these dissertation occupies.