

UNIVERSITY OF KWAZULU-NATAL

**THE INFLUENCE OF PROMOTIONAL ACTIVITY ON
SUPPLY CHAIN STABILITY: A FAST MOVING CONSUMER
GOODS (FMCG) PERSPECTIVE**

By

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College of Law and Management Studies

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Yours sincerely

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My parents, for instilling the belief that I can do better; my husband for all his support and sacrifice; and my supervisor for his guidance and for being able to channel all of my ideas.

“Hope is a waking dream.”

-ARISTOTLE

ABSTRACT

Today, most sales are stimulated at the point of purchase, so sales promotions are becoming a crucial element of any marketing campaign. The consequence of these promotions is the creation of unpredictable demand. The resultant instability has been termed the “Bullwhip Effect” (BWE). The BWE has a negative effect on business performance as it creates information distortions that cause excessive inventory holdings, higher overall costs, poor customer service and lost sales. An important strategy to achieve a smooth flowing supply chain is to mitigate or preferably eliminate the BWE.

The aim of this research was to monitor the stock levels of a high value product flowing through the supply chain to determine whether marketing activities, such as promotions, contribute to increased instability in the chain. The study followed a case study approach and analysed the business activities of consumer packaged goods company (CPGC) “X” promoting their product “X”, an item of high value, with retailer “X”. The promotion was monitored in three phases. The phases included pre-promotion planning, execution of the promotion and post promotion analysis. The researcher employed both qualitative and quantitative research methods. The research established that the ROI on the promotion was greater than the target and that the retailer made an additional profit. However, when the assessment of ROI included more of the supply chain, there was a negative operating profit due to excess upstream inventory.

The study confirmed that promotional activities contribute to the BWE and that this effect may be more pronounced with products of higher value. The phenomenon worsened as the distance of supply chain nodes from the real demand increased. This caused a major shift in ordering patterns and an altered total inventory pipe fill in the chain.

The recommendations arising from this study are that the CPGC and retailer should implement a true scorecard and a joint business plan for those brands that have products of high value. Subsequently, a vendor managed inventory (VMI) system should be implemented. This will remove the retailer’s need to forecast and may prevent unstable ordering and delays due to cost avoidance. Shrinkage will be reduced as the CPGC would directly own, control and supply stock in the retailer’s DCs.

LIST OF ABBREVIATIONS AND ACRONYMS

1. ‘MM: Number- thousands
2. 3PL: 3rd Party logistics provider
3. ABC: Activity based costing
4. ARMA: Auto regressive moving average
5. B2B: Business to business portal
6. BBBEE: Broad based black economic empowerment
7. BWE: Bullwhip effect
8. CFP: Collaborative forecast planning
9. CPFR: Collaborative planning, forecasting and replenishment,
10. CPGC: Consumer packaged goods company
11. CSL: Customer service level
12. DC/DCs: Distribution centre(s)
13. DHL: Trading name of a 3rd party logistics provider
14. EDI: Electronic data interchange
15. EDLC: Everyday low cost
16. EDLP: Everyday low price
17. EDW: Electronic data warehouse
18. EPOS: Electronic point of sale
19. ERP: Enterprise resource planning
20. FMCG: Fast moving consumer goods
21. FTL: Full truck load
22. FY: Fiscal year
23. GIV: Gross invoice value
24. JBP: Joint business plan
25. JVC: Joint value creation
26. JIT: Just in Time
27. KPI: Key performance indicators
28. LDP: Local demand planner
29. LSM: Living standards measure
30. M1: Month one
31. M3: Month three
32. M6: Month six

- 33. M9: Month nine
- 34. M12: Month 12
- 35. OOS: Out of stock
- 36. P3M: Past three months
- 37. PF: Production forecast
- 38. PO: Purchase order
- 39. POS: Point of sale
- 40. PWC: Price Waterhouse Coopers
- 41. RDP: Regional demand planner
- 42. RFID: Radio frequency identification
- 43. ROI: Return on investment
- 44. RSP: Retail selling price
- 45. SAP: Systems, applications, products in data processing (business software)
- 46. SCOR: Supply chain operations reference
- 47. SF: Sales forecast
- 48. SMART: specific, measurable, attainable, realistic, timely
- 49. SKU: Stock keeping unit
- 50. TPR: Temporary price reduction
- 51. TS: True scorecard
- 52. VMI: Vendor managed inventory
- 53. ZAR: Currency- South African Rand

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CHAPTER ONE

INTRODUCTION AND STATEMENT OF THE PROBLEM

1.1 Introduction

The study is conducted in the fast moving consumer goods (FMCG) industry and is based on the South African market. The research follows a case study approach in terms of analysing the operations between a single consumer packaged goods company (CPGC) and a single retailer in relation to a single FMCG product so as to examine the influence that a promotion has on the stability of a supply chain. In particular, the course of one promotion was observed.

The CPGC is a FMCG company and is part of a global organisation which has a market specific organisation in each country where it has an interest. The organisations in each country are responsible for maintaining the distribution of product to the retailers in that country. The CPGC is part of a global supply chain in that it sources raw materials and produces finished stock offshore. This means that there is a long lead time to receive consignments from the plant. As a result, forecasting demand is crucial when it comes to keeping retailers and their shoppers satisfied.

Retailer X is one of the local South African retailers. The business is rapidly expanding so the company is focusing on continuous improvement in its supply chain and uses technology and systems to accommodate the growth. The business is still in the early phase of expansion and many challenges are experiencing such as a disconnect between head office, the warehouse and the retail stores, systems limitations for ordering and tracking product codes, lack of capacity at their warehouses, lack of processes and a general lack of flexibility. One of the key strengths of this retailer is its ability to keep up with the market to leverage key trends, such as those in personal grooming.

There is much competition in the personal grooming market so CPGCs thrive on introducing new innovations as well as technology upgrades on existing lines in the market. As a result of the CPGC's investment in research and development to drive innovation, these personal grooming products have become more expensive, as well as more desirable, and are therefore known as high value items. In order to drive consumption, CPGCs and retailers favour the use of promotions to stimulate demand and this is often found to be the major cause of instability in the supply chain.

1.2 Background

Sterman (2011, p.1) has said that supply chain instability wreaks havoc with firms, consumers, and the economy through excessive inventory, poor customer service, and by raising the risk in the cost of capital invested. The main contributor to supply chain instability is the phenomenon called the bullwhip effect (BWE). The BWE is a result of amplified variance in demand as one moves upstream in the supply chain and according to Sterman (2011, p.2) the BWE has a dramatic effect on business performance as its impact can be extended to quality problems, increased logistics costs, extended lead times, and lost sales through out-of-stocks.

According to Bandyopadhyay and Bhattacharya (2009, p.1246), the BWE is often observed in industries that supply developing markets or emerging economies. The reason for this is that demand is more likely to surge unexpectedly. The industries that are hard hit include manufacturing, grocery and retail. On the surface, it appears that the CPGC bears most of the excess operational costs created by the BWE but these costs must eventually be passed on to the downstream firms, *i.e.* the retailer in the form of higher prices or poor customer service and product quality.

Hamister and Suresh (2008, p.442) add that “there has been a long-standing belief among the operations management community that certain marketing behaviours can adversely affect operational performance in the supply chain. For instance, excessive promotions and price discounting may drive up sales variability and increase cost levels, especially in the upstream stages of the supply chain through the bullwhip effect”.

Despite the above mentioned theory, promotions are increasing in popularity because in the current economic climate it is getting tougher for manufacturers and retailers to win in the market as consumers are more sensitive to price whilst demanding a higher level of service (Long, 2008, p.3). These consumers will not support a retailer if they cannot get the products, prices or promotional offers that are desired; retailers are therefore under increased pressure to drive costs down (Long, 2008, p.3). This pressure is passed onto the CPGCs and as a result, is increasing the need for lean manufacturing, just-in-time delivery, and an agile supply chain. Thus, developing a stable supply chain becomes more important than ever.

The product being examined (product X) is part of a global brand that aims to continuously build trust and heritage through innovation. The brand targets approximately 700 million consumers around the world. A major competitive advantage for the brand is that it has built a strong portfolio of products and consumers perceive the products to be of high quality. The SKU falls under the category of men's skin care and primarily deals with the benefit of effective hair removal for men.

The target is aspirational males within the age group of 18-35, in living standards measure LSM 6-10. Usage of this product extends to age groups 35-80. The product that can be found on the retailer's shelf is already 6-9 months old. This is due to the lead time from the production plant to the CPGC and the stock turnaround time at the CPGC warehouse. At the point of purchase (for the shopper) the age of the product largely depends on the rate of sale at stores. When the rate of sale is slow, then the product can be on shelves for approximately 4 months or longer. If the rate of sale is high, then the product can be sold in a matter of weeks.

The CPGC tends to run frequent discount promotions or value added deals through physical bundling in the market in order to support this SKU and to continuously create brand awareness in order to reinforce its competitive position. The medium used to drive education about the innovation of this product and to initiate trial, is digital campaigns. The digital campaign comprises Twitter feeds, Facebook posts as well as a dedicated website campaign.

The market is advancing in maturity and is experiencing slower demand while recurring discount promotions have led to a decrease in profit margin. In terms of brand identification, this SKU holds a leading position in the category. One of the major challenges for growth in this category is the introduction of retailer's private label ranges. The major trend in this category is to offer more skin care benefits whilst improving functionality of the product, *i.e.* driving innovation.

There is no previous promotional history of this SKU with regard to customer X. The reason for this is that discount promotions with this customer were considered to be off-strategy. The CPGC believed that promotions did not cause a significant increase in sales at this customer; however, price discounting remains a popular tool for competing retailers. The usual advertising medium is placing the product on advert/leaflet, *i.e.* either retailer specific adverts or in the newspaper and the typical promotion tool is offering a reduced price to shoppers for a specified period.

1.3 Statement of the problem

As mentioned by Hamister and Suresh (2008, p.442), the BWE can be created through promotions, but promotions can also exacerbate an existing BWE.

Today, most sales happen at the “point of purchase”, so sales promotions are becoming a crucial element of any company’s marketing artillery in order to capture the consumer at the first moment of truth. As a result of increasing category competition, as well as retailer and consumer pressure, CPGCs will need to drive even more innovative promotions with retailers to protect market share and brand value.

So the primary objective of effective supply chain management is then to counteract the BWE and achieve a smooth-flowing supply chain whilst working together with the marketing teams to benefit from effective sales promotions. A promotion can be regarded as the trigger that stimulates demand as it increases the amount of product sold through a retailer’s stores and increases the amount of stock that is ordered from the CPGC.

This may appear uncomplicated, but if the flow of inventory is forecast inaccurately and is not managed effectively through the chain to the retailer, it could lead to an “out-of-stock” situation and can create information distortions which cause chaos up and down the supply chain. Products of low value have been examined extensively (refer to table 2-4 on p.26), but currently there is a gap in the research and there is little or no information on the impact on the chain when a promotion is based on items that are of high value. This study focuses on a product that is considered to be of “high value”.

Products are called “high value” when they have broken the perceived price barrier in their category and they present unique challenges based on this profile (Lee, Padmanabhan and Whang, 1997b, p.93). This inevitably means that the operations in the supply chain for this product are different from that of a “low value” item. The purpose of this study was to determine the influence of promotional activity on the pipeline fill of inventory for both the manufacturer and the retailer for “high value items” and to determine if this contributes to instability in the chain. The reason for this is that the end-demand for product X requires production to be scheduled at least 6 months in advance of the actual need. Over time, any instability amongst forecasts, demand management and production due to cost avoidance or any other reason may result in miscommunication and, ultimately, supply that cannot meet the demand. This could contribute to the collapse of each node in the chain.

As observed by the researcher and discussed in chapter five, it can be seen that the process of fulfilling demand for high value items faces the additional challenges of:

- i. changes in retailer's ordering patterns - to delay the cost of ownership of inventory downstream in the supply chain;
- ii. smaller batch ordering;
- iii. more frequent orders;
- iv. additional packaging for protection ;
- v. additional delivery requirements for handling;
- vi. additional merchandising requirements; and
- vii. exacerbated pilfering (theft)

The observed product does not have an expiry date and is considered to be “long-life”. The main issue is that whilst these products can remain on-shelf for longer periods of time, they are more prone to be stolen due to their value and desirability. They may also be out-of-stock because orders were delayed by retailers who were attempting to delay the cost of ownership. These challenges illustrate the chronic instability inherent with “high value items”. Placing these items on promotion may further exacerbate the bullwhip effect.

Research conducted by the IGD (2012a, p.38) reveals that the key challenge for supply chains with regard to promotion volume lies in balancing inventory with the following factors:

- i. agility in manufacturing and supply downstream
- ii. volatility in demand;
- iii. lead times for planning;
- iv. transport efficiencies;
- v. increasing number of orders; and
- vi. shelf availability

These challenges are also present in the make-to-stock production systems and supply chains for high value products and contribute to the bullwhip effect. This slows down the response of a supply chain and increases the costs associated with the product at each node.

1.4 Aim of the research

1.4.1 Research Questions

- i. To what extent is a bullwhip effect observed in the supply chain of a high value product?
- ii. To what extent do sales promotions exacerbate an existing bullwhip effect?
- iii. What factors create or contribute to a bullwhip effect in the supply chain?
- iv. How can instability with orders for high value items be minimised?

1.4.2 Research objectives

The first objective was to determine the extent to which a bullwhip effect is observed in the supply chain of a high value product and then to assess the influence that a promotion may have on the supply chain. To do this, the concept of the bullwhip effect and supply chain stability needed to be explored further as well as the various types of promotions. The next objective was to determine what other factors play a role in the creation of the bullwhip effect. Once these factors were identified the final objective was to provide recommendations that would contribute to mitigating or eliminating the bullwhip effect. The researcher wished to determine why items of high value experience erratic or unstable orders and how this can be reduced. Unstable orders are those orders that do not fit the ordering profile due to the difference between the original forecast and the actual purchase orders (forecasts are either shared by the retailer or are generated by the CPGC using retailer data) as well as any discrepancy in the ordering pattern based on the time in the ordering cycle.

1.4.3 Motivation for the research

CPGCs have prioritised the improvement of their supply processes and have increased their efforts to improve demand management. Under supply chain management, the operations teams have been charged with the task of assessing the impact of poorly managed demand on supply chain stability and on sales. However, despite progress in both theory and practice, the problem of the BWE still remains. This can be attributed to factors such as competition as well as retailer and consumer pressure. As a result, CPGCs react by supporting more promotions in order to protect their market share and brand equity.

The challenge that remains is how to balance forecasts generated from demand information with adequate production levels to run smooth operations at a time when an artificial event, such as a promotion, causes variable demand for a product that is of high value. This study explores the reasons for the instability.

1.5 Conclusion

The quest to drive consumption in the FMCG sector means that retailers need to invest more in their products to make them more attractive to shoppers. Promotions can be an effective means of doing so. This pressure is passed onto other partners in the supply chain such as the CPGC. It is for this reason that demand becomes unstable because no one knows how well a promotion will perform. This instability wreaks havoc in the supply chain and contributes to the bullwhip effect. This effect may be expected to be exacerbated when the promoted product is one of higher value.

The study sought to assess the influence of promotional activity on supply chain performance and its influence on the so called “bullwhip effect.” The study is confined to the FMCG sector with a focus on recording the business activities conducted between the CPGC and the retailer. Chapter one provides a background to the study and defines the problem statement, the research questions, objectives and the motivation for the study. Chapter two reviews the relevant literature that describes existing research in this field. The various subsections of chapter two seek to illuminate the phenomenon of the bullwhip effect and its impact on the supply chain. Chapter three outlines the research methodology and documents the research design, data capture and data analysis. Chapter four presents an analysis of the CPG company’s data and reports the factors that play a role in the daily operations of CPGC “X” and retailer “X” as well as the performance of a promotion. Chapter five discusses the findings of the study. Chapter 6 provides managerial recommendations and describes limitations to the study and areas for further research.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

Manufacturers and retailers are finding it increasingly difficult to win in the market as consumers are more sensitive to price whilst demanding higher levels of service. Consumers will not support a retailer if they cannot get the products, prices or promotional offers that they desire (Long, 2008, p.3). Retailers are therefore under increased pressure which is passed onto the FMCG manufacturers. As a result it may be anticipated that there is an increasing need for supply chain stability to counteract these destabilising influences. The intense pressure experienced throughout the supply chain highlights certain strengths and weaknesses as well as opportunities and threats.

One such weakness, as identified by Sterman (2011, p.1), is that supply chain performance is compromised by the ordering behaviour of downstream firms in response to demand created by marketing initiatives led by promotions. The underlying issue is that these promotions can create unplanned demand, which leads to “out-of-stock” situations and can create information distortions which cause chaos up and down the supply chain. Over time this instability in the supply chain results in what has been known as the bullwhip effect. There are many studies in operations management (Lee *et al*, 1997(a) (b); Metters, 1997; Donovan, 2000; Taylor, 2000; Van Goor, 2001) that explore the impact of poor inventory management and the creation of the bullwhip effect, but a gap exists when it comes to the influence of initiatives that boost retail sales and the variations that result.

Taylor (2000, p.515) provides guidance for supply chain progression in the following statement: “the elimination of demand amplification could remove a major cause of the uncertainty and variability which creates very fundamental problems for supply chain management.” The gap in research identified in Taylor’s study and for that of most published studies regarding demand amplification is that the demand drivers and ultimately the bullwhip effect have been examined at length for typical lower value consumer products, but not for those of high value. Products of high value present unique challenges based on their profile.

The FMCG industry can be separated into upstream and downstream activities. The latter are the operations that deal with distribution of the final product. For the purposes of this study the downstream part of the chain is defined as any activity that occurs between the CPGC and the retailer.

2.2 Overview of FMCG

Many definitions exist in literature for fast moving consumer goods (FMCG). For the purpose of this study, the classification of FMCG given by Loettner (2006, p.2) is most suitable: FMCG “are consumer products that have a fast turnover and a relatively low price, and include food and beverages as well as frequently purchased consumer products such as toiletries, cosmetics, cleaning products and pharmaceuticals”. All of the companies that manufacture these products are called consumer packaged goods companies (CPGCs) and are referred to collectively as the FMCG industry.

The driving factor for the sale of these products is that these items satisfy a consumer need and provide convenience with a high consumption rate and are purchased often. Today some personal care products are breaking the perceived price barrier and are no longer considered to be of a relatively low price. This creates a unique profile for these types of products and presents unique challenges for marketing, logistics and retail functions as the high desirability and cost of these products often leads to high pilferage rates downstream.

The FMCG industry is facing increased strain for products to be manufactured faster. At the same time the products need to be focused on smaller segments of the market at a lower cost, but with increased marketing efforts. The resultant cost combined with competitive factors, such as delivering just-in-time inventory where, “the exact amount of goods arrives at the moment it is needed” (Heizer and Render, 2006, p.633) puts increased pressure on the inbound and outbound links of the supply chain. In order for the supply chain to operate smoothly, accurate forecasts need to be maintained. The importance placed on sales promotions being part of the marketing strategy of the FMCG industry across the globe has increased (Long, 2008, p3). As a result, organisations should spend more time in planning these activities and forecasting their sales volumes whilst attempting to accurately determine a promotion’s impact on supply chain stability.

Other key trends amongst CPGCs, is the adoption of a push system for production and sales (Patel and Rajai, 2010, p.25). This causes chaos in an industry that is largely driven by consumer demand. In order to improve the effectiveness of daily business as well as the artificial event, such as a sales promotion, CPGCs should be able to understand consumer and retailer demand to determine whether the supply chain has the capacity to fulfil stock requirements, *i.e.* a pull system. FMCG companies survive by achieving volume target sales.

These targets are achieved by leveraging the marketing and sales functions to create and stimulate demand through strategic market and retailer specific business solutions. Logistics, on the other hand, is charged with building and sustaining market share as it influences shelf availability by focusing on on-time deliveries and accurate order quantities. In order to ensure supply chain stability, the sales and logistics functions in this industry should work together to support distribution.

Prices of products remain constant most of the time, with the exception of promotional periods. The traditional price is based on a percentage mark-up of its cost and thereafter a percentage mark-down for non-performing inventory. These are standard rules across any retail organisation. The problem that arises is that this does not factor in retail nuances, for example, consumers become dissatisfied with a retailer if they see different prices at other stores for the same product, and the longer a product sits on-shelf, the higher the discounting could be. As a result, organisations need to recognise the impact that sales promotions have on their supply chain and then CPGC's and retailers need to redesign their systems in order to accommodate the lead time (time from order to delivery) required to ensure optimal availability of product so as to deliver on their customer value proposition.

The FMCG and Retail Report (2008) separate the market into four major categories, these being: food, toiletries, household and health. Growth in all segments has slowed down, with the exception of toiletries, also known as the personal care segment. All players in the market have recognised this and have focussed efforts on extending personal care lines in a bid to counter declining sales in other categories. According to Lennard (2009, p.1) the untouched markets for growing share is in the personal care or grooming category of the Middle East and Africa. However, Bandyopadhyay and Bhattacharya (2009, p.1245) warn that the bullwhip effect is most often observed in industries that serve developing markets where demand can surge suddenly. An example is that of grocery and retail.

According to PWC (2012, p.4), South Africa is following in the footsteps of many other emerging markets by having an expanding base of middle-class consumers. CPGCs recognise that these consumers have high aspirations coupled with many opportunities to spend their income. Almost every major city in South Africa is becoming saturated with shopping malls that provide unique offerings tailored to the local consumer culture, and where a premium is placed on luxury consumer goods.

The FMCG & Retail Report (2008, p.7) states that the challenges for FMCGs “reflect both the attempt to keep up with increasing complexity and the varied demand” from consumers, as well as “the attempt to align, what they feel is a solid supply chain strategy, with that of their retail partners”. The main problem for the sector then becomes the increased volume in their supply chains, followed by planning and forecasting capabilities.

2.3 Trends affecting demand in the market

CPGCs experience difficulty in forecasting any change in demand. This can be explained by the following demand trends described by Vriens and Versteijnen (2011, p.5).

- Strong price erosion: “price erosion is most commonly deemed to be the difference between the actual cost of a product and its potential price on a sliding scale from its ideal price to the break-even point” (Antonio, 2008, p.2). Although price erosion is a trend in many industries, the FMCG industry faces erosion that has never been seen before. Price erosion can put pressure on the value chain all the way to the suppliers of inputs;
- The rise of private labels (house brands): retailers are all facing intense competition and they compete on margins, so the idea of developing their own private label products, also known as house brands, becomes more attractive, as they cut out the middle man. As a result, CPGCs increase their investment in marketing initiatives, trade funds (promotions budget) and innovation to strengthen their brands;
- Consumer tendency to demand more variety: consumers place more emphasis on elements such as availability, price and service. As a result, supply chains need to be more responsive. This brings to the forefront the requirement of agile logistics solutions; and
- Demand variability caused by promotions: in the past, promotions of FMCGs used to have a major influence on sales volume. CPGCs, where possible, have started to align promotional plans with retail customers in advance. In spite of this progress,

forecasting and planning for demand created by these promotions remains a challenge. This can lead to the bullwhip effect which results in unnecessary costs and risk.

Duclos, Leslie, Lummus and Vokurka. (2003, p.317) state that effective supply chain management necessitates the sharing of information amongst all members in the chain, specifically demand communication. Their study builds on the research conducted by Naim, Towill and Wikner (1992, p.3) which focuses on determining the impact of promotions and trade deals on the performance of a supply chain. They state that marketing actions alone can have a major impact on supply chains. What is interesting is that Duclos *et al* (2003, p.319) cite other research that shows that promotions can have a negative impact on brand equity as a result of increased variance in sales and the creation of more stock management problems.

Duclos *et al* (2003, p.319) also find that promotions increase consumers' sensitivity to pricing, which means that consumers tend to buy only when the product is on promotion. Promotions also induce a forward buying or stockpiling type of attitude which leads to future sales being less than expected. While there are many research articles that show the negative consequences of promotional activity, there are equally many articles that show the beneficial attributes of promotions. Nonetheless, promotional spending has increased for most organisations.

2.4 Trends driving supply in the market

The following trends have been identified as the key factors that drive supply (Eye on bv; 2011, p.7):

- Increasing prices of raw materials and energy: many CPGC's cost structures are severely impacted by the escalating cost of raw materials and energy. This drives their total operating costs up and impacts the price of their final product downstream;
- Pressure on capacity utilisation: manufacturing of consumer goods is reliant on the effectiveness of the CPGC's plans and forecasts to achieve optimal resource allocation. A short lead time for changes in capacity, coupled with high uncertainty in demand makes holistic planning a crucial element;
- From supply/capacity driven to demand orientation: the retail market demands high service levels and continuous stock replenishment, and since synchronisation of demand is still limited, agility in the upstream part of the chain becomes critical.

Just in-time (JIT) deliveries are still often realised by holding extra buffers in capacity and stocks; and

- Global transfer of manufacturing: manufacturers with products of high value per unit locate their means of production in another country because of lower resource costs.

A major challenge is managing innovation, manufacturing, logistics (longer lead times when supply is global), marketing and sales activities when production facilities are scattered around the world. As a result forecasting and planning become critical features for stable operations. “Supply uncertainty is driven by the constant search for efficient methods of gaining competitive advantage through the optimal use of resources. Due to the ongoing pressure from retail and existing production overcapacity, the industry is consolidating activities. Manufacturing companies are forced to rationalise and, with the growing need for product innovation and marketing activities, their profit margins are under high pressure” (Eye on bv; 2011, p.8).

2.5 The challenge for retailers

The customer retail margin is under major strain in the current economic environment (PWC 2012, p.18). To address this, retailers need to balance two important business measures: top-line performance and their profitability. A few key areas can have a significant impact on achieving these goals. They are: category management, marketing, procurement, supply chain and operations management.

With regard to table 2-1, category management is the priority for the buyers at the retail organisation, yet these buyers are already fraught with overseeing all other operational tasks that affect their business so they have fewer resources to devote to the complex task of category management. This task may be expected to become more complex when there are high value items that need attention within the category, as these products need specialised merchandising as well as more investment in security to prevent pilferage. Space and product placement as well as merchandising through the use of plannograms often do not provide an opportunity for revenue and profit potential. They are very difficult to implement and monitor across all of a retailer’s stores. Retailers are also reluctant to allocate additional space to high value items as the pilferage rate could increase per square metre versus their actual sales.

Another key business driver is marketing. Marketing helps to stimulate consumer demand by creating additional value for shoppers (Baker *et al*, 2005, p.389). Effective marketing can also improve brand equity, increase customer and consumer loyalty and in doing so, helps to

grow overall revenue potential. One such mechanism that can be used is that of a pricing strategy. Pricing strategies may vary in nature. Grewal and Levy (2007, p.447) explain the nature of this in the following statement: “the pricing task differs for fashion and staple goods”. Promotional pricing for high value items further promotes the products’ desirability due to a revised perception of the value offering.

Table 2-1 The key business drivers that can improve business measures for retailers

Business measure	Key business driver	Operational elements
Top line growth	Category	<ul style="list-style-type: none"> • Leveraging assortment projects
	Management	<ul style="list-style-type: none"> • Space and product placement planning • Merchandising strategy • Purchasing strategies
	Marketing	<ul style="list-style-type: none"> • Appropriate pricing • Tailored communications and promotion events
Profitability	Supply chain	<ul style="list-style-type: none"> • Better planning of orders and replenishment cycles • Partnering with suppliers • Implementing inventory management policies • Warehouse optimisation

(Source: Adapted from PWC, 2012, p.18)

Supply chain management comprises sourcing, planning, ordering, replenishment, and logistics activities such as stock management, transportation (inbound and outbound) and warehousing. When retailers partner with suppliers, the benefits could include finding a solution for better inventory management and better discounts on stock. Supply chain awareness is fast becoming a crucial component for retailers to gain a competitive advantage. Forecasting is a complex activity and further compounds the stock management problem, especially in an ever changing environment. This can lead to high inventory levels, stock

write-offs due to non-performance as well as damages and theft. It can distract an organisation to the extent that certain categories will suffer out-of- stocks if not addressed.

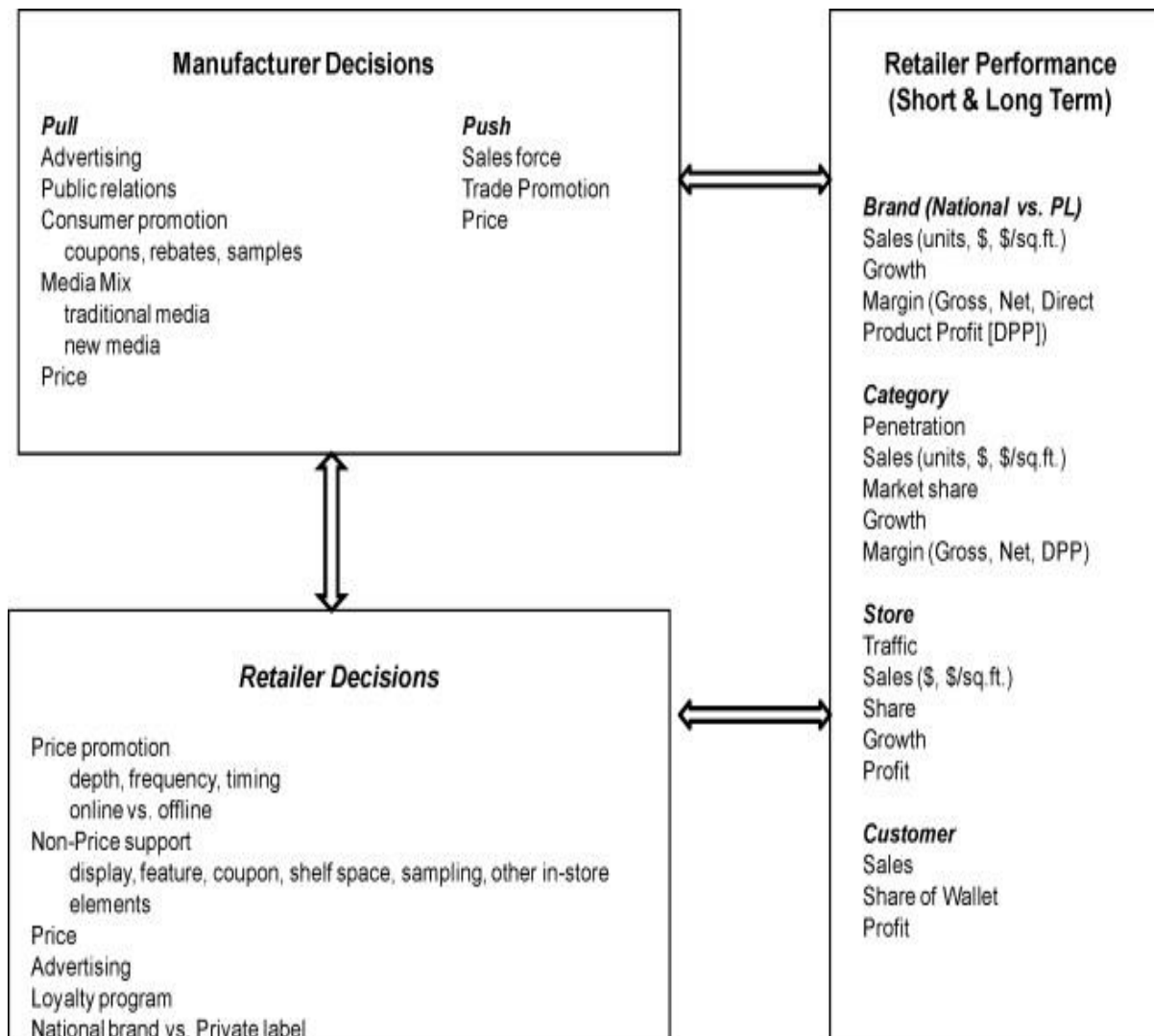


Figure 2-1 The relationship between manufacturers' (CPGCs') decisions and retailers' performance (Source: Ailawadi, Beauchamp, Donthu, Gauri and Shankar, 2009, p.5)

Figure 2-1 shows how a CPGC's decisions on communication and promotion can have an effect on retailer decisions and performance. There is a feedback effect from the retailer's performance back to retailer and CPGC decisions as both parties make their communication and promotion budget and stock allocation decisions based on the expected business return.

The left of the framework shows the important tools that are under the control of the CPGC and the retailer. The CPGC's tools can be regarded as either pull or push. The CPGC's pull decisions make use of tools such as advertising. This advertising has the ability to sway a retailer's strategy for the price, advertising, placement, positioning and promotion of a product.

For example, if a CPGC decides to promote their brand on television, the retailer may decide to leverage this campaign and allocate more space in-store and put the products on promotion so as to draw more attention from consumers to their chain of stores.

The CPGC's push decisions such as wholesale price, trade promotions, and sales force efforts also influence the retailer's decisions. The retailer's decisions include those on price (retail selling price/ RSP), price promotions, traditional non-price support like feature advertising (adverts in newspaper) and displays, and other in-store communications.

The right side of the framework shows the key performance indicators (KPIs) for a retailer. The indicators include target penetration, foot traffic, and sales as a function of profit. The CPGC's objectives are to maximize brand profits, while the retailer's objectives are to maximize chain profits. The gap in this relationship is that a CPGC is primarily interested in the performance of its brands, while the retailer is more interested in its performance at the category and the store levels.

2.6 Category overview

According to Lewis (2011, p.1), retailers and the CPGCs often have different profit objectives in that:

- Manufacturers want to maximise the profits of their brand; and
- Retailers, on the other hand, want profit maximization of the entire product category.

Regardless of this, both manufacturers and retailers can grow the revenue potential through collaboration. Category management is one example of a collaborative activity.

“Category management is a term describing methods and processes involved in managing retail operations” (Lewis, 2011, p.2). Category management is a method whereby the stores are divided into sections of similar or like products and sub sections of complimentary products. For example, all shampoos are grouped together in a section, whereas conditioners and treatments (complimentary items) are grouped into sub sections nearby.

To elaborate, a category is a group of items that are substitutes for each other. For example, Colgate or Aqua fresh are products that can be used as a cleaning agent for one's teeth. Since each product can be used as a substitute for each other, both can be included in the section or category called “toothpastes”.

The category captain (leading brand manufacturer/CPGC determined by the highest sales in a given period) (Dussart, 1998, p.54), provides guidelines or recommendations to the retailer on the optimal way to shelve products based on their research into shopper perceptions on elements such as pricing corridors, display units and placement, and promoted products within a category. This type of collaboration involves a high degree of openness as well as information sharing.

Under category management, decisions about assortment and ranging, grouping and placement, promotion and mechanics, and pricing are made per category with the ultimate goal being to maximise total category profits. “Promotional activity is also an area in which CPGCs are expected to be involved” (Lewis, 2011, p.1) when doing retail category management. The next section explores the characteristics of the personal care category and its various sub-segments.

2.6.1 The personal care category

The focus of this study was on the male grooming segment of the personal care category. The following sections will provide an outline for the male grooming segment as well as the overview of the retail categories (prospects).

Growth in the male grooming segment is primarily driven by loyalty to brand, as well as the aspirational qualities of the consumers or end users (Euromonitor, 2012, p.3). Hence product line extensions in the form of upgraded technology or innovation becomes crucial to the CPGC’s portfolio. Furthermore, new product development is important so as to capitalise on the new consumers entering the market (Euromonitor, 2012, p.3-4).

The prices of these products are under severe pressure due to the competitive environment; however, new products and innovation on existing lines can be priced at a premium and in doing so, drive the value of the personal care category up. According to Nielsen (2004, p.22), emerging markets such as South Africa have experienced double-digit growth as compared to established markets where growth is flat.

2.6.2 Prospects for the male grooming segment

According to Euromonitor (2012, p.1), growth in the total men’s grooming revenue sales over the next four years was expected to be slow as a result of increasing maturity though a few “dynamics” will keep demand stable.

According to research done by Euromonitor (2012, p.3), these dynamics are:

- Due to the growing influence of global personal care trends, it is now acceptable for men to spend more time and money on their grooming routine;
- Improvements in distribution of male products, new product innovation launches, as well as tailored media packages appealing directly to users will see the South African market players capitalising on the global trends; and
- Tailored promotional activities as being part of the business plan will become more important and will start making these perceived luxury items appear more affordable to more consumers.

2.6.3 Characteristics of products in the personal care category

The characteristics of products in the personal care category are documented in table 2-2.

Table 2-2 The characteristics of personal care products

Characteristic	Implication
Items are of small value.	When the cost of all these products is totalled it can consume a significant part of the consumer's budget.
The consumer keeps small quantities of these products.	The consumer prefers to purchase them frequently, only as needed.
The consumer spends little time on the purchase decision.	The consumer rarely focuses on the features of the product. Brand loyalties or recommendations from key influencers drive purchase decisions.
Brand switching is induced by heavy promotions and advertising.	Low loyalty.
These products are tailored to satisfy a necessity and to provide comfort or luxury.	They meet the demands of the entire population; price and income elasticity of demand varies across products and consumers.

(Source: L'Occitane en Provence, 2010, p.54-55)

The characteristics of products are important to understand as it is the characteristics of products that determine their flow within the supply chain. They may also influence inventory stock holding levels as well as inbound and outbound logistics at each stage in the chain.

Table 2-3 Trends driving supply in the personal care category

The trends	Result
A focus on appearance in emerging economies.	In emerging economies, personal appearance is important in achieving success. Thus an increasing number of consumers are prepared to invest more in premium personal care products.
New retail concepts.	Products previously were sold through department stores. Increasingly, these products are being sold through specialist retail shops and channels making personal care products more accessible and widely available.
Increasing global wealth.	Increasing global wealth and the growing number of middle-class consumers means more is spent on premium personal care products that are typically expensive.
Increased segmentation.	Personal care companies are creating products targeted at defined consumer groups and preferences to add value and gain a competitive edge.
Globalisation.	Globalisation, including the globalisation of the media, is further facilitating the development of the above trends, with lifestyle changes and personal aesthetics spreading increasingly from economically mature markets to emerging markets.

(Source: L'Occitane en Provence, 2010, p.54-55)

The trends in table 2-3 encourage CPGCs to position their products in markets where consumers can be persuaded to trade up to more expensive, higher-end premium personal care products. Nielsen (2004, p.4) has also conducted research into the key trends that are contributing to the growth of the personal care categories around the world. They identify 6 key trends:

- i. the need for convenience;
- ii. concerns over health and safety;
- iii. new product innovation in both form and function ;
- iv. changing demographic profiles and the aging population;
- v. the blossoming of the “metro-sexual man”; and
- vi. introduction and wider distribution of premium products.

2.7 Supply chain instability

Supply chain instability can threaten the profitability of any organisation through disproportionate inventory levels versus sales, poor customer service due to a lack of product availability and unnecessary finance tied up in non-performing stock.

Supply chain instability is often known as the bullwhip effect. This is the tendency for variability to increase at each level of a supply chain progressing from customer sales to production (Lee *et al*, 1997b, p. 93 and Chen *et al*, 2000, p. 436). According to Kaminsky *et al* (2008, p.171), this variability in demand can cause significant operational inefficiencies as “the bullwhip effect between stocking levels indicates an increased stocking level variability in value chains and value systems”. For example this may be caused by “insufficient market data, deficient forecasts or other uncertainties” (Svensson, 2005, p.764).

Zotteri (2012, p.1) is of the opinion that variations in demand levels are not caused by changes in final end-consumer demand, but by an occurrence within the supply chain itself. Studies conducted by Disney *et al* (2006, p.444) also support Zotteri’s statement, as they claim that “demand amplification is caused by some internal mechanism or event; it is not due to something external to the system. So although the customer demand may be extremely volatile, it is self-induced”.

According to Doran, Hill and Stratton (2012, p.870), stabilising the supply chain and the ability to cushion it from instability in the market should be a strategic business focus. Authors such as Hanna, Maffei, and Newman, (1993, p.19) suggest that using inventory order backlog and capacity can help to achieve this, but others believe that this represents the gap between the literature and reality and that more management decision support systems are needed to develop the strategy. These opposing views suggest that rather than providing a buffer in the supply chain, methods for reducing variability in demand should be adopted. These studies favour the ideal of a lean or agile supply system so as to increase responsiveness to downstream demand. Very few studies (Hanna *et al*, 1993, p. 20; Hult *et al*, 2008, p. 235; Christopher *et al*, 2010, p. 104) have explored how inventory backlog and a lean system could work together.

2.7.1 The product and inventory control problem

Figure 2-2 represents a five-echelon (or tier) supply chain. The five parties appear as the five nodes of the chain. They are: the supplier of raw materials, the manufacturer (representing the CPGC itself or its factory), the distribution agents such as DHL, the wholesaler and the trade retailer. The figure also shows the flow of orders. The flow starts with the trade retailer placing an order with the wholesaler. This order is derived from aggregated store level demand. The wholesaler receives the orders and either supplies the order or holds it until he receives sufficient stock from orders he has placed with the distributor. The distributor then orders from the manufacturer. The manufacturer then orders from the supplier.

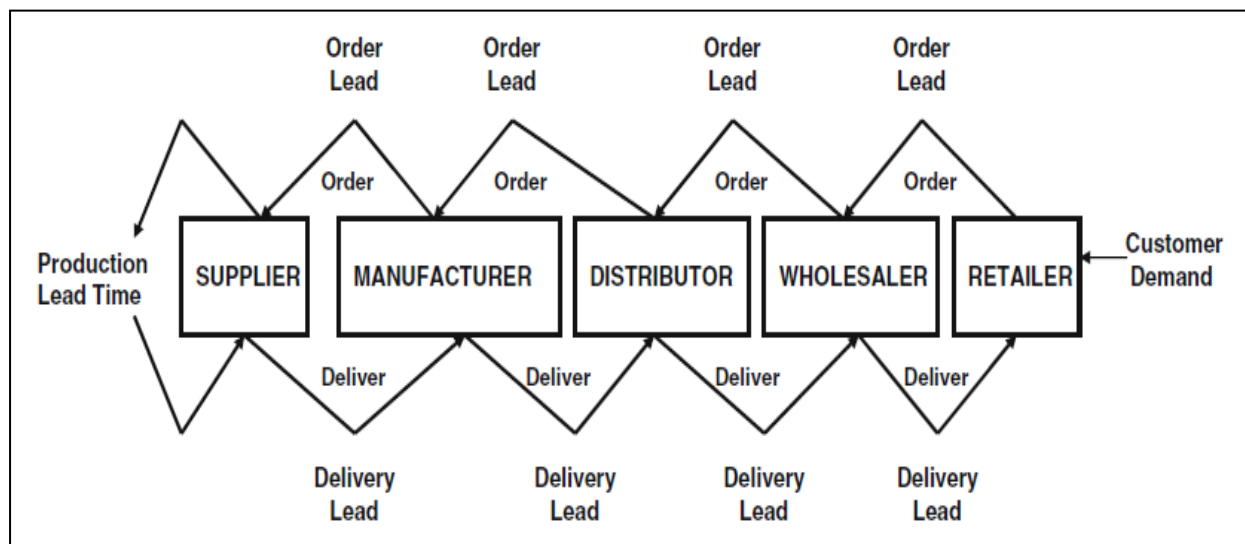


Figure 2-2 The flow of orders and deliveries in a retail supply chain (Source: Bandyopadhyay and Bhattacharya, 2009, p.1246)

Examining the delivery flow indicates that the finished product is supplied to the end consumer using the reverse of the order flow. In order to satisfy orders, each node in the chain is required to forecast what the demand would be for the next node in the chain and then work to supply that demand. “If a node (say, the distributor) cannot access the actual demand data of the end customers, then that entity will have to depend on the order of its immediate customer (the wholesaler, in this case), resulting in an error in the demand forecast” (Bandyopadhyay and Bhattacharya, 2009, p.1245). Furthermore, each node will aim to satisfy all orders. This causes the variability in customer demand to rise in the upstream part of the chain. This illustrates how the bullwhip effect originates.

“A supply chain is a system consisting of material suppliers, production facilities, distribution services, and customers who are all linked together via the downstream feed-forward flow of materials (deliveries) and the upstream feedback flow of information (orders)” (Disney *et al*, 2003b, p.201). In the supply chain (see figure 2-3), each node is in charge of inventory, production or distribution activity. The common problem at each node is how much to make and/or how much to supply in order to satisfy customer or consumer demand. This is the classic production/inventory control problem.

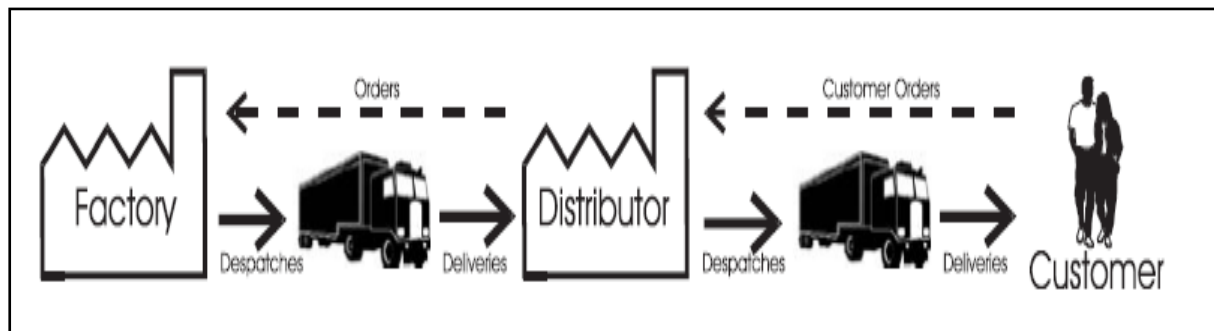


Figure 2-3 The flow of a typical retail supply chain (Source: Disney *et al*, 2003b, p.201)

As indicated in figure 2-3, each node in the supply chain calculates orders for manufacture or delivery on the sales orders to their customer in the chain. Each node in the chain only has information about what their immediate customers’ want and not on what the end consumer wants. “This does not allow suppliers to gain any insight into what their customers are ordering to cover their own inventory-based customer service level (CSL) and cost requirements and what the customers are ordering to satisfy immediate customer demand” (Kaipia *et al*, 2000 cited in Disney *et al*, 2003b, p.201). If there is no insight into real demand, this will result in a domino effect of problems in the chain. As a result, it will be almost impossible to foresee and to put into place any process to eliminate inventory swings.

Inventory planning is an inconsistent process. Planners can overreact to signals in the market. High stock holdings can suggest that demand is low for a specific product and as a result the planner may adjust all future orders to align with this newly perceived demand level. The planner may even suggest that the product be discounted so as to flush the stock off the shelves. This discounting will suddenly boost sales and consequently alter the demand variance.

The main contribution by Hamister *et al* (2008, p.453) is that they have shown that discounting may lead to improved profitability and smaller swings in demand when demand forecasts are planned. This represents a point of departure in supply chain management in as previous literature assumes that if prices are stable, then demand variance will be reduced and the bullwhip effect would be mitigated.

2.7.2 The drivers of the BWE

Hamister and Suresh (2008, p. 441) support Lee, Padmanabhan and Whang (1997b, p. 93) by citing the five main causes of the bullwhip effect as being: long lead times, order batching, supply shortages, price fluctuations, and demand forecast updating (see figure 2-4).

Demand forecast updating refers to the projection of demand patterns. When an order is received from a downstream member, the planner upstream processes the order and considers it to be a signal about product demand. As a result of this signal the upstream planner adjusts their forecast and their orders on their upstream suppliers. As lead times become longer, especially with global supply chains, it becomes common to keep weeks of safety stock.

Order batching occurs when CPGCs wait to accumulate orders before they place an order with the upstream members. “Periodic ordering amplifies variability and contributes to the bullwhip effect. If all customers placed their orders accordingly in a week then the bullwhip effect would be minimised.” (Lee *et al*, 1997b, p.96). Additionally, full truck load (FTL) discounts often encourage CPGCs and retailers alike to place orders so that they can benefit from economies of scale and receive the FTL discount.

“Estimates indicate that 80 percent of the transactions between manufacturers and distributors in the grocery industry were made in a “forward buy” arrangement in which items were bought in advance of requirements, usually because of a manufacturers’ attractive price offer” (Lee *et al*, 1997b, p. 96). Forward buying is caused by price changes in the market such as promotional price discounting, *i.e.* the tally/discount system, value bundling (buy two and get 50% off), or trade deals for bulk buying. Ultimately this means that a retailer’s and/or consumer’s demand patterns do not reflect their consumption rate, *i.e.* the variability in demand is larger than the variability in consumption; another contributor to the bullwhip effect.

When the demand for a product is greater than product availability, a CPGC will place these products on what is known as an allocation programme. This means that orders will be rationed amongst customers. For example, if supply of product is at a 40% threshold, then customers will only receive 40% percent of what they had originally ordered.

Retailers are aware of this process and when they suspect that a CPGC will not be able to supply total quantities, they place larger orders than that which they actually need. This is known colloquially as gaming. When the period of high demand cools down, retailers start to cancel their orders or request quantity changes. “The effect of “gaming” is that customers’ orders give the supplier little information on the product’s real demand” (Lee *et al*, 1997b, p.97-98).

Lee *et al* (1997b, p.93) recognise that organisations implement new strategies and that these strategies introduce new challenges. Some of these challenges include the ability to integrate new information systems, define new organisational relationships, and implement new incentive and measurement systems. Their study on the bullwhip effect in supply chains focuses on determining how order swings occur and what organisations can do to mitigate them.

Lee *et al* (1997b, p. 94) description of the current situation is: “various industry studies found that the total supply chain, from when products leave the manufacturer’s production lines to when they arrive on the retailers’ shelves, has more than 100 days of inventory supply”. This clearly shows that the issue of information distortion has led every member in the supply chain to forward buy or stock pile because of the high degree of variability in demand. These authors then state that in a supply chain for a typical consumer product, even when consumer demand is relatively flat, there is a large variance in orders placed on CPGCs by retailers and suggest that in order to solve this problem, organisations need to understand what causes the bullwhip effect so that they can eliminate it. The gap in this research is that there is no observation for supply chains of high value items and the unique challenges that they may pose.

CPGCs can deal with these challenges by negotiating more effective trade terms with retailers, by planning and scheduling manufacturing operations according to consumer demand, by implementing an efficient inventory management policy and by maintaining agile physical distribution operations. To prevent the cost of stock moving back up the supply

chain to suppliers, CPGCs will need to become more responsive. This is a particular challenge for businesses that have global manufacturing facilities with fixed production slots for each market.

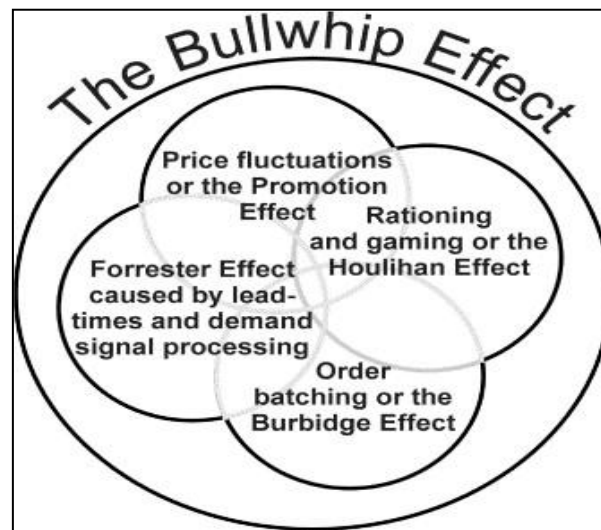


Figure 2-4 The main drivers of the bullwhip effect [Source: cited in Disney *et al*, (2003a, p.161)]

In dealing with the challenge of unstable demand and shorter lead times for planning, the removal of the buffer between shopper demand and the supplier is impacting the planning process as the lead time for demand planning has been shortened. Erratic demand can lead to “out-of-stocks”. Hence supply chains need to become demand driven.

Higher order frequency results in smaller deliveries which cause transport inefficiencies and higher costs. It also increases the risk of late deliveries as trucks share loads, meaning that they have more retailers on their route. It also results in operations having to process, assemble and despatch many more orders, thereby adding cost, complexity and risk to their businesses. In order for a CPGC to have an effective model, it still needs to be able to respond to demand. As a result, it will need to adapt its operations to help it meet the requirements of its customers, while continuing to manage its costs.

Organisations experience trends in which orders and output rise sharply towards month-end periods or quarter-end. This is due to the sales teams’ drive to generate revenue (value) through achieving volume targets. This dynamic in supply chains is often exacerbated by reservation orders; orders which retail customers place in response to perceived shortages in an attempt to gain greater allocation of current stock.

Several factors contributing to demand distortion have been described in the literature. Table 2-4 lists these factors, together with the various authors who have cited these factors as potential causes of demand distortion.

Table 2-4 The authors that concur regarding factors contributing to demand distortion

Distortion factor	Author/s citing these factors
Increased demand variation upstream	Ravichandran (2006, p.1); Lee <i>et al</i> (1997, p.1); Kopczak <i>et al</i> (2003, p.31); Bolarin <i>et al</i> (2008, p.1); Iqra University (2005, p.1); Buchmeister <i>et al</i> (2008, p.45); Yinjing <i>et al</i> (2004, p.7); Bagchi <i>et al</i> (2007, p.309); Disney <i>et al</i> (2003a, p.157); Disney <i>et al</i> (2003b, p.205); Taylor (1999, p.55); Taylor (2000, p.517); Wright <i>et al</i> (2008, pp.2); Hamister <i>et al</i> (2008, pp.13); Li <i>et al</i> (2010, pp.1); Kim <i>et al</i> (2010, pp.2); Cachon <i>et al</i> (2007, p.457)
Poor demand forecast or demand management	Lee <i>et al</i> (1997, p.3); Kopczak <i>et al</i> (2003, p.31); Buchmeister <i>et al</i> (2008, p.45); Yinjing <i>et al</i> (2004, p.7); Bagchi <i>et al</i> (2007, p.310); Disney <i>et al</i> (2003a, p.157); Disney <i>et al</i> (2003b, p.205); Taylor (1999, p.56); Taylor (2000, p.523); Wright <i>et al</i> (2008, pp.3); Hamister <i>et al</i> (2008, pp.13)
Price discounts and advertising can cause demand distortion	Ravichandran (2006, p.1); Lee <i>et al</i> (1997, p.3); Boute <i>et al</i> (2007, p.1); Kopczak <i>et al</i> (2003, p.31); Iqra University (2005, p.1); Buchmeister <i>et al</i> (2008, p.46); Yinjing <i>et al</i> (2004, p.7); Bagchi <i>et al</i> (2007, p.310); Disney <i>et al</i> (2003a, p.157); Disney <i>et al</i> (2003b, p.205); Taylor (1999, p.57); Taylor (2000, p.523); Wright <i>et al</i> (2008, pp.3); Hamister <i>et al</i> (2008, pp.13)
Order batching, replenishment rule/ stock policies	Lee <i>et al</i> (1997, p.3); Boute <i>et al</i> (2007, p.2); Kopczak <i>et al</i> (2003, p.31); Iqra University (2005, p.1); Buchmeister <i>et al</i> (2008, p.46); Yinjing <i>et al</i> (2004, p.7); Bagchi <i>et al</i> (2007, p.310); Disney <i>et al</i> (2003a, p.157); Disney <i>et al</i> (2003b, p.205); Taylor (1999, p.57); Taylor (2000, p.523); Wright <i>et al</i> (2008, pp.3); Hamister <i>et al</i> (2008, pp.13)

(Source: author's own construction)

Bagchi and Paik (2007, p. 322) concluded their study by confirming the assumption that better information flow and channel coordination can mitigate the bullwhip effect. Based on the results of their study, demand forecast updating, level of an echelon and price variations were the three largest contributors to the bullwhip effect.

Demand forecast updating, the level of an echelon and price variations were believed to contribute 53% of variation in demand amplification. In order to mitigate the bullwhip effect retailers need to share actual demand information and coordinate their operations' activities with their trading partners.

With regard to the operational causes of the bullwhip effect, with forecasting being the focus, Bandyopadhyay *et al* (2009, p.1247) show that time series models do not provide effective results for the analysis of high tech products. In studies conducted by Chaharsooghi *et al* (2008), the authors evaluated the impact of the ARMA forecasting method with those for moving average and exponential smoothing methods and proved that the use of forecasting techniques does not always mitigate the bullwhip effect.

Bandyopadhyay *et al* (2009, p.1249) also state that agent based modelling provides evidence that the bullwhip effect is created as a result of the lack of or break in communication between members in a chain. This research also highlights further gaps in that the impact of multilevel inventory policy for a geographically spread organisation has not been investigated in the literature, nor has the impact of consignment stock policies on the bullwhip effect been considered in literature. A further gap in the body of knowledge is how to reduce the impact of lead time (throughout the supply chain) on the bullwhip effect.

Most studies today (Disney *et al*, 2006; Zotteri, 2012; Doran, 2012) have only considered two stage supply chain models, but have not explored complex structured supply chains that have multiple levels that are spread geographically around the world. This provides further opportunity for lead time reduction in global supply chains.

2.7.3 The stock management problem

According to Disney *et al* (2006, p.160), inventory line managers have two considerations regarding stock replenishment. The first consideration being that a replenishment rule impacts on order variability. This refers to the ratio of order variance to the demand variance, as seen by the supplier. The second consideration is the variance on net stock, meaning the ratio of net stock variance to the demand variance. The key difference here is that the bullwhip effect mainly affects costs upstream whereas net stock variance impacts the service level downstream.

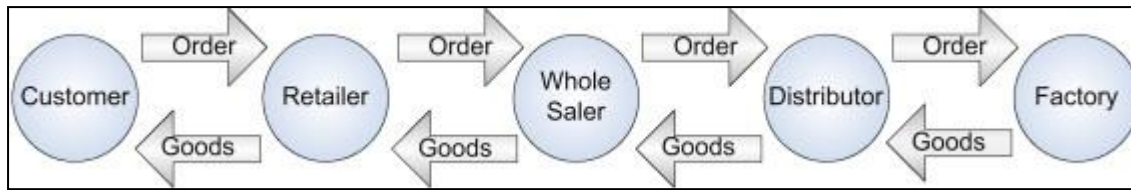


Figure 2-5 The flow of orders in a supply chain (Source: cited in Wright *et al*, 2008, pp.9)

Figure 2-5 shows that orders are stimulated in the downstream part of the chain starting with the retail customer (order flow from left to right). Goods are shipped/ delivered from the upstream suppliers in the opposite direction (delivery flow from right to left). Supply chains consist of networks of firms, each receiving orders and adjusting production to meet changes in demand. Each node in a supply chain maintains stock of finished product. To understand the response of a supply chain and the causes of instability, it is necessary to understand, the obstacles faced by an individual CPGC as it manages its resources in an attempt to balance inventory holdings and orders.

The most important resource is that of sales data, however, the more often that sales data is shared in the chain, the more “noise” these data can contain. As a result, managers at each node need to decide whether a change in orders is a temporary event to be remediated, or if it is a trend that necessitates a change in the forecast for production as well as the estimate for capital investment. Generally, they wait until more information is shared, and in so doing create an additional delay in response.

Eventually the forecasts (based on consumer/retail demand), produced by the sales and marketing organisation, lose credibility with production and operations. The sales team, in turn, find that erratic production makes forecasting and selling difficult. This worsens the instability and contributes to a vicious cycle. This can cause reservation (phantom) orders and thereafter, cherry picking. During upswings in demand, suppliers are unable to boost production fast enough to keep pace. Product becomes scarce, and retailers are placed on allocation.

Customers often respond to longer delivery times and unreliable supplier deliveries by increasing their desired safety stock levels, and placing multiple orders through different distributors. The outcome is that downstream parties may not be interested in upstream costs. This may be disputed however, by taking into account that when order variance is mitigated upstream, the upstream nodes are able to provide better lead-time to the downstream nodes.

A further opportunity exists in that a collaboration incentive could be offered to the retailers in the trade terms package so that the CPGC may be able to reduce its costs and then offer better prices.

On the surface, it appears that the supplier bears most of the excess costs created by phantom orders. However, these costs must eventually be passed on to the downstream firms in the form of higher prices, poor customer service or poor product quality. From this it can be seen that suppliers have a strong incentive to improve the stability of their customers.

2.7.4 The domino effect

Most research to date (Fisher, 1997; Lee *et al*, 1997b; Duclos *et al*, 2003; Hamister and Suresh, 2008) focuses on the impact of certain factors on supply chain stability. These factors are:

- i. discounting or pricing;
- ii. demand forecasting;
- iii. scheduling;
- iv. production techniques;
- v. order review intervals;
- vi. inventory management;
- vii. replenishment policy;
- viii. relationships; and
- ix. information sharing.

Existing literature examines these factors individually without considering the domino effect that results when a number of these factors occur simultaneously in the chain. Fisher *et al* (1997, p.211) draw attention to the difference between functional and innovative products. This represents a point of departure in the literature as, in this study, the impact of the bullwhip effect on product families is explored by analysing the type of product being observed in the inventory cycle.

Fisher *et al* (1997, p.211) argue that functional products require efficient supply chains and innovative products require responsive supply chains and each of these chains will need a different mix of strategies to cushion against variance in demand. Fisher *et al*'s contribution is the recognition that different types of products require exclusive management in a chain.

New surges in demand often cause decisions to be made that will increase capacity utilisation unnecessarily, as the demand ultimately dissipates. As unnecessary demand variability complicates the supply chain planning and execution processes, there are a number of undesirable effects that increase in their severity as they have a negative impact on operating performance.

These effects are (Lee *et al*, 1997a, p.547):

- i. schedule variability increases;
- ii. capacity is overloaded and/or under-loaded;
- iii. cycle times lengthen;
- iv. working and safety stock inventories increase;
- v. overall costs increase;
- vi. customer service levels decrease; and
- vii. sales and profits decrease.

2.8 The BWE

Incremental demand coupled with out-of-stock situations in the execution process create distortions which can cause chaos up and down the supply chain (Lee *et al*, 1997b, p.93). There are numerous influences, and when they are combined this leads to the bullwhip effect. Donovan (2000, p.1) states that unplanned demand fluctuations, including those resulting from out-of-stocks, create distortions that cause massive variance both upstream and downstream in the supply chain. Donovan (2000, p.1) also provides insight into what is termed the general drivers of demand distortions.

2.8.1 Key influencers driving the BWE

According to Donovan (2000, p.1), the most common demand drivers are retailers, promotions, sales, manufacturing, policies, processes, systems and suppliers. For the purpose of this study, the focus will be on the top 3 drivers. These are customers, promotional activity, and sales. Demand drivers lead to distorted information which in turn can cause an excessive build up of inventory at each node in the supply chain.

There is therefore a need to identify exactly why and how the demand distortion drivers impact on the business in order to find effective ways of dealing with the bullwhip effect. Donovan suggests that organisations need to better understand the impact of these demand

drivers in order to address them. For example, the following question may be asked: “What do promotions do for you versus what they do to you?” Donovan also suggests that major demand variations are a result of unplanned promotions and sales incentives offered to management personnel. He also takes into account the impact of phantom orders (due to perceived rationing/shortage) as well as the impact of transportation incentives such as FTL discounts.

Taylor (2000, p.530) adds to this complexity of distinguishing demand drivers from the aggravators with the following statement: “When considering demand amplification it is suggested that it is important to distinguish between factors which trigger demand variability, *i.e.* root causes, and factors which amplify the variability once it exists”. Some companies have been successful in improving the efficiencies in their internal chain, for example, between functions such as production, logistics and purchasing (Bruce and Ireland, 2000, p.80); however, when one takes a total supply chain view the outcomes can be seen to be a mere redistribution of inventory either up or down the chain. Bruce and Ireland (2000, p.81) argue that this is due to the “demand being disconnected from supply in the form of stock piles of inventory both within and between organisations”. According to Barratt (2004, p.31), when the above-mentioned disconnect is coupled with “isolated forecasting and planning”, an organisation will “battle just to stand still” as opposed to companies that have good collaboration. The latter organisation will, through collaboration, link demand to supply and will increase performance.

Table 2-5 presents the top 3 influencers of demand as well as the aggravators and their related impact on the chain.

Table 2-5 The top 3 demand distortion drivers, aggravators and their impact

Influencers of demand	Aggravators	Impact
Customer	Phantom orders and cancellations	The retail customer does not have confidence in CPGC’s ability to supply product reliably so they place bigger orders to secure more stock. When product availability is considered satisfactory, they cancel the balance of future orders or cherry pick. Retailers reject orders.

Promotions	Impact on demand and margin	Sales promotions affect current inventory holdings and the supply pipeline; unplanned promotional events can create excess costs and stockpiling at each node.
Sales	Sales teams' volume targets per period	Shorter sales reporting periods promote a smoothening of demand due to less order variability- resulting in a dampening of the bullwhip effect.

(Source: Donovan, 2000, p.1)

2.8.2 Dealing with the bullwhip effect

The most influential contribution to understanding the bullwhip effect was made by Forrester in 1958 (p. 37). In his studies, he was able to replicate the phenomenon of the bullwhip effect using model systems. He was then able to propose ways of dealing with it through elimination and mitigation.

From economics studies (Cannella *et al*, 2013; Moussawi-Haidar *et al*, 2012; Avinadav *et al*, 2013) it can be seen that the bullwhip effect challenges the hypothesis that inventory levels make the production process smoother than that of the demand process. In effect production may experience a greater amplification than actual sales. In this regard Lee *et al* (1997b, p.95) recognise some major causes of production variability and propose some solutions for mitigating the bullwhip effect.

Zotteri (2012, p.7) refers to items of higher value. He mentions that calculations for a marginal analysis “lose their simplicity because demand is unpredictable, so balancing the cost of inventory with the potential gain from an inventory investment is not easy”. This balancing act is difficult to achieve as the situation is more risky than that of a lower valued item, making the inventory investment too expensive.

In the study conducted by Metters (1997, p.89-100), the focus was on the economic impact of the bullwhip effect. The study shows that by mitigating or eliminating the bullwhip effect, stock expenses would decrease between 15 and 30%. It is for this reason that bullwhip reduction strategies have received a lot of attention.

There is a gap in the research in that studies have either been conducted at an industry level, a company level or a product family level. It may be beneficial to conduct research that considers all three levels to determine if the intensity of the bullwhip effect is variable.

Kaminsky *et al* (2008, p.161) have conducted research into identifying and quantifying the causes of the bullwhip effect. From their research they propose a guideline for reducing or eliminating the phenomenon.

Their suggestions include:

- i. Reducing uncertainty by centralising demand information, whereby each stage in the chain is provided with information on actual consumer demand;
- ii. Reducing variability that is inherent in the customer demand process, for example, by reducing the variability at one point in the chain (at the retailer), one can reduce the variability that is passed onto the CPGC. One way of doing this is to employ everyday low price strategies (EDLP), such as those of Wal-Mart. In doing so, one can eliminate excessive changes in demand;
- iii. Reducing lead-time of orders through the use of cross-docking and reducing lead time of information communication through the use of electronic data interchange (EDI); and
- iv. Forming strategic partnerships, *i.e.* through the use of a vendor managed inventory (VMI) program, so that the CPGC does not rely on retailer orders and the resulting bullwhip effect.

Lee *et al* (1997b, p.98) also identify ways to counteract the bullwhip effect. They suggest the following:

- i. Avoid multiple demand forecast updates: avoid the repetitive processing of consumer data and make the data from downstream members more accessible to the upstream members. In this way “the upstream site would have access to the demand and inventory information at the downstream site and update the necessary forecasts and resupply for the downstream site” (Lee *et al*, 1997b, p.99). They recommend just-in-time replenishment as an efficient and effective way to mitigate the bullwhip effect;
- ii. Break order batches: organisations need to develop strategies that allow for smaller batches more frequently. As upstream members receive data on a periodic basis from downstream members, they will not have to cope with unexpected demand surges. The contributing factor for batching was the high costs involved in generating and replenishing an order. The authors suggest that an EDI system be implemented to reduce the transactional costs. Another reason is the high cost of transport. CPGCs can lower these costs by introducing product assortment to the truck loads instead of a full load of the same product;

- iii. Stabilise prices: since forward buying aggravates the bullwhip effect, the best way to control the situation is to decrease promotional activity and discounting. The authors suggest that strategies such as EDLP, everyday low cost (EDLC) and value pricing strategies can be effective alternatives to promotions. Activity based costing (ABC) can help to show an organisation the massive costs incurred as a result of forward buying. “ABC systems provide explicit accounting of the costs of inventory, storage, special handling, premium transportation, *etc.* that were previously hidden and outweigh the benefits of promotions” (Lee *et al*, 1997b, p.101). This system enables the implementation of the EDLP strategy; and
- iv. Eliminate gaming in shortage: rather than granting allocations to retailers based on their orders, the rationing should be conducted as per past shipments records as this takes away the motivation for customers to place massive orders. The authors agree that some CPGCs work together with their customers to determine orders before the specific sales period starts. This helps the CPGC to plan production as they will have a better idea of the demand for a product.

In his study entitled Supply Chain Management: Cracking the bullwhip effect, Donovan (2000, p.4) explores many possible solutions to address the bullwhip effect. Some of the remedies are:

- i. To reduce the lag time between receiving forecast and actual demand data;
- ii. To implement systems so that actual demand can be monitored in real time;
- iii. Identify demand patterns for each echelon in the supply chain;
- iv. Encourage the collaboration between stakeholders to share demand information;
- v. Remove barriers to information flow;
- vi. Identify the inventory policies that create demand variations;
- vii. Eliminate transportation discounts;
- viii. Reduce or eliminate promotional discounts that create incentives for forward buying behaviour in retail organisations;
- ix. Implement EDLP;
- x. Circumvent false orders and unnecessary cancellations by implementing a window period for changes to orders; and
- xi. Implement VMI between retail partners based on a collaborative relationship of information sharing.

2.9 Variables that can impact supply chain performance

In order to determine which variables can affect the performance of an FMCG supply chain, the study conducted by Van Goor (2001, p. 9) analysed data from 30 multinational FMCG companies and divided the variables into 3 aspects. These aspects are: the internal variables, distribution logistics, and organisational aspects. The following variables were cited:

Internal variables:

- i. standardisation of communication traffic;
- ii. exchange of detailed forecasts;
- iii. order-status tracking and tracing;
- iv. use of logistics control systems;
- v. type of order picking/cross docking; and
- vi. situation of order penetration point.

Distribution logistics:

- i. utilisation level of transportation;
- ii. number of distribution centres; and
- iii. frequency of replenishment.

Organisational aspects:

- i. management involvement;
- ii. joint targets in a chain;
- iii. shared information technology; and
- iv. trust between channel partners.

As a result, the following four factors could be identified as making the largest contribution to business performance:

- i. flexibility: in volume, replenishment and lead time;
- ii. inventory: costs according to stock levels and interest percentage;
- iii. reliability: of order completeness and service level; and
- iv. costs: of transportation, warehousing and materials handling.

The study conducted by Naim and Towill (1993, p. 40) used a systems dynamics approach to develop computer-based simulations of supply chain activity and thereby test various strategies to reduce demand amplification. However, studies conducted by Wilding (1998, p.43), whilst determining the chaos in supply chains, shows that computer systems that are designed to manage supply chain activity are unstable and can create or exacerbate further demand amplification.

Taylor's study (2000, p. 55) focuses on developing an easier way to approach demand amplification and in doing so suggests that the first requirement is to design a flow chart that identifies the processes by which both product and information flows between members in the chain, *i.e.* process activity mapping. The next step was to identify the demand amplification using demand data (actual demand and forecasts) and activity data (production, despatch and external activity such as promotions). This method helped the author recognise that demand amplification occurs not only between companies or members in the chain, but also within the functions of each company or member.

Taylor (2000, p.55) supports the theory that changing policies could reduce demand amplification and has suggested trial of the following policies:

- i. Policies to manage demand variability and create demand visibility: weekly demand levels should be shared amongst members and orders should be aligned weekly; designing a demand management team who should determine how the chain should react in the face of unplanned activity or rapidly depleting stock levels;
- ii. Policies to counteract supply variability: production planners to meet weekly to set regular schedules; deliveries between companies should be made on fixed days in the week so as to allow for better timing of production and delivery activities;
- iii. Stock policy: safety stocks should be maintained at certain points in the chain to address any variability; safety stock must only be implemented to cover external variability as internal variability would be eliminated by the demand policy;
- iv. Price policy: pricing should remain stable; and
- v. Decision rationale: a change in decision making is needed to take into account the total supply chain situation rather than solely that of individual supply chain members.

“The greatest potential, and challenge, for effective supply and demand management is to achieve collaborative planning, forecasting, and replenishment driven by actual customer demand” (Burt *et al*, 2010, p.536). Information sharing and collaboration between each node in the chain can change the way that inventory and forecasts are managed. The dynamics of the internal chain of the CPGC is the next area under consideration..

2.10 Analysing the chain

A supply chain comprises many members as well as policies and practices. As a result of this, a great deal of complexity and uncertainty arises within the supply chain. Forrester (1958, p.37) suggested that order variance was a result of irrational behaviour of members in the supply chain. Lee *et al* (1997b, p.93) introduced four possible causes of the bullwhip effect. Naim *et al* (1992, p.4) evaluated the bullwhip effect using a simulation model that focused on Forrester’s model of a retailer, a distributor, a warehouse and a factory. They found that information and material delays were the main aggravators of the bullwhip effect. This argument is also supported by Hong-Minh *et al* (2000, p.790).

In Taylor’s study (2000) the author evaluated the downstream member’s policies that focused on reducing their inventory levels. He argued that the bullwhip effect is created by passing inventory responsibility to the upstream members. A major gap in research exists as many authors have sought to identify the causes of the bullwhip effect, but not many have given any attention to the measurement of the bullwhip effect. There is little or no literature that shows the causes that have the greatest impact on demand amplification.

There is also little or no literature that explores the roles and dynamics of internal departments that are external facing, *i.e.* those that deal directly with and can influence demand at the retail trade level. At this point it becomes necessary to explore this interface in more detail so as to understand its influence and potential impact on demand and, by extension, on demand amplification. The internal links in the chain of the CPGC that interface and directly influence the retail trade (the retailer) are the sales and logistics teams. The sales and logistics teams are responsible for the flow of goods and information to and from the retailer. Essentially, they influence and handle the orders placed by the retailers.

The CPGC, *i.e.* the manufacturer sells through retailers and distributors. The CPGC’s logistics team then records any incoming and outgoing orders. This is termed the variable sales-in (sales into the CPGC via orders received from downstream).

The CPGCs also purchase data concerning the rate at which their products sell out through the retail stores. It is this sales-out information that is used as a guide for determining consumer demand. The CPGC's sales teams are in charge of maintaining the forecasts (including those of the incremental volume) to be achieved from sales promotions and are in direct contact with the retailers (retail buyers).

Logistics are in direct contact with the distribution partners, those that manage the deliveries to retailer DC's as well as direct-to-store in the provinces where the retailer has no warehouses. Orders are received daily from each retailer either directly from the planner at the retailers head office, the DC, or from the stores - this is dependent on the retailers structure. This represents hundreds of ship-to-delivery points and orders. To further understand each of these functions and their related impact on forecasting and supply chain stability, their roles in the organisation need to be examined.

The sales team are the driving force that stimulates order placement by the retailers. In order for a company to be successful they need to have a sales strategy. The main objective of the sales strategy is to drive a company's sales by predicting and amending the volume sales targets. The focus of this team is to drive as much volume as they can through the retailers business by building brand equity and loyalty amongst shoppers for their product in order to drive consumption by the end user. Ultimately, their role is to create demand and stimulate incremental sales volume.

The sales team, on a daily basis, monitors the consumer sales through a retailer's business to determine the performance of their brands. The sales team can manage and influence volumes of products that flow through the trade by utilising marketing mechanisms, such as promotional activity. The scope of promotional activity spans discounts, consumer value offers, demonstrations, advertising, assortment planning and new product launches. This is a type of direct influence on consumer demand.

The role of the logistics team is to optimise the volumes of inventory held in the supply chain for potential delivery to retailers. The main objective is to satisfy retailer demand for order fulfilment whilst sustaining a stable flow of finished goods through the retail trade. Their role has an impact on the sales target of the sales team, the volume sales shipped for the organisation as a whole (GIV: gross invoice value), the retailer's inventory holding and ultimately consumer sales in the market through on-shelf availability.

The logistics team are involved with planning forecasts for inventory often 6-8months before the actual need for stock arises. This process happens early as the stock will need to be produced locally or imported, depending on the organisation and the type of replenishment process. Logistics is further involved with managing the daily orders that are received from retailers.

Their task is to fulfil these orders at 100% service level capacity for on-time delivery. This is managed through the timely downloads of orders at specific intervals. The order is then managed for expected volume and is sent to the distribution partner for picking and delivery. Thus logistics teams are in a position to directly influence the level of stock holding at the retailer level as well as the volumes sold through the market.

“In general, demand for functional products is dependent on a range of promotions offered in various retail outlets” (Ramanathan, 2012, p.1). Effective sales promotions play a critical role in supply chain stability. In order to develop effective sales promotions there needs to be a high level of collaboration between CPGCs and the retailers for the purposes of controlling the planning, forecasting and replenishment processes.

2.10.1 The SCOR model

The supply chain operations reference (SCOR) model is a management tool that has been used in multiple industries to measure and evaluate supply chain performance. This tool allows users to perform root cause analysis to identify optimal solutions to issues in supply. This tool allows for supply chain stability and can go a long way towards mitigating the bullwhip effect as it takes into account all of the key influencers in the chain, especially those influencers that stimulate demand. The SCOR model provides “a framework that links performance metrics, processes, best practices, and people in a unified structure”, (Supply chain council, 2010, p2).

This framework enables a line of communication that spans all the partners in the chain. This “enhances the effectiveness of supply chain management, technology, and related supply chain improvement activities” (Supply chain council, 2010, p2). The tool enables effectiveness by “using standard terminology to better communicate and learn the supply chain issues and by using standard metrics to compare and measure their performances,” (Demirag, 2011, p2). This tool develops over time with the feedback from leaders that are from different industries. These leaders provide information on best in class practices and processes.

SCOR directly influences customer service, the control of cost, planning and risk management as well as the relationships between partners in the chain, from the plant to the end customer. The tool enables good customer service delivery as it assists stakeholders in the chain to evaluate the cost attached to performance ratios and to develop plans to deliver on customer expectations in response to changes in market growth. SCOR consists of “standard descriptions of management processes, a framework of relationships among the standard processes, standard metrics to measure process performance and management practices that produce best-in-class performance” (Demirag, 2011, p4). “SCOR enables partners in the chain to evaluate and compare their performances effectively with other companies, to identify and pursue specific competitive advantages and to identify software tools best suited to their specific process requirements” (Demirag, 2011, p4).

An example of how SCOR can help is with perfect order fulfilment. Perfect order fulfilment is a metric that shows how customer service activities, as well as the planning and sourcing for production and the delivery efforts, are organised to meet the end demand. SCOR “contains the perfect order fulfilment metric definition, calculation methods, and discussion points. The SCOR model lists the processes that influence the performance” (Supply chain council, 2010, p5). The next step is for users to analyse the information in order to identify the root causes of a problem.

If implemented correctly, SCOR spans all of the relationships in the chain from the primary supplier to the end customer. According to Demirag (2011) and the Supply chain council (2010), the gap in this tool is that the SCOR model does not take into account the activities of the sales and marketing function or research development. The activities of the sales and marketing function directly influence key forecasts in the chain through their planning and execution of promotions and advertising campaigns to stimulate demand. If these activities are not monitored or planned for due to a lack of focus or communication amongst internal stakeholders then the SCOR model will be ineffective in meeting business and supply chain objectives.

The following section explores the purpose, trends, objectives and types of promotions in an effort to understand their potential impact on supply chain stability.

2.11 Sales promotions

For the purpose of this study, the following definition of sales promotions is considered suitable. According to Kotler (2000, p.295), “sales promotion consists of a diverse collection of incentive tools, mostly short-term, designed to stimulate quicker and/or greater purchase of particular products/services by consumers or the trade”. Promotions work because they provide an incentive that boosts the product’s value by creating a benefit that spans the product’s features or equity.

“Sales promotion is an initiative undertaken by organisations to promote an increase in sales, usage or trial of a product or services (*i.e.* initiations that are not covered by other elements of the marketing communication/ promotional mix)” (Odunlami *et al*, 2011, p.9). “Sales promotion acts as a competitive weapon by providing an extra incentive for the target audience to purchase or support one brand over another. It is particularly effective in spurring product trial and unplanned purchases” (Aderemi 2003 cited in Odunlami *et al*, 2011, p.9).

Sales promotions become useful in categories where there are “like” products and competition is fierce. In other words, where brand equity is not enough for a company to claim a point of difference. The FMCG industry is an example of such an environment.

2.11.1 The purpose of sales promotions

As mentioned previously under the section: challenges for retailers - sales promotions have a long term and short term effect on an organisation’s sales.

The reasons for this are, according to Patel and Rajai (2010, p.11):

- i. To serve as a reminder to consumers and retailers alike that a company’s products are available in the market; and
- ii. How that product can satisfy their individual needs.

Ultimately a CPGC has to constantly inform retailers and end consumers about the attributes and availability of their products so that the benefits of their products can be top-of-mind at the point of purchase. “The second purpose of promotion is persuasion” (Patel and Rajai, 2010, p11). Increased competition among rival products adds pressure and CPGCs are compelled to undertake sales promotion activities in order to temporarily reduce the price of their products on a retailer’s shelf.

The third purpose of a sales promotion is to “flush” excess stock out of a manufacturer’s or a retailer’s warehouse so as to offset (or afford) more raw materials coming into the production plant. The fourth purpose is to react to competitor activity within the market.

A well-designed sales promotion has the capability to (Patel and Rajai, 2010, p.12):

- i. Aid the launch of new products into the market – new products are often not accepted by a retailer if there is no monetary support provided by a CPGC;
- ii. Promote shelf merchandising space – promotions often allow the CPGC to get more shelf space and secondary placement for the period of the promotion;
- iii. Increase trial of a new product;
- iv. Balance the impact of promotions and media advertising of rivals;
- v. Increase repeat purchases by using loyalty drives; and
- vi. Encourage stockpiling – deal-oriented sales promotions encourage consumers to buy more than usual.

The authors Odunlami and Ogunsiji (2011, p.10) support that above and cite the following as benefits of promotions for organisational performance:

- i. They encourage the purchase of a large size unit by consumers;
- ii. They generate trial amongst non-using consumers;
- iii. They persuade retailers to carry new products and a higher inventory level;
- iv. They encourage off season purchase; and
- v. They build brand loyalty.

However, many researchers question whether promotions actually do result in “additional” sales as these very promotions result in retailers and consumers buying quantity that does not match their immediate consumption pattern, *i.e.* forward buying.

2.11.2 Trends driving the use of sales promotions

The following trends in the market have contributed to the growth of sales promotions according to Patel and Rajai (2010, p.12):

- i. retailers are gaining more power over suppliers
- ii. heightened price sensitivity amongst consumers
- iii. increased perception that some brands are equal
- iv. declining brand loyalty
- v. decline in the efficacy of media
- vi. pressure to achieve short term results

Other trends cited by Duclos *et al* (2003, p.318) are that:

- i. Promotions help to reduce stock for the retailer and for the CPGC;
- ii. Promotions help to shift the cost of holding inventory to the purchasing party (from CPGC to the retailer);
- iii. Promotions help to increase store traffic as well as the sales of non-promoted products;
- iv. Promotions help brands to maintain their market share; and
- v. Marketing activity helps to strengthen the relationship between the retailer, CPGC and the CPGC sales force.

2.11.3 Types of promotions

Sales promotions can be classified according to their target audience. There are two types of promotions (Patel and Rajai, 2010, p.12):

- i. consumer oriented; and
- ii. trade oriented.

A deeper understanding of the dynamics of each type of promotion is required to determine the impact a promotion can have on supply chain inventory holdings as well as product flow.

2.11.3.1 Consumer oriented sales promotion

This type of promotion is designed to drive consumption by encouraging the consumer to buy more. Consumer oriented sales promotion activities comprise of sampling, couponing, bonus packs, price-off and event marketing.

Consumer oriented sales promotion tools are used for the following reasons (Patel and Rajai, 2010, p.12):

- i. increase short term sales;
- ii. induce trial;
- iii. reduce inventory; and
- iv. keep up with competition.

2.11.3.2 Factors influencing the consumer oriented sales promotion

Many features of a product can influence the type of promotion element to be used. If the unit price is low, there is less risk for the CPGC and the retailer. However, both can reap the benefit of mass marketing. Therefore, mass marketing requires mass sales promotions. They can differ by product, *i.e.* whether a product is durable or perishable.

A sales promotion is also influenced by the product life cycle (Patel and Rajai, 2010, p.16). When a product is launched, its features, benefits and costs must be presented to the buyers. If a new product is thriving, competition grows and sales promotions become crucial to increase its sales. A CPGC which has generous funding to support their product can make better use of a sales promotion programme than a firm with limited resources.

Consumer oriented sales promotions are indicative of a 'pull' strategy as they centre on the consumer instead of the retailer. This strategy targets its marketing efforts directly at the consumers with the hope that it will stimulate interest and demand for the product. Typical pull sales promotion strategies include: samples, coupons, cash refunds or rebates, loyalty programmes and rewards such as contests, sweepstakes, and games.

2.11.3.3 Trade oriented sales promotion

This type of promotion is designed to push the sales of a product, *i.e.* a push strategy. Typical push sales promotion strategies include incentives such as buy-back guarantees, free-trials, as well as trade allowances, *i.e.* discounts to the retailer. Point-of-sale material (POS) (such as free standing units and gondola end claddings), trade shows, advertising within a retailer advert and category management can further motivate retailers to sell a product (Patel and Rajai, 2010, p.19). This means that a CPGC promotes their product through a retailer who then promotes it to the consumer. The motive is to get retailers to carry a CPGC's brand, to give it more space on their shelves at store level and advertise it in their broad sheets/adverts. In doing so, they push it onto the end-consumer.

2.11.4 Why sales promotion schemes have an effect on sales

The basis for this argument is that sales promotion schemes have an impact on the quantity of product that is bought by retailers and consumers as well as the switching of brands by consumers and category growth.

The factors driving this are (Patel and Rajai, 2010, p.23):

- i. The consumer buys more because the product is discounted and therefore he perceives the product to be of added value;
- ii. Consumers are persuaded to buy another brand (one that they do not usually use/buy) when there is no promotional incentive;
- iii. Total category consumption grows due to the promotion (when one has more of something, they tend to consume more) (Best *et al*, 2007, p.621); and
- iv. Consumers who do not buy in that category may purchase the product because it now represents better value, as opposed to “going without”.

Figure 2-6 shows the effect that the price of a product can have on the demand for that product by the consumers that purchase from retailers. As the price decreases in response to the promotional period, the demand or sales-out from the stores rises rapidly.

This pattern is supported by Best *et al* (2007, p.620) that in markets with promotions, a sharp increase in sales is experienced when the price is first reduced, and is then followed by a return to normal sales over a period of time or after the promotion ends. It can then be said that promotional activity has both a short term and long term impact on sales. The next section will explore this further.

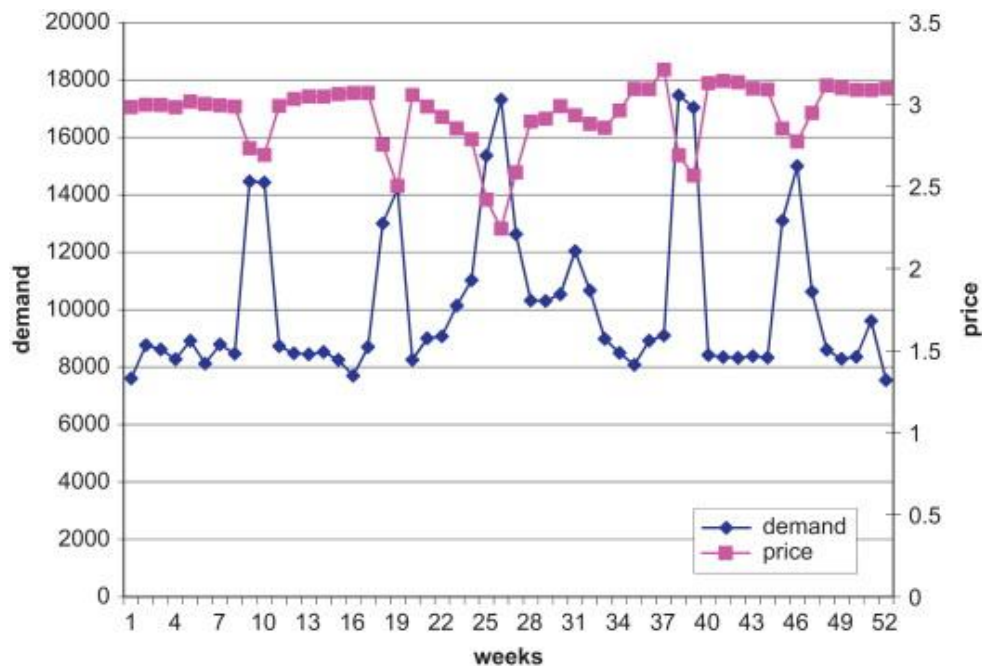


Figure 2-6 Retail sales out data: demand and price versus time in weeks (Source: cited in Zotteri, 2012, p.6)

2.11.5 The Short term impact of promotions

According to Patel and Rajai (2010, p.26) a temporary price reduction (TPR/price off) significantly increases the sale of the promoted products:

- i. In the short run, promotional activity can cause an erratic increase in sales of any promoted product (as seen in figure 2-6). This is due to temporary price reductions that increase the overall value and appeal of the product to the consumer and it leads to an immediate purchase response. The boost in sales can be measured through switching of brands, periodic demand growth and stockpiling;
- ii. Sales promotions lead to brand substitution within the product category: the sales peak experienced in the promotional period is due to brand switching, shorter purchase reaction time and consumer stockpiling. Premium brands can easily encourage consumers to switch from lower graded brands. This is due to premium brands having increased brand equity;
- iii. Sales promotions lead to shorter purchase reaction time and consumer stockpiling; consumers buy more of a product or buy at a different time than normal due to a promotion. The effect of this could be that consumers are not willing to buy products post-promotion, until such a time as they consume all of their personal stock; and
- iv. Sales promotions lead to periodic category demand growth.

Contrary to that stated above, increased promotional purchases do not always lengthen the time till the next purchase in the category occurs. This means that the promotion has resulted in an increase in consumption, hence promotional activities not only persuade consumers to buy more but also to consume faster. Sales promotions can also influence the sales of complementary and competitive categories, meaning that promotional activity not only increases the sales of the promoted product itself but also the sale of complementary categories.

This indicates a strong cross relationship, *i.e.* when a razor is on promotion at a discounted price, consumers would also purchase a shave gel, hence sales of shave gel increase sharply. It seems that consumers use their saving from the promotion to purchase complimentary non-promoted items.

According to Patel and Rajai (2010, p.28), the impacts of promotions in the short term are fleeting. Consumer stockpiling, however, can have a long term effect. Together the short and long term effects cancel each other out. Stockpiling is generally offset by a slight post-promotion dip in demand. “Thus increased sales are a result of sales borrowed from the future rather than increased overall consumption” (Patel *et al*, 2010, p.28).

2.11.6 The effectiveness of current promotion mechanisms

The ultimate goal is to anticipate and manage each promotion in the most effective way as poor forecasting and planning can lead to severe out-of-stocks or excess inventory.

Predicting incremental sales is complicated. If information on promotions is available, it is not always shared upstream. This can lead to last-minute changes in production. The amount of data that is collected by CPGCs, even for experienced teams, is vast and laden with ambiguity. As a consequence CPGCs find it difficult to determine the effectiveness and efficiency of promotional mechanics.

Possible reasons for this are provided by Long (2008, p.4):

- i. No clear objectives are set for the event at the beginning of the planning stages;
- ii. Other events by rivals can take place at the same time; the impact of which makes it very difficult to understand the true performance of an event;
- iii. The pre- and post-promotional effects are not quantified appropriately and/or at the proper timing; and
- iv. The nature of POS displays used during the promotion, as well as store level switching by consumers, are not analysed.

From the points listed above it is apparent that there needs to be an evaluation process for a promotion. A suitable pre and post evaluation of a promotion must comprise factors such as: the period chosen for the event; any expected media influence at the time; the characteristics of the product; the product/brand equity; the discount given; who is the audience; and were the audience reached and if any rival offsetting activity had taken place in the promotional period.

There is great difficulty for CPGCs to develop a framework to analyse this level of detail, especially when their calendar of events is taken into account. Ultimately the level of detail is scaled down and the analysis is kept to the bare minimum. Emphasis is placed on quantifying the incremental sales volumes and the corresponding revenue.

At the pre evaluation stage the efficiency and effectiveness of a promotion is based on an artificial calculation, using the estimate of incremental sales as a base figure. Consequently, the true success is difficult to determine.

2.11.7 The impact of marketing initiatives on the supply chain

According to Christopher *et al* (2010 as cited in Green *et al*, 2012), “the integration and coordination of marketing processes throughout the supply chain has received little attention”. The authors then argue that the most important marketing strategies of tomorrow will be those that are fully integrated into the supply chain as this will result in an optimal level of improvement in efficiency and effectiveness measures.

Figure 2-7, as cited in Duclos *et al* (2003, p.319), was taken from the historical sales of a CPGC. It shows any change in manufacture, inventory levels and shipments in response to orders due to marketing stimulated activity. The X axis represents time in weeks and the Y axis represents cases produced in units. Each peak in the graph is the response to some marketing activity. Figure 2-7 shows the impact of the two types of promotions: consumer and trade oriented promotions. The results show that the peaks at all points in the chain decreased substantially with the absence of marketing activity, *i.e.* consumer discounting and trade deals.

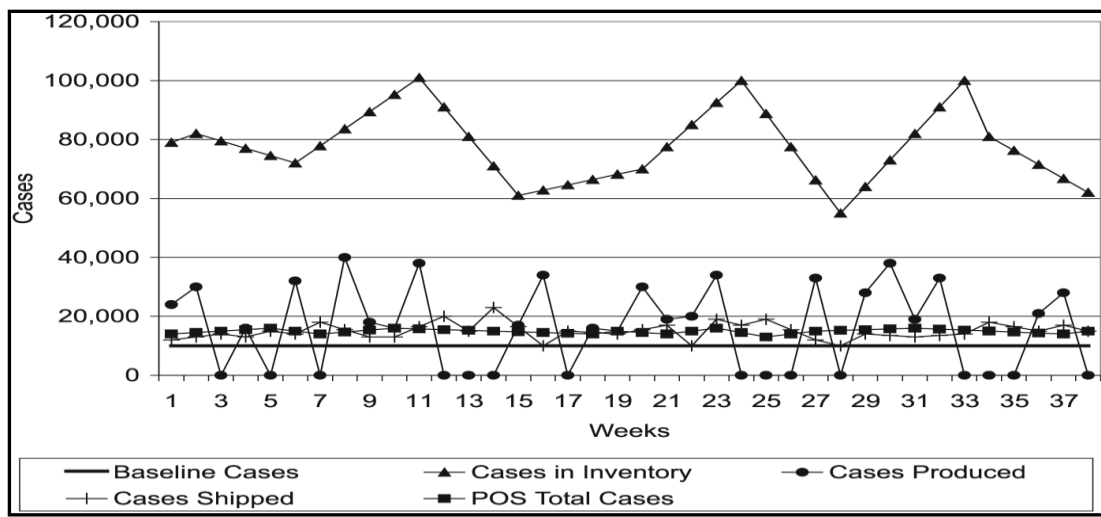


Figure 2-7 Demand distortion at a CPGC (Source: Duclos *et al*, 2003, p.319)

Growth in demand shows little about the long-term impact on total demand but there could still be a major impact on the supply chain. For example, if demand exceeds stock on hand,

retail customers will incur out-of-stocks. This ultimately threatens the most important factor for driving sales, that is, on-shelf availability.

If no product is available, then no sales will be made, meaning that, at store level per square metre, retailers will make a loss and CPGCs ultimately make less revenue as they will invoice fewer orders. The cost base is amplified when production needs to meet massive orders for unplanned short term events. These costs comprise warehousing, resource investment, carrying costs, and labour as well as extra distribution (logistics outbound) costs.

From this we realise that better co-ordination is needed between sales teams, logistics teams and manufacturing to ensure that manufacturing knows about the timing of activities, the type of activity, the true customer or consumer data, the expected volume forecasts and calculations used, all ahead of time.

CPGCs that offer premium portfolios and subsequently discount them to drive volume sales, experience the frontal force of the bullwhip effect. As a consequence of the BWE and the discount sales, the trade starts to buy the product to stock rather than to sell. The trade makes more money by leveraging the sales discounts and promotional schemes that are funded by the CPGCs. This leads to further demand distortion and inaccurate forecasts.

2.12 Forecasting

Demand forecasting is a popular tool that is used in business management today; however, it is becoming a routine process rather than aiming to address a specific problem (Gung *et al*, 2002, cited in Saeed, 2007). A comprehensive set of guidelines for the effective use of forecasting frameworks does not exist, so forecasting is being used “as an end rather than as a means with the expectation to improve the performance of the supply chain” (Gung *et al*, 2002, cited in Saeed, 2007).

“In a supply chain for a typical consumer product, even when consumer sales do not seem to vary much, there is pronounced variability in the retailers' orders to the wholesalers” (Lee *et al*, 1997b, p.2). Orders placed on the manufacturer and on the manufacturers' supplier increase even more. This trend is supported by Taylor (2000, p.517) in the following statement: “If demand for products is transmitted along a series of inventories using stock control ordering, then the demand variation will increase with each transfer.”

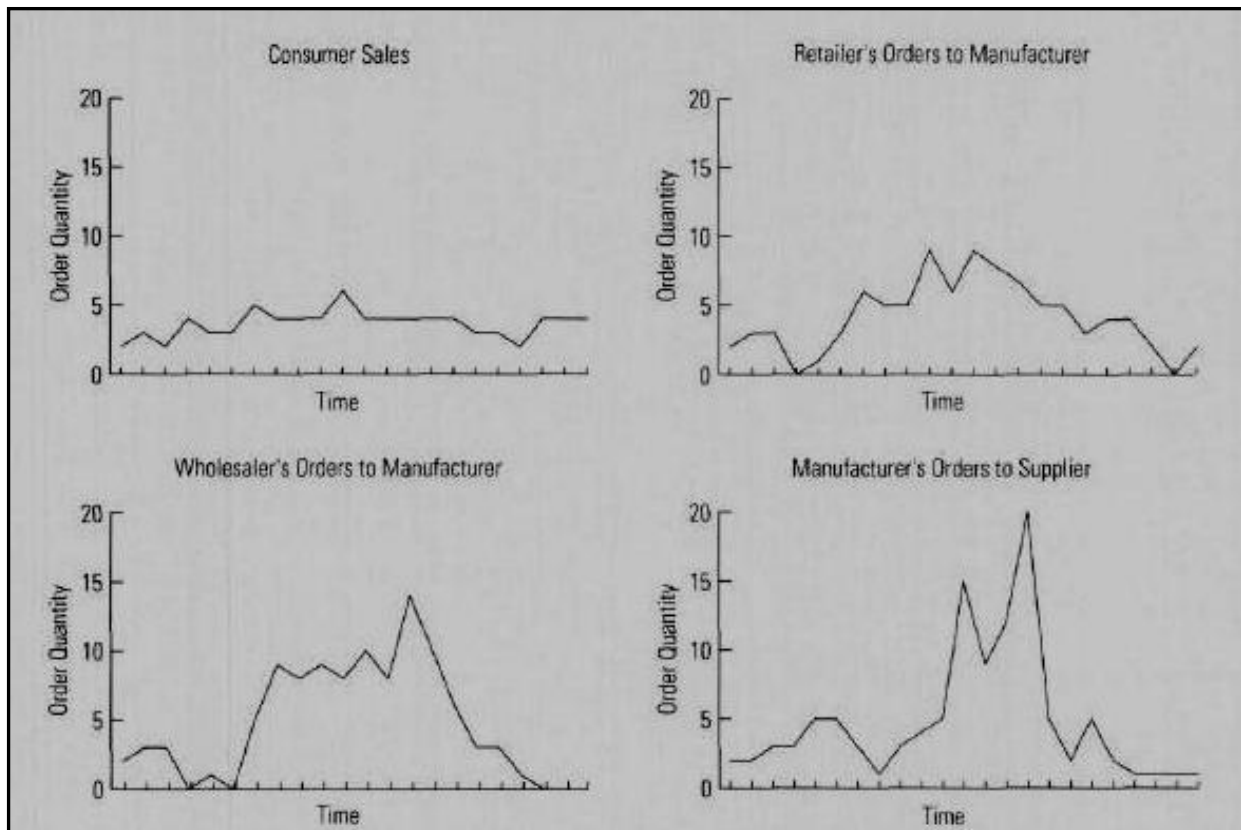


Figure 2-8 Increasing variability of orders up the supply chain (Source: Lee *et al*, 1997, p.2)

With regard to figure 2-8, when a CPGC offers a consumer-oriented or trade -oriented discount, it severely disrupts the system both upstream and downstream. This results in a “shock” to the system and encourages the retailer to increase their orders for the promotional period. Thereafter, as stock is depleted, they realise that consumer demand and subsequent sales are relatively flat. This type of shock behaviour creates other issues, such as space and time constraints, especially for global supply chains

A clear lesson to be learnt from figure 2-8 is summed up in the following statement by Van Goor (2001, p.1): “Collaboration between suppliers, manufacturers and retailers can improve the number of satisfied customers by reducing lead-times, improving service levels and decreasing costs.” To rectify the issues caused by distorted information, organisations need to first determine the causes of the bullwhip effect. In literature today, the main theory presented to mitigate the risks of the bullwhip effect is to manage the levels of information and the planning process by effectively utilising the input at each node in the chain, *i.e.* collaborative forecasting.

2.12.1 Forecasting and demand planning

The forecasting and demand planning function consists of three parts (IGD, 2012b, p.2):

- i. forecasting;
- ii. planning; and
- iii. management

A deeper understanding of the key influencers in the supply chain is needed. The key influencers being: the retail customer, the shopper (in-store), the consumer and competitors. Of all the factors affecting the forecasting process, retail customer plans may be expected to have the biggest impact.

Unpredictable sales during promotional periods lead to forecasts that are inaccurate, both for the retailer and for the CPGC. Research conducted by IGD (2009, slide 14) identified a few key challenges in the downstream part of the supply chain, these being: a lack of collaboration; resources; promotional space; the forecast update process; a lack of focus on promotional forecast review; and a lack of focus on cannibalisation.

Key challenges in the downstream part of the supply chain explored:

- i. A lack of collaboration between retailer/manufacturer: the relationship between the CPGC and the retail customer can vary. “It is suggested that those which are simply a buyer-seller relationship are not as effective when executing promotions” IGD (2009, slide 14);
- ii. Resources: people forecasting at both the retail customer and the CPGC should fully understand the characteristics, trends, seasonality and different usages of the product and category. Staff turnover has a significant impact on the accuracy and the effectiveness of a forecast;
- iii. Promotional space: the retail space in-store as well as the placement for the promoted product can have a great effect on the sales for the period. The more sales made per square metre of shelf space, the more effective a promotion is;
- iv. The forecast update process: due to the volatility of promotional demand it is essential that promotional forecasts are updated on a daily basis using the latest consumer sales data in conjunction with stock cover information;

- v. A lack of focus on promotional forecast review: the lack of a post-promotional review to fully understand the factors that affected the promotional performance can lead to further inaccurate forecasts if the promotion is repeated; and
- vi. A lack of focus on cannibalisation: the majority of CPGCs do not have access to their competitors' sales, therefore they have no visibility of the cannibalisation of their products.

CPGCs need to align their plans with those of their retail customers in order to ensure optimal service levels. "Accurate forecasts play a critical role in building supply chain readiness to deliver targeted service levels" (IGD, 2012b, p.2). Alignment of all participants in the chain, such as the retailer, the CPGC, the logistics partners and the production plant, on demand for product and anticipated service levels, encourages shared understanding and the transfer of crucial information between all parties involved. This is known as collaborative forecast planning (CFP). CFP "is particularly valuable when customer demand is uncertain, such as in the retail industry", (Hult, Ketchen, Meyer and Rebarick , 2008, p.235).

2.12.2 Forecasting- implementation

Due to the major volume uplifts experienced in promotion periods, an incorrectly planned event can have a massive impact on stock levels throughout the supply chain. Failure to communicate the right information to the right people at the right time can lead to chaos. The following challenges were identified (IGD, 2009, slide 20):

- i. A pressurised environment: retail customers and CPGCs work in an environment where workload tends to increase whilst headcount is generally static or declining;
- ii. Time line agreement: keeping to timelines is critical in executing any type of promotion, for example, when production lead times are lengthy and supply chains run across continents, a last minute change to a promotion by retail customers may mean that the CPGC cannot support it; and
- iii. Preparation: for collaborative planning meetings to be effective, all parties involved need to invest time in carrying out the required preparation.

Heizer and Render (2006, p.108) suggest a seven step process for developing a forecast whilst considering influences such as external factors (unforeseen):

- i. determine the use of the forecast;
- ii. select the items to be forecast;
- iii. determine the time horizon of the forecast;
- iv. select the appropriate forecasting model;
- v. gather the data needed;
- vi. make the forecast; and
- vii. validate and implement the results.

In addition, the following points need to be considered (IGD, 2009, slide 8):

- i. Understand the value of collaboration: this applies to both internal CPGC organisation dynamics across departments as well as retail customers in the trade. Building effective relations between partners in the chain can lead to effective collaboration through better communication;
- ii. Carry out promotional reviews: analysis of past promotional activities needs to be reviewed, to the point that a sufficient platform of information is built. It will help identify promotion drivers as well as basic knowledge for the organisation;
- iii. Understanding what has gone wrong in the past helps to identify solutions, *i.e.* lost sales due to lack of availability;
- iv. Retail customers in the trade should allow for additional visibility to their suppliers. Such visibility requires the sharing of information such as sales out data from stores, stock on hand levels and inventory management policies. This will help to develop more accurate forecasts of consumer demand and customer ordering patterns;
- v. Make optimal use of promotional space and promoted product placement at the retailer;
- vi. Share responsibility for the forecasting of promotion events amongst CPGC sales teams, logistics teams and production, with external help from retail trade partners. The ultimate goal is to balance manufacturing efficiencies, “with the requirement for supply chain agility in a volatile marketplace” (IGD, 2009, slide 8); and
- vii. Align with a win-win outcome: this sets the criteria for sales volume and profit margins. This can help to achieve stability within forecasts as the agreement will mean fewer changes in operations such as sales promotion mechanics and pricing.

- viii. Business intelligence comprises many tools. Two such tools are joint business planning (JBP) and true scorecards. Developing a JBP and TS allows for total integration of information across the supply chain thus eliminating swings in demand whilst contributing to stability in supply.

The joint business plan links strategy to execution. JBP's "support a collaborative value proposition based on their go-to-market engagement plans while generating a financial report that enables timely management intervention and performance optimisation", (Accenture, 2012, p. 7). The JBP outlines the business activities that create the greatest value for the organisation. The TS feeds into the JBP as the TS defines the key measures and the activities needed to be done in order to deliver the results.

The "scorecard concept arose out of a recognised need to measure success on more than just financial statements", (Oracle, 2013, p1). The scorecard tracks the measures or key performance indicators (KPI's) that are chosen by the organisation. The measures that are chosen are the ones that create value for all of the stakeholders involved. The measures are linked directly to the organisations objectives. "The success of such an ideal partnership resides in mutual trust, total access to information on both sides and complete transparency during negotiations, plus an on-going shared analysis of a scorecard to check if progress is real and efficient", (Dussart, 1998, p. 50). The TS is a 12 month plan that needs to be reviewed frequently so as to identify performance on KPI's.

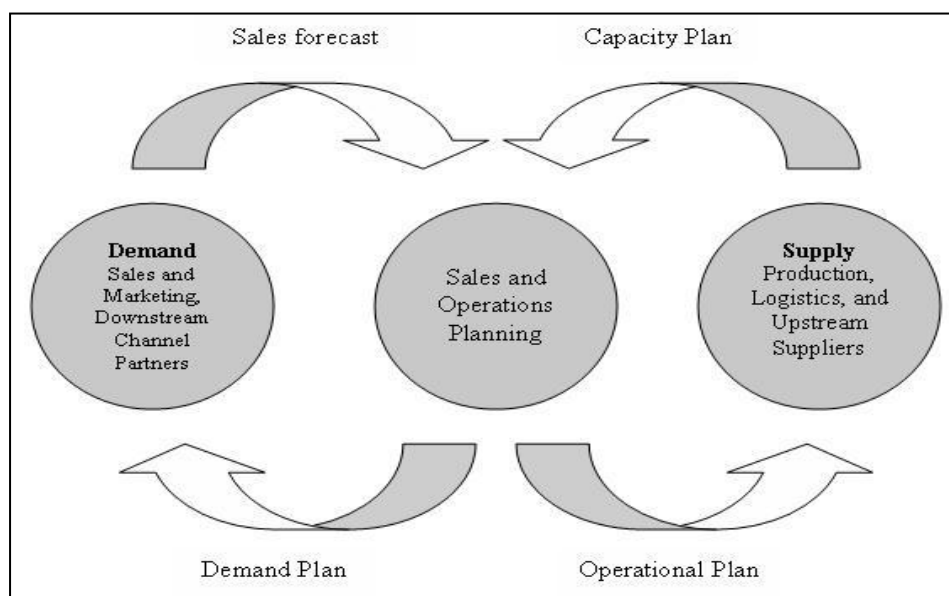


Figure 2-9 The Sales forecast in sales and operations planning (Source: Mentzer and Moon, 2005, p.11)

As previously mentioned, the marketing function creates demand at the end consumer level and it can be stimulated by activities such as promotional events. Therefore supply should be sufficient to meet demand. Other management functions, including manufacturing, purchasing and logistics work in tandem to maintain the supply. There is a constant flow of information through the functions.

According to Mentzer and Moon (2005, p.11), the flow of information starts with demand and ends at the supply function. Since marketing creates and stimulates demand by the end consumer, the sales forecasts arrow flows from the demand side. The supply team will prepare the capacity plan in response to the sales forecast (see figure 2-9).

2.12.3 Components of a demand driven enterprise

In a study conducted by Hult *et al* (2008, p.235), a demand driven supply chain keeps four major priorities in mind. These are: speed; quality; managing cost; and flexibility. Achieving balance amongst these four priorities can lead to a better overall value proposition for the end-consumer. The study also makes reference to the three A's as part of a supply chain design moving towards a best value approach. The three A's are: agility; adaptability; and alignment.

2.12.3.1 The three A's

Agility is the ability of a supply chain to respond to any major variability between supply and demand (Hult *et al*, 2008, p237). This is achieved through the use of additional inventory which is known as cushioning. The author also suggests that agility can be achieved through better information flows between the downstream and upstream members of a chain as well as information from external sources such as a retailer. Another example of agility is cross docking. "Cross docking refers to moving product from a manufacturing plant with delivery directly to the customer with little or no material handling in between. Cross docking not only reduces material handling, but also reduces the need to store the products in the warehouse", (Murray, 2014a, p1). Cross docking can aid in the fast transfer of inventory from the CPGC to the retailer when inventory from the CPGC is loaded directly onto the retailer's outbound trucks. This helps turnaround time for store deliveries and helps to alleviate space issues at the retailers DC.

Adaptability is the ability to redesign the supply chain as necessary. An example of adaptability is the implementation of vendor managed inventory (VMI). “Vendor Managed Inventory or VMI is a process where the vendor creates orders for their customers based on demand information that they receive from the customer. The vendor and customer are bound by an agreement which determines inventory levels, fill rates and costs’, (Murray, 2014b, p1). VMI reverses the flow of order creation in the chain and it contributes to supply chain stability by reducing inventory holding and eliminating OOS at the retailer.

Alignment refers to the ability to form a common interest or platform for processes amongst all members or stakeholders in the chain. A good example of alignment is collaborative forecast planning (CFP) between key members in the chain. The CFP feeds into the TS and achieving the target in the TS is one of the main inputs in the JBP.

CPGCs are in a unique position as data miners. They need to leverage this so as to drive the demand creation and fulfilment processes. Visibility across their chain enables CPGCs to be agile with rapid response capability, for example, to react to changes in the retail customer’s inventory policies (and stock holdings) in order to reduce disruptions in the retail supply chain. The CPGCs and the retail customer will also be better able to recognise the various types of demand and deploy inventory in an efficient way, *i.e.* demand based management. The demand indicators can be the basis for inventory replenishment strategy. This will help to increase performance across the retail network.

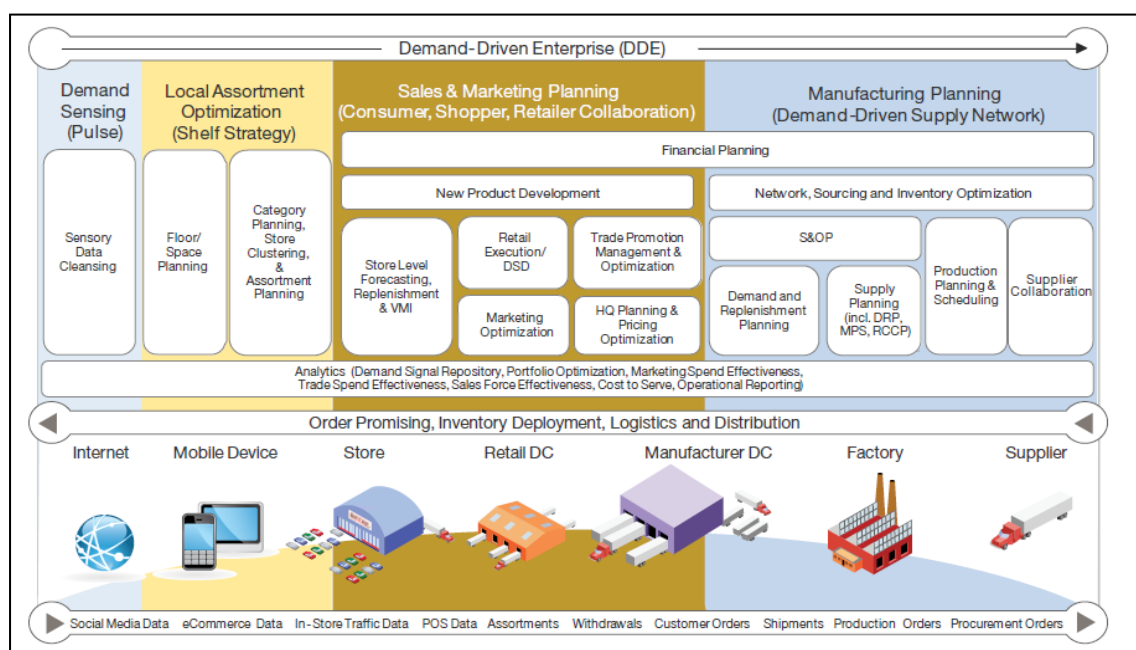


Figure 2-10 A demand driven enterprise (Source: cited in Capgemini and POI, 2011, p.25)

The Demand-Driven Enterprise illustrated in Figure 2-10 is one that combines the planning phase and the implementation phase of both the CPGC and the retailer in order to optimise revenue gains. Revenue is increased with processes that support optimal assortment and space planning and effective management of the marketing or promotion budget, whilst simplifying the supply chain.

Figure 2-10 shows the flow of information in an organisation. The flow starts with the collation of demand sensing data at store or category level (ecommerce and in-store data). This data then flows through to the marketing and sales planning function where inventory is added to a forecast to accommodate any planned marketing activities. This forecast of inventory then flows to the plant as an instruction for inventory to be manufactured (production order). The plant places orders with their suppliers of raw materials (procurement order). The inventory is produced and finished product flows from the factory to the CPGC DC. The CPGC receives orders from the retailers and ships those orders to the retailer's DC. From the retailer's DC, the products are shipped to their stores or are sold via ecommerce via the retailer's website.

An organisation that is driven by demand, focuses on the following areas:

- i. demand sensing or pulse;
- ii. shelf strategy or local assortment;
- iii. production planning and sales; and
- iv. trade planning and execution (supply).

“These concepts work together as enablers to leverage the full breadth of consumer data available to maximise market share, revenue and ROI, while driving efficiency and agility,” (Capgemini and POI, 2011, p25).

2.12.3.2 Demand sensing

Demand synchronisation utilises point-of-sale data directly from the retailer. Point-of-sale data is that of store level sales, and helps CPGCs to understand any trends occurring at the shelf. Demand-sensing processes can analyse shipments to the retail customer for a period of time. Point-of-sale and shipments, if analysed simultaneously, can better identify demand patterns, and enable rapid response and contribute to building better forecasts for the future.

This is where electronic data warehousing (EDW) can help to integrate multiple sources of data. EDW refers to “a relational database that is designed for query and analysis”, (Oracle,

2002, p1). It can hold CPGC historical data on shipments and transactional data from other sources such as the retailer's sales information and shared forecasts.

The data warehouse has tools that enable the client to analyse the housed information as well as "other applications that can manage the process of gathering data and delivering it to business users", (Oracle, 2002, p1). "Having visibility into the retailer's inventory strategy and POS data enables CPGCs to manage inventory and resource constraints and produce an executable deployment plan to meet projected consumer demand" (Capgemini and POI, 2011, p.26). Intense market pressure and the increasing distance between CPGCs and the end consumer mean that CPGCs will have to develop capability in demand management in order to remain competitive. "The key to implementing the capabilities required for a demand-driven enterprise is to use an integrated approach" (Capgemini and POI, 2011, p.26).

2.12.3.3 Local assortment

The shelf strategy or localised assortment (Capgemini and POI, 2011, p.26) and CPGC sales teams should work together with the retail customer to concur on assortment build, plannogram design and joint business plans. The retail customer's feedback on promotional events with criteria such as: discounts or broadsheet specials should be included in the forecast. The plans must also include seasonality, new product development and projected market and consumer trends. "The demand-driven enterprise proposes a greater level of CPGC involvement in managing the initial planning of assortments and shelf space and further collaboration to reduce risk with retailer workload around detailed product analysis in planning the shelf" (Capgemini and POI, 2011, p.26). The demand-driven enterprise also analyses the trends of how organisations in the industry try to differentiate their offerings in the market.

2.12.3.4 Planning for production and sales

Forecast accuracy directly impacts on the rest of the retail supply chain as it affects the replenishment plan. Other key inputs include store level stock holdings, stock/orders that are in transit, the store ordering patterns, retailer DC's stock holdings, service levels as measured by the retailer, and safety stock measures. It is also important to keep track of the inventory in transit (pipeline) as it could cause more instability.

"Supply chain volatility is exacerbated if the pipeline inventory is not properly incorporated into the inventory management decisions" (Kim *et al*, 2010, p.7). "Supply chain management requires coordination among the various entities involved in the delivery of a product to the

ultimate consumer. Demand information is used by each step in the supply chain for planning purposes, including production scheduling, inventory control, and delivery plans” (Duclos *et al*, 2003, p.317).

Activity based costing is crucial to the inventory management decision. Activity based costing (ABC) “reveals the links between performing particular activities and the demands those activities make on the organisation's resources”, (Cooper and Kaplan, 1991, p130). This technique enables decision makers to see how products create value as well as how they consume resources. ABC allows one to see the profit and focus attention on those “activities that will have the biggest impact on the bottom line”, (Cooper and Kaplan, 1991, p131). ABC should be considered as part of the inventory replenishment tool by the retailer. The retailer needs to take into account all the costs associated with the product that they want to order or promote.

An example provided by Lee (2001, p8) shows how ABC plays a big role in realising profit: a retailer had launched larger sizes in fabric care products such as washing powder and softeners in order to compete with wholesalers. Upon an analysis of margin, the retailer’s move to larger sizes was positive, and generally led to consumer forward buying or bulk buying. When the ABC technique was applied, it had revealed that overall category profit was declining as the launch sizes had a lower manufacturer case count and was therefore more expensive as it passed through the chain from the DC to the store shelf.

“So using ABC to make marketing instrument decisions is very important”, (Lee, 2001, p8).

Duclos *et al* (2003, p. 317) suggest a number of methods to improve supply chain dynamics as a possible solution to the bullwhip effect.

These methods are:

- i. remove an echelon;
- ii. integrate information flow throughout the supply chain;
- iii. implement JIT; and
- iv. improve pipeline policy and ordering patterns.

In the study conducted by Naim *et al* (1992), they evaluated improvements that could be made by reshaping the supply chain, removing barriers to information flow across a supply chain, decreasing lead time lags, and making advances in new order policies and timings; however, their research did not provide any information as to how effectively managing promotions or marketing activities could lead to performance gains.

2.13 Trade planning and execution

Trade planning and execution directly impacts on a CPGC's bottom line and it has the ability to determine the success of a brand by influencing its competitiveness in the market. This is known as trade promotion optimisation. CPGCs need to find ways to better utilise trade promotion optimisation. Capgemini and POI (2011, p.31) offer the following suggestions for industry standards:

- i. The use of real-time, consumer-oriented data, or “demand signals”, including consumer demographics, purchasing behaviours, social and direct inputs, crowd sourcing, point-of-sale transactions and syndicated research — should be incorporated into predictive techniques;
- ii. Demand modelling techniques as well as the data sources to be used in determining the post-promotional impact should be aligned between all partners in the chain;
- iii. The feedback loop should be consistent and timely so that any amendments to a promotion can be made within a reasonable window;
- iv. The role of promotions should be broadened to include those activities that touch the consumer directly;
- v. “Statistical modelling provides the insights to do a better job balancing the trade-offs in trade promotions, including discount, price, time frame, product mix and in-store placement. The analysis is performed by customer and deal, by store and individual week. This output enables appropriate tactical actions such as the elimination or curtailment of unsuccessful events or the improvement of future events” (Capgemini and POI, 2011, p.31); and
- vi. Sales merchandising auditing, as well as retail auditing will grow as it provides information on whether activities that were planned have actually occurred, and it would also provide feedback as to the learnings.

Developing and implementing a holistic framework for forecasting and trade planning (figure 2-11) makes it easier to respond to changes in the market. A consistent flow of data from credible data sources eliminates any confusion regarding consumer behaviour and trends in the market. Credible data allows an organisation to better position their promotions to shoppers or position their claims to consumers via advertising campaigns. Any adjustments to the model should be done after an understanding of the effect the adjustment will have on achieving an organisation's end-goal.

Figure 2-11 shows that there are many factors that can feed into a more holistic forecast. The forecasts can become more informative for each node in the chain. If the forecasting process is conducted in a standardised framework using the operational data, financial plans and trade plans it can create a co-ordinated scenario analysis. Figure 2-11 indicates that the operational data as well as the financial and trade plans feed into the framework. The framework then enables decisions to be made on what is the optimal portfolio of brands, assortment, type of promotion, promotion calendar, and price. The framework assists users to perform a cross-elasticity analysis. These decisions help to develop a coordinated scenario analysis and when combined with the category plan, customer trade plan and the marketing plan lead to consumer sensitive demand actions.

“This framework becomes the foundation for incorporating predictive information into operational decisions. It can enable optimisation across the product portfolio, corporate/customer trade plans, category/assortment plans, calendars, competition and price.” (Capgemini and POI, 2011, p.20).

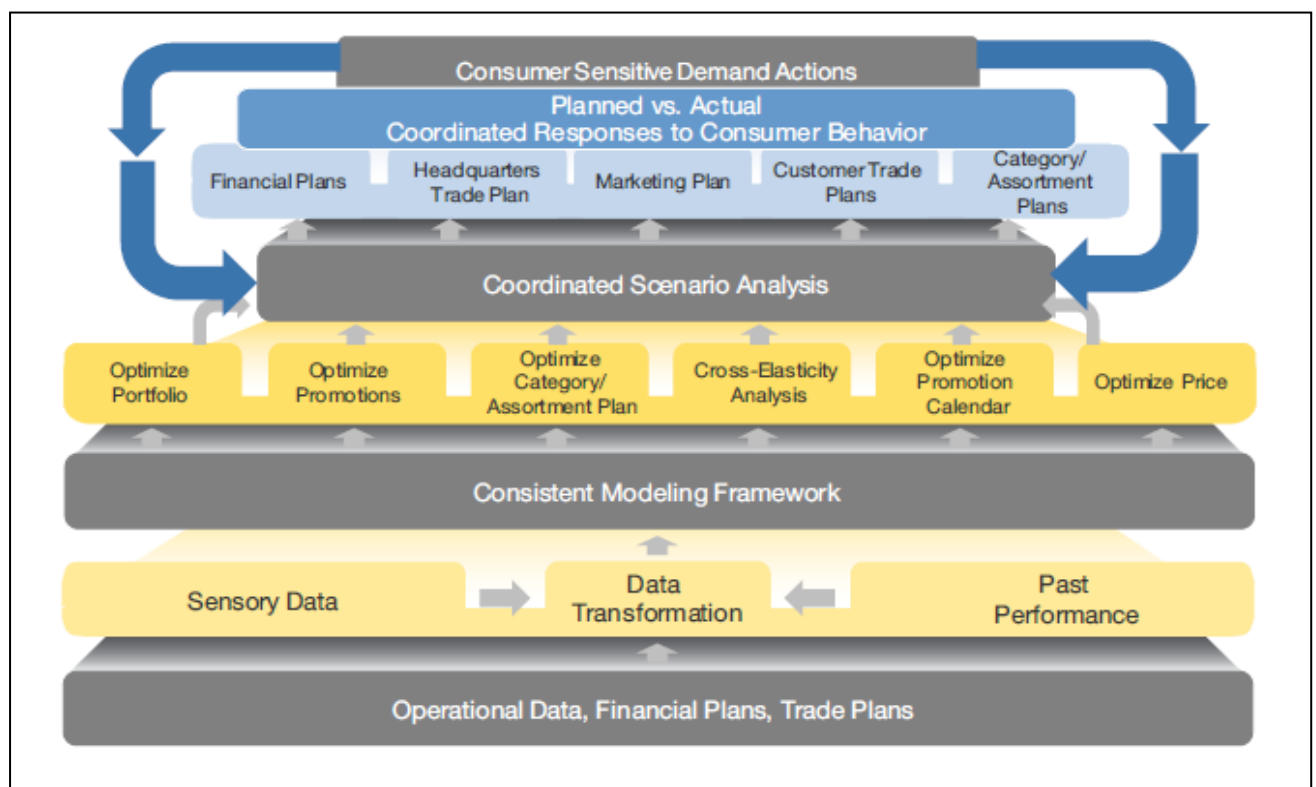


Figure 2-11 A market model for forecasting (Source: Capgemini and POI, 2011, p.23)

2.14 Conclusion

The FMCG industry has reached a point where any improvements in business process cannot guarantee the desired result for the bottom line, or that a shareholder will be satisfied. One of the ways to ensure sales growth is to stimulate consumer demand through marketing initiatives by using mechanisms like promotional activity. Promotions can increase sales but they also have a negative impact on the supply chain in the form of the bullwhip effect. The bullwhip effect is a wasteful occurrence that is the result of a lack of information between the key players in the chain. The BWE is dangerous as it places a major burden on safety stock levels and sharply increases costs. The increase in overall costs filters into the final cost of product making it more expensive as it passes through each node of the chain. In order to promote stability in the supply chain, it is crucial that more effort be focussed on mitigating or eliminating the BWE.

The BWE is exacerbated by both demand and supply drivers. The common influencer of the BWE in literature is that of variation in demand for a product that is caused by sales promotions. Promotions lead to erratic retail ordering that has not been planned for. The increase in demand caused by the different types of promotions can be better managed across the supply chain if the key players improve communication between each node as well as their flexibility to deal with peaks.

Forecasting plays a key role in eliminating variations in demand and in changing the mindset from that of a supply based chain to that of a demand based chain. Forecasting encourages collaboration through alignment of all key stakeholders as well as agility to respond to changes in the market. This process also highlights any changes in activities that are required to build the business and this encourages adaptability.

This chapter explores the current issues that are experienced in the supply chain for a low value item as there is little or no literature that explores the different requirements in a chain for items that are of higher value. Supply chains for high value products experience all of the issues that affect low value products but experience additional challenges and requirements. Perhaps the most pertinent requirement being that products of high value need modified supply chains and different processes from their lower valued counterparts so as to add more value instead of cost at each node in the chain and eliminate erratic ordering, shrinkage and pilferage.

Items of higher value do not flow smoothly through the supply chain due to the higher costs associated with the product. This means that at each node, cost avoidance is occurring. This phenomenon leads to hindered supply at the lower end of the supply chain and can result in erratic retail orders, cherry picking and even severe OOS on store shelves. Conducting a promotion of these products further exacerbates existing problems experienced in this chain. Existing literature does not address these challenges or how they can be managed.

In order to identify the optimal plan for the implementation of trade activities and, in particular for those products of higher value, CPGCs as well as retailers need to work together to analyse the impact of promotional activity on each node in the chain. Return on investment from key sales activities need to be balanced with the costs associated with delivering those sales. This means that the concept of ROI needs to be broadened to include the costs of instability across the supply chain. Business intelligence tools such as true scorecards and joint business planning can help to eliminate variability in demand as they help to track and achieve results through integration. Supporting tools such as collaborative forecast planning, electronic data warehousing, VMI, ABC and cross docking can help to eliminate current challenges as they promote adaptability and agility in the chain. They also assist with achieving the targets set out in the JBP.

A neglected area in existing literature is attention to how all of the business intelligence and support tools may be implemented in parallel to create a demand driven enterprise. This will be a complex task but may prove very rewarding since each tool helps to mitigate the BWE.

The review of the existing literature provided a solid grounding that prepared the researcher for the next stage in the study. The research methodology of the proposed study is described in the following chapter.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

The overall goal of this research was to assess the influence of sales promotions on a specific high value FMCG category and, based on a thorough analysis, to explore the influence on subsequent supply chain stability. A case study approach that investigated a single FMCG product in relation to one promotion was adopted. “The term case study pertains to the fact that a limited number of units of analysis (often only one) is studied intensively” (Kruger, Mitchell and Welman, 2008, p.193). The case study method was chosen as it allows the researcher to build on existing theory, and it provides a foundation for recommending solutions to address the research problem. The study was carried out at the head office of CPGC X, with the permission of the human resources manager.

The study was subjected to certain constraints as the researcher was not permitted to conduct structured interviews or to use any questionnaires due to confidentiality agreements and time constraints on the CPGC staff and resources. Key people provided clarity on the status and content of the information provided from CPGC X such as the shipments reports. The information from this report was used to determine the history and trends associated with product sold to retailer X by CPGC X. Key actions on behalf of these stakeholders were also observed during the process of the promotion. The two main contributors to the information that was provided were the sales (key account) manager as well as the logistics manager from the CPGC. The sales manager had been leading the sales of the customer’s account for 3 years. This manager is responsible for sales nationally for customer X. The logistics manager has worked for CPGC X for 10 years and has had experience at each node in the supply chain. The sales and logistics managers work closely to ensure that all of the customer’s orders are delivered on time to avoid out-of-stock situations and reduction in service levels.

After an extensive review of existing literature, the researcher was able to understand the role of a promotion in the market and its possible influence on the supply chain. This allowed the researcher to make observations of the promotion process at the CPGC in order to obtain the necessary information to critically analyse the pre and post promotion status of the supply chain.

3.2 Research Design

An exploratory study was undertaken as little is known about the influence of sales promotions on the stability of a high value FMCG's supply chain. In order to achieve the aim of this research, a real sales promotion event was monitored to determine the influence of internal and external factors on the success and outcome of the event. An appropriate evaluation framework was developed to enable relevant analyses of the impact of the sales promotion event. The evaluation framework enabled calculation of the effectiveness of the sales promotion, the assessment of the supply chain status pre-promotion, and the supply chain status post-promotion. The objectives of the evaluation framework were fourfold:

- i. To examine the stock levels, that is, to determine the level of stock holdings at any given point in the downstream section of the chain to determine whether they are sufficient or if the production/import process would be triggered. The following information was analysed:
 - a) CPGC X and customer X stock holding report;
 - b) CPGC X- 12 month history of shipments to retailer X;
 - c) Retailer X: their order running rate; and
 - d) Volume forecast of the retailer X.
- ii. To record and monitor the sales promotion plan in order to follow an effective promotional programme that added value to manufacturers' brands. It is important that sales promotions are planned strategically. This means that each plan should be consistent with the short and long term interests of the promoted brand. If such consistency is not ensured, there is a risk of failure of the promotion, an overstocked inventory pipeline and waste of the invested funds. The following information was analysed:
 - a) The buy-in orders: orders placed before the promotion starts;
 - b) The orders placed during the promotion;
 - c) Retailer X sales out information;
 - d) The percentage uplift due to promotion activity versus normal running rate; and
 - e) The logistics cut cases report (availability) for the duration of the promotion.
- iii. To measure the sales promotion against its objectives. The measures must determine whether the sales promotion is effective and efficient,

both at the stage of planning (pre-evaluation) and at the stage of evaluation (post-promotion) and its impact on the business.

- iv. To track the after effects by recording the level of stock holdings after an artificial event, such as a promotion. The following measures were analysed:
 - a) Performance: actual sales versus the target;
 - b) Accuracy: forecasted orders versus actual orders; and
 - c) Availability report (stock holding of the retailer and the CPGC).

3.3 Data collection

Two methods were used to collect data for this research. Firstly, to evaluate the performance of the promotion, quantitative methods were used. Secondly, to analyse the internal and external influences on a promotional event, qualitative methods of participant observation were used. The purpose of this is that quantitative research is used, “to evaluate objective data consisting of numbers while qualitative research deals with subjective data” (Kruger *et al*, 2008, p8). Subjective data enabled the researcher to understand the influence of key variables in the environment. The aim of this type of research is to achieve an in-depth understanding of a situation.

Key assumptions were:

- i. Incremental orders are placed by the retailers during the sales promotion period; and
- ii. Base sales represent the sales in periods when no promotions occur. They are understood to be “the true sales” that would occur irrespective of sales promotion activities taking place or not.

3.4 Data analysis

“Researchers use quantitative data to corroborate and support the qualitative data which is most useful for understanding the rationale or theory underlying relationships” (Soy, 1997, pp.19). Case study research generates a large amount of data. A database was prepared to allow for data to be organised into categories for ease of analysis.

3.4.1 Quantitative

“Field studies are conducted in the environment in which a phenomenon was observed originally” (Kruger *et al*, 2008, p.8). One promotion for one product was analysed. Data regarding shipments to the retailer by the CPGC were collected in real time. All orders were received via a proprietary enterprise resource planning (ERP) platform called SAP (version 6.0). The data was then exported to Excel spreadsheets so as to facilitate ease of access as well as the cross comparison of data to identify patterns and emerging trends. Sales out data was collected from the retailer’s business-to-business platform called the EPOS analytics portal. It was then exported to Excel to facilitate ease of access. Excel was chosen because it is a relatively simple and user friendly software that enables calculations, forms and graphs to be created. Once the data was processed into suitable units of measurement, the information was reported in graphs and thereafter the findings were analysed.

3.4.2 Qualitative

Observation was used as part of the exploratory design of the research project. Such data collection is known as simple observation. According to Cooper and Schindler (2006, p.242), “its practice is not standardised because of the discovery nature of exploratory research”.

For example, in this study, there were certain areas where the researcher was able to gain more knowledge by seeing how processes and procedures were performed than by relying on reports. Furthermore, by directly observing the promotion, the researcher was able to develop a better idea of where problems could occur and also why they occur.

Data was collected by monitoring the internal and external environments of the promotion event. Key influences were recorded as raw field notes. After the researcher had collected sufficient data through the observation method, the data was examined to detect any patterns or any linkages between the research objective and the original research questions, *i.e.* the data was coded by dividing it into themes. The data required manual processing by the researcher in order to provide a complete and accurate assessment of the promotion environment.

The following are examples of data that was collected through the observation method:

- i. market analysis, *i.e.* the major activities or trends in the market;
- ii. competitor activity, *i.e.* the promotional activity of rival brands;

- iii. logistical issues internally at the CPGC;
- iv. logistical issues at the retailer;
- v. changes in process at the retailer;
- vi. observations of the impact on cross categories for complimentary products;
and
- vii. post-promotion behaviour of the retailer.

3.5 Validity and reliability of the study

According to Kruger *et al* (2008, p.142), “validity is the extent to which the research findings accurately represent what is really happening in the situation”. The authors go on to link validity to reliability (2008, p145) in that validity is concerned with the findings of the research and related to the credibility of the findings. Zikmund (2003,p.280) holds the view that reliability relates to the degree to which measures are free from error and therefore yield consistent findings.

“External validity reflects whether or not findings may be generalised beyond the immediate case or cases,” (Soy, 1997, p.10). Data was analysed and then reviewed with reference to the literature review to enhance external validity. Data was collected in real time via industry approved systems.

3.6 Limitations

This study was limited to the promotion event conducted by one CPGC at one retailer for one product. Consequently, only general conclusions based on inductive reasoning could be arrived at. Hypothesis testing and deductive reasoning were not appropriate.

3.7 Anticipated contribution

Firstly, this research explores the influence of a promotion of high value items on the supply chain in terms of the phenomenon called the bullwhip effect. It focuses on the demand drivers created by these marketing initiatives. The research also explores how a lack of attention to the above-mentioned concept leads to its occurrence. This study may provide other organisations within the same industry with a better understanding of how they may develop a holistic and effective framework for conducting sales promotions.

3.8 The phases of the evaluation framework

A description of the three phases of the promotion follows. These phases are typical of promotions staged in the FMCG context.

3.8.1 Phase 1: sales promotion planning

The sales promotion planning process consists of several steps. Firstly, in this study, specific, measurable, attainable, realistic and timely (SMART) objectives were stated and documented in a promotion recommendation report. The second step was to document the factors that may influence the level of sales of a product (*i.e.* promotion price). Step three was defining the sales promotion estimates for both revenue and cost. The last step was to measure the planned incremental sales and hence the incremental marginal contribution for a sales promotion against the objectives.

3.8.2 Phase 2: execution of the sales promotion

While the promotion was in the execution phase, data was collected on external factors which could affect the promotion. Examples of these factors include:

- i. supplier and retailer out-of-stocks;
- ii. confirmation that the promotion took place; and
- iii. competitor activity during or just before the promotion period with regard to similar products

These factors were monitored and recorded, as these data are relevant to an analysis of the results.

3.8.3 Phase 3: evaluation of the promotion

This phase consisted of three steps. Step one was to gather financial data after the promotion had ended. This was done as soon as the data became available. Step two was to analyse the results and compare them to the promotion objectives. Successes or failures were analysed to determine where improvements could be made. Also, any significant differences from the plan were studied and explained. The last step of the analysis was to gain an understanding of what to expect of a promotion.

3.8.4 Key performance indicators

The following key performance indicators of the promotion were recorded:

- Incremental sales: sales from the promotional period as a percentage of the base running rate for the period;
- Effectiveness measure: incremental gross invoice value of sales as a percentage of the total sales promotion cost; and
- Effectiveness measure: average marketing investment percentage less the trade terms percentage multiplied by the incremental sales, all as a percentage of the total sales promotion cost.

With regard to pre-evaluation of the promotion, no real data was available at that point. Thus, an estimate of total expected sales was used to determine the objectives in advance.

3.9 Conclusion

This chapter describes a framework that was used to assess the effectiveness of the promotion that was studied. In order to conduct the assessment four objectives were defined. These were to monitor stock levels in the chain, monitor the planning of the promotion as well as the implementation to identify any gaps, measure the promotion versus the target and to track the after effects of the promotion. Both quantitative and qualitative methods of data collection were used to conduct this case study. The use of two methods allowed the researcher to collect data from both the internal and external environments. Chapter three explains how the research was conducted and the processes involved. Once the data was collected, themed and interpreted, the researcher was in a position to present the findings of the research report. The data is presented in the form of graphs and tables and the observations are presented as descriptive reports. The findings of the research are presented in the following chapter.

CHAPTER FOUR

FINDINGS

4.1 Introduction

In chapter two of this study existing theory on the effects of promotional or marketing activities on stability in the supply chain was explored. This chapter reports the findings of the research that was conducted at a consumer packaged goods company (CPGC) . The researcher was able to observe the course of a promotion before, during and after.

Data was gathered in three stages. The first stage was that of planning the sales promotion. Once the researcher had an understanding of how this process took place, the researcher was in a better position to observe the next stage. The second stage was the execution window of the sales promotion, *i.e.* the actual time during which the promotion occurred. The third stage was the post-evaluation of the sales promotion.

The CPGC is a global organisation that has offices in virtually every country. The South African headquarters supplies the majority of retailers in southern Africa and surrounding countries. The company has multiple distribution partners and its products are produced internationally. Due to the longer lead times involved with global products, the organisation relies heavily on forecasting techniques to estimate the total volumes that need to be manufactured. With regard to the product supply chain (downstream), products need to be available to ship to the next stage in the right quantities at the right time, thereby ensuring a smooth product flow. The CPGC needs to make sure that their retail customers order according to their pre-aligned forecasts so that total stock levels remain stable. Any radical changes in ordering patterns can have a negative impact on stability in the entire chain and can affect the plans of other retail customers.

The FMCG product being observed in the promotion is one of higher value. This presents unique challenges for shipment to retail customers as the product needs to be secured at all times due to high pilferage rates. Generally, customers delay their orders until the exact point that the product is needed for inventory so that they can minimise the risk of loss due to shrinkage or damage. Items of higher value also present an argument for cost avoidance, whereby the customers delay orders so as to show lower capital tied up in inventory when there is a quarterly analysis at the customers' distribution centres (DCs).

4.2 Forecasting

Demand management starts with separating the individual retail customers by their product offering or their portfolio and consumer offering. This enables the CPGC to have a better understanding of what the current and future trends of their customer will be. After this analysis is done for each of the customers at SKU level, the CPGC will be able to aggregate total demand . When an analysis is done with this level of detail, it ensures that forecasts are more accurate.

4.2.1 Retail customer forecasts

There are two forecasts that are developed by the retail customer. These are the retail sales forecast and the order forecast. The retail sales forecast shows the expected sales revenue from products sold in the stores over a specific period. This forecast is used to estimate the retailer's sales versus their actual revenue target. Revenue targets are set so that the retailer can work towards generating the appropriate revenue in order to cover their operational costs, overheads and profit targets.

The revenue targets are based on a monthly period. The sales forecast is vital to ensure that the retailer's business is on track to deliver the necessary revenue to enable adequate cash flows. This forecast can influence the retailer's decision on whether to use a promotion in order to stimulate sales. The sales forecast also shows the revenue that is expected to be derived from each product in the stores. Each product has a different cost price and retail selling price (RSP). The retailer adds a profit margin to the cost price of a product to determine what its RSP should be. The size of the profit margin depends on how much revenue the retailer needs to generate. Profit margins differ by product and its characteristics.

The order forecast shows the anticipated orders that will be placed on the suppliers for product in a specific period. These forecasts both have a 13 week time horizon. As mentioned, the order forecast is shared with suppliers weekly, instead of daily. This can cause a major gap between the volume that the CPGC secures for that customer versus what they actually need.

4.2.1.1 The retail sales forecast

The retail sales forecast is developed by the commercial buyer, for those products. For example, a retail customer can have many buyers. The buyers are each responsible for a certain department in the store, *i.e.* non-foods, foods, clothing, accessories, cosmetics and perfumery. This forecast primarily employs the method of extrapolation.

The buyer will take the following factors into account when developing the forecast: history of aggregate sales across all stores, any planned promotional activity with suppliers and the running rate of products. The buyer only adjusts the forecast if there are new products or brands that will be introduced to stores or if there is extra promotional activity. The buyer does not share this forecast with the supplier; however, this forecast is shared internally, within the customer organisation for the purposes of tracking their internal targets.

4.2.1.2 The order forecast

The order forecast is developed by the planner for those products. Similar to having different buyers for different departments in the store, there are different planners for the different departments. This forecast is also based on the method of extrapolation as the planner primarily looks at the history of sales in the stores at an aggregate level, stock holding in the stores at an aggregate level as well as stockholding in the DCs. The planner also takes into account any promotional plans that have been communicated by the buyer.

Once the order forecast is completed, it is shared with suppliers by loading this report onto their system on what they call the order portal. The report is adjusted on a weekly basis to keep the report at a constant 13 weeks of orders. The order forecast should be directly linked to changes in the actual sales report. The reason for this is that as sales are made in the stores, the orders forecast should be adjusted to reflect the replenishment stock that is needed. If this is not done consistently, the customer business runs the risk of keeping too little stock on hand versus consumer demand.

4.2.1.3 The differences between the retail sales forecast and the retail order forecast

Some key issues have been identified with the retail customer's forecasts. Firstly, both of the customer's forecasts do not include any CPGC feedback. Feedback from the CPGC provides a more holistic forecast. For example, the CPGC could be unable to supply stock and that may affect on-shelf availability at the retailer causing the retailer's sales to decline.

The time horizon for these forecasts is also shorter than the lead times that global suppliers need to ensure that adequate volume is brought in for that customer, *i.e.* the CPGC's PF has a 6 month lead time. This forces the supplier to estimate what would be needed, and this could have negative consequences such as out-of-stocks if less volume is brought in.

There is a lack of communication between the buyer and the planner in that their forecasts are developed separately. They do not provide mutual feedback on each of the forecasts, yet they are both key influencers of on-shelf availability. Possible reasons for the lack of communication are no reporting line structures and functional silos, which results in little to no support for multi functional team interaction. The retailer's forecasts are also based on aggregate data for sales and stockholding. This aggregate data may not be a true reflection of all the stores as it does not take into account the running rates of individual stores, *i.e.* some stores will have less stock holding than others as their sales are higher, yet the customer's system does not recognise this.

Aggregate data shows the top line inventory holdings of the chain and neglects to show that some stores are out of stock and need to be replenished. If the aggregate data show inventory levels to be higher than that of their policies, their systems would not allow for an order to be placed on the CPGC to replenish stores that have no stock left.

4.2.2 Internal CPGC Forecasting

There are two main forecasts that are developed by the CPGC. These are the production forecast and the sales forecast. The production forecast will form the instruction to the plant on what product to manufacture in terms of SKU level with the quantities required, as well as when it will be needed. The sales forecast is the projected target volume that is expected to be ordered by the retail customer, *i.e.* sales to the retailer.

4.2.2.1 The production forecast

The production forecast (PF) shows the volume that is needed in the next six months. This forecast is submitted to the plant, six months before the stock is needed and is therefore only developed twice a year. The reason for this is that the production process for the finished product takes three months and the lead time for delivery of the finished goods consignment to the CPGC takes a further three months via sea freight. Figure 4-1 shows the participants and the information involved in the production forecast.

The forecast is developed by the regional demand planner (RDP) who is based in a foreign country and the commercial operations team (local). This is a historical forecast as it is based on an analysis of previous shipments to all the retailers. It considers shipments over the last two fiscal years, as well as anticipated growth as a result of any planned market activity.

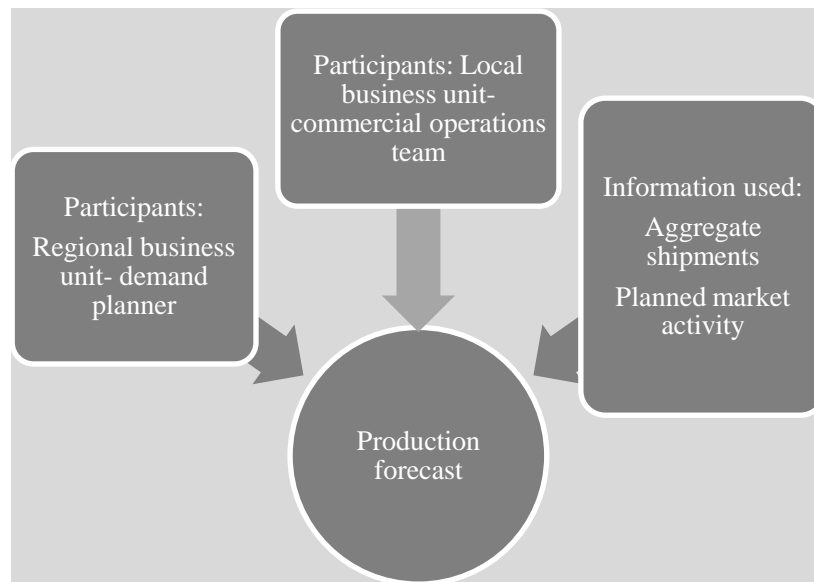


Figure 4-1 The inputs of the production forecast (Source: author’s own construction)

There is limited opportunity for the CPGC to adjust this forecast. This forecast can only be adjusted before it is submitted to the plant. Once the forecast is submitted to the plant, no changes can be made and this serves as a binding agreement between the plant and the CPGC. If additional volume is needed, an additional forecast will need to be submitted for the incremental volume. This usually happens when the sales forecast projects a drastic increase in sales due to unplanned or last minute agreed activity. Additional forecasts for incremental orders are treated as emergency/rush orders.

In the worst-case scenario, the plant will expedite volume that was produced for another country. The production forecast is shared between the key influencers, namely the regional business unit and the local business unit. The production forecast is shared so that the key influencers can provide feedback timeously with regard to any anticipated business changes that could have an impact on the volume of product that would be needed for the market. There is great co-operation between these business units.

4.2.2.2 The sales forecast

The sales forecast shows anticipated orders from retail customers for the next three months. This forecast is submitted to the commercial operations team three months before the volume is needed. At this point if there are any gaps between the sales forecast and stock on hand it would be recognised. If more stock is needed, an additional forecast would be submitted to the plant for an emergency order. Figure 4-2 shows the participants and the information involved in the production forecast. The local demand planner (LDP) does not contribute to the production forecast but rather to the sales forecast along with the key account manager who represents the customer within the CPGC. They are the key contributors to this forecast as they are the closest resources to the customer's business and the market trends.

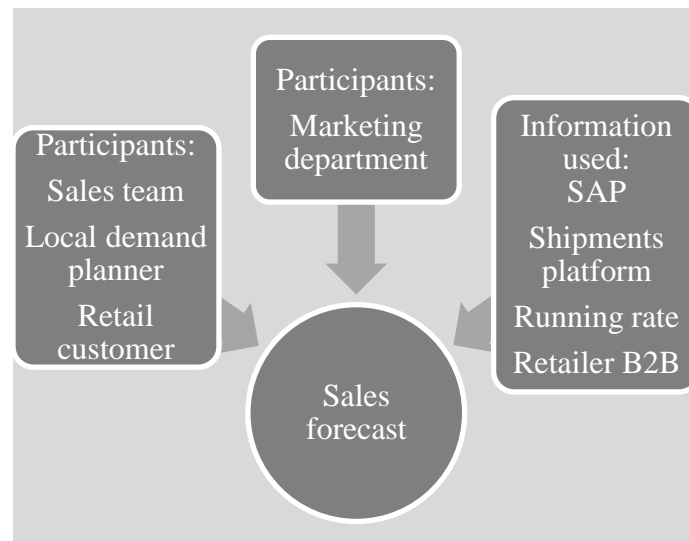


Figure 4-2 The inputs of the sales forecast (Source: author's own construction)

The local demand planner takes into account information such as the history of shipments to the customer, the introduction of any new products to the CPGC portfolio for the market, the customer's business-to-business (B2B) portal which shows what the customer is expecting to order for the next 13 weeks and changes in distribution of products across all stores in the customer's portfolio. The key account manager takes into account factors such as the agreed promotional plans, anticipated growth as a result of planned promotional activity, as well as any movements in the current inventory portfolio of the customer. A qualitative method is used in this forecast as it relies on judgement and comparative techniques to make an estimate.

The local demand planner also uses a calculation called the running rate. This running rate stipulates what the average shipments should be in a specified period. It can also be referred to as the “average sales”- the average sales that would occur in a period without a promotion. The role of estimating the running rate is owned by the local demand planner. The running rate is used as the benchmark for minimum volume shipments for the current fiscal year; therefore, its calculation is based on annual shipments of the previous fiscal year.

Since the calculation is based on past data, it excludes the impact of economic information such as the appreciation or devaluation of currency, competitive information, or market research information. As a result, the running rate needs to be manually altered on a monthly basis to account for this, as well as for an anticipated increase in sales due to seasonality.

There is ample opportunity to adjust the sales forecast. Since the market is always changing, response plans dictate that this forecast be adjusted accordingly.

This forecast can be adjusted up to two months before the volume is needed. This forecast is widely shared amongst the key influencers such as the varying management levels in the sales department, and with the customer. There is a large amount of management input for the forecast; however, the customer makes a minimal contribution. A reason for this is that the customer has to spread their time across a myriad of suppliers.

The ultimate goal is that the production forecast and the sales forecast within the CPGC channels match. If there is less inventory on hand than is needed versus the sales forecast, then the CPGC is left with a cumulative backlog. Conversely, if there is more inventory on hand than is needed, this results in additional costs for holding that inventory in the chain.

4.2.2.3 The differences between the production forecast and the sales forecast

A diagrammatic summary illustrated in Figure 4-3 shows the timeline of the different forecasts. There are key differences between the PF and SF forecasts. Firstly, the time horizons are different. The production forecast provides a six month plan, whereas the sales forecast is a three month plan. In order to plan effectively for production, the time horizons should match as the sales forecast should be a key input for the production forecast.

Secondly, the production forecast only looks at past data of annual shipments that were aggregated. The production forecast does not take into account the individual running rates or the impact of market activity on volumes ordered by the retail customer.

This could result in forecasts that are either too high or too low. The key differences between the production forecast and the running rate that is used in the sales forecast is that the production forecast is estimated by the regional demand planner who does not adjust the calculation of the average shipments except for changes in the portfolio of the CPGC for that market, whereas the local demand planner estimates the running rate and adjusts it on a monthly basis so as to keep management informed of how trends in the market can impact on the orders that are placed by retail customers.

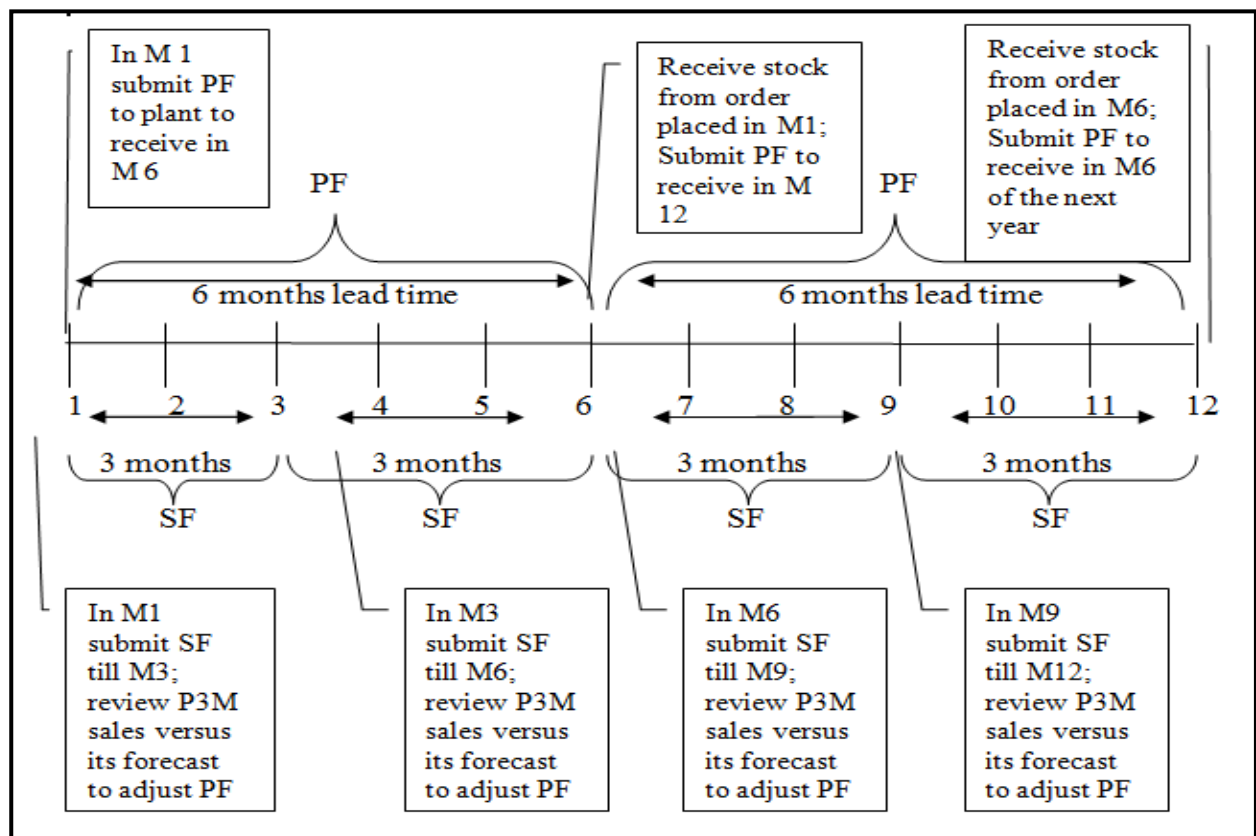


Figure 4-3 The timeline for submitting forecasts (Source: author's own construction)

As a result, the sales forecast primarily looks into the future and attempts to take into account the possible impact of anticipated trends in the market place. It is important that the key influencers are in touch with the customer's business and current and future trends as this could have a ripple effect on the inventory holdings of the CPGC. There is no direct retail customer input into the production forecast, yet this information could enrich the quality of the forecast. Retail customer input is only incorporated in the sales forecast process after the forecast is developed. If the customer is involved at an earlier stage, the customer would be able to provide more valuable input. Early involvement of the retail customer would foster ownership of the forecast process.

4.2.3 Information sources used by the CPGC for orders

The CPGC uses multiple data sources in its decision making. This is what is referred to as a cockpit of tools. There are three primary reports that are used to analyse shipments to the customer in Rand value as well as units of volume. These are SAP, Shipments “cockpit” and the customer’s order portal.

4.2.3.1 SAP Enterprise Resources Planning System

SAP is an application that is used by the CPGC operations team to receive orders from retail customers via electronic data interchange (EDI). If customers do not have EDI, then orders are emailed through to the CPGC representative and are then manually captured in SAP. SAP is also leveraged as a tracking tool.

Once orders are received, they are screened for set criteria such as minimum order values, to check if all the product codes are correct and if the purchase order has delivery date constraints, *i.e.* the order may not be delivered before a certain date due to customer DC scheduling. The screened orders are then shared with the 3rd party logistics company (3PL) via SAP. Once these orders have been picked and are ready to be delivered, they are invoiced by the 3PL. The order status in SAP is then updated as “invoiced”. This information is sent through to the Shipments cockpit platform.

4.2.3.2 Shipments “cockpit”

Shipments cockpit or shipments one is a platform that allows the sales team to generate customised reports on shipments depending on the information needed. This platform provides a multi layered report as the user can choose from a combination of options. These options are:

- i. Time - shows the current fiscal year versus the previous fiscal year, *i.e.* it also shows history of shipments. This allows for calculations to show year on year growth;
- ii. Two Measures -
 - a) value in terms of gross invoice value or net invoice value,
 - b) as well as volume in terms of standard shipping units or consignment shipping level;
- iii. Customer - which customer does the user want to view;
- iv. Geography - which country does the user want to view;

- v. Currency - the currency in which the user would like to see the value results, *i.e.* South African Rand or US Dollar; and
- vi. Product level - the exact product (SKU), product family (groups of SKUs) or brand level.

This platform is used every day by the CPGC teams as the key input for a review of the business. The Shipments cockpit platform is updated daily at midnight with the invoiced orders from SAP for that day.

4.2.3.3 Customer's order portal

The CPGC also makes use of the customer's order portal via the customer's website. This portal shows all orders that the customer expects to place on the CPGC for the next 13 weeks. The customer provides a 13 week forecast as it projects a 3 month forecast. The first week of the forecast represents the current week of orders and the 12 weeks thereafter represents the 3 month projection of orders. This gives the CPGC a better understanding of the volume they will need to have available in order to supply the customer. This report is used by the CPGC operations team to book delivery slots at the customer's DC as well as to prepare the 3PL for picking slots.

The challenge identified with this platform is that the forecast is inconsistent in that the expected order changes daily depending on the performance of sales through the customer's tills- this constantly alters the total inventory holdings in their chain. Further challenges arise as these changes are only shared with suppliers once a week.

4.3 Background to product X

This SKU is part of a global brand that aims to continuously build trust and heritage through innovation. The brand targets approximately 700 million consumers around the world. The brand's major competitive advantage is that it has built a strong portfolio of products and that consumers perceive the products to be of higher quality. The SKU falls into the category of men's skin care and primarily deals with the benefit of effective hair removal for men.

The flow of Product X through the supply chain is illustrated in Figure 4-4.

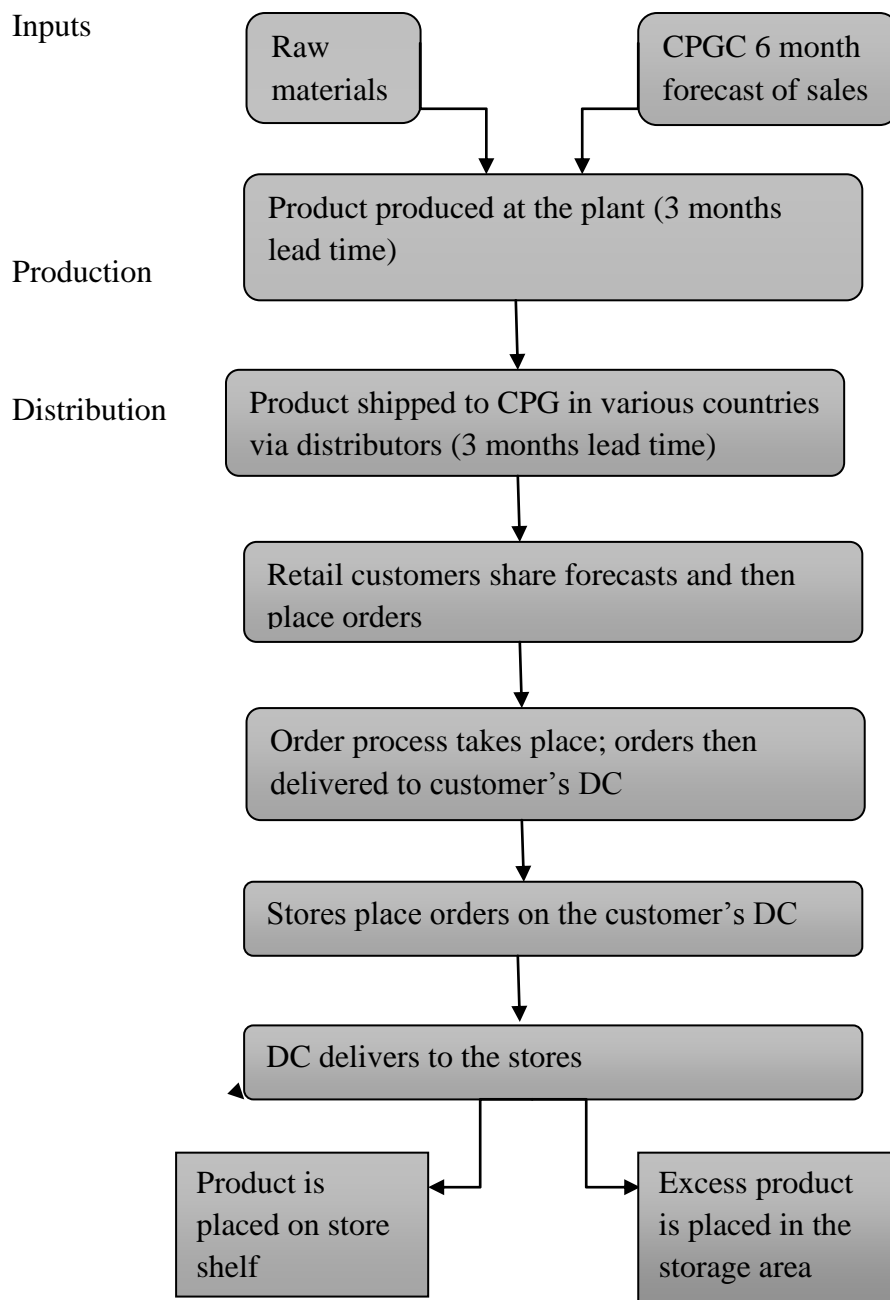


Figure 4-4 The flow of Product X in the supply chain (Source: author's own construction)

The target is aspirational males within the age group of 18-35, in the upper range of the South African Living Standards Measure (LSM 6-10). Usage of this product extends to age groups 35-80. The product that can be found on the retailer's shelf is already 6-9 months old. This is due to the lead time from the plant to the CPGC and the stock turnaround time at the warehouse. At the point of purchase the age of the product largely depends on the rate of sale at stores. If the rate of sale is slow, then the product can lay on shelves for approximately 4 months or longer. If the rate of sale is high, then the product can be sold in a matter of weeks.

The CPGC tends to run frequent discount promotions or value added deals through physical bundling in the market. This is in order to support the SKU, to continuously create brand awareness and to strengthen its competitive position. The medium used to inform consumers of innovation of this product and to encourage trial is digital campaigns. The digital campaign comprises Twitter feeds, Face book posts and a dedicated website campaign.

The market is increasing in maturity and is experiencing slower demand as recurring discount promotions led to a decrease in profit margin. In terms of brand identification, this SKU holds a leading position in the category. One of the major challenges for growth in this category is the introduction of retailer's private label ranges. The major trend in this category is to offer more skin care benefits whilst improving functionality of the product, *i.e.* driving innovation.

There is no previous promotional history of this SKU with customer X. The reason for this is that discount promotions with this customer were considered to be off-strategy. It was deemed that promotions did not lead to a significant increase in sales at this customer; however, price discounting remains a popular tool for competitive retailers. The usual advertising medium is placing the product on advert/leaflet, *i.e.* either retailer specific adverts or in the newspaper and the typical promotion tool is offering a reduced price to shoppers for a specified period.

4.3.1 Ordering and sales history of Product X

This section explores the ordering pattern of the retail customer by analysing what was actually shipped to them in their current fiscal year versus the previous fiscal year. All shipments are stated in cases (selling units; the unit of measure in which the product is actually sold to the retail customer and delivered) and not in individual consumer units.

Any impact of out-of-stocks from the CPGC has been excluded as only actual shipments to the customer are shown.

4.3.1.1 Past 12 months history

The history of CPGC shipments for the financial years 2011/12 and 2012/13 are illustrated in figure 4-5. Average shipments for FY 11/12 are calculated to be 4746 units per month or 1095 units per week (see appendix B). Average shipments for FY 12/13 are calculated to be 3624 units per month or 1087 units per week (see appendix B). From this it is apparent that the overall volume for FY 12/13 is declining versus the previous year (FY 11/12). As a result, both the retailer and the CPGC have a mutual objective to increase sales.

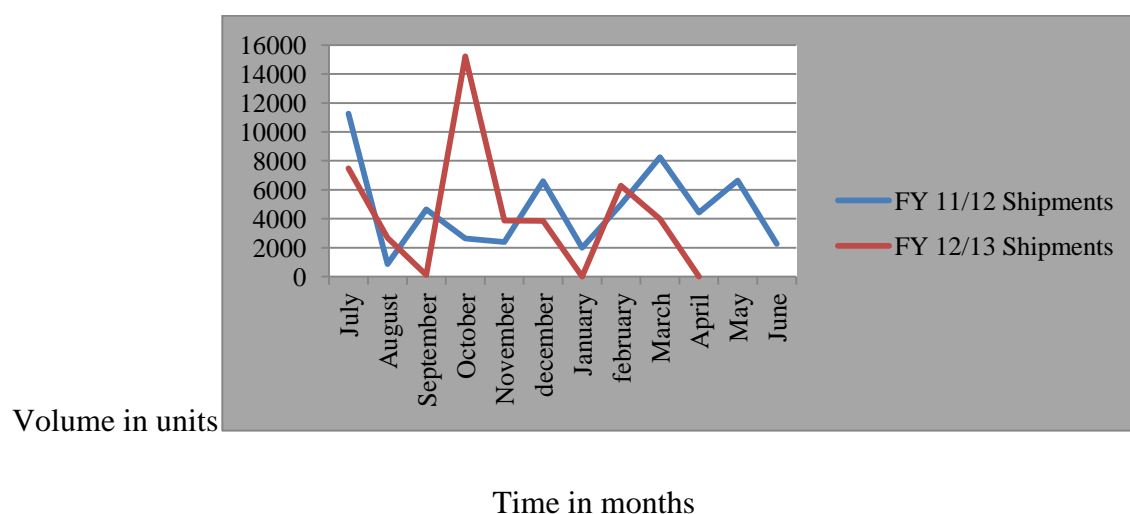


Figure 4-5 The history of CPGC shipments to the retail customer (Source: ex Shipments one portal)

From figure 4-5 it can be seen that shipments to the retail customer are erratic. In this case, the CPGC needs to rely heavily on the retail customer order forecast to determine what the estimated orders will be. This has major implications in terms of the longer lead times experienced in a global supply chain. The CPGC needs to have an effective 6 month customer plan to ensure stability in their production levels.

4.3.1.2 Observations of Product X shipment history and potential explanations

Figure 4-5 does not illustrate any clear trend. The retail customer places a large order and then does not order as much the next time, or does not order at all in subsequent order periods. This so-called pattern could be representative of the retail customer increasing his stock reserves for stores and DCs in response to a coming event. This means that he is ordering stock in order to stock pile for expected future increases in the rate of sale, perhaps

due to seasonality, peak periods of consumption or that they have previously deliberately run down inventory levels as a result of an audit period to show lower capital tied up in inventory.

Alternatively, cumulative rate of sale in stores could be low as the product is not selling at the anticipated rate. As a result of this low rate of sale, the retail customer only places orders once a specific minimum threshold of “sold stock” is reached in the ordering system. This means that once a certain amount of stock is sold through the till points at store level, total stockholdings at store level and at DC level need to be replenished. The standard level of stock holdings which a retail customer tries to maintain is 2 weeks of cover in the stores (total stores), 3 weeks of cover in the DCs (total DCs), and 1 week of cover in-transit (orders on their way to the DC to be received).

As mentioned in section 4.1, there had been no previous promotional activity for product X with customer X. Competitor retailers promote this product at least once per quarter by using price discounts. As a result, these retailers are perceived as having what is known as “destination stores” for this product, as their promotions have created awareness and loyalty amongst their shoppers.

With regard to product design, the brand relies on innovation. Every year sees a new product or variant being launched in the market according to technology upgrades and pre-identified consumer needs.

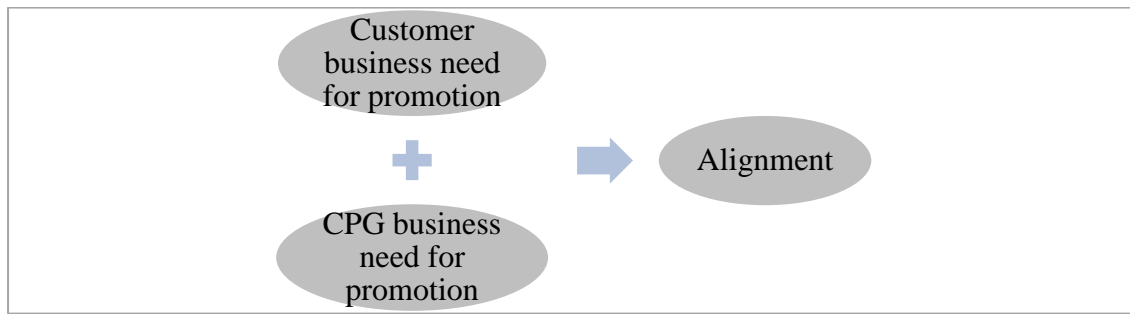
4.4 The stages of a promotion

The promotion of Product X follows a typical sequence of stages common to all FMCGs.

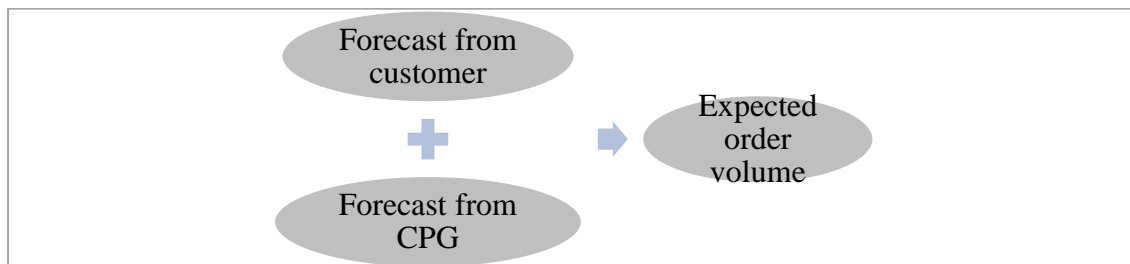
4.4.1 Pre-promotion-alignment

A promotion is a result of a business need either of the CPGC, or the retail customer. In this situation, the sales of product X in customer X were declining. A promotion would help to stimulate demand for the product in those stores. The negotiation to book a CPGC initiated promotion with a retail customer begins at the CPGC organisation. The process of booking a promotion starts with a written promotion recommendation. The promotion recommendation (see figure 4-7) is shared with the fund owners at the CPGC. Once it is approved, the discussion starts between the CPGC and the retailer. At this stage the promotion status is “planned”.

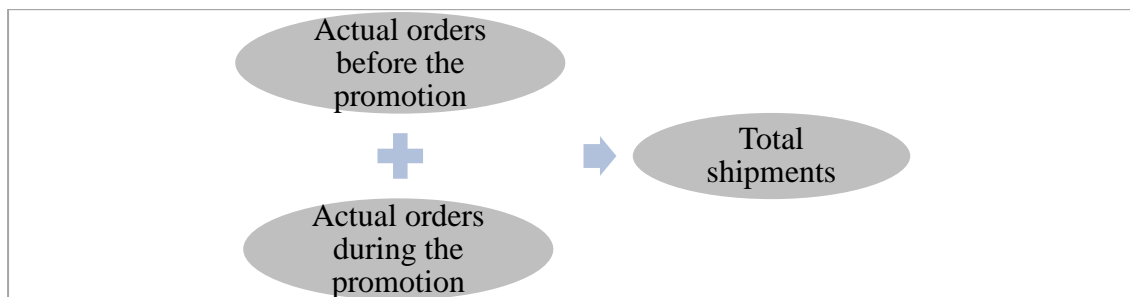
Stage 1a: Pre-promotion



Stage 1b: Planning the promotion versus objectives



Stage 2: Promotion period



Stage 3: Post-promotion

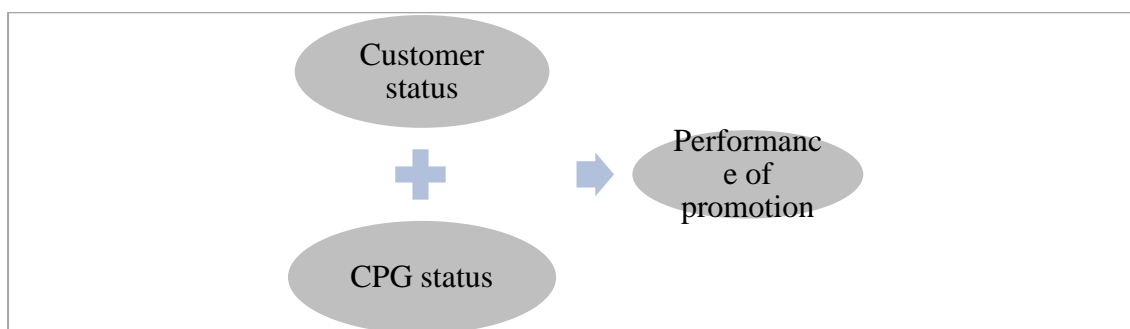


Figure 4-6 The various stages of a promotion and the important elements (Source: author's own construction)

The promotion recommendation is a detailed document that states the following:

- i. the background- why funds should be spent on this promotion;
- ii. the objectives of the promotion;
- iii. who is the promotion target;
- iv. what product will be promoted and which promotional tools will be used;
- v. how the objectives will be met - *i.e.* what is the customer support; what communication will be used to reach the target audience; and
- vi. the risks - *i.e.* competitor reaction to the promotion.

When agreement is reached between the two parties as to which product will be promoted, in what period, and for how long, the promotion status changes to “confirmed”. The price of the product, on promotion and off promotion, is at the sole discretion of the retailer. CPGCs would offer a tally discount, *i.e.* price reduction, during the promotion period and by law, may only recommend a promotion price.

The promotion recommendation report serves to remind both parties what promotional elements need to be performed, *i.e.* the promoted product needs to be put on a leaflet and the retail customer system needs to be updated to reflect the adjusted prices. Orders also need to be placed with the CPGC for the promotional volume. Thereafter, it is used as a tracking tool by both parties to determine how well the promotion is doing versus the original objectives. Figure 4-7 is an example of a promotion recommendation report prepared by the CPGX sales team.

4.4.2 Planning the promotion versus objectives - expected order volume

The next stage of pre-promotion planning is to prepare forecasts of expected shipments in the promotion period. The retail customer shares its forecasted orders. The CPGC also estimates its own forecasts based on previous shipments to the retail customer.

Figure 4-8 indicates that there are major differences between the CPGC forecast and that of the retail customer. The majority of forecasted orders are above the running rate; however, the retail customer’s average forecast per order is 80 cases whereas the CPGC’s forecast is 45 cases (see appendix C). On further investigation, the gap between forecasts was explained by the fact that the customer believed that the CPGC would be out-of-stock; they expected to order more than needed as they believed their orders would be rationed.

Recommendation: To authorise the use of funds to invest in the male grooming promotion in customer X. This document serves to recommend the **Brand Y male grooming promotion in customer X** for week 8 to 10 with a total estimated cost of ZAR 250MM. The aim of this investment is to ensure strong support to build equity and secure exceptional visibility for Brand Y by increasing the rate of sale in stores. Investment is behind equity broadsheets and additional placement. Visibility will be achieved via increased size of broadsheet communication and additional temporary displays. The investment will be positioned as a quarterly promotion as it is intimately linked to the initiatives.

Background

Leveraging brand Y in customer X is an ideal opportunity to grow brand Y as customer X is also committed to growing the category value by trading up consumers to premium male grooming usage. In order to do this we need to offer the right value proposition for consumers to choose our brands and trade up from lower tier brands, thus growing the value of the male grooming category.

Objectives

- Ensure strong support due to tally discounting (correcting the value proposition)
- Build equity on brand Y through increased size of broadsheet communication
- Secure exceptional visibility for brand Y via additional display

Who

Product X: Trading up of current brand Y shoppers and encouraging trading across of competitive male grooming shoppers. The focus is on customer X's stores.

What

Increased size of broadsheet communication in customer X's advertising leaflets and increased in store presence via additional display and space. These plans will of course not shift our focus from the other sales fundamentals objectives such as the correct merchandising.

How

The below plans will come as incremental vs. the current plans that we can invest in.

<u>BRANDS</u>	<u>BRAND Y</u>
<u>Month</u>	<u>MARCH 13</u>
<u>Promotion</u>	Toiletries: male grooming
<u>Timing & Product</u>	18 th March 2013- 31 st March 2013 Product X
<u>Communication</u>	Leaflet with additional temporary display
<u>Customer Support</u>	Communication on Broadsheet informing consumers about the additional savings
<u>Total Volume to be sold during promotion</u>	Product X 615 shipping units. Total incremental GIV is ZAR500MM
<u>Investment</u>	ZAR 250MM

Risks / Discussions

Risks / Discussions	Outcome	Plan to Address
Competitor promotion at same time as brand Y Male grooming promotion.	Lower reach than expected, leading to lower volume shipments during promo period.	CPGC Team to leverage with each buyer, the total investment done by the CPGC.

Figure 4-7 The promotion recommendation report (Source: CPGC X sales team)

The promotion period started on the 18th of March which is in week 8 as indicated in figure 4-9. The customer indicates that they expect to place their orders in week 6 to allow for delivery lead time; as a result a sudden spike in the forecasted orders is observed. The customer orders low volumes in week 8 as he already has a high stock holding for the start of the promotion. A small spike in forecasted orders is seen in week 9 as the customer believes he will have a high enough stock holding to replenish the stores during the promotion. A large replenishment order is expected in week 11, which is after the promotion period. The CPGC forecast shows a similar trend, but with lower expected volumes.

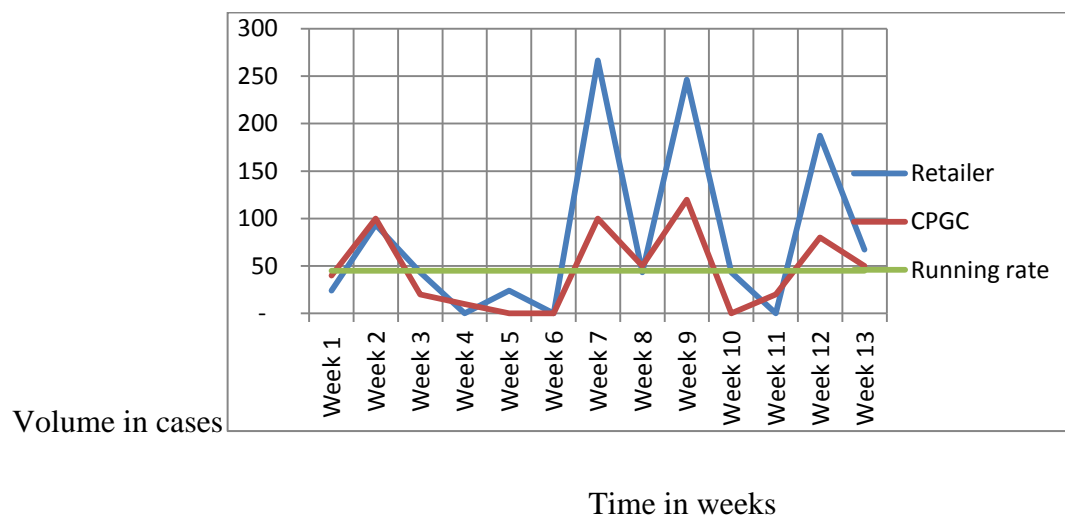


Figure 4-8 Graph showing the difference between the customer forecast and the CPGC forecast (Source: ex Shipments one portal)

4.4.3 Promotion period

The second stage of the promotion includes the activities associated with the promotion period itself and comprises 2 phases (see stage 2 of figure 4-6).

4.4.3.1 Actual orders before the promotion (buy-in period)

The buy-in period for the promotion refers to the 2 week period before the promotion starts. It is expected that most customers will place the majority of orders to stock pile for the promotion in this time. There is a 1 week lead time for the CPGC to deliver the retail customer's orders to the respective DCs. There is also a 1 week lead time for the customer's DCs to deliver to their stores nationally. This means that there is a total of 2 weeks lead time from the time that the order is placed by the customer to the time the volume arrives at the store. Their orders are then reviewed for any errors and are accepted by the CPGC.

The orders are then sent by the CPGC to their distribution partner or warehouse for picking, invoicing and shipping to the customer. Invoicing and shipping occurs at the end of the first week.

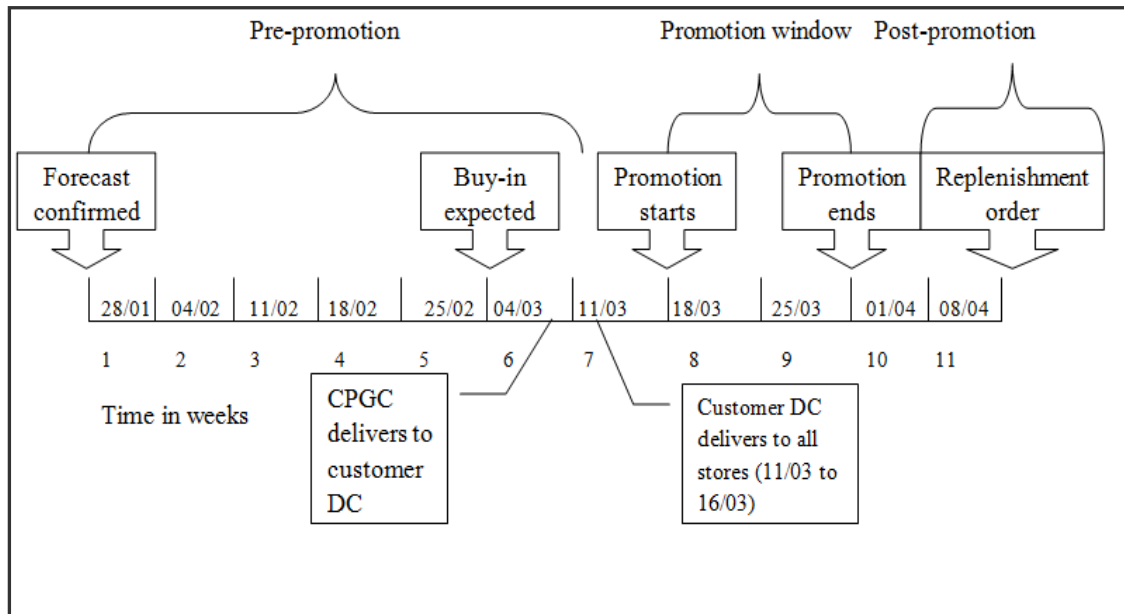


Figure 4-9 The timeline of activities associated with the promotion (Source: author's own construction)

Figure 4-9 shows a time line grid of activities that were expected for the promotion. It shows the critical 11 week period which comprises the 3 phases of a promotion. The pre-promotion phase starts with the alignment of the promotion and obtaining joint forecasts for volume, *i.e.* week 1. The buy-in period is expected to occur in week 6 and 7 (to allow for a 2 week lead time from actual order placement on the CPGC to delivery to the store). The actual promotion period starts in week 8 and ends in week 9. Replenishment orders were expected 2 weeks later in week 11.

4.4.3.2 Observations of the promotional period of product X

Customer stock holdings at the planning stage were relatively high. The high stock holdings were a result of the customer over ordering by 372% and 144% respectively (see appendix A) in the 2 months before the promotion, whereas their sales were lower than anticipated. They held a minimum of 6 weeks of cover, *i.e.* 2 weeks of cover at the DC, 3 weeks of cover in-store, and 1 week of cover in-transit (order to be delivered by the CPGC).

Inventory levels at the CPGC were constant. The forecast was tracking for a 100% service level to all customers versus all forecasts. The retail customer had sent through his forecast early (2 months before the promotion via their order portal) so that the CPGC could secure the stock for the promotion. There were no internal constraints at the CPGC or at the customer.

Three promotions on product X were carried out at other retail customers during this phase by other customer teams at the CPGC. Two competitor promotions followed these promotions. This posed a risk of consumers already being “loaded” with product before the observed promotion could occur. The decision was taken to carry out the promotion despite this aggressive marketing activity.

The plant experienced shortages of raw materials for the packaging. A consignment of finished product was due to arrive in the country 3 weeks before the promotion could start. At this point the CPGC only had 8 weeks of cover. As a result, CPGC inventory holdings were lower than expected (12 weeks cover is normal). Multiple promotions were due to occur and promotions can cause an increase in demand of at least 4 weeks of stock. The CPGC flagged a risk with the plant so that the volume could be expedited faster. The retail customers were notified of this development. All customers placed orders 1 week after the arrival of the consignment. No supply issues were experienced during this time.

All stock consignments were detained at the port for inspection. The stock was detained for the second time at the 3PL warehouse. This delayed availability of stock in the CPGC system to satisfy orders. Customers were placing orders 3 weeks before they actually needed them, versus the normal 2 week process. This led to the CPGC having to arrange for special deliveries outside their nominated delivery date as the customer’s purchase order had an expiry date (a usual constraint). If the purchase order has expired, the DC will not accept the receipt of stock.

Customers had to arrange with their DCs to make arrangements for unscheduled deliveries. Total inventory levels at the CPGC became volatile as large unforecasted orders were downloaded. The CPGC was unable to meet orders for other retail customers and had to request additional stock from the plant to be air freighted.

4.4.4 Execution window of the promotion

The second phase of stage 2 of the promotion (see figure 4-6) describes the activities of the actual promotion and the orders during the promotion.

4.4.4.1 Actual promotion

The actual promotion was run with customer X, in all their stores nationally. The promotional tool that was used was a “special offer”. A special offer is where a tally discount is given on an item. A tally means “percentage discount”. In this case a tally was given on select male grooming products for a pre-defined 2 week period. The discount was offered for each of those products sold through the till points of the customer, *i.e.* a sales out promotion, whereby the consumer benefits from the full discount directly. The product was supposed to have been placed on the retail customer’s printed leaflet so as to build consumer awareness of this value offering.

The objective of conducting the promotion at customer X was to increase demand for the product in their stores and therefore increase revenue for the male grooming category in their business. This also increases the average order value that is placed on the CPGC.

4.4.4.2 Actual orders during the promotion

Larger orders versus the forecast were placed by the retail customer with two special requests. The first request was for the large orders to be delivered in four deliveries as opposed to one. The customer did not want to hold that much inventory in their DC, as they had limited space to keep high value/high risk items. They had high stock holdings in-store so couldn’t share the risk. Also, customers asked to delay the delivery so as to avoid the costs involved in holding this inventory.

The second request was for assistance with additional merchandising capability in-store and radio frequency identification RFID tags on cases. The CPGC managed to fulfil these requests within a tight deadline. The requests were a result of store personnel being unable to manage the excess stock in their stores. CPGC resource personnel were allocated route lists to assist stores with receiving the high value items with RFID tags. The RFID tags assisted with the tracking of the product. CPGC resource personnel also assisted with manually loading these onto the customer system and packing the shelves.

If the CPGC did not assist with the abovementioned requests, this would have led to massive shelf out-of-stocks. Shelf out-of-stocks during a promotional period mean that the promotion wouldn't be successful and the customer makes fewer sales, therefore fewer or smaller orders are placed with the CPGC. It can also lead to the retail customer being commissioned by the advertising standards authority for misleading consumers.

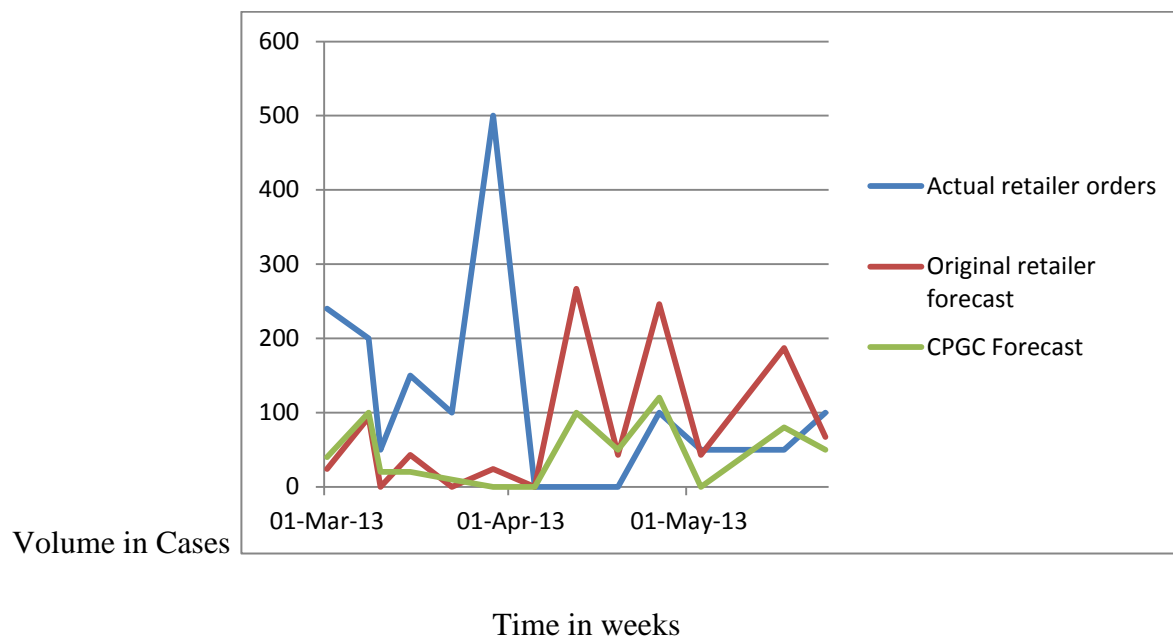


Figure 4-10 The difference between the customer forecast, CPGC forecast and actual orders (Source: ex Shipments one portal)

Figure 4-10 reflects actual orders as they are invoiced and the CPGC and retailer forecasts. It does not show actual deliveries. It can be seen that actual orders were placed on the 08th and 15th of March, before the promotion. Staggered orders were delivered to the customer's DCs between the 15th and 29th of March. The customer placed a large order on the 29th of March - this was an unexpected order as it was not communicated in the customer's forecast. This put the CPGC at great risk as they were unable to fulfil orders for other retailers. Orders started to pile up and resulted in a back log. Stock had to be air freighted to counter this risk. The next replenishment order was placed on the 26th of April, approximately 3 weeks after the promotion.

4.4.4.3 Observations of the execution period of the product X promotion

The customer DCs could not receive any deliveries from suppliers due to capacity constraints. 3PLtrucks were rejected at the back door and were also asked to postpone the deliveries as they could not print any invoices for receipt (systems offline). The customer had additional challenges internally where they could not provide space on their advertising leaflet for the promotional product as they had to put their own house brands on there instead. As a result, the objectives in the promotion recommendation were not met.

The promotional price was poorly communicated on-shelf as it was not visible. It was not communicated nationally across stores due to a systems error in various regions. Additional display and space commitments could not be monitored nationally as the customer did not allow external agents in their stores.

The CPGC was out-of-stock temporarily due to product consignments being detained at the port. As a result, service levels to the customers were the lowest that they have been in 9 months. The customer placed orders in an erratic fashion. This was partly due to the customer opening new stores, and pipeline volume was needed to fill the shelves. The customer did not previously include this in their forecast for the CPGC.

4.4.5 Post-promotion

The post-promotion is the final stage in the promotion (see stage 3, figure 4-6)

4.4.5.1 CPGC and customer status

The CPGC was subject to greater risk of holding too much high value inventory when the additional consignments from the plant were received, and the inventory was not delivering on the required stock turns. The customer placed another order only to replenish their DC and this happened 1 full week after the promotional period. Sales out from the customer's till points in-store declined rapidly after the promotion, therefore no further orders were placed on the customer DC from the stores.

Stores that were holding excess stock amplified total inventory holdings in the customer's supply chain. This hindered any further orders as the customer's ordering system showed that their supply chain appeared to be overstocked. This however may not be a true reflection of stock holdings nationally as some stores may have no stock, whereas others are overstocked. It is highly dependent on rate of sale in individual stores.

Since the customer's ordering system is automated, it takes into account total stock holdings in the stores as well as in their DC and then triggers an order on the CPGC if their 6 weeks of cover is compromised. The 6 weeks of cover is the guidance for stock levels that is set in the retailer's inventory policy, *i.e.* 3 weeks cover in-store, 2 weeks cover in DC and 1 week in transit. If the stock holding at store level is heavily inflated and not a true reflection of stock movement, then the automated orders at DC level, if not manually altered, would be severely under called.

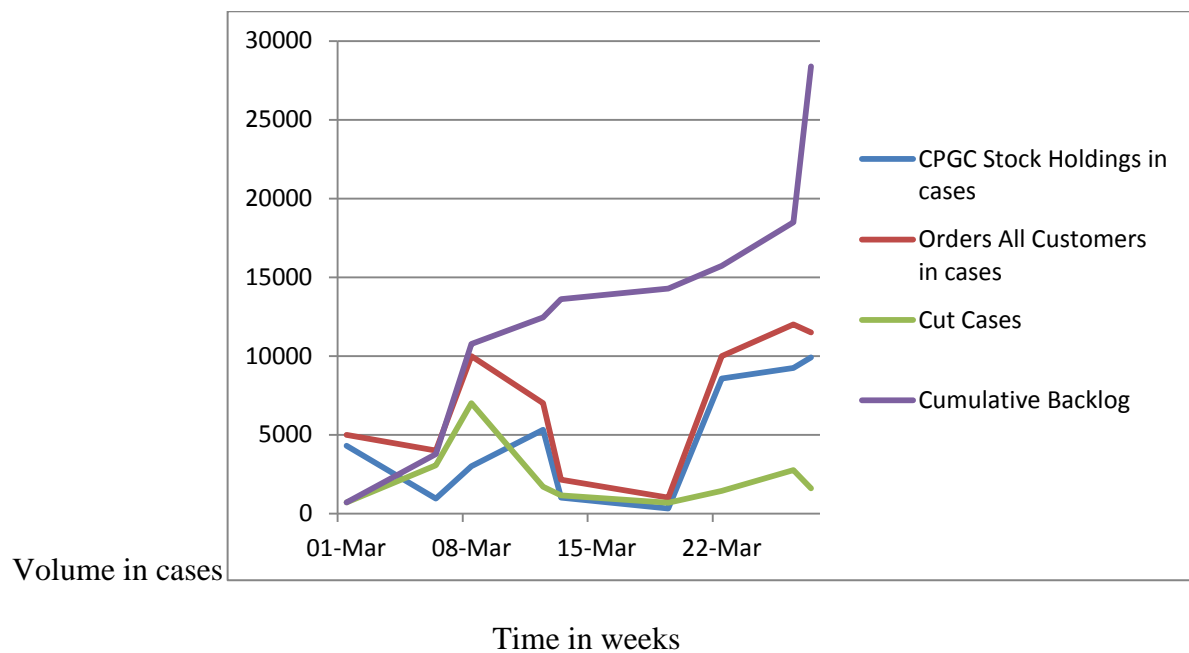


Figure 4-11 The cumulative backlog of orders on the CPGC (Source: ex Shipments one portal)

The trend lines of CPGC stock holdings and all customers' orders follow similar patterns. This resulted in all orders having been short delivered as there was limited stock. Customer's placed massive orders on the 07th, 11th, 21st and 27th of March as a result of the CPGC short delivering previous orders. The graph shows the sharp rise in back orders. On the 27th of March, the cumulative back orders are approximately 28,000 cases. The CPGC had to request emergency consignments in order to stabilise their inventory levels.

4.4.5.2 Calculating the performance of the promotion (CPGC perspective)

The performance of the promotion for the CPGC in financial terms can be evaluated by the volume of units sold to the retail customer as a result of the promotion - this encompasses both buy-in volume during the pre-promotion phase and during the actual window of the promotion. The performance will also be evaluated by the value created in currency, *i.e.* in Rands.

The following elements have been tabulated:

Volume:

- expected promotion volume
- total orders placed by the customer
- increase in sales by the customer, in units

Value:

- increase in sales by the customer, in value
- increase in sales for the CPGC
- expected cost of the promotion for the CPGC
- total cost of the promotion
- return on investment (ROI) for the CPGC

The ROI calculation will be used as the effectiveness measure.

With regard to the efficiency measure, the trade terms paid to the customer will be taken into account in the calculation. The trade terms are percentage rebates that are negotiated between the CPGC and the retail customer for standard trade. This is a legacy of trade in the South African retail market, where all CPGCs pay trade terms to their retail customers. The trade terms include, amongst other clauses, a percentage rebate on all volume purchased. To elaborate, if a retail customer orders a “full truck” of stock, the CPGC provides an incentive to the customer by offering a percentage discount on the value of that order. To have a true reflection of the efficiency measure, one needs to deduct the trade terms as an earning to the retail customer and as a payment by the CPGC.

The actual performance of the promotion is summarised in the table below and is the authors own construction.

Table 4-1 The performance of the promotion in volume and value for the CPGC

(Source: author's own construction)

Volume		
Element	Volume	Calculation/source of data
Expected promotion volume	615 shipping units	As per the promotion recommendation (see figure 4-7)
Total orders placed by the customer	700 shipping units	Actual orders taken from the buy-in period, promotion window, and replenishment orders (CPGC data)
Increase in sales at the customer (in units)	500 shipping units	Incremental 500 shipping units sold over base sales. The customer did not incur any additional costs
Incremental volume for the CPGC (in units)	475 shipping units	Base running rate is 45 shipping units per week, and 225 for 5 weeks. Calculation: $700 - 225 = 475$
Value		
Element	Amount	Calculation/source of data
Increase in sales at the customer in Value	R406,504.00	Incremental value over base sales RSP per shipping unit X sales = Customer Value $R813.00 \times 500 \text{ shipping units}$ $= R406,504.00$
Increase in sales for the CPGC	R569,105.00	Gross invoice value (GIV) of shipments to the customer
Expected cost of the promotion for the CPGC	R250,000.00	As per the promotion recommendation (see figure 4-7)
Cost of the promotion for the CPGC	R150,000.00	No broadsheet took place therefore this cost is excluded
Cost of the product	R200,000.00	Actual CPGC cost price
Total cost to the CPGC	R350,000.00	Cost of the promotion + Cost of the product = Total cost to the CPGC
Return on investment for the CPGC	163%	Calculation: $\left[\frac{\text{Increase in sales for the CPGC}}{\text{Total cost of the promotion}} \right] \times 100$

The effectiveness measure is the increase in sales for the CPGC less the trade terms commitments divided by the total cost of the promotion, which is the cost of the promotion plus the cost of the product.

If the trade terms commitment of the CPGC to the retail customer is 10% then the calculation would be:

$$R569,105.00 - 10\% = R512,194.50$$

Then:

$$R512,194.50 / R350,000.00 \times 100 = 146\%$$

Return on investment is 146%. The breakeven point is 100%, whereby there is no loss or gain from running the promotion. The objective of this promotion was to break even as the aim was to build brand equity and create an increase in sales at the retail customer.

Table 4-2 The performance of the promotion in volume and value for the retail customer (Source: author's own construction)

Volume		
Element	Volume	Calculation/source of data
Sales during the promotion period	673 shipping units	Total sales through the customer's tills in the promotion period
Average sales in non-promotion period (base sales)	173 shipping units	3 week rolling average as calculated by the retail customer
Increase in sales at the customer	500 shipping units	Total sales less 3week rolling average of base sales = 673 units – 173 units = 500 units
Value		
Element	Amount	Calculation/ source of data
Increase in sales at the customer in Value	R406,504.00	Total cost of products sold including profit mark-up
Cost of the units sold	R253,200.00	Cost of the products [Cost price + transport costs to store + merchandising costs (R200,000.00+ R50,000.00 + R3,200.00 = R253,200.00)]
Return for the retail customer	R153,304.00	Total sales value less cost of the incremental units= incremental sales value = R406,504.00 - R253,200.00 = R153,304.00

An incremental sale is determined using the average sales calculation for a period. The retail customer uses a 3 month and 3 week average sales measure, which they term “base sales” for a period. Incremental sales are then calculated as the difference between sales made in the promoted period less sales of the average sales per period. The incremental sales value is representative of the additional profit made per period.

Return for the retail customer is R153, 304.00, that is, the difference between the currency value (value in South African Rand) of the products sold less the cost of those products. This results in additional cash profit made in the period as a result of the promotion. The customer did not incur any additional costs as a result of the promotional activity as all costs are paid by the CPGC.

4.5 Conclusion

The volume of shipments of Product X had declined year-on-year (see figure 4-5). This was the reason that the CPGC decided to invest in a promotion at retailer X. The promotion was intended to boost sales in the stores and stimulate the flow of product in the chain through retail orders resulting from the retailer stocking up for the promotion. As Product X is an item of high value, this presented new challenges for the supply chain of retailer X. Retailers place orders in such a way as to avoid loss due to shrinkage and damage as well as to delay the cost of ownership of the inventory. The CPGC’s main priority was to ensure that their retail customers place orders that are in line with their forecasts. In this way the levels of stock in the chain are stable.

There are four types of forecasts that are used at the retail end of the chain. The retailer uses a retail sales forecast (what they expect to sell in store) as well as an order forecast (what they expect to order from the CPGC). The CPGC develops a production forecast as well as a forecast of what they expect to sell to the retailers. There are two main gaps between all of these forecasts. Firstly there is no feedback loop between the CPGC and the retailer. All of the forecasts are developed in isolation with little to no regard for the business activities of the next partner in the chain. Secondly, the time horizons for all the forecasts are different which makes it difficult to relate forecasts. Since all the key stakeholders are not involved in the development of the forecasts and no outcome is shared demand can be highly variable especially during promotion windows.

All the CPGC constraints that were identified in the course of the study are summarised in table 4-3.

Table 4-3 A summary of CPGC constraints leading to suboptimal supply chain management (Source: author's own construction)

CPGC	
Element	Constraint
Communication	There was a lack of focus on retailer X as a result of little or no previous communication regarding brand plans or customer strategy. This resulted in declining sales for product X in retailer X.
Forecast lead time	Longer lead times are required to accommodate the global supply chain. Limited flexibility to change the production forecast and little agility to accommodate emergency orders.
	Each node in the supply chain has its own processes and policies. This creates further complexities as each node orders according to their own forecasts without feedback from the node immediately after it in the chain.
	The CPGC production forecast is submitted 6 months before it is needed and the retailer's sales and order forecast is submitted 3 months before it is needed.
Inventory holdings	Stock holdings are variable due to the reliance on retailers placing orders according to their forecasts.
Demand Planning-regional (RDP) versus local (LDP)	LDP does not contribute to the production forecast despite being closest to the customer business; RDP only understand the business from a top line level.
	LDP adjusts the running rate according to the market trends, whereas the RDP only uses averages. Adjusted running rates are not included in the production forecast.
Running rates	These are adjusted on a monthly basis to account for changes in the market. These adjustments could be a major contributor to the accuracy of the sales forecast; however, the sales forecast is locked two months before the volume is needed. As a result, these adjustments only serve to show risk or opportunity to the management and cannot influence reordering from the factory.
Order system	The system automatically deletes orders that do not meet the criteria for a perfect order. Manual intervention is required to recapture missed or deleted orders.

All the retail customer constraints that were identified in the course of the study are summarised in table 4-4.

Table 4-4 A summary of retail customer constraints leading to suboptimal supply chain management (Source: author's own construction)

Retail customer	
Element	Constraint
Forecasts	The retailer does not share their sales forecast with the CPGC
	The 13 week forecast is not locked. The retailer shares their order forecast on a weekly rather than daily basis.
	Both the order and retail sales forecast does not include any CPGC feedback.
	The planner and the buyer develop their forecasts separately instead of collaborating to ensure that their forecasts are integrated.
Inventory policy	At any given point the retailer needs to ensure that they have a maximum of 6 weeks of cover in their chain. There is no exception to this policy regardless of rate of sale in the stores. Excess inventory also has implications for space in the DC.
Ordering system	The system only takes into account aggregate data and excludes store dynamics regarding rate of sale.
Collaboration	There is no collaboration between the stores and the DC. They operate as separate business units.
Ordering pattern	The retailer has variable ordering patterns for items of high value. This is done to delay cost ownership.

Superimposing the influence of a promotion was seen to exacerbate existing constraints and give rise to further constraints. These additional constraints are summarised in table 4-5.

Table 4-5 A summary of constraints arising as a result of the promotion that lead to suboptimal supply chain management (Source: author's own construction)

Element	Constraint
Forecasts	Planning for the promotion increased the gap between the CPGC sales forecast and the retailer order forecast. There was no collaboration between these two parties in developing a single forecast.
Retailer order forecast	For the month in which the promotion would occur, the retailer only forecast promotion volume and excluded base sales; they also excluded the volume that would be needed to fill the shelves of their new stores.
Orders	The retailer placed larger orders than their forecasts. They did not order on the agreed dates.
Capacity	The retailer asked that deliveries be broken down into smaller ones as they did not have space in their warehouse. This could also represent a delay in cost ownership. Since this was the first promotion of its kind at the retailer, there was a heightened belief that the greater volume of high value items would lead to increased pilferage.
	The retailer prioritises its private label brands over supplier brands. So when there was no advertising space on their leaflet, they excluded the product that was observed in this study.
Promotion recommendation	This detailed plan does not form a binding agreement. For example, the retailer was unable to deliver on the agreed activity such as adequately communicating the promotion via pricing, advert, and display without any consequences arising from the agreement. If the agreement had been honoured, sales during the promotion could have been higher.
Inventory holdings	Considering this promotion, the CPGC held excess inventory for this retailer, as the retailer only placed replenishment orders 3 weeks after the promotion. The retailers system showed excess inventory as a result of forward buying and due to the collective stores that experienced low ROS. As a result the retailer was OOS in the stores that had a high ROS
	CPGC had a cumulative backlog of orders since all retail customers ordered more than their forecasts.

The various stages of the promotion were monitored from the pre-promotion phase to the post- promotion phase. The promotion was aligned with the retailer as per the objectives set out in the promotion recommendation report. During the promotion the retailer was unable to fulfil all of the requirements as set out in this report. Despite this shortcoming, the promotion was a success as measured by the financials- the ROI for the CPGC was 146% and the retailer made an additional cash profit. Post-promotion status from a supply management perspective is less favourable. The CPGC was left with a cumulative backlog of orders and the retail customers had their orders cut as the CPGC was unable to supply. Contributing factors were that retailers placed larger orders as they anticipated an increase in market activity due to promotions.

A discussion of the findings and preliminary analysis is presented in the following chapter.

CHAPTER FIVE

DISCUSSION

5.1 Introduction

The aim of this chapter is to provide a review of the themes that were identified in chapter four and reference will be made to the research questions and the key areas that were explored in the literature review. The underlying theme of this research is to determine what influence promotional activity has on supply chain stability. This chapter will review the above-mentioned question in order to provide a basis for recommendations that address this phenomenon in the next chapter.

A promotion has the ability to increase sales rapidly. This is the reason that promotions have become so popular. If demand is known and the CPGC has forecasted accordingly, a promotion should not cause any instability in the supply chain. In chapter four, we see that this was not the case, in fact, it is the opposite scenario, whereby after the promotion period, the CPGC was left in a serious position with a massive backlog of orders and was unable to supply all of their customers' orders. The retail customer that was running the promotion was also left in a negative situation as they were at risk of holding too much inventory versus their policy of holding 6 weeks of cover.

The extended supply chain includes different partners that have differing processes as well as policies at each node. It is these differences that create complexity and uncertainty in the chain. The findings in chapter four have shown that there is a direct relationship between promotional activity and changes in the flow of inventory in the supply chain. It has also shown that promotional activity results in variability and causes each member of the chain to order more stock so as to uphold the service level agreement of the node after it. Chapter four has also shown that a promotion can lead to overstocking of the retail customer and destocking of the CPGC, and excess holdings of unfinished goods at the plant due to emergency orders.

The main contributor for the uncertainty and supply chain dynamics is that business needs change constantly and new requirements were inadequately communicated between the trading partners. In chapter four it can be seen that the customer recognised, at the last minute, that they required assistance for the following: merchandising, system loads, staggered deliveries, quantity changes on orders, additional security for deliveries and storage

at their DCs. These elements all require time and additional resources to implement by the CPGC. A possible reason for the late requests was that the customer did not have previous experience with promoting this product.

The research questions presented in chapter one are:

- i. To what extent is a bullwhip effect observed in the supply chain of a high value product?
- ii. To what extent do sales promotions exacerbate an existing bullwhip effect?
- iii. What factors create or contribute to a bullwhip effect in the supply chain?
- iv. How can instability with orders for high value items be minimised?

The factors that create or contribute to the BWE (research question number 3) will be discussed further such as collaboration, systems issues, flexibility, gaps, capacity and resource constraints and the policies that cause distrust.

5.2 Collaboration

The consequences of a lack of collaboration are depicted in figure 5-1. There was a general lack of collaboration between the trading partners due to inadequate communication and transparency. This had a major impact on their daily dealings and even more so with a high profile event such as a promotion. Other key weaknesses that were illuminated as a result of the lack of collaboration were little to no sharing of plans.



Figure 5-1 The impact of a lack of collaboration (Source: author's own construction)

This resulted in poor confirmation of the promotion, greater impact of sourcing from a global supply chain and poor communication flow between the CPGC and the retailer as well as within the retailer hierarchy for key operational plans. Each of these issues will be explored further.

5.2.1 Inadequate confirmation of the promotion

The promotion recommendation report is a document that is used by the CPGC to reach alignment with the retail customer. However, it can be seen that this alignment does not necessarily mean that there is an agreement. The retail customer changed the promotion criteria to better suit their current needs. To elaborate, it was agreed that there would be advertising of the promotional product on the customer's promotion leaflet during the promotion window, but this did not happen.

The customer faced internal issues with regard to space on this leaflet and had prioritised other products. This was not communicated to the CPGC beforehand. This has the ability to put the promotion at risk as there was no visibility/communication to consumers that there was an actual promotional offer. As a result, it would be highly likely that the objectives of the promotion would not be met, as the promotion would not be as successful as if it was advertised.

Products that are advertised via print media and or TV commercials can increase sales in the period by at least 60%. If this was communicated earlier, the trading partners could have agreed that the promotion be moved to another date.

5.2.2 The impact of sourcing from a global supply chain

Due to the long lead times for the CPGC to import consignments, the customer is required to share at least a 6 month forecast of base sales and subsequent orders, as well as a forecast for any promotional activity. Forecasts for promotional activity are required at least 3 months before the event. There was inadequate communication of forecasts between the CPGC and the retail customer in that none of the parties had elaborated on how the forecasts were derived. If there was alignment on how forecasts were produced then there would be less of a gap between CPGC forecast and the customer forecast upfront and sufficient stock could have been imported. The forecast for the promotion was only received by the CPGC a month before the activity happened. This did not allow the CPGC sufficient time to manage total inventory levels in response to the promotion.

To elaborate, the CPGC needs to keep sufficient stock to supply all retail customers in South Africa. Any unplanned for or inadequately forecasted promotion can put them out-of-stock.

The CPGC would only receive emergency consignments after a considerable time and this OOS could lead to service level constraints that are passed onto the customer as every OOS leads to a lost sale for the customer and less orders for the CPGC.

5.2.3 Communication/information flow

Forecasts, brand plans and customer strategy were not shared at the outset. As a result, there is little or no transparency between the CPGC and the retailer. The latter end of the customer supply chain is laden with responsibility for inventory flow as they have the greatest influence on the first moment of truth, *i.e.* the first and final touch point for the consumer. The major gap stems from a lack of collaboration between the retail DC and retail stores.

The retail DC operates as a separate business and tries to “manage” store inventory at the same time so that they do not need to place large orders on the CPGC at any given point as they are continuously audited for capital tied up in inventory. Stores do not communicate the difference between their expected sales and their actual sales. For example, store managers may be expecting a spike in sales due to national events, public holidays, seasonality, and deep price promotions. This type of information and its impact on stores represents a valuable source of data for the DCs so as to leverage further opportunities for incremental sales, which in turn helps to flush inventory from DC storage.

5.2.4 Sharing of plans

The CPGC does not take the initiative to share brand plans or media plans in advance. This type of information could have a great impact on the sales of retail customers. Media plans or marketing campaigns seek to stimulate demand and encourage consumers to purchase the product. When marketing campaigns are initiated by the CPGC, sales in all retail stores across customers increase drastically. This type of scenario creates a wave of activity amongst consumers that can be likened to an artificial price promotion. As a result, retailers need to be aware of this type of activity so that they can ensure that there is sufficient stock on hand, in the right part of their chain, at the right time so as to fulfil this demand of shoppers in their stores. When the CPGC does not share these plans, the retailer is not prepared for the incremental sales and therefore loses out on the opportunity. Only the retailer that has sufficient stock at that time would capitalise on the incremental sales.

This means that in totality, the entire marketing campaign would not have been as successful as it could have been.

5.2.5 Inventory strategy

The CPGC adopts a push system for inventory. The CPGC's business plan centres on the delivery of volume targets instead of value targets. Ultimately the most important key performance indicator for any department is their value contribution to the bottom line. Instead, this CPGC relies on over delivering volume shipments to influence the bottom line.

The CPGC would need to ship a lot of low value items to balance against their shipments of high value items. The CPGC also utilises promotion tools to push stock into retailers DCs as they seek to influence consumer demand for their products. At the end of a business quarter, the sales team would start to discount or price-promote items of higher value so as to stimulate shipments and help them achieve their volume targets.

The retailer adopts a pull system for inventory, for example, when sales increase, their inventory holdings decrease, and they should be placing orders on the CPGC to replenish their DC. However, the retailer's system views inventory on a holistic level which means that their automated system may not generate orders when they actually need to. Due to the adoption of a pull system, the DCs operate a daily schedule, whereby the stores can receive deliveries every day, with the exception of stores that are located in outlying areas which receive deliveries every second day.

5.3 Systems issues

As depicted in figure 5-2 the systems that are used by the trading partners have a major influence on the flow of inventory in the chain as they can have an impact on inventory holdings and movement between each node. The type of system used by each partner needs to have a suitable interface with that of the node before and after it in the chain. This will help to alleviate bottlenecks that arise from human error that occurs as a result of manual rework of orders.

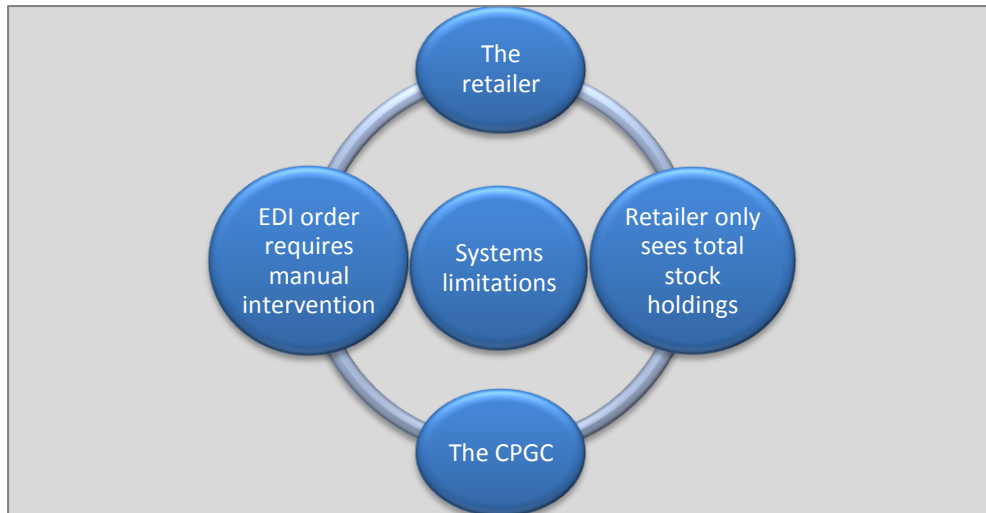


Figure 5-2 The systems limitations between trading partners (Source: author's own construction)

5.3.1 The retailer

The retail customer organisation operates an automated ordering system. The flaw of this system is that the retail DC looks at inventory from a total chain perspective. This means that the system ignores rate of sale from individual stores. The system collates the information from all the stores and provides top line data. The challenge that arises is that the retail customer forecast (the 13 week view of expected ordering) that is shared with suppliers is based on this automated system.

This results in a forecast that is incorrect and unreliable as it does not include any manual data regarding the impact of out-of-stocks due to high rate of sale. A study conducted by Holmstrom in the retail industry (cited in Bagchi *et al*, 2007, p. 321) found that retail stores are the main contributors to the domino effect of orders in the chain as it represents the starting point for “slow, inaccurate demand information flow in the supply chain”.

This automated ordering system is one of the main contributors to the retail planners 13 week order forecast. Additionally the retailer's 13 week forecast is not locked due to changes in the automated ordering system. It changes on a daily basis and does not contribute to a mutual forecast. Furthermore, the retail customer business-to-business portal is not transparent. It does not show all the information that is necessary for suppliers to make recommendations on strategy, *i.e.* no rate of sale and no product catalogue for stores are made available; stock on hand information of DCs and stores is not readily available. The reason

for this is that the retailer's system is not capable of providing the platform to share these types of reports on a daily basis.

5.3.2 The CPGC

The CPGC EDI order download process is inherently flawed and requires constant manual intervention so as to ensure that the process works smoothly. This also increases the risk of human error. Gaps in the system exist whereby if there are any errors in the orders, those orders would be dropped or deleted by the system. This means that any erroneous line item on a purchase order (PO) can be deleted or an entire order can be dropped. As a result, nobody recognises that there are failed orders unless the order capturers have been notified by the sales team and are expecting orders to come in or if they are checking the detail against a physical purchase order.

Research conducted by Wilding (1998, p. 43-57) that investigated the impact of chaos in the supply chain, revealed that systems that are designed to control flow in the supply chain are unstable and can cause demand amplification which leads to the bullwhip effect.

The CPGC would not be able to check every EDI order as it receives hundreds on a daily basis. Any missed orders mean that the dropped order will only be noticed if the customer recognises that they have not received a delivery against a PO that is open on their system. These orders will have to then be manually captured or the customer will place a new order, a week later. These gaps can have severe implications for on-shelf availability in the retail stores and contribute to the bullwhip effect.

The following sections will explore to what extent sales promotions exacerbate an existing bullwhip effect (research question two).

5.4 Flexibility

In the course of the promotional period, the researcher observed that there was little or no flexibility shown by each trading partner. The impact of a lack of agility between partners is that there is a slower response time to any changes in the market. In chapter four it can be seen that competitive activity in the market place started a month before the actual promotion that was being observed. However, the customer lacked the flexibility to start the promotion at this time due to internal process lead times and approval hierarchies. Furthermore, the CPGC could not deliver the stock required at that time as they could not accommodate any emergency orders in their delivery schedule.

The CPGC has little or no flexibility to obtain additional stock in the short term. The CPGC places orders with the plant 6 to 9 months before actually needing the stock. The stock takes approximately 3 months to be produced and 3 months to be delivered. Therefore, the CPGC receives stock 6 months after the order was placed. As a result of this, any variability in retail customer orders can place the CPGC under major strain. Receiving this stock can cause further constraints that can delay the flow of inventory, as the CPGC has no flexibility.

Delays due to quarantine can be one such constraint. These delays cause stock to only be available 2 weeks after the consignment is received. This is a result of documentation being delayed by authorities. Preferential rates are not paid for high value consignments therefore they are only processed at port on a first-come-first-served basis. All high value consignments are freighted by sea rather than air freighted. This can delay consignments being booked into the CPGC system by 3 months. Only emergency consignments can be air freighted, but these are also subject to decisions regarding the costs involved and the type of product to be transported. They are also subject to quarantine.

5.5 Gaps between the forecasts and the actual orders

Reasons for the gaps between forecasts and orders are depicted in figure 5-3.

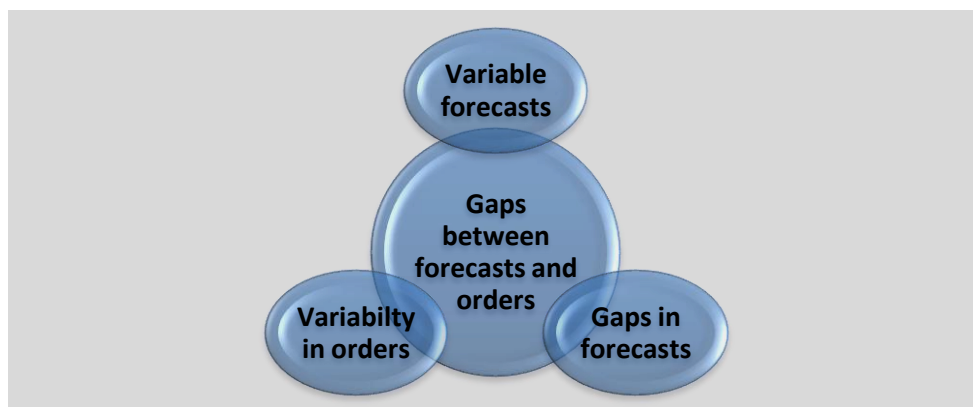


Figure 5-3 The causes of gaps between the forecasts and orders (Source: author's own construction)

The main challenge to effective demand management is the variability in forecasts and actual orders. From theory and practice it is understood that forecasts are not 100% accurate, but partners can work within a tolerance to achieve at least 70-80% accuracy. In this way, the partners can ensure that inventory can flow smoothly in the chain and that all customers can be supplied adequately.

5.5.1 The impact of variable forecasts

Longer lead times experienced by a CPGC due to its position in a global supply chain can have a major impact on the bullwhip effect as this has inherent implications for stability in the chain.

CPGCs cannot afford to submit variable forecasts to the plant and any variability in those forecasts inevitably means that they would have to pass risk onto the retail customers. A composite view of all the retail customers that the CPGC serves illustrates that any variability in forecasts submitted by more than one of these customers can limit the CPGC stock holding's ability to supply all orders. Figure 4-8 is representative of the cumulative backlog of orders that result from varying forecasts.

5.5.2. The causes of the gaps between the forecasts

In chapter four it can be seen that there is a great difference between the actual orders and actual sales for the promotion period versus what the retail customer had originally communicated in terms of their forecast as well as the timing of when orders would be placed. There is also a great difference between the CPGC forecast and the retail forecast. Some of the main contributors to this difference are:

- i. There are major discrepancies in the time horizon:
The retailer forecasts and the time frame for the CPGC forecast do not match. This is crucial as this information is needed for importing purposes, for example the retail sales forecast has a three month horizon, whereas the CPGC forecast has a six month horizon. This mismatch in key requirements causes the CPGC to guess what the customer would require in six months time;
- ii. The CPGC has multiple forecasts:
There are two CPGC forecasts; one that is done by the regional planner and one done by the local team, this causes more confusion as these forecasts do not match;
- iii. The use of “running rates” by the CPGC and the retail customer:
This can be a hindering factor as running rates are not a true reflection of reality but rather an average of previous shipments and sales. This shows that there needs to be greater focus and collaboration between partners in the pre-promotion alignment stage; and

- iv. The retailer has multiple forecasts:

The retailer has two different forecasts, *i.e.* the sales forecast and the order forecast, which are not aligned. This can have severe consequences for the ordering pattern of the retailer and for what the CPGC is expecting to sell.

5.5.3 Variability in orders

In order for the retail customer to generate a PO, the planner would develop a forecast based on their current stock holding in their chain. Thereafter, the DC would use this forecast to place an order with the CPGC. The order can only be placed if entered into their automated system. The system would recommend receiving dates based on calculations of the running rate of stock that would be shipped to the stores. The DC then prepares to receive the PO on the recommended date.

5.5.3.1 The retailer's DC

In chapter four it can be seen that the DC does not always place orders according to the agreed timelines. This could be in response to the difference between the system recommended dates and the agreed timelines; or that the DC does not have capacity to receive the stock; or that the DC would be audited. With regard to the latter, despite the DC's role to house inventory for replenishment to the stores, their policies require that they do not have a large amount of cash tied up in warehoused inventory. Therefore, the DC delays the receiving of POs in order to delay cost ownership until the audit is over.

In order to try and better manage their inventory levels, the DCs place smaller orders more frequently. This practice does not follow the pattern that was originally set out in the retailer's forecast. This has severe implications for the retailer's 13 week forecast as it changes the overall quantity to be ordered and the expected ordering pattern. This means that the CPGC would not know what to expect and would not be able to schedule their deliveries. In a study conducted by Bagchi *et al* (2007, p311, pp9), it was found that the passing of risk for stock holding to the members upstream, *i.e.* the CPGC, can further exacerbate the bullwhip effect.

5.5.3.2 CPGC capacity to handle influx of orders

During the promotion buy-in period the researcher noted that placing all orders during this time period stretched the CPGC and their resources.

As there was an influx of orders versus a normal sales period, this led to missed orders, delivery scheduling issues, and customer space constraints to receive additional stock.

Lee *et al* (1997, p. 96) in their study of the bullwhip effect in supply chains support the claim that suppliers cannot handle an influx of orders due to the time and costs of processing them. They stated further that “periodic ordering amplifies variability and contributes to the bullwhip effect”. These challenges had severe implications for service levels agreements as well as on-shelf availability for the retail customer.

5.5.3.3 Service levels

Service levels are agreed upon with the retail customer at the outset. It is an agreement that the CPGC would aim to deliver a certain target. For example, the CPGC could aim to deliver all orders at a minimum of 95% fill rate. This means that the minimum target for the CPGC is to deliver 95% of the stock in each order and, as a result, 95% of all the orders placed by the customer. Service levels are compromised by rejections, OOS, late delivery, and cherry picking by retail DCs. Cherry picking is caused by retail DCs choosing the stock that they want on a PO when the CPGC delivers (instead of all the stock that was originally ordered).

The retail organisation measures service levels on a monthly basis as the difference between what they ordered on POs placed versus what they received. They do not include any other factors in their calculation. The reason for this is that the demand planner conducts this review and not the retail DCs. The demand planner does not have knowledge of which POs were rejected or cherry picked unless otherwise informed by the CPGC.

Service levels have a direct correlation to on-shelf availability. If service levels from the CPGC are poor, this means that the retail DC would not have enough stock to deliver to stores and, as a result, the service levels to retail stores from the retail DCs will be poor.

This results in a domino effect as the stores would not have sufficient stock on their shelves to sell to consumers or shoppers, *i.e.* the rate of sale would be affected. This would result in lost sales for this retail customer as the shopper may decide to purchase the product elsewhere or not at all.

The following sections will explore to what extent a bullwhip effect is observed in the supply chain.

5.6 Capacity and resource constraints

A number of resource constraints were recorded in both retailer and CPGC operations;

5.6.1 Retail customer

The retail customer faces many constraints with regard to capacity and resources. Amongst the constraints are space and lack of manpower. From the previous chapter it can be seen that the customer faced challenges receiving POs and subsequent storage in their DCs. The situation was exacerbated as this challenge was only communicated to the CPGC once the stock was at the retail customer's DC waiting to be delivered. As a result, the stock was rejected. The rejection places the CPGC at risk as it involves additional costs. This stock cannot be sold immediately to another retail customer as it needs to be quarantined to assess if, after transport, it is fit for sale and consumption.

Any single retail customer deals with many suppliers/CPGCs. The number of suppliers that they deal with depends on how many supplier brands they decide to sell in their stores. The gap with this retail organisation is that the customer has very few demand planners. This means that their manpower is spread across the forecasting of orders to be placed on many suppliers at the same time. As a result, the planner will perform forecasting of sales and subsequent orders to restock DCs and stores for all categories and all supplier brands in those categories. This means that the planner would have virtually no time to commit to assisting any one supplier with quality forecasts.

With regard to structure, the retail customer only has two DCs nationally as opposed to the majority of retailers who have a DC located in each major province. This retailer constantly faces capacity issues to receive orders since they have run out of space in their DCs. These two DCs service all of the stores in each province nationally on a daily basis. Their supply chain could benefit greatly from having a greater geographic footprint of warehouses and/or transshipment points.

The researcher also noted that existing DCs have additional issues of not having specific storage areas for items of higher value, *i.e.* a security cage area. In order to manage this, the DCs delay the orders to be placed on the CPGC until their inventory levels are depleted.

This has a major impact on availability and therefore shelf OOS. The back storerooms of stores do not have a high value storage area either. This presents a major challenge with regard to pilferage.

An even bigger challenge is how the retailer moves items of high value securely from DCs to stores. Any recommendation for this would be expensive; however, one can balance the cost of cages against the loss from high pilferage rates.

5.6.2 The CPGC

The CPGC also faces constraints with regard to capacity and resources. In particular, the researcher observed that their order downloading system is inherently flawed. Section 5.3 also identifies that there is a shortage of manpower to compare physical POs to the EDI version. From this it can be determined that the EDI system for capturing and maintaining orders from retailers is inadequate as it still requires manual intervention to operate smoothly. With reference to section 5.4, flexibility is hindered due to the inability to accommodate emergency retail orders. Delivery schedules of the 3rd party logistics partner are finalised a week before actual deliveries are made. This leaves no room for last minute additions.

5.7 Policies that cause distrust

Certain CPGC and retailer policies were observed to foster mistrust between these two nodes in the supply chain.

5.7.1 CPGC policy of rationing

When the CPGC is facing a shortage of stock, it adopts a policy known as rationing. Rationing is also referred to as an allocation or a fair share policy. Rationing means that if the CPGC only has stock to fulfil 40% of all retail customer orders then the CPGC would only supply 40% of each order placed on them. This type of situation precedes any previous agreements on service levels as well as alignment on promotional activity. This policy can create the perception amongst retail customers that the other customers are the CPGC's top priority. As a result of this, retail customers place massive orders if they believe that there is an OOS, or that the CPGC has limited stock available. They then cherry pick when their orders are received. For example, if a retail customer places a PO for 10 units that are actually needed, and the CPGC only delivers 40% of the PO, the retail customer would then place an order for at least 26 units so as to receive 10 units after the rationing.

If each retail customer adopts the same action as mentioned above, then the quantity of total orders increases and the ability of the CPGC to supply those orders would decrease to less than 40%. The CPGC would then take action by placing a larger order on the plant for stock. When the stock arrives, the CPGC would be at risk of holding too much inventory as retail orders would decrease rapidly.

5.7.2 Challenges due to the type of promotion

It is CPGC policy that any promotion that concerns price discounting as a marketing tool is only conducted on a sales out policy. The sales out policy means that the price discount is only given on the product that is purchased by the shopper through the till point of the retailer, *i.e.* sales out through the till. In this way, the CPGC can ensure that the price discount or full benefit of the promotion is passed on directly to the shopper or the consumer.

This policy works well in that it benefits the consumer directly; however, it also isolates the retail customer. The retailers order up large quantities of stock for the promotion. This is known as forward buying and it results in retailers adopting a pattern for ordering or buying that does not reflect their actual need. After the promotion period of price discounting offered by the CPGC has ended, the retailer cannot sell the excess stock at promotion sales rates. The retailer is left in a negative position whereby they are stockpiled for a longer period than expected.

5.7.3 Retailer policy of sharing information

The researcher noted that there was a general policy of minimal sharing of information by the retailer. This could have been attributed to a lack of trust between the trading partners, or that the retailer's time was spread thinly across all of their suppliers. It was also noted that the retailer had no formal way of sharing reports externally as their system does not have the capability to provide a platform for ongoing sharing of their internal data. There is also no method of validating their internal data in terms of data checks.

The retailer's internal targets are also shared amongst their staff in a holistic manner, meaning that if the overall business target is a 20% increase in sales, then that target becomes the departmental target. There is no deployment of a target by category. This can limit the overall performance of the retailer's business since some categories can deliver more sales than others. If targets are specified, then tailored plans can be developed to achieve that

target. In this way, some suppliers in high sales growth categories could play a much more strategic role in driving the retailers business.

5.7.4 Retailer policy of no commitment to brand suppliers

Like every other retailer in the world market, this retailer prioritises their house brand products over those of supplier brands. House brands receive top priority for advertising in the customer's leaflet, additional space in store and in the DC, as well as for merchandising on the shelves in-store.

This occurs despite the CPGC's overall investment in media, retailer advertising, margins, promotion campaigns and trade terms allowances for logistics being higher. This leads the CPGC to believe that the retailer is hindering the sales of their brands in-store and encourages the funds that were spent on that retailer to be used elsewhere.

5.8 Conclusion

The following reasons are advanced for the unstable orders placed by retailer X and are proposed as, potentially, causes of unstable orders for any high value FMCGs placed by other retailers:

- i. Large amounts of cash will be tied up in inventory (prompting cost avoidance) and, as a result, retailers place smaller orders more frequently;
- ii. The retailer may be entering an audit period;
- iii. The retailer may have little or no capability to monitor high value items, therefore order placement is delayed until inventory levels are at a minimum;
- iv. The existence of high pilferage rates versus actual sales;
- v. Orders are determined by poor forecasting processes; and
- vi. The retailer has only one or a limited number of order planners for the group of stores, indicating a lack of resources.

The researcher noted that a promotion increases the overall orders from retailers and this creates stock pressure on the retail stores. The promotion increases the retailer's sales which then alter the demand information that is sent to the CPGC. This means that the forecast is continually changing and this alters the base running rate for normal months. Additional stock also increases the risk of pilferage. After the promotion, the retailer is left with too much stock and does not order anything for a long time.

These observations have a strong correlation with the study conducted by Bandyopadhyay (2009, p.1246) which states that the bullwhip effect has the following effects on the stability of a supply chain:

- excess inventory at each node in the supply chain
- inadequate capacity
- shelf out of stock
- increased costs in the supply chain
- loss of sales
- inaccurate production plans

In chapter four it can be seen that each of the above-mentioned points exist in the chain during the observed promotion. As a result, it can be determined that the bullwhip effect is present in the supply chain between the CPGC and the retail customer due to order variability as well as in orders that are placed by the CPGC on the plant for safety stock due to the longer lead times needed to maintain a global supply chain.

The following points contributed to instability in the chain:

- Demand information upstream in the chain becomes more difficult to interpret accurately ; and
- Retailers flood orders as they are unsure about the CPGC's ability to deliver on time for the promotion and cancel them when they receive their true order.

In a statistical study conducted by Bagchi *et al* (2007, p.322), it was found that adjusting demand forecasts, the number of levels in the chain and changes in price due to promotions contributed 53% of the variation in demand amplification in the supply chain. From this it can be determined that in order to manage the bullwhip effect, partners at each node in the chain need to collaborate and share information.

Chapter six will deal with how instability with orders for high value items can be minimised.

CHAPTER SIX

RECOMMENDATION AND CONCLUSIONS

6.1 Introduction

The BWE is not a new concept but progress in theory and practice has been limited. This is evident from the fact that the phenomenon still exists. Businesses suffer as they lose sales as products are not available when they are needed, and when they do become available, then they would be at a higher cost. One of the main contributors to the cycle of the BWE is marketing activity. Marketing campaigns form part of a strategic business solution with, in recent years, the rise in popularity of trade promotions. Trade promotions have become crucial to maintain healthy sales levels in the long term.

This research has shown how marketing activities can have an impact on the stability of a supply chain, by revealing how downstream members have conflicting objectives on how to drive profit, by highlighting the challenge posed by promoting products of higher value and how this very difference creates additional problems and costs. Analysing the interface between each node in the chain reveals the weaknesses in the key policies, processes, procedures and systems that amplify the variance in demand. As a result, both manufacturers and retailers need to recognise the impact of promotions on the stability of their supply chain and redesign their processes to accommodate the lead time required to ensure optimal availability of product and operational effectiveness to ensure healthy sales growth.

In chapter five the researcher sought to discuss each of the elements that contributed to the uncertainty and ambiguity in the chain and to highlight its related impact. In chapter six, the researcher will make recommendations for those issues that were identified within the supply chain and will outline certain limitations of the study and describe areas for future research. The recommendations are to increase transparency so as to improve communication between all parties in the chain, to develop smooth ordering patterns so as to ensure high service levels to customers and to promote inventory flow. There should be a focus on eliminating swings in demand to minimise uncertainty and to promote ethical sales techniques that can be adopted to build the business, or foster the spirit of continuous improvement. Lastly, methods or key elements that could be used to design a true scorecard and joint business plan should be instituted.

6.2 Recommendations

6.2.1 Transparency

The idea of business partners working together in a transparent environment where information is readily shared is not a new notion. In fact, many researchers are in support of this mutual relationship. In the observed dealings between the CPGC and the retailer, the researcher noted that there was an undercurrent of mistrust between the parties and attributed this to a lack of communication and unaligned objectives. This resulted in each party having isolated goals. It is the plans and actions designed to achieve these isolated goals that create instability in the supply chain.

The key to mitigating the effects of the BWE is to eliminate uncertainty (although this may not be entirely possible). There are business principles and tools that can help to demystify the true nature of consumer demand and thereby ensure a seamless supply chain scenario. The research gives rise to a proposal based on the weaknesses and opportunity areas identified in the chain, whilst leveraging the strengths of key players.

True score carding and joint business planning are two supporting tools that can be used to help bridge the divide between the parties as they encourage the sharing of critical business information such as targets and key plans for growth. By documenting the objectives, it serves as a simple performance measurement tool that can help each party to understand each other's vision for the business and will provide direction for daily business decisions.

6.2.1.1 True score card (TS)

A true scorecard should be designed together by the CPGC and the retailer so that both parties work toward mutual and transparent goals. A true scorecard enables “top to top” alignment on critical goals/strategies and how to support them. It also allows one to capture all the value created by strategic revenue management work (e.g. incremental sales, profit, cash) or joint value creation projects (e.g. supply projects like in-stock, shrink or inventory reduction). Capturing the value and reviewing it with the retailer greatly enhances the ability to commercialise the value created. The true score card will help to determine joint goals and assess strategies to meet these goals. In order to make this score card operational, both parties need to understand their business needs and why they are important. The parties would need to discuss and align the critical goals that have to be met as well as the key performance indicators that are needed to deliver these goals. All goals must be balanced, sustainable and realistic. Refer to figure 6-1 for an example of a template for the true scorecard.

6.2.1.2 Joint business plan (JBP)

Developing and maintaining a competitive advantage depends on the ability of a chain to react to changes in demand. Each node in the chain needs to work collectively so as to implement an “integrated supply chain marketing strategy”. This will help the chain to focus on the consumer. An enabler of this integrated strategy is utilising a rigorous joint business plan that spans each member in the chain. The joint business plan encourages transparency between partners and the sharing of demand data, forecasts, targets and both short and long term strategies. This will lead to the reduction and possible elimination of uncertainty in the chain.

The JBP is about making more efficient investments so as to grow the business. As a result, the most effective JBP is one that flows from the targets that are set in the true score card so investments are tailored to deliver on the strategic goals. The JBP begins with a mutual alignment of the goals and strategies from the true scorecard. It would then document the plan that leverages a building block approach to show the strategic choices of where to focus and how to win in those focus areas.

One of the main areas of the JBP is building a “sufficiency check”. The sufficiency check allows calculations to be made of the cost of doing business and the potential gains. This has a major influence on the type of joint value creation projects that need to be implemented. Refer to figure 6-2 for an example of a template for the joint business plan.

6.2.1.3 Resource allocation

The parties involved need to work as partners and share responsibility for the TS and JBP. Time and manpower need to be dedicated to tracking and delivering according to the targets in the TS. Manpower needs to be allocated to the key focus areas and joint value creation projects so as to create additional value against the joint business plan. CPGC key account managers should work directly with the retailer to agree on an assortment of products, plannograms for the categories, and trade deals or promotions, *i.e.* the execution plan to deliver the TS.

If the retailer has any plans that could cause consumer demand to change, this should be included in the TS and subsequent forecasts. The CPGC should share information regarding any introduction of new innovation with the retailer so that plans can be designed to capture joint value.

TRUE SCORECARD : CPGC AND RETAILER X																	
PREPARED FOR FISCAL YEAR 13/14																	
Measures to be tracked monthly and reported quarterly in conjunction with the joint business plan																	
		Target			Monthly progress actuals												Gap Vs. Target
		2014 target	2013 actuals	Index vs 2013	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Updated monthly
A.	TURNOVER (ZAR)																
A.1	All Categories - CPGC Data (ZARM)																
	A																
	B																
A.2	All Categories -Retailer X Data																
	A																
	B																
B.	TOTAL INCOME (ZAR)																
B1.	Total Income earned from sales																
	All categories (ZARM) Total Income																
	A																
	B																
	% Total income of sales																
B2.	Total income from Trade Terms																
	Terms Earning																
	A																
	B																
	Full truck load (FTL) allowance																
	Promotion investment all categories																
B3.	categories																
	All categories (ZARM)																
	A																
	B																
C.	Logistics																
	Fill rate																
	SOH DC Regions in days																
	SOH Stores in days																
	OOS lines																

Figure 6-1 Suggested template for a true scorecard (Source: Adapted from Flannery and Marzian., 2005, p. 3)

Figure 6-1 shows what a template of a true scorecard could look like. It incorporates the key elements of documenting what the targets are for each area of importance, *i.e.* section B total income, and what information is needed to define the measure, *i.e.* income from sales, trade terms and promotion investment by product category. It also allows for the monthly tracking of performance and allows the user to record any gaps versus the target.

JOINT BUSINESS PLAN: CPGC AND RETAILER X					
PREPARED FOR FISCAL YEAR 13/14					
<i>Measures to be tracked monthly and reported quarterly in conjunction with the true scorecard</i>				* Reference to true scorecard	
Category Measures	Target for fiscal year 13/14	Building blocks	Status	CPGC owners	Retailer X owners
INCREASE VALUE GROWTH *A	140 Index versus year ago = ZAR 20,000,000.00	Drive more targeted promotions.		KEY ACCOUNT MANAGER (KAM)	BUYER
		Link all promotions to the retailers big campaign periods.			PLANNERS
		Sell more premium SKU's.		KAM	BUYER
INCREASE TOTAL INCOME *B	ZAR 5,000,000.00	Increase fund utilisation from 64% to 100%. Leverage additional Trade Terms Criteria.		TEAM LEADER (TL) TL	HEAD BUYER HEAD BUYER
LEVERAGE EFFICIENT LOGISTICS *C	Service levels to the retailer distribution centres to be maintained at 95% TOP 15 sku's at 95% service level	Orders to be delivered at 95% fill rate. Leverage space on trucks so as to provide maximum earnings on full truck load allowance. Efficient ordering: Retailer X to place combined order on nominated days. Prioritise top 15 SKU's that generate 80% of the sales (Parties to align on which SKU's to be inserted here).		SUPPLY TEAM LEADER (STL) ORDER DOWNLOAD (OD) OD STL	PLANNERS
IMPROVE PAYMENTS *B2	Less than 60 days	CPGC to prioritise speedy payment to Retailer X for promotion invoices. Retailer X to prioritise speedy payment to the CPGC for shipments. Neither party is allowed to withhold payment for any reason (issues to be resolved after payment). No offsetting of invoices is allowed. All invoices and claims are to be shared within 30 days of statement.		ACCOUNTS RECEIVABLE (AR) AR AR AR	BUYER BUYER BUYER BUYER
SHOPPER MARKETING *B3	Increase foot traffic by 10%	Increase communication to shoppers about CPGC brand in Retailer X. Invest in Retailer X direct to consumer mail. Link CPGC digital campaign to Retailer X to target aspirational shoppers.		KAM KAM KAM	BUYER BUYER DIGITAL TEAM
Key for status:					
	Done				
	Work in Progress	On behalf of Retailer X- Print name:		On behalf of CPGC- Print name:	
	Started	Title:		Title:	
	Not Started	Signature:		Signature:	
		Date:		Date:	

Figure 6-2 Suggested template for a joint business plan (JBP) (Source: Adapted from Flannery *et al*, 2005, p. 8)

Figure 6-2 shows the template of a joint business plan. This template shows the key category measures or focus areas to be tracked, the target for the period, as well as the building blocks that would be used to achieve the target. It also makes reference to the status of achieving the target as well as the owners of each party that would be responsible for each measure.

The key measures identified in the JBP stem from the focus areas that were documented in the TS. The JBP details the joint value creation projects that will contribute to achieving the targets that were set out in the TS.

6.2.2 Develop a smooth ordering pattern

In a typical chain, each node develops a production order or restocks without considering the state of inventory holdings in the node before or after them in the chain. Collaboration can be introduced through the following concepts:

6.2.2.1 Collaborative forecast planning (CFP)

CFP should be introduced due to the challenges that currently exist with demand forecasting between the parties in the chain. CFP can also be a major source for developing the targets that would be aligned in the TS. The first step would be for the CPGC regional and local demand planners to work together to develop a holistic forecast. At the same time, the CPGC and the retailer should work together to develop a joint forecast by pooling their information sources. The retail buyer and the retail planner need to work together to reconcile the sales and orders forecast so that this combined forecast can be shared with the CPGC.

The second step is for the CPGC to align the TS with their internal departments. The CPGC's planners forecast also needs to be compared to the retailer's forecast so as to align the quantities required. This comparison is critical to ensure that all business factors have been taken into account so that one forecast can be shared with the plant. This ensures that there will be minimal variability or adjustments made to forecasts at each node in the chain. More importantly, this should eliminate the need to submit emergency orders to the plant and should smooth the production process. This type of method adopts a bottom up approach to demand management and provides a more accurate view of what actual demand could be.

It is also important that the forecast to be submitted to the plant is developed within a timeline that takes into account the lead time required to produce and import the stock that is needed.

Collaborative planning for replenishment, whereby the plant supplies the CPGC and the CPGC supplies the retail DC and the retail DC supplies the retail stores, follows a top down approach. To ensure that an adequate amount of inventory flows through the chain at any given point in response to orders, it is recommended that an open system of information is developed so as to show inventory holdings at each node and its movement. This ensures that there is minimal risk that each node is not overstocked and enables free flow of inventory when and where it is needed in the chain (just-in-time). In this way CFP allows for a cycle of continuous improvement.

6.2.2.2 Information sharing

Some of the commonest issues that may be expected in the forecasting process are that data is unreliable, inaccurate, insufficient or inconsistent. Sharing of real time demand information is the key to ensuring that business decisions bring stability to the supply chain rather than causing chaos. A platform that provides open sharing of information across partners in the chain can alleviate uncertainty. An electronic data warehouse (EDW), *i.e.* a data repository, is a possible solution to eliminating such uncertainty.

The EDW would collate and store CPGC data, plant/factory data, and retailer data such as sales. This type of platform would then serve as a single reference point with traceability. It would also provide real time reporting. This would also help to close the gap of functional silos by providing better co-ordination between the CPGC marketing departments and the plant.

6.2.2.3 Vendor managed inventory (VMI)

VMI is a strategy that places the responsibility for decision making regarding replenishment with the CPGC. As a result, the CPGC is responsible for the customer's inventory levels as well as the cost of the inventory. VMI is an ideal solution to most of the challenges experienced between the CPGC and retailer that were observed. It eliminates order variance by the retailer, rejections, cherry picking, capital tied up in inventory for the retailer as well as space constraints at their DCs.

With regard to the implementation of VMI, the CPGC could work together with the retailer to determine what consumer demand would be. They would take into account factors such as base running rates, planned promotions and retailer strategy. In turn, the CPGC would develop a forecast of what they need to ship to the retailer's DC. The DC would allocate space in the warehouse for the CPGC's stock and the CPGC would manage this stock directly and would be responsible for its replenishment and security. The CPGC would own all of the stock at the retailer's DC until that stock is moved from the DC to the retail stores. At this point ownership of stock transfers to the retailer.

VMI would also reduce the number of hours needed by the retailer to forecast orders and sales as the CPGC would manage this and it also allows the retailer to focus on other key areas in their business.

VMI can only work if clear expectations are defined in advance, there is a flow of information between these two parties so that inventory levels can be maintained, and the lines of communication are kept open. It is ideal that a TS and JBP are already in place before the two parties engage in a VMI strategy. In this way, the targets are known and the retailer would work together with the CPGC to ensure that joint value is created for both parties.

6.2.3 Eliminate swings in demand

6.2.3.1 Minimise the depth of promotion discounting

Surges in demand due to deep promotions result in inflated costs for production and logistics within the period and cause the chain to be overstocked. Minimising the depth of promotions would ensure that retailers order responsibly in response to the promotion activity. As a result, they would not be overstocked after the period and would be able to sell out any remaining stock at a normal rate without having to sacrifice their front margin. Additionally, trade deals and promotions should be planned in such a way that they do not coincide.

6.2.3.2 Incentivise the retailer through sales in

By following a sales in policy (*i.e.* CPGC providing a discount to retailers on the products that they buy instead of the CPGC discounting the sales out through their till), retailers would have the opportunity to manage the promotion directly.

In this way they can better manage their orders and restocking process as well the depth of the promotional discount and time period of the promotion. The retailer should implement activity based costing (ABC). The total cost of forward buying can be substantially large and may not appear in traditional accounting systems. So the total cost would be unknown. The ABC system is one that gives visibility of these hidden costs. As a result, it would enable the retailer to balance the costs of forward buying with the value it creates and should assist with stable ordering patterns.

6.2.3.3 Minimise trade incentive rebates

Trade terms and full truck load incentives actively encourage retailers to stock pile due to economies of scale. Retailers and CPGC need to balance the value of the incentive with the cost of warehousing extra inventory. Eliminating the full truck load allowance will ensure that there are no demand lumps in the supply chain.

6.2.3.4 Implement trade promotion management systems

Approximately 60-70% of the marketing budget is used for trade promotions. To eliminate the swings in the promotional plan, the reliance on trade promotions needs to decrease. As a result, organisations now need to find a more efficient and effective promotional mix. This means analysing the total cost of promotional activity to determine which are generating the most value and must take into account the supply chain effects. Furthermore, the sales promotion calendar for the fiscal/calendar year needs to be set between the retailer and the CPGC, not the CPGC alone.

6.2.4 Build the business

6.2.4.1 Identify the gaps

A culture of continuous improvement by identifying problems in the business should be adopted. This would ensure that there are always smooth operations between the parties involved in the chain. For example, attaining the perfect order is crucial to maintain high service levels. This is true for the CPGC in their supply to the retailer DC as well as for the retailer in their supply to the stores so as to service the consumer. Since there are always fluctuations in real demand, this necessitates the holding of safety stock in the chain, but this will result in a clash with the objective of inventory turns and return on investment for capital outlay. If the CPGC adopts ABC costing at a customer level, the costs associated with shipping to each retailer can be identified and specific cost reduction measures can be put in place and can be balanced with other important supply chain objectives.

6.2.4.2 Work towards solutions to close the gaps

All parties in the chain should work towards finding solutions to close all gaps in the business, for mutual benefit. The CPGC often has more resources than the retailer and should absorb some of the responsibility for assisting the retailer to grow their business.

For example, the CPGC can provide additional resources for demand forecasting, true score carding, VMI, and can make recommendations for systems changes to the retailers.

The alignment that is needed to close gaps in the extended supply chain becomes much more difficult since each company or partner reports to different shareholders and this could start to seem like a risk management exercise. All parties need to look at this as being shared risk. Activities such as CFP, replenishment and redesigned processes for managing change in consumer demand can help parties to work together more effectively.

6.2.4.3 Share common resources

As mentioned above, the CPGC often has more resources than the retailer, as well as more experience as they deal with many retailers. By sharing common resources with the retailer, it frees up manpower for the retailer to focus on greater business needs. For example, the CPGC has resources that work effectively to manage their master data.

The CPGC can share knowledge and best in class processes with the retailer so as to help improve their systems, master data issues and supply processes. For example, the retailer faces space constraints in their DCs which often results in the DC rejecting deliveries of POs. The CPGC can assist the retailer by proposing solutions such as through-put plan at the DCs.

This means that the CPGC can work together with the retailer's planner as well as the DC to agree on the stock that is needed for the stores. The CPGC can then deliver the appropriate quantities at the exact time they are needed in order that the DC can move this stock directly from receiving onto trucks that will deliver directly to stores (*i.e.* cross docking at the DC). This means that no further space would be required at DC, thus eliminating that constraint.

6.2.4.4 Flexibility of the production plant

The CPGC global model is to have one plant per brand for production. These single plants service every CPGC market organisation in the world. This presents challenges for capacity and operational lead time. No single country can have their forecast prioritised. To alleviate the issues with global sourcing, the CPGC needs to have more than one production plant per brand, that are strategically located so as to serve a particular region, *i.e.* a production plant that serves North and South America and Europe, and one that serves Africa, Asia and Russia. Alternatively, they could expand their existing plant to accommodate more production lines that serve specific regions.

This should eliminate current bottlenecks and can help speed up the production process and overall lead time for delivery. More flexibility is needed at the plant as their current policies and processes do not allow for market organisations to be agile enough to respond to changes in consumer needs and demand.

6.2.4.5 Flexibility to have preferential rates for high value consignments

Quarantine and port delays are frequent contributors to OOS for high value lines. They also contribute to high pilferage rates amongst these products as theft at port is significantly higher than at any other stage in the chain. Additionally, the longer the consignment sits at the port, the higher the risk of damage and contamination. The CPGC should consider paying preferential rates for these consignments so as to shorten their time in transit and to offset the cost of pilferage, damage and contamination.

6.2.5 Designing the TS and JBP

It is crucial that the true scorecard be developed before the joint business plan. The reason for this is that the key targets identified in the TS are the basis for the elements to be included in the JBP. The TS can be regarded as the objective and the JBP is the plan to achieve the target. In developing the TS and JBP there are key processes, measures and elements to focus on. The following sections will provide guidelines for these.

6.2.5.1 Process for designing the TS

It is important to consider the following elements as they are the building blocks for the TS.

- Agree on the specific measures between members in the chain. It is vital to align targets in the chain with the needs of the retailer;
- Base the TS on the retailer's fiscal year plans;
- Include the previous year and current year's targets to show progression, if any;
- Include major JVC projects- these should be laid out in the JBP; and
- Include both supply side and demand side measures for both the retailer and the CPGC.

6.2.5.2 Measures for the TS

Some key measures for the TS are listed in table 6-1.

Table 6-1 Key measures for a true scorecard (TS)

Measure	Elements
CPGC Turnover (Value Growth) to retailer X	The value of CPGC shipments to the retailer; cash flow improvements
Retailer X's Turnover on the CPGC's products	The value of sales of the CPGC's products through the retailers till; gross profit
Total income earned by retailer X through business with the CPGC	Trade terms package Trade terms rebate Promotional investment
Supply side	Forecasting; FTL earnings; Efficiencies in order placement; Rejections
Accounts side- payments efficiency	CPGC timeline for payments Retailer's timeline for payments
Shopper Marketing measures	Penetration; Foot traffic; Performance of promotion activity

(Source: Adapted from Flannery *et al*, 2005, p. 8)

6.2.5.3 Process for designing the JBP

- Identify the key opportunity areas that are of mutual benefit;
- Or identify the key areas that will help to deliver the targets;
- Define the key actions that are needed to realise the opportunity; and
- Allocate resources and timelines to complete the key actions.

It is important to note that the measures in the TS should be the same focus areas for the JBP since the documents are linked.

6.2.5.4 Measures for the JBP

Some key measures for the JBP are listed in table 6-2.

Table 6-2 Key measures for a joint business plan (JBP)

Measure	Building blocks
Value growth	how to drive sales; spend per trip; gross margin
Volume growth	how to drive orders
Efficient logistics	improve full truck and case fill rates; inventory holdings
Payments	pay on time/pay score; adherence to payment procedure
Marketing investments	investing in promotions and brand building activities or awareness; closure rate

(Source: Adapted from Accenture, 2012, p. 1-12)

6.2.6 Building capability

Building capability in the long run is important for the survival and success of any supply chain. It is for this reason that CPGCs and retailers need to work together to understand each other's long term goals in all facets of the business so that they can develop together. This should happen in the spirit of strong collaboration and building long term strategic and responsible partnerships. Some of the areas for building capability could include:

- Volume targets so as to ensure long term profit gains and the ability to supply downstream;
- Packaging for the future to ensure environmental sustainability through recycling and reducing the carbon footprint;
- Automation of production could ensure lower total product costs;
- Improving the stability of sourcing raw materials in the global supply chain can reduce total costs;
- What measures will be adopted in the spirit of continuous improvement with regard to safety and quality of products;

- What the plans are for innovation and would each partner be able to support first-to-market ideas and implementation;
- What plans or strategies are in place to build best in class business practices, and whether there are any constraints in capacity or resources between any of the partners;
- What measures are in place to continuously develop your employees and support the BBBEE;
- What challenges are there in your business as a result of growth;
- What capabilities are currently being worked on in your supply chain and what impact these would have on each party;
- The capability to run warehousing for retailers;
- The capability of the CPGC to offer any exclusive products to the retailer; and
- Are the parties using JBPs and TSs and how does the CPGC ensure efficiencies in lean manufacturing?

BUILDING CAPABILITY				
FISCAL YEAR 13-14				
NO.	CAPABILITY	QUESTION	CURRENT STATUS	FUTURE (3-5 years)
1	Volume	What are your plans to cater for future growth with regards to volume and product?		
2	Packaging	What are your current packaging formats?; Do you offer flexibility for different packaging formats?		
3	Production and advancement	What automation plans are in the pipeline?; What is the degree of production automation?		
4	Sourcing	Where do you source majority of your material ? Are there concern with raw material shortage or sustainable supply?		
5	Continuous improvement- safety	What systems do you have in place? What are your intentions for continuous improvement?		
	Continuous improvement- quality	What systems do you have in place? What are your intentions for continuous improvement?		
6	New product development	Are you able to provide innovation by supporting first to market ideas?		
7	Market and customer analysis	Are you able to provide regular market/trend overview supported by data to drive your innovation plans? Do you conduct regular benchmarking and have any strategic alliances with overseas suppliers, or access to centres of excellence?		
8	Capacity and resources	Do you have a team to support or mirror the retailer X team? E.g. Buyer, Planner, Technical, Product development Do you have succession plan in place for all key staff members?		
9	Skills development	Do you have a skills development plans?		
10	BBBEE	What is your level and what are your future plans to improve?		
11	Challenges or obstacles	Specify any challenges?		
12	Supply chain capabilities (direct store delivery, pick n pack)	What are your supply chain capabilities?		
		Do you own your logistics team or do you outsource?		
	Warehousing	Do you offer warehousing and for what period/if not, can you in future?		
13	Exclusivity	Are you an exclusive supplier to retailer X? Do you offer product exclusivity to retailer X?		
14	Business plan	Do we have a joint business plan?; Are you able to play a category Leadership role?; Do you have new promotional ideas?		
15	Lean manufacturing	What do you do to value optimise and improve efficiencies?; Do you have an internal scorecard/ target measurement document in place? How often is this reviewed?		

Figure 6-3 Proposed capability toolkit (Source: Adapted from Flannery *et al*, 2005, p. 11)

6.3 Limitations to the Study

6.3.1 Confined scope

This study was limited to the observation of the operations between one CPGC and one retailer. Additionally, only one promotional event was observed.

The scope of this study was confined to one CPGC and its supply chain partners. In reality no firm in the FMCG industry operates individually. Due to the competitive nature of the retailing industry and the confidentiality of business agreements, the researcher could not gather information on other retailers that the CPGC serves in order to conduct a comparative analysis.

6.3.2 Access to information

The researcher was only allowed to observe the course of one promotion and was only allowed to access information pertaining to that promotion in the interests of information security. For further security reasons, the observer was unable to probe key influencers for more detail or clarity. Despite the above-mentioned challenges, the researcher was able to obtain useful data.

6.4 Areas for Further Research

From the literature review it was identified that existing research is only conducted at one level in the chain. It would be beneficial if research could be conducted simultaneously at each level in the chain to determine what aggravators contribute to the BWE and the total impact on supply chain stability.

There is scope for research into the benefits that can be derived from implementing a true scorecard and joint business plan so as to effectively implement a vendor managed inventory program. A comparative analysis can be conducted showing the situation before the implementation of VMI and after. In order for the researcher to determine the true contribution of VMI, the researcher would need to analyse the total cost to the supply chain of implementing a VMI strategy versus the returns. In particular, the VMI programme sees the hidden costs to the CPGC rise considerably versus any other partner in the chain.

6.5 Conclusion:

From a CPGC perspective, shipping volume is key to keeping a product alive in the retail trade. Increases in volume shipments as a result of an increase in demand for the SKU (via promotions) lend substance to the marketing and supply effort. In theory, this is what brings the consumer or shopper back to the shelf and stimulates their interest which in turn generates more sales. From a retailer perspective, the objective is to keep only those products that are desired by consumers in order to maximise their inventory turns. As a result promotional activity has become a popular tool, yet promotions are also the main driver of instability in the supply chain and give rise to the phenomenon termed the BWE.

A gap in research into the bullwhip effect exists as although low value consumer products have been examined at length, those of high value have not been. Products of high value present unique challenges based on their profile. The purpose of this study then, was to determine the influence of promotional activity on the pipeline fill of inventory for both the manufacturer and the retailer of high value items. The dilemma of promoting high value products gives rise to a vicious cycle of gains through business growth due to the increase in sales, but losses in supply chain efficiencies which over a period of time can cripple on-shelf availability and relationships between partners. As long as organisations favour the use of product discounting and, in particular, discounting of items of high value, the BWE will remain a never-ending problem. Consequently, it is important to find methods that can help eliminate the issues caused by promotions.

From existing literature the concepts of supply chain instability and the BWE were examined. The various trends that drive demand and supply in the market were explored as well as the current challenges for retailers in order to determine if these contributed to any instability in the chain. The commonality amongst the demand and supply activities, as well as the retailer business, was that various promotions are used to pull product through the supply chain from upstream to downstream.

The key for all partners in the chain is to balance top line growth and profitability during promotional discounting windows and to do this, key functions in the CPGC as well as the retailer such as marketing and supply chain, need to work in tandem. Working in tandem requires the sharing of information and an increased focus on forecasting methods in order to develop holistic business plans. One such method is collaborative forecast planning.

This study followed a case study approach in terms of analysing the business activities of CPGC X in relation to retailer X when they were promoting product X, which was an item of high value. The promotion was monitored in three phases. The phases were: the pre-promotion planning, execution of the promotion and post promotion phases. To do this the researcher employed two methods of research. Firstly, to evaluate the promotion event in terms of shipments and financial performance, quantitative methods were used. Secondly, to analyse the internal and external influences on a promotional event and to lend more context to the data, qualitative methods of participant observation were used.

An analysis of the case investigated in this study indicated that the ROI on the promotion was greater than the target and that the retailer made an additional profit that they could invest further. When the concept of ROI was broadened to accommodate the supply chain status, there was excess inventory upstream in the chain and little to no stock downstream. This situation leads to a negative operating profit when the associated cost of inventory is taken into account.

Unstable inventory and higher costs are symptoms of the bullwhip effect, which means that the BWE was present at each node in the supply chain with, typically, the problem becoming worse further upstream as the nodes become further removed from the real demand. This phenomenon was observed to have been exacerbated by the sales promotion as the promotion caused a major shift in ordering patterns and altered the total inventory pipe fill in the chain due to buy-in volumes downstream. After the promotion period had ended, the CPGC was left with too little stock to cover the orders placed by retailers nationally. The spike in orders was as a result of increased market activity in the male grooming category due to multiple promotions in the market. This caused a cumulative backlog in orders at the CPGC and the retailers were placed on allocation due to cut cases. This resulted in OOS in the trade and ultimately a loss of sales.

The instability that was caused in the chain was more variable for the products of high value due to the product's high desirability. This added more complexity and increased overall costs in the chain due to the need for extra security measures and the variable ordering patterns. Key factors, such as a lack of communication as well as different time horizons and inputs for forecasts for promotional activity between each partner, created chaos up and down the chain. This resulted in poor order fulfilment rates and unstable inventory holdings.

Methods have been presented to help alleviate or eliminate the effect of the BWE. These are: vendor managed inventory, true score carding and joint business planning. These methods could contribute to a strategic plan to stabilise inventory swings by promoting transparency between partners through the sharing of information and plans. Collaborative forecast planning is the first step to implementing any of these plans as it encourages alignment between the parties involved. Once alignment has been reached on key measures and targets then a business plan can be developed.

VMI is a further potential strategy to stabilise a retailer's business. VMI eliminates unstable ordering and delays due to cost avoidance as well as loss of realisation due to shrinkage and pilferage as the CPGC directly owns, controls and supplies the movement of stock in the retailer's DCs; however, in order for VMI to run smoothly, the TS and JBP is a prerequisite. Existing literature does not allude to how all of these methods can be used in parallel.

The following were conclusions from chapter six about the impact of promotions:

To summarise, the influence of promotions is to:

- i. Increase the order quantity that is placed on the CPGC by retailers;
- ii. Encourage increased orders by the retailer's head office that then creates stock pressure on the retail stores;
- iii. Result in increased stock holdings at the retail DCs and stores that then increases the risk of pilferage;
- iv. Increases the retailer's sales which then alters the demand information that is shared with the CPGCs thereby resulting in a demand forecast that continually changes and alters the base running rate for normal months; and
- v. Leave the retailer with either too much stock so that he does not order anything for a long time, or leave the retailer with no stock so that he then places a massive order to replenish his DCs and stores.

The effects on supply chain stability may be summarised as:

- i. Demand information upstream becoming more difficult to interpret accurately;
- ii. Retailers flooding orders on the CPGC as they are unsure about the CPGC's ability to deliver on time for the promotion and then cancelling these orders when they receive their true order, *i.e.* retailers cherry picking their quantities; and

- iii. Excess inventories remaining at each node in the supply chain resulting in extra costs and unrealised profits and saleable stock left sitting in transit or at the warehouse.

In conclusion, the following methods may contribute to a reduction in instability:

- i. Introduce a true scorecard and joint business plan;
- ii. Introduce vendor managed inventory;
- iii. Agree on order quantities upfront and stagger delivery dates (meaning that orders can be broken down and delivered on different days to allow for better inventory management downstream);
- iv. Negotiate nominated delivery dates (NDD) (specific days in the week), so that the arrival and the receipt of high value stock can be monitored;
- v. Implement an RFID system of tracking tags to reduce pilferage;
- vi. The CPGD provide the retailers with suggested orders based on actual demand information taken from the retailers EPOS system that shows actual sales in stores versus their stock on hand; and
- vii. Pool resources.

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APPENDIX

A: CPGC closed shipments pre-promotion

*CPGC data of shipments to retailers							
Month 1 and 2 shipments- pre promotion							
February							
Customer	Shipments cockpit	Production Forecast	Sales Forecast	MTD	MTD WOO	MTD vs Fcst	MTD WOO vs. FCST
Retailer X	Product X	1 339	900	1 345	4 976	100%	372%
March							
Customer	Shipments cockpit	Production Forecast	Sales Forecast	MTD	MTD WOO	MTD vs Fcst	MTD WOO vs. FCST
Retailer X	Product X	825	170	885	1 190	107%	144%
*Source: Shipments cockpit application							
Acronym	Expansion						
MTD	Month to date						
MTD WOO	Month to date with open orders						
FCST	Forecast						

B: Average shipments to retailer X**SHIPMENTS TO RETAILER X [UNITS]****PERSONAL CARE PRODUCT X****PERIOD: FY 11/12 TO FYTD MARCH 2013**

Time	TOTAL FY 11/12	FYTD MARCH 2013
Units of Shipment	Unit	Unit
Customer	Retailer X	Retailer X
Product	X	X
Product X [Total units]	56948	43482
Product X [Average units per month]	4746	3624
Product X [Average units per week]	1095	1087

*Source: Shipments cockpit: 01/04/13

All Shipments cockpit data is received from SAP platform

C: Average forecast of orders for product X

Table showing Retailer X forecast* and CPGC forecast* for product X in cases					
Forecast	Total Cases	Average Cases			
Retailer X forecast	1039	80			
CPGC forecast	590	45			
*Data extrapolated from sheet 1: Forecast All brands					

D: Ethical clearance



17 September 2014

Ms Crusann Pillay (205513935)
School of Management, IT and Governance
Pietermaritzburg Campus

Protocol reference number: HSS/0314/013M

New project title: The influence of promotional activity on supply chain stability: A Fast Moving Consumer Goods (FMCG) perspective

Dear Ms Pillay

Approval Notification – Amendment Application

This letter serves to notify you that your request for an amendment received on 12 September 2014 has now been approved as follows:

- Change in Title

Any alterations to the approved research protocol i.e. Questionnaire/Interview Schedule, Informed Consent Form; Title of the Project, Location of the Study must be reviewed and approved through an amendment /modification prior to its implementation. In case you have further queries, please quote the above reference number.

PLEASE NOTE: Research data should be securely stored in the discipline/department for a period of 5 years.

The ethical clearance certificate is only valid for period of 3 years from the date of issue. Thereafter Recertification must be applied for on an annual basis.

Best wishes for the successful completion of your research protocol.

Yours faithfully

Dr Shenuka Singh (Chair)

/ms

cc Supervisor: Mr RH Salisbury
cc Academic Leader: Professor Brian McArthur
cc School Admin.: Ms D Cunynghame

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