

Collaboration and Supply Chain Planning

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Abstract

Organisations increasingly face the challenges of managing supply chain in their operations. Stock write-offs due to lack of proper planning as well as dysfunctional relationships within trading partners have become common in the beverage industry. In an attempt to deal with the issue, huge capital investments are made to improve manufacturing equipment and IT systems. However, this does not prove to be the solution to the underlying problem.

The aim of this report is to establish whether implementing collaborative planning, forecasting and replenishment (CPFR) can ensure a fair allocation of stock write-offs between Coca-Cola South Africa and its bottling partners. It first looks at the potential causes of write-offs within Coca-Cola; secondly, it discusses the most crucial parts of the CPFR process required for the system; and lastly explores whether the benefits of implementing CPFR outweigh the risk of maintaining the status quo.

The study makes use of semi-structured interviews with relevant senior managers, analysed using themes to explore underlying issues as well as approaches to meeting this challenge. Based on the research outcome, it was concluded that implementing CPFR will provide a solution for the entire system because it can improve relationships within the supply chain. CPFR is far more than a technical problem as it requires a bold strategic move that will result in a cultural change within the organisation.

Declaration

I, Michelle Kgobe declare that this research project is my own, unaided work, except to the extent indicated in the acknowledgements and references, and by comments and quotations included in the body of this research. It is being submitted in partial fulfilment for the degree of Master of Business Administration in the University of Witwatersrand, Johannesburg. It is solely for the purposes of completing the Masters degree and is not meant to be published. It has not been submitted anywhere for any degree or examination in any other university.

Dedication

To my best friend, Michael Lesibane Kgobe, my children Oarabile and Amogelang for your support, patience and sacrifices during the three years of my MBA studies and final research project.

This onerous task would not have been possible without your help; for this, I thank you all very dearly.

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1 INTRODUCTION

1.1 Purpose of study

The purpose of the research is to explore whether successful supply chain collaboration can help ensure a fair allocation of stock write-offs between the Coca-Cola Company and its bottling partners. The report will focus on implementing a collaborative planning, forecasting and replenishment (CPFR) process in an attempt to reduce stock write-offs and create a supply chain advantage for the organisation.

1.2 Context of study

The Coca-Cola Company's business model can be summarised as follows:

The Coca-Cola Company (TCCC) manufactures beverage concentrate and distributes it to franchised bottlers, who then manufacture TCCC products, bottles and cans and in turn, distribute these products to the retail trade, which sells it to the consumer in the street (Van Niekerk 2003). TCCC focuses primarily on the marketing of its brands through companies like Coca-Cola South Africa (CCSA), whilst bottlers focus on selling and distribution. Supply chain is a process led by CCSA, driven mainly through promotions done by brand teams.

The firm has enjoyed good growth since its return to South Africa in 1994. The well established distribution system has continued to give TCCC a competitive advantage. In the recent past, however, stock write-offs have continued to dominate management meetings. They result from supply chain issues which continue to pose challenges within the system due to brand teams' limited visibility in the planning process. This is further exacerbated with the introduction of new products, without anyone assuming accountability or responsibility. TCCC's stock writes-offs are made up of concentrate whilst the effect at the bottlers' are even

higher due to the fact that they include packaging material as well as finished products. The challenge faced by the system is to get all parties to jointly assume ownership of the supply chain process in order to benefit the entire system. Stock write-offs allocation will therefore not become an issue that consumes management time.

One of the main reasons for stock write-offs has been identified as poor forecasting. Currently the organisation is showing a 56% level of inaccuracy in forecasting some of its products. The company's top-down approach is partly to blame for this. During planning, each business unit is given volume and earnings growth targets which get communicated to shareholders who in turn hold the company accountable for achieving them. These become the responsibility of the brand teams. However, while brand teams try to align with company strategy of being a total beverage company, bottlers need to recover their manufacturing overheads as quickly as possible. These goals result in conflict of interest as brand teams introduce new products like fruit juices whilst bottlers want to produce products that require less set up time and ensure speedy recovery of overheads. The latter tend to be well established sparkling brands like Coca-Cola

The relationship between CCSA and its bottling partners has been somewhat strained by these conflicting goals. Sadly the customer does not become the focus. Instead products get pushed to the trade to sell to consumers without clearly understanding customer demands, needs and behaviour. The result is stock shortages or unwanted products on retail shelves. This has negative cost implications for both CCSA and the bottler.

Supply chain is defined as "the global network used to deliver products and services from raw materials to end-customers through an engineered flow of information, physical distribution, and cash" (Walker 2005:15). In an attempt to deal with supply chain issues, CCSA set up a supply chain committee that is chaired by a representative from the brand team and planning managers from each bottling operation. The aim is to keep each other updated on stocks of materials and product discontinuations. There is no discussion on new launches

nor is there discussion on customer orders. Each time a new product is introduced, questions come up from the bottling operations as to whose responsibility the write-offs will be.

CCSA and the bottlers have come a long way in developing a relationship of trust between each other. A commercialisation process for new product development is in place. Value chains are now shared between CCSA and each of its bottling partners. The next step would be to have a supply chain process in place, one that incorporates customer demand into the value chains.

In order to refine the supply chain, a comprehensive excess inventory management system is required (Crandall and Crandall 2003). As mentioned above, forecast inaccuracy is currently at 56% on some of TCCC brands. The trading partners involved need to understand the causes of the forecast discrepancy. Measuring all participants in the forecast process on the accuracy of the result is critical in ensuring that demand planning gets adequate participation and attention and that all inputs are free of organisational bias (Gattorna 1998). According to Gattorna the key factor to excellent demand forecasting is collaboration. Specifically, a consensus process ensures a consistent set of assumptions based on a broader base of input.

1.3 Problem statement

1.3.1 *Main problem*

The main problem that this case has been chosen for is that Fast Moving Consumer Goods (FMCG) beverage industries have great difficulty in fairly distributing the risk of stock write-offs and large costs are associated with poor collaboration.

1.3.2 Research Objectives

The first objective is to identify the perceived causes of stock write-offs.

The second objective is to identify the most common structure for a successful CPFR within the Coca-Cola system, one that might reduce stock write-offs.

The third objective is to identify whether implementing CPFR within the system's planning process might provide a solution to the fair distribution of stock write-offs.

1.4 Significance of study

The study fills a gap. Although much has been written about CPFR (Seifert 2003; Gattorna 1998; Hassini 2008; Simchi-Levi, Kaminski and Simchi-Levi 2003;; Walters 2006; Wadhwa, Saxena and Chan 2008; Qing and Ha 2008), there has been no study done at CCSA South Africa. The information obtained from this research will help fill that gap.

The study will provide guidance to the beverage industry and other FMCG companies. Stock write-offs reduce company profits. Many organisations have moved into the systems applications and products (SAP) system but, like CCSA, are not utilising the supply chain module. Part of the reason is that the supply chain process has not been defined and accepted by all parties. In addition there is lack of transparency within the entire process. This report will provide valuable information that will help organisations understand some of the underlying causes of write-offs. It is hoped that the system will improve its planning process and reduce stock write-offs. This, in turn, will improve customer relationships.

1.5 Delimitations and limitations

1.5.1 *Delimitations*

The study will be done from the perspective of a beverage company that implements CPFR and not from a customer perspective.

The format of the research will be interviews. The scope will be limited to CCSA and its bottling partners and will focus on the principles of CPFR as a framework to review the level of supply chain alignment and to define improvement strategies.

The study will not focus on IT systems or logistics. It will also not calculate the financial impact of implementing CPFR.

1.5.2 *Limitations*

With the nature of this research being qualitative research in the form of an interview, generalisation can only be limited to a similar company and FMCG industry. Besides the interview schedule, no other instruments will be utilised. Subjectivity may occur as there is potential bias from the Researcher and the interviewees who are all employees of the companies being studied.

There is a possibility that the study may uncover a variety of underlying issues that the Researcher may not be familiar with. This implies there may be a need for flexibility during the research process.

1.6 Definition of terms

CCRM	Collaborative Customer Relationship Management
CM	Category Management
CPFR	Collaborative Planning, Forecasting and Replenishment
DRP	Distribution Requirements Planning
ECR	Efficient Consumer Response
EDLP	Everyday Low Pricing
EOQ	Economic Order Quantity
EPOS	Electronic Point of Sale
EVA	Economic Value Added
FMCG	Fast Moving Consumer Goods
JIT	Just In Time
MRP	Materials Requirements Plan
POS	Point of Sale
QR	Quick Response
RSP	Retailer-Supplier Partnerships
SCM	Supply Chain Management
SKU	Stock Keeping Unit
TBC	Time Based Competition
TOC	Theory of Constraints

TQM	Total Quality Management
VCM	Value Chain Management
VMI	Vendor Managed Inventory

1.7 Assumptions

The assumption is that the interviews reflect the general views within the system. There are no other assumptions that, if they do not hold, will influence the outcome of the research. The system in this case refers to TCCC, as represented by CCSA, and its bottling partners. Even though the focus of this report remains stock write-offs, there will be reference to supply chain and supply chain management. This is due to the fact that there is a direct correlation between supply chain and stock write-offs, with the latter being the consequence of poor supply chain management.

The researcher refers to Michelle Kgobe, the author of this report and the author refers to the reference author.

2 LITERATURE REVIEW

2.1 Introduction

The literature is divided into five sections. The first section looks at common causes of stock write-offs within an organisation. This addresses the first objective. The second section looks at the findings on supply chain collaboration. The third section introduces the CPFR model and that leads to the second objective. The fourth section looks at the appropriate structure for CPFR. The last section looks at the impact of CPFR on overall performance for the organisation. This addresses the third objective.

2.2 Potential Causes of Stock Write-offs

The behaviours discussed below have been found to be common causes of excess stock that may lead to write-offs.

2.2.1 Poor Demand Management

Product proliferation and shorter product cycles can result in demand uncertainty, thereby causing excess inventories (Crandall and Crandall 2003). Demand planning remains a challenge for most organisations. Often companies sift through their supply side opportunities and ignore the demand factor (Gattorna 1998). According to Gattorna, companies need to think beyond simple efficiency issues and towards value creation opportunities, they need to articulate their value proposition to the customer and drive a comprehensive supply and demand chain strategy from that critical insight.

Another area of focus is demand volatility. Volatility is often increased through an organisation's own policies and procedures and is one of the main causes of misalignment between the supply chain and customers (Gattorna 1998). The

Author argues that customers simply respond to signals sent to them by suppliers. Organisations thus face the challenge of improving their demand management through reducing demand volatility. Just in time (JIT), Quick Response (QR), and Efficient Consumer Response (ECR) are traditional approaches developed to reduce lead time and supply chain cost. These, however, assume that volatility is present. Managing demand means smoothing it out by eliminating the volatility before it can be used in the planning process.

Promotional discounts distort buying behaviour thus generating high demand volatility. Introducing free delivery in order to increase customer service may see customers change their ordering pattern. The longer the distribution channel, the larger the distance between suppliers and customers. Due to the fact that they cannot order on a daily basis, channels stagger their ordering resulting in demand volatility. This is a typical situation found within the system.

Furthermore, effective management implies removing complexities of the business operations (stock outs, obsolescence, labour costs, and warehouse). Complexity relates to uncertainty, increased reliance on accurate, timely information, increased risk of stock outs, increased customer lead times (reduced service levels), increased reliance on effective production planning capability, reduced ability to provide accurate information to manufacturing, and increased risk of obsolescence (Gattorna 1998).

2.2.2 *Poor Forecasting*

Marketers may want to carry excess inventory to enable them to quickly respond to customer needs (Crandall and Crandall 2003). According to Crandall and Crandall they achieve this through their forecasting methods. The result is that some finished goods inventories do not move and become excess or new products replace existing ones, making the latter obsolete.

Forecasting is a critical tool in management (Simchi-Levi et al. 2003). Not only should managers forecast inventory levels but decisions need to be made as to

whether to enter a particular market, launch a promotion and the level of production capacity. According to the Authors, there are three rules of forecasting, namely:

- The forecast is always wrong;
- The longer the forecast horizon, the worse the forecast; and
- Aggregate forecasts are the more accurate.

Forecasting tools and methods are generally split into:

- Judgement method – involves collection of expert opinions;
- Market research methods – involves qualitative studies of consumer behaviour;
- Time-series methods – mathematical methods in which future performance is extrapolated from past performance; and
- Causal methods – mathematical methods in which forecasts are generated based on a variety of systems variables.

On one occasion, moving from a completely judgmental forecasting method to a simple forecasting model and using exponential smoothing with seasonal adjustments, reduced overproduction and excess inventories by as much as 40% (Crandall and Crandall 2003). According to the Authors, prior to 1985, very few companies had dedicated forecasters. However, nowadays having dedicated forecasters has become a necessity for most companies.

It is common for companies like CCSA to rely on historical data to forecast future demand. This is due to the number of years their brands have been in existence. The challenge comes when new products are introduced and this is brought about by the non-existence of similar brands for comparison. The weather and

seasonality of the products also play a role. Promotions are run over the winter period in order to boost sales. The peak demand in the last quarter of the year makes distribution a real challenge. This, however, is not the focus of this report. Recent stock write-offs have been associated with poor forecasting and stock keeping unit (SKU) rationalisation decisions made.

Marketing managers should support programs that prevent excess inventories by working more closely with customers to obtain better forecasts of product demand (Crandall and Crandall 2003). In addition, better forecasting data can be communicated with engineering and production to schedule introductions of new products and phase-outs of discontinued products.

2.2.3 Poor Inventory Management

An inventory is of value when a finished goods inventory is readily saleable and moves quickly through the production and distribution steps from manufacturing to a customer; when the work-in-process inventory moves steadily through the manufacturing process without undue delays; and when raw materials inventory just meets the needs of manufacturing (Crandall and Crandall 2003). According to the Authors, excess inventory continues to be a global problem and has a direct financial impact on companies. This is exacerbated by the fact that management reporting systems are unable to identify where and how much excess inventories exist.

It can thus be concluded that the area of inventory management remains a challenge for organisations. A common question that arises is what are the appropriate inventory levels that a firm should maintain? The top seven strategies for reducing inventory were identified by Simchi-Levi et al. (2003) as follows:

1. Periodic inventory review;
2. Tight management of usage rates, lead times, and safety stock;
3. Reduce safety stock levels;

4. Introduce or enhance cycle counting practice;
5. ABC approach;
6. Shift more inventory or inventory ownership to suppliers; and
7. Qualitative approaches.

However, these are all internally focused and do not consider the entire supply chain. Traditional approaches like economic order quantity (EOQ) and materials requirements plan (MRP) are static in that they ignore the possibility of future operational improvements (Gattorna 1998). Furthermore, Gattorna argues that an approach where lead times can be shortened by reducing the dependence on forecasts that tend to be unpredictable, thereby improving responsiveness to volatile demand.

Identifying the appropriate inventory strategies at supply chain stocking points remains a challenge (Kaminsky and Kaya 2009). Furthermore, determining which products or parts will be made to stock and which will be made to order is not easy. A push system requires knowledge of how much stock to produce. Therefore forecast accuracy is important. A pull system, on the other hand, implies that customers' waiting time has to be minimal else it will impede competitiveness on the part of the firm. According to Kaminsky and Kaya costs can be cut dramatically by using a combined system instead of pure make-to-order or make-to-stock systems and that information exchange between the supplier and the manufacturer is critical for effective lead time quotation.

It can also be argued that is important for a firm to be able to respond timeously to change in the market. Creating an extra reactive capacity that can respond effectively to uncertain demand is an important component of any accurate response program (Qing and Ha 2008). Reactive capacity is the maximum volume of production that can be committed after good demand forecasts have been obtained (Gattorna 1998). Reactive capacity streamlines the supply chain.

Specifically, a holistic approach would be for a firm to understand the drivers of its reactive capacity and explore ways in which labour costs, capital costs and mismatched incentives affect supply chain's target reactive capacity level. Additional reactive capacity or a lower cost of reactive capacity has a positive competitive effect on a firm but a negative effect on the competitor (Qing and Ha 2008). The Authors illustrate where firms compete only on choosing initial inventory, lower inventory cost creates a positive competitive effect for a firm but a negative effect for the competitor. Where firms compete on both initial inventory and reactive capacity, under some reasonable conditions, inventory cost plays no role in competitiveness. It only affects how the firm use inventory and reactive capacity to fill demand. This means that understanding the implications of wholesale price and cost of reactive capacity will be useful for firms in designing contracts or negotiating contracts with their suppliers.

2.2.4 Poor New Product Development Process

It is often the case that companies need to be continuously innovative in order to remain competitive. There are various factors to take into account when screening a new product. For example, in order for the product to be acceptable on retail shelves, it must not only have the best price but it has to be the right brand, fashionable, of highest quality and be easy to buy and return (Walker 2005). However, new products require additional inventory at all stages, from raw materials to finished products (Crandall and Crandall 2003). Specifically, changes that take place during the screening process may require that certain parts become obsolete, impacting the entire supply chain.

2.2.5 Poor Internal Management Process

Agreeing the processes across the demand chain (product development, trade marketing, distribution, category management and store marketing) and supply chains (raw material purchases, manufacturing, warehousing and distribution, purchasing of goods and store operations) as well as the impact these have on

the different functions and organisations across the various chains will result in maximum benefit for the organisation. These processes need to be managed together. For example, a purchase by a consumer of an item at a store should trigger a series of activities, from raw goods suppliers to retailers, and the necessity to replace an item on the shelf (Gattorna 1998).

The trading partners within the system can use the techniques of supply chain management to bring their processes together as close to the paradigm as possible. This means bottlers can share point-of-sale (POS) data collected by retailers at a checkout, including being able to take into account the effect of promotional activities. Currently, only national account data is available to CCSA and this is for a purpose other than managing supply and demand chains. In addition, some of the bottler distribution centres that supply the so-called main market (e.g. taxi rank and spaza shops) supply order information to CCSA.

In order to integrate the planning process, organisations need to focus on the development of channel strategies, planning of manufacturing, inventory, distribution and transportation, demand planning, forecasting and marketing and promotional planning (Gattorna 1998). Operating in silos will not integrate the demand and supply chain processes that trading partners share.

Suppliers can be blamed for encouraging businesses to buy more through behaviours such as offering bulk discounts, allowing them to buy on a regular schedule, offering major discounts in order to clear old stock and making customers hold excess inventory due to lack of capacity or quality problems on their part (Crandall and Crandall 2003). This is referred to as induced demand volatility and, as indicated, is caused by credit terms, promotions and pricing, specific company policies, distribution channel structure (Gattorna 1998). The Author argues that aligning credit terms to an accounting calendar month can be a solution which provides uniformity and consistency between customer demand and supply chain.

2.2.6 Production Planning and Purchasing

It is common practice for production managers to avoid unfavourable variances by improving labour efficiencies and machine utilisations (Crandall and Crandall 2003). They do this by producing at capacity levels that avoid fluctuations. This strategy results in higher inventories when demand is lower, causing excess inventories which may become obsolete. Furthermore, procurement of materials at a price discount can cause excess inventories.

2.2.7 Conclusion

In summary, literature suggests that poor demand planning, forecasting, inventory management and organisational processes (procurement, new product development and internal management processes) are some of the contributors to excess inventory which may lead to stock write-offs and supply chain issues within the organisation. Stock write-offs, in turn, have a negative impact on company profits. There are other causes recommended by Crandall and Crandall (2003) (see Appendix 3).

Proposition 1:

Poor demand management, planning and forecasting are amongst the major causes of stock write-offs within the system.

2.3 Findings on Supply Chain Collaboration

“CPFR is an initiative among all participants in the supply chain, intended to improve the relationship among them through jointly managed planning processes and shared information” (Seifert 2003:30). According to Seifert, it is a tool for comprehensive value chain management and strategic supply chain management. Furthermore, it is a process whereby both long- and short-term information regarding point-of-sale data, forecasting, shipping, production plans

and order generation are jointly planned by key trading partners using web based collaboration software.

CPFR was started by American based mass retailers, Wal-Mart and Warner-Lambert, with the aim of reducing inventories across the supply chain (Seifert 2003). In the past, collaborations were characterised as arm's length, and the relationship among the players were competitive (Christopher 2005 cited in Kavouridis 2007).

According to Seifert (2003), collaboration encompassed the sharing of forecasts and responding to inconsistencies between parties due to Wal-Mart's promotions, capable of generating large swings in consumer demand. The sharing of data led to improved forecasting and a solid relationship between the two partners. Wal-Mart's success made the FMCG industry aware of the potential for rationalisation. Wal-Mart built relationships with its suppliers in order to offer its customers the right product, at the right time and at the right cost. Their strategy is based on ECR. Consumer in ECR means an orientation towards the needs of a consumer and efficient response means a process oriented optimisation of the supply chain. The partners benefit through higher profits as costs become reduced in the supply chain.

Nowadays, the markets are characterised by turbulence and uncertainty in demand and that makes the management of supply chain a challenge (Christopher and Lee 2004 cited in Kavouridis 2007). The Authors suggest that collaboration in the supply chain will reduce uncertainties and risks. Supply chain management (SCM) has its roots in the ECR concept which originated in the US in 1993 and was adopted by others 1996 (Gattorna 1998).

One of the greatest barriers to implementing ECR is organisation structure and attitudes (Gattorna 1998). Trading partners should not be regarded as competitors; rather cooperative relationships need to be established. At all times, the focus should be the consumer. Poirier (2003:79) agrees that "satisfying these consumers is the essence of an effective supply chain network and the ultimate reason for creating alliances within the network". According to him, it is important

to know who the consumers are and what they want. Manufacturers and retailers must jointly identify target products needed to enhance consumer product offering. Open sharing of data means a significant change in the organisation. Specifically, ECR requires an organisational structure that interfaces at every level and function.

Up until recently, competition focused on branded and dealer own brand products; supply chain efficiency and consumer needs were the least of concerns (Gattorna 1998). When restaurants became a threat, companies started to discount heavily through promotions, all in an effort to win consumers back. This caused a strain on the supply chain due to peaks and troughs in demand. ECR was about reversing the push principle where the product was pushed into the pipeline, regardless of retail sales (Seifert 2003).

The push principle creates inefficiencies and costs in the chain as manufacturers overburden warehouses and retailers increase their purchases to take advantage of discounts, without considering consumer needs. The result is large demand swings, large inventories, incorrect forecasts and capacities that are either too high or too low. Promotional sales became difficult to predict resulting in an inventory that had to be discounted at a later stage (Gattorna 1998). Faced with the pressure to sell products, retailers resorted to discounting products. Consumers, in turn, alter their shopping behaviour, only buying products when they are on sale. This reduces retailer margins.

The pull principle, applied in ECR, focuses on consumer needs and buying behaviour (Seifert 2003). Production and distribution is determined through information from retail outlets. According to Seifert, ECR discourages the silo mentality where optimising logistics at one stage of the supply chain leads to increased costs at the other stages. Instead, ECR encourages overall optimisation of the chain.

Category management (CM) is an important aspect of ECR. It is defined as a joint process whereby retailers and manufacturers manage categories as strategic business units in order to increase utility for customer, thereby increasing

revenues (Seifert 2003). CM and electronic point of sale (EPOS) go hand in hand. The former gives a holistic view of the total consumer product offering whilst the latter provides information about which product is selling where. This can be used to drive the replenishment process and can be shared with partners in the supply chain process (Gattorna 1998). While revenue remains the main focus in CM, cost optimisation is the focus in supply chain. It can be argued that cost reduction is a focus of CM since it ensures efficient structuring of promotional activities, efficient control of product assortment or the optimised development and introduction of products.

CPFR is a further development of ECR and, together with collaborative customer relationship management (CCRM); represents business concepts of second-generation ECR (Seifert 2003). Furthermore, CPFR promotes unprecedented cooperation among trading partners throughout the value chain. It is a tool for comprehensive value chain management of an organisation. Seifert argues that using CPFR recommendations and insights can help companies make vast improvements in troublesome areas, such as sales and forecasting. CPFR removes the silo decision making and gets departments to share crucial information, removing the walls between strategy formed on the supply side and that formed on the demand side.

2.4 CPFR Model

Below is a model for CPFR (Seifert 2003). See Appendix 2. The model is divided into three phases, namely planning, forecasting and replenishment. It structures the relevant steps necessary for the CPFR implementation process.

Step 1 – Develop Collaboration Arrangement

Step 1 is about establishing rules of cooperation between a retailer and a manufacturer. It consists of the following actions:

- Develop a mission statement

This is a common basis for cooperation, trust and utilisation of resources;

- Determine CPFR goals and objectives

This includes agreement on performance measures and setting and establishing criteria for exceptions;

- Discuss competencies, resources and systems

These must be clearly determined and capabilities clearly defined;

- Define collaboration points to integrate business functions

The points must be mapped to trading partners' competencies and establish responsible functions;

- Define information sharing needs

Information from both manufacturer and retailer must be identified, which information needs to be shared, e.g. anomalies and the frequency of exchange of information, medium of exchange and allowable response time before an information request can be honoured, and a forecasting method must be determined;

- Define service and ordering commitments

In a nutshell, this means collaboratively agree forecasts which will become firm orders;

- Determine resource involvement and commitments

Both parties establish which resources would be made available, e.g. how many employees will be devoted to the CPFR process;

- Resolve differences between parties in the CPFR process

This entails having measures for conflict resolution, standardisation of rules for handling disagreements and differences between partners;

- Regularly review cycle for CPFR agreement

Process needs to be continually evaluated and the success of the collaborative relationship needs to be benchmarked. Modification can be done whenever necessary; and

- Publish front-end agreement

The agreement becomes binding for all participants. It can also be updated to reflect new developments.

Step 2 – Create joint business plan

Here, both parties agree a business plan taking into account their individual corporate strategies. Information such as minimum order quantities, lead time and order frequency is continually exchanged. The joint business plan improves the quality of forecasts and sets the platform for communication and coordination in the supply chain.

Step 3 – Create sales forecast

The retailers' POS data and promotion planning provide the basis for sales forecast.

Step 4 – Identify exception for sales forecast

Examples include seasonal products. The criteria for handling these are determined in step 1.

Step 5 - Resolve or collaborate on exception items

This is achieved through real-time communication between the partners. Each change flows into the new forecast. The increased communication and decision-making by producers and retailers increases the reliability of the order that is generated later.

Step 6 – Create order forecast

The order volume is based on the inventory targets per product and the destination of the goods. The short-term order forecast is used to generate actual orders and the long-term order forecast flows into overall planning.

Step 7 – Identify exceptions for order forecast

All products are identified that represent exception to the cooperatively determined acceptance of the order forecast.

Step 8 – Resolve or collaborate on exception items

Here, exceptions are identified and clarified through real-time communication between partners. Each change flows immediately into the new forecast. This accelerated communication increases the reliability of the order that is generated later.

Step 9 – Generate order

Here, an order forecast becomes a firm order. Order generation can be handled by either the manufacturer or retailer depending on competence in the process, access to appropriate technology and the availability of free resources. Raw material suppliers must also be included in this CPFR process.

Proposition 2:

The most crucial parts of the CPFR process that will reduce stock write-offs and help ensure a fair allocation between system partners are:

1. Step 1 – Develop Collaboration Agreement.
2. Step 2 – Create Joint Business Plan.
3. Step 3 – Create Sales Forecast.
4. Step 6 – Create Order Forecast.

2.5 Factors to consider when designing CPFR structure

2.5.1 *Relationship between functions*

Supply chain management is not owned by any department in the organisation, but rather is a phenomenon that touches nearly all areas of business (Mentzer, Stank and Esper 2008). According to the Authors, a clear delineation of the domains of logistics, marketing, production, operations management and supply chain management should help firms clarify the level of decision-making scope required for change initiatives.

Functional managers often get frustrated by conflicting goals. For example, inventory improvement becomes a challenge when one has to improve customer service. The Authors argue that the best approach would be to assign inventory improvement to a cross-functional manager, such as a chief operations officer, for execution.

Furthermore, reducing overall supply chain costs can be achieved through dynamic control and flexibility, which in turn influence supply chain performance.

The benefits are for the entire system. For example, choosing the least-cost transport mode benefits distribution. Recent trends show that when competition increase, profit margins decrease (Wadhwa et al. 2008). This, the Authors argued, led to the development of dynamic supply chains to reduce total cost, lead-time, inventory and backorders, among others by selecting the best supplier for customer of best retailer, for retailer of best wholesaler of choice of a supplier depending on how long the ultimate customer is willing to wait and what the overall cost is. The higher the number of alternative options or flexibility, the higher is the complexity in the supply chain.

Walker (2005) listed some of the statements made by people opposing implementation of supply chain management in their organisations:

- The benefits of supply chain management come only from ERP;
- The investment required for ERP is too large and the return too low;
- Information systems that large companies can afford are too expensive for small companies;
- Supply chain management is only for large companies;
- A network is too complex to understand;
- Companies have to clean their own house before joining a network;
- Networks fail because of greed by one of the trading partners;
- Networks fail because of a lack of trust among the trading partners;
- Networks fail because people at all levels resist change; and
- Every organisation has to be an equal for the network to function.

Networks refer to supply chain networks.

2.5.2 Organisation Culture

In order for demand planning to improve in the organisation, the following guiding principles must apply (Gattorna 1998):

- Focus – people must be fully committed to it;
- Ownership – the organisation must foster understanding of demand forecasts across the company and attitude shift from ‘my number’ to ‘our number’; and
- Balance – organisations must have the authority to balance supply and demand in accordance with strategic objectives.

As a result most organisations align demand planning with sources of input to forecasting, typically marketing. The issue with this is that the analytical skills required in supply and demand planning are more frequently found in operations instead of marketing. According to Gattorna, planners require a specific set of skills – analytical abilities, coupled with the ability to use statistical analysis tools. In addition, communication, negotiation and facilitation skills are critical if a consensus process is being employed.

Demand forecast should never be forced to equate a business plan (Gattorna 1998). Gattorna stresses the fact that forecasts should rather serve as a predictor of performance relative to a business plan. In other words, forecasts should always be adjusted based on actual orders received and demand should be based on that. Forecasts are even more accurate when based on actual consumer demand such as point of sale (POS) data.

2.5.1 Role of Strategy

Poirier (2003) stressed the fact that supply chain is an important framework for supporting operations and enhancing strategic direction. According to Ehlers and

Lazenby (2003:205), “when a tight fit between strategy and structure is absent, the organisation’s performance will decline, as it experiences administrative problems, resource allocation problems and conflicting priorities regarding strategy implementation tasks”. Furthermore, Poirier (2003) stressed that organisations that made progress on supply chain management are the ones that implemented it with an intention to move the organisation towards an advanced level of performance that would have meaning for the organisation and its customers. On the other hand, a business strategy should be used by an organisation as a tool to drive it towards integration of their demand and supply regimes to build a platform for achieving a competitive advantage (Gattorna 1998). Accordingly, it is important for enterprises to understand supply and demand processes along the chain and manage these processes cooperatively, to eliminate waste and to create greater value for all partners.

The challenge faced by organisations is taking supply chain management to a more strategic level. By elevating it to the heart of decision making in the boardroom, a company can improve profitability and growth (Gattorna 1998). Specifically, companies need to move beyond just reducing inventory levels, distribution costs, and lead times, to the re-engineering of supply chain cost structures, to improving customer service. Poirier (2003) agrees with this, stating that a lack of cohesive customer relationship management strategies has been the reason for slow progress in all industries.

Furthermore, the supply chain can directly affect both profitability and invested capital. Revenue is increased through greater customer service and product availability. Cost is reduced by lower cost of goods sold, transportation, warehousing, material handling and distribution costs. Working capital is improved through lower raw materials and finished goods inventory and shorter order-to-cash cycles. Fixed assets are reduced due to fewer physical assets like trucks, warehouses and material handling equipment.

Managing a global supply chain is risky as one need to take into account differences in economics, cultures, politics, infrastructure and the competitive

environment which may result in more delays and greater uncertainties (Manuj and Mentzer 2008). Recent disasters have left many supply chains exposed and risk mitigation in supply chain has become a necessity. It has become important for organisations to reconsider their strategy and, if necessary, align the organisation to this changed environment in order to achieve a strategic fit (Wagner and Bode 2008).

The Authors argue that risk management is costly and can only happen if probability of supply chain disruption is high and the effect of these on performance is high. They identified five types of supply chain risk classes namely demand side, supply side, regulatory, legal and bureaucratic, infrastructure and catastrophe. The research found that external factors or risks had no impact on supply chain performance; therefore they should not form part of strategic decisions. On the other hand, everyday demand side and supply side disruptions are very important for achieving high supply chain performance. Therefore company resources should focus on these.

Coke, Wal-Mart and Dell are examples of US companies who have aligned a supply chain strategy with a business strategy as reflected in economic value added (EVA) growth (Gattorna 1998). Coke, by acquiring many of its independent bottlers, won the battle against Pepsi Cola. Dell uses a direct sales channel strategy that involves processing orders directly from customers, building computers to the customer's order and delivering within five days. This required its suppliers to maintain an inventory within 15 minutes of its manufacturing plants. With 14 days' work in progress and a finished goods inventory, this meant it sold computers that are 60 days newer than its competitors who are operating traditionally configured supply chains (Gattorna 1998).

2.5.2 Strategic Alliances

Retailer-supplier partnerships (RSP) are ideal in a simple value chain. However, it can be argued that RSP may require more time within the system as there are

many partners involved and not everyone can invest in advanced information systems required.

Given the level of investment in supply chain management, it has become important for firms to be able to measure performance within the supply chain and be able to manage it. Both structural and relation characteristics of supply chain are important for firms to consider because of their respective impacts on its ability to serve customers (Autry and Griffiths 2008). Structure addresses the configuration of connections between supply chain firms while the relationship examines the qualities and properties of supply chain connections. According to the Authors, firms with stronger relationships benefit most from the relational supply chain capital invested and this manifest as greater execution-oriented performance. In addition, the Authors argue that pursuing only strong or only weak relationships set firms up for either an efficient but not very innovative supply chain, or an innovative but somewhat inefficient supply chain.

Structures provide benefits such as access to innovative information due to the bridging function performed by those spanning information gaps in the network structure. The report suggests further research into whether it is more efficient and effective for firms to invest directly in relationships with customers or suppliers, or whether it is better to invest in competitive intelligence that can be used to optimise the structure of the supply chain by identifying the most attractive partnering opportunities.

The main reason for success of the supply chain despite several weak connections or relationships is the strength or dominance of the manufacturer (Roethlein and Ackerson 2004). The manufacturer is dominant and has a bigger influence on the system. According to the Authors, the manufacturer converts corporate goals into specific quality objectives and, without adequate communication of these goals to the bottom level, the distributor is left to impose its own goals of customer satisfaction. Specifically, this can affect the level of trust within the chain as the distributor stops providing feedback to the manufacturer and the manufacturer imposes its rigid standards on the distributor.

Strong and frequent unidirectional communication exists between the manufacturer and the distributor. The system has the franchise partner performing both the roles of a manufacturer and a distributor. The Authors stress that it is from this strong relationship that the supply chain is able to remain successful while communication weakens and disappears at either end of the supply chain.

The retailers, on the other hand, use category management to manage products offered to the consumer and this makes their cooperation critical for suppliers (Holmstrom, Framling, Kaipia and Saranen 2002). However, according to Holmstrom et al. (2002), very few of them forecast demand by SKU due to the number of different items to manage. The high service levels from suppliers means there is no benefit for them in forecasting demand. Efficient replenishment of stock is dependent on retailers' forecasting, even though this is extra work for them. The Authors stress that the relationship is no longer about partnership but massive collaboration by a large number of business partners. Since CPFR is not all about forecasting, category management can be used as input in determining pipeline inventory. Rather than focusing on SKUs, retailers need to work with categories using the rank and share approach where they focus on changes in the rank order of the SKU in the category (Holmstrom et al. 2002).

The system uses a push-based supply chain where production and distribution decisions are based on long-term forecasts. The plants base demand forecasts on orders received from the retailers and this process makes it difficult to react to changes in the marketplace. The result is an inability to meet changing demand patterns and stock write-offs as demand for product declines or the shelf life expires. The bullwhip effect result in excessive inventories brought about by high safety stocks, unacceptable service levels and product obsolescence (Simchi-Levi et al. 2003).

2.5.3 Role of Information Technology

Most organisations have implemented inventory systems such as ERP, JIT and VMI. For these firms, implementing supply chain management systems becomes

a challenge as there is a need for integrating many isolated systems, modules and strategies for effective planning, control and execution of large projects across both manufacturing and distribution environments (Samaranayake and Toncich 2007).

Supply chain optimisation is defined as the most efficient use of resources that are involved in satisfying a customer order through a network of companies subject to restrictions and limitations on the use and flow of these resources (Hassini 2008). From the IT side, SCM came about as a result of processes that started in the early part of the last century. These were EOQ, progressing through Materials Requirements Planning (MRP), Materials Requirements Planning II (MRPII), Distribution Requirements Planning (DRP), Just In Time (JIT), Total Quality Management (TQM), Theory of Constraints (TOC), Time Based Competition (TBC), Supply Chain Management (SCM) and Value Chain Management (VCM) (Seifert 2003). It is fair to say that each process had its shortcomings hence an evolution from one to the next, with each bringing its own improvements.

These systems are evidence of technology as an enabler. As mentioned above, the challenge is to remove the silo mentality and get all partners to connect horizontally in order to keep the consumer satisfied. For example, the time it takes to promote, produce and distribute promotional products is a function of plans developed by marketing. Marketing cannot therefore be excluded from supply chain planning (Seifert 2003). Senior leadership also need to provide direction and support and this is demonstrated by the organisational culture they set.

Traditional approaches to mitigating supply and demand mismatches focus on improving forecasting, optimising production and inventory plans and reducing lead times (Gattorna 1998). Technology is the main driver towards improving forecasting but can be limited in its effectiveness due to short lifecycles of some products (e.g. fashion) which limits the extent to which historical demand can be collected. Scanning at the counter can also distort sales data stored in a computer. For example a sale of a can of Coke and a can of Diet Coke might be scanned as a sale of two cans of Coke if the two products are priced the same.

According to Gattorna, information technology plays a major role by providing the integrating tools needed to convert data into business processes that are meaningful and make it possible to convert consumers that are needed to feed company strategies. Specifically, modern technology allows consumers to buy goods via the internet, consumer direct channels and home shopping television networks. In contrast, Poirier (2003) highlights the fact that the focus should be on the business needs rather than technology implementation and that the systems implemented should not be to cut down headcounts by automating processes in the back end office. Furthermore, he argues that focus on automating processes intended to generate new sales, without doing something to make things better for the customer, does not work.

The internet has made it possible to create larger networks and extend supply chain optimisation capabilities to numerous partners (Green 2001). E-business is another tool that has been used to service customers and collaborate with business partners. Planning on an inter-enterprise basis requires the planning to be done jointly among many of the chains trading partners, where suppliers' and customers' constraints are incorporated within the planning process (Rudberg, Klingenberg and Kronhamn 2002). Supply chain linkages can be made more easily and at a lower cost using web-based technology (Green 2001). Each organisation is responsible for its own plan but incorporates relevant information from other organisations.

The implication of this extended supply chain software capability is the ability to form collaborative relationships known as intelligent supply chain networks which means going beyond immediate suppliers and customers to real time knowledge management of suppliers' suppliers and customers' customers (Green 2001). Systems like SAP, Oracle, and JD Edwards are expected to provide such collaborative solutions. The quality of shared information continues to be an issue that must be considered in the sharing of information for collaborative planning in supply chain (Petersen, Ragatz and Monczka 2003). Green (2001) argues that determining the degree to which common databases would be shared with enterprise partners remains a challenge as trust becomes an issue.

Linked information systems are not a complete answer for supply chain integration (Petersen et al. 2003). Firms will continue to communicate and share information through both traditional modes of communication as well as linked information systems if their planning is to be successful. The study showed that the level of trust that exists between two firms, together with the quality of information exchanged are factors that have an impact on the effectiveness of the decision-making process in collaborative planning. Specifically, the quality of information exchanged via linked information systems has a significant impact for all types of collaborative planning and has a larger impact than the quality of information exchanged through traditional modes in every collaborative plan context except for joint goal or target setting.

There is a clear trend for accepting third party software and systems support for supply chain applications. Partnerships are formed between REP and supply chain planning firms, supply chain management with ERP software. There is less reliance on data interchange for data transmission as more supply chain software is evolving towards internet applications that communicate with ERP systems (Green 2001).

Globalisation has driven companies to take optimal decisions such as inventory optimisation. Through supply chain networks, they are able to adapt local decisions to changing structures of supply chain. Supply chain network members should frequently make decisions about using resources, their own and those of the others (Sheremetov and Rocha-Mier 2008). It is vital for a member to be connected and accepted by others in order to avoid conflict. This arrangement, according to the Authors, makes decentralisation of decision-making in supply chain management an easy task.

When their products are out of stock, customers' buying patterns change as the consumer has choice. In a study done on the value of information sharing when the supply chain distributes several substitute products, Ganesh, Raghunathan and Rajendran (2008) had the following findings:

1. Substitutability reduces the value of information sharing in most situations, and a higher degree of substitution results in larger decreases of the value of information sharing. Product substitution increases the base level profit, that is the profit when information isn't shared and demand pooling reduces the demand variance per product;
2. The reduction in the value of information sharing because of substitutability, for any degree of substitution, is higher when demand is correlated, when the number of substitute products is smaller or when the number of products whose demand information is shared is higher; and
3. When information about demand of only a sub-set of products is shared, the value of information sharing can be higher under substitution than under no substitution;

The Authors argue that if the substitution effects are ignored then there is a risk of overestimating the value of information sharing.

2.5.4 Conclusion

In summary, the literature suggests that technology, organisation culture, company strategy and structure all have a role to play in allowing collaboration to function properly within an organisation. It is not possible to have one without the other. It is important for the organisation to understand the impact of applying these incorrectly.

2.6 Impact of CPFR on performance

2.6.1 *Benefits of CPFR*

According to Seifert (2003), the benefits of having CPFR are:

- Drastically improved reaction times to consumer demand. The reduction of shortages and optimisation of turnaround times make for a more flexible and more reliable supply chain that ultimately improves product availability and customer satisfaction;
- Higher precision of sales forecast. Because it is a co-operative effort, forecast gains reliability, everyone profits from synergies. Partners bring their experience, differing perspective, consumer data and research into the forecasting. This increases reliability of the sales forecast;
- Direct and lasting communication. Establishing direct lines of communication raises the level of exchange between the phases of the value chain;
- Improved sales. Cooperation in planning, forecasting and supply dramatically reduces out-of-stock situations, thereby increasing income and all parties benefit; and
- Reduced costs. Reconciling production plans with raw material suppliers and manufacturing through optimised sales projections opens up further savings potential.

The benefits of implementing CPFR for a retailer include increased sales, higher service levels and lower product inventories (Fliedner 2003). According to the Author, for the manufacturer it means increased sales, higher order fill rates, lower product inventories, reduced capacity requirements. Furthermore, shared supply chain benefits include direct material flows, improved forecast accuracy and lower

system expenses. There is evidence of these benefits from companies such as Procter and Gamble and Heineken.

2.6.2 Performance Management

Collaborative performance management is used to monitor improvement (Rudberg et al. 2002). The report highlighted six planning processes suitable to perform on a collaborative basis:

1. Collaborative demand planning;
2. Collaborative supply planning;
3. Collaborative promotion planning;
4. Collaborative transportation planning;
5. Collaborative product development; and
6. Collaborative performance management.

According to the Authors, if collaborative demand and supply planning is carried out properly, it reduces the need for a collaborative promotion planning process. In addition, collaborative transport ensures that material and finished goods are delivered at the right time, to the right place. Stable relationships in the supply chain are the most appropriate for collaborative performance management. Transparency is the key success factor as members of the supply chain can see how the other one is doing and can use the opportunity to incentivise other members to increase performance for the whole chain.

Furthermore, it is important that supply chain members define how to share risks and rewards before entering collaboration. Parties involved in collaborative demand planning should include all of the primary members in the supply chain. Due to the confidentiality nature of forecasting information, public and private encryption methods are used for authentication and encryption procedures and

message digests for ensuring data integrity (NIST 1999 cited in Holmstrom et al. 2002).

Collaboration should preferably take part between adjacent nodes in the supply chain (Rudberg et al. 2002). An example would be between a manufacturer and its distributor or between the distributor and its customer. The benefit for the manufacturer is reduced uncertainty in demand, more accurate forecasts due to information exchange, reduction in safety stock and improved capacity utilisation. The distributor can improve delivery processes for its own customers, thereby providing better customer service.

However, implementing new systems is often met with resistance. The following are some of the remarks from the marketing department that were found in the Barilla case where the organisation was changing its distribution system (Simchi-Levi et al. 2003):

- We run the risk of not being able to adjust our shipments sufficiently quickly to changes in selling patterns or increased promotions; and
- If space is freed up in our distributors' warehouses when inventories of our own products decrease, we run the risk of giving our competitors more distributor shelf space. The distributors would then push our competitor's products more than our own since once something is bought it must be sold.

Interestingly, a similar comment to the last point came up at a meeting in the organisation being researched. The argument was that, since the company's products have a high stock turnover in a store, it shouldn't even be debatable that more retail space should be allocated to its products. This means more stock for the store as well as the company's warehouse. The company needs to identify tools that will allow it to control the bullwhip effect, or the increase in variability in the supply chain (Simchi-Levi et al. 2003).

Variability is caused by demand forecasting, lead time, batch ordering, price fluctuation, and inflated orders. In an attempt to control the bullwhip effect, some organisations centralise demand information within a supply chain. According to Simchi-Levi et al. (2003), channel strategies like everyday-low-pricing (EDLP) where a product is offered at a single consistent price rather than regular promotions are used to reduce variability in customer demand. Strategic partnerships promote information sharing within the supply chain thus eliminating the bullwhip effect.

Conflicting objectives remain a challenge. Ingredients suppliers want to see consistent volume orders, production managers prefer producing products that ensure quick overhead recovery and production efficiencies and retailers need short lead times in order to satisfy customer demand (Simchi-Levi et al. 2003). Interestingly, some organisations focus on local optimisation. That is, each partner in the supply chain does what is best for their facility rather than what is best for the entire chain.

In a study done on how firms' approach to supply chain management can shape performance, supply chain orientation was depicted as a strategic capability with customer orientation, competitor, supplier, logistics and operations, and value chain coordination as important tools for revealing this capability (Tomas, Hult, Ketchen, Adams and Mena 2008). The Authors argue that prioritising logistics and value chain could prove productive if the organisation is struggling to create a supply chain orientation. However, an integration of functions rather than silos should be prioritised. The study also found that supply chain orientation not only affected internal process performance but also affected customer performance, financial performance, innovation and learning performances.

2.6.3 Challenges of implementing CPFR

Amongst the barriers of implementing CPFR is the lack of internal alignment with regards to corporate goals and objectives that support a company's commitment to its shareholders and stakeholders, compensation that promotes a silo mentality,

non-existent change management skills, tunnel vision, the non-invented here mentality, internally focused organisational silos, legacy systems and leadership that is focused on Wall Street and making up the numbers regardless of the expense to the long-term prospects of the company (Seifert 2003). Furthermore, people fall into the trap of personal comfort zones which they choose not to leave, even if it means the demise of the company.

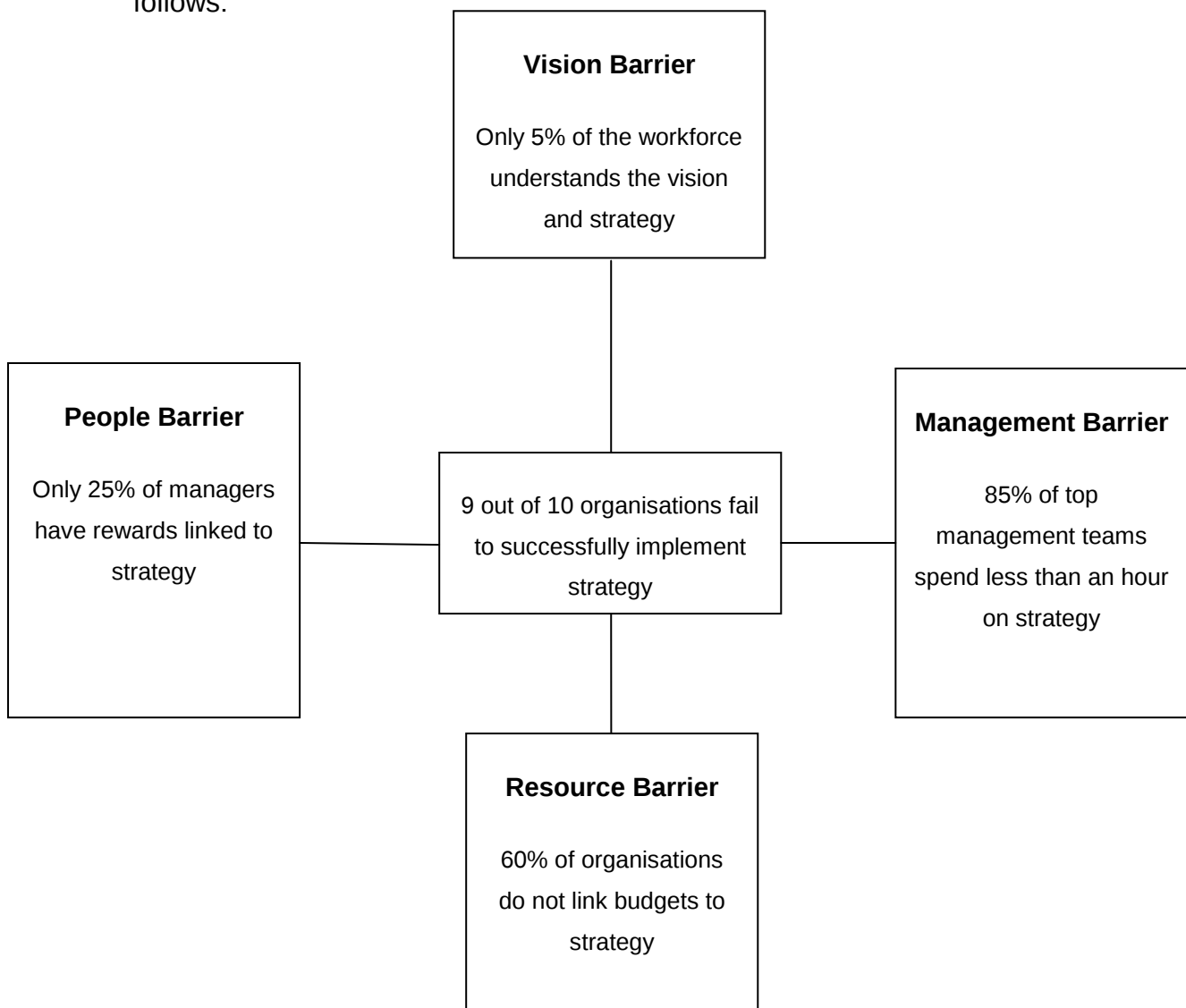
It is also important for the system to understand the internal opposition and support for SCM strategies. Cox, Ireland, Lonsdale, Sanderson and Watson (2003) classified four categories of individuals in the organisation namely:

- Zombies – don't understand what SCM is and don't want to help its implementation;
- Enemies – understand what SCM is but don't want to help with its implementation;
- Confirmed allies – understand what SCM is and want to help with its implementation; and
- Potential allies – don't understand what SCM is and want to help with its implementation.

Obstacles are lack of trust in sharing sensitive information, the lack of internal forecast collaboration, availability and cost of technology expertise, fragmented information sharing standards, aggregation concerns (number of forecasts and frequency of generation) and fear of collusion (Fliedner 2003). Sharing sensitive operating data may enable the trading partner to take advantage of the other.

According to Fliedner, organisational structure can also be a stumbling block as various functions may keep demand information in formats that suit them. For example, at CCSA volume is reported in unit case, physical case, gallons and by product category or by pack. This can result in conflicting forecasts. Furthermore the Author argues that CPFR requires internal collaboration within the organisation. In the same way, external collaboration is required. The lack of

technology, technical expertise and the lack of integration capabilities across the supply chain present barriers to implementation. Specifically, a full-blown collaboration would mean an increase in the number of forecast as indicated by point of shipment data which represent the aggregate of all stores. There is a potential for two or more suppliers or retailers to collude and share information harmful to the trading partners. In Ehlers and Lazenby (2008), the Balanced Scorecard Collaborative identified four barriers to strategy implementation as follows:



Proposition 3:

The rewards for improved collaboration, with a well designed CPFR process outweigh the risks of maintaining the status quo.

2.7 Conclusion of Literature Review

The literature review provided an insight into the causes of stock write-offs. This study will investigate those factors within the system context with the hope that the result will improve processes within the organisation and can provide best practice within the beverage industry.

The literature also highlighted how supply chain collaboration may provide a solution to the stock write-off problem. It demonstrated the CPFR model as a tool that can be adapted by an organisation to improve its supply chain process. It touched on factors to consider when setting up a CPFR structure in the organisation. These include the role played by information technology, how aligning the organisational culture to the supply chain objectives and having the right strategy and strategic alliances in place can add value in creating a supply chain advantage. Lastly, the literature demonstrated the impact of CPFR on overall organisational performance.

This report will investigate whether CPFR will provide a solution to the system's stock write-off allocation problem which, in turn, can create a supply chain advantage for the organisation.

2.7.1 Proposition 1:

Poor demand management, planning and forecasting are some of the main causes of stock write-offs within the system.

2.7.2 Proposition 2:

The most crucial parts of the CPFR process that will reduce stock write-offs and help ensure a fair allocation between partners are:

Step 1 – Develop Collaboration Agreement

Step 2 – Create Joint Business Plan

Step 3 – Create Sales Forecast

Step 6 – Create Order Forecast

2.7.3 Proposition 3:

The rewards for improved collaboration, with a well designed CPFR process outweigh the risks of maintaining status quo.

3 RESEARCH METHODOLOGY

3.1 Introduction

This chapter describes the methodology that was followed to achieve the research objectives of the study. The chapter starts off with a description of the method that was chosen. It then covers the research design, population sample, procedures used in data collection, data analysis and interpretation. The chapter concludes with a discussion on validity and reliability of the chosen research method.

3.2 Research Methodology

The objectives stated in section 1.3 require the Researcher to reveal the causes of write-offs and gain insight into the processes, if any, currently in place to deal with the problem.

Yin (1994) defines a case study as an inquiry that investigates a contemporary phenomenon within its real life context, especially when the boundaries between phenomenon and context are not clearly evident (Yin 1994 cited in Rowley 2002:18). According to Leedy and Ormrod (2005), a case study may be especially suitable for learning more about a little known or poorly understood situation. Furthermore, a focus on a single case that is unique or has exceptional qualities can promote an understating or inform practice for similar situations. Hence this case lends itself well to qualitative research.

The objective of this research was to uncover causes of stock write-offs in the FMCG beverage industry, how the stock write-offs can be fairly allocated between CCSA and its bottling partners and to explore possibilities for a better CPFR process. CCSA is a big organisation and one of its bottlers is the sixth largest in the entire Coca-Cola system. The Reseacher thought that the best opportunity to learn is to choose the largest, most successful supply chain type in this industry.

Data analysis steps defined in Leedy and Ormrod (2005) were applied to this case. The use of index cards assisted in identifying categories that helped cluster data into meaningful groups. Data was then scrutinised for underlying themes and other patterns that characterise the case more broadly. Lastly, conclusions were drawn which may have implications beyond this specific case.

Choosing a case method allowed the Researcher to explore more fully the motives, methods and reasoning of the respondents which a questionnaire could not accomplish. Yin (2005) highlighted the strengths of interviews as the source of evidence as thus:

- Targeted – focuses directly on case study topics; and
- Insightful – provides perceived causal inferences and explanations.

3.3 Research Design

As mentioned, since this study involved a single case, the case study method was suitable for compiling information gathered during the interviews. Rowley (2002:18) defined research design as “the logic that links the data to be collected and the conclusions to be drawn to the initial questions of the study”. The approach to the research design for this study was the formulation of research propositions followed by semi-structured interviews that helped discover any new aspects not covered in the literature review.

3.3.1 Research Propositions

The research focus was on understanding the causes of stock write-offs at Coca-Cola South Africa, as well as explore whether implementing CPFR can help address the issue. This led to the formulation of research propositions that reflect a speculation of the findings by the Researcher.

Broadly, the interview questions related to the stated proposition as follows:

Proposition: 1

Poor demand management, planning and forecasting are some of the main causes of stock write-offs within the system.

➤ The following questions were used to validate this:

- How many products can be deemed as failures during the past three to five years (as a percentage of all new product introductions)?
- What is the forecast accuracy of new product introduction?
- What was the value of stock write-offs in the past three to five years?
- What have been some of the worst consequences of those write-offs in terms of manufacturing, distribution, stock holding and marketing costs?

Proposition: 2

The most crucial parts of the CPFR process that will reduce stock write-offs and help ensure a fair allocation between partners are:

Step 1 – Develop Collaboration Agreement.

Step 2 – Create Joint Business Plan.

Step 3 – Create Sales Forecast.

Step 6 – Create Order Forecast.

➤ The following questions were used to validate this:

- What are the initiatives that must be implemented to improve this, e.g. collaborative planning and forecasting, supply chain visibility, other?
- What are the five major organisational barriers preventing this improvement?

Proposition: 3

The rewards for improved collaboration, with a well designed CPFR process outweigh the risks of maintaining the status quo.

➤ The following questions were used to validate this:

- What will be the major benefits if implemented successfully? Internally?
External competitive positioning?

3.3.2 Interview Schedule

The intention of the Researcher was to limit the list of questions to a small number. In most cases, answers to some questions emerged while the interviewees were responding to others. The participants were a fair representation of the intended group, selected with the objective in mind, as illustrated in Table 1. A structured interview schedule was designed to be used during interviews to ensure questions are answered with as much detail as possible to enable proper analysis. The interview schedule is attached in Appendix 1.

The interview questions were derived from objectives and literature in which they came. As mentioned, they helped assess the level of frustration brought about by the lack of process, highlighted the recommendations to improvements as well as preparedness and acceptance by management and staff of implementing the CPFR process.

As highlighted by Yin (2009), amongst the weaknesses of interviews as the source of evidence are:

- Response bias;
- Inaccuracies due to poor recall; and
- Reflexivity – interviewee gives what interviewer wants to hear.

The objective was to get the respondents talking and this was achieved, mainly due to the fact that the problem that was investigated had caused frustrations within the system. As mentioned, interviewees are all employees in the system and so their responses may be biased towards their organisation. The interview also tried to assess their level of commitment, understanding and attitude, i.e. whether they think implementing the CPFR process will be successful or whether it should be a top priority for the system.

3.4 Population and sample

3.4.1 *Population*

The population for this study was determined based on the key decision makers within the value chain. A value chain provides an indication of profit split between trading partners for each product, pack and channel. Every new product launch or packaging innovation is evaluated using the value chain. The population comprised of CCSA representatives – marketing, channel, finance, supply chain, new product development, as well as bottler representatives – planning, production, finance. The population excluded external customers due to the limited scope of the study.

3.4.2 *Sample*

The people that were interviewed were determined based on the role they play within the system supply chain, either from an operations perspective (planning, manufacturing and finance) or marketing (innovations, brand strategy, demand planning). The planning and supply chain managers are responsible for production planning and forecasting within the manufacturing operations and are members of the supply chain committee that is headed by CCSA. The directors are responsible for strategic decisions such as launching new products whilst the

finance managers assume responsibility for reporting manufacturing variances and write-offs.

Four interviews were conducted with each bottler representative in charge of production planning and supply chain. These are accountable for variances reported by their operations, together with all supply chain issues within their respective organisations. If necessary, they would seek input from internal staff who directly report to them since they are the ones that may be more close to the issues at hand. A total of 12 interviews were planned. Below is a list of people that were interviewed and the reason for choosing them.

Table 1: List of respondents

Position	Operation	Reason for choice
Managing Director	Canners South Africa (Pty) Ltd	Central operation; produces cans for all bottlers
Supply Chain and Planning Manager	Coca-Cola Shanduka Beverages (CCSB)	Previously family owned business; no systems in place
Supply Chain and Planning Manager	ABI	Biggest bottler in South Africa
Production and Planning Manager	Penbev	Family owned business
Finance Managers – All four Bottlers	ABI, CCF,CCSB, Penbev	Report and explain reasons for write-offs
Consumer Marketing Director	Coca-Cola South Africa	International Experience
Demand Planner	Coca-Cola South Africa	Creates concentrate orders for the system
New Product Launch - Commercialisation	Coca-Cola South Africa	Heads Innovation Process and facilitates Commercialisation Innovation Forum (CiF)
Commercialisation and Customer Leadership	Coca-Cola South Africa	Strategic decision maker; head of brand and channel teams

3.5 Data collection

Triangulation was applied in this case. Rowley (2002:23) argues that “one of the greatest strengths of case studies as compared with other methods is that evidence can be collected from multiple sources” while Yin (2009) argues that the need to use multiple sources of evidence for data collection far exceeds that in other research methods such as experiments, surveys or histories.

The study entailed the use of three sources of data, namely, interviews, a questionnaire and a documentation of notes.

3.5.1 *Building a Case*

The case focus was on whether the internal processes within the system ensured a fair allocation of stock write-offs. The Researcher based the need for the study from the interactions between bottler and brand representatives at various forums. There was temptation from the Researcher to use their financial background to source write-off information from the financial records. However, a decision was taken to leave these till the end.

At the beginning of March 2009, a meeting was scheduled with CCSA supply chain and innovations manager to ascertain whether they understood the size of the problem and whether a process was in place to address the issues at hand. The answer provided was that the way the business model is structured would not provide a solution. The Researcher thought the matter needed to be investigated further.

Before the research begun, permission to investigate the matter further was sought from the business unit president who provided the lead for the Researcher. The reason for seeking his permission was to make sure there was co-operation from the system. Due to the sensitivity of the area under investigation, external customers were excluded from the interview process.

A cover letter introducing the research study was sent to each planning manager between the 19th and the 23rd of March of the year of the study (see Appendix 4). This clarified the purpose and significance of the study. The Researcher followed up with a phone call and introduced the industry expert who was to accompany them at the initial meeting with planning managers. The reason for his inclusion was because the university panel suggested it as the Researcher came from a finance background and had no knowledge of supply chain operation. Another reason was to make sure the information sourced was reliable and in line with industry norms. He ensured that the Researcher remained focussed on the issue at hand by asking relevant questions. He was part of subsequent interview meetings held with bottlers as well as the demand planner.

The semi-structured interview questions were sent out prior to the meeting to help the Researcher think about the problems faced by bottlers that are directly or indirectly linked to inventory. These revolved mainly around areas of inventory, forecasting and delivery and included the following:

1. What is the one competitive pressure or industry trend problem that, if solved, would eliminate 80% of your problems?;
2. What is the one customer service problem that, if solved, would eliminate 80% of your customer service problems?;
3. Name the one forecasting problem that, if solved, would eliminate 80% of your forecasting problems;
4. The one production planning and scheduling problem that, if solved, would eliminate 80% of my production planning is...; and
5. The one inventory problem that, if solved, would eliminate 80% of my inventory problems is...

Interview meetings were conducted with the Cannery managing director, the supply chain and planning manager at Shanduka as well as the planning manager at ABI who had been recently called back from Coca-Cola Fortune, a bottling

operation in which he held a similar role. The reason for choosing these respondents was because they were directly faced with the inventory write-offs problem at their facilities and thought that something needed to be done.

The Researcher took notes and recorded the conversations for later reference. This helped in narrowing the focus of the study, bearing in mind the research propositions. Forecast accuracy came up a number of times and that created a need for further exploration. In order to avoid having this study as a one-sided operations perspective, the Researcher decided to involve a wider spectrum of respondents (see Appendix 1).

3.5.2 Main Interviews

Having narrowed down the research focus and compiled the literature review, the Researcher scheduled interviews with the participants in section 3.4. Most participants were familiar with the study as indicated in the initial letter sent to them (Appendix 4). Once again, the interview questions were sent beforehand to allow the interviewees time to formulate the answers. This was done during the December 2009 period. Due to the fact that this was a peak period for the entire system, the Researcher made considerations and scheduled not more than one hour interviews using the email system.

Data was collected using semi-structured interviews that were designed specifically for the role the individual played in the supply chain (see Appendix 1). These ranged from a minimum of one to seven questions. Interviews with planning managers were held at their premises, with the exception of the Penbev planning manager whose interview had to coincide with his visit to the Coke offices in Johannesburg. His interview was in the form of a conference call that took place at the Researcher's office whereby the industry expert dialled in to join the discussion.

The interviews were held from the 3rd to the 15th of December 2009 and, on average, took one hour to an hour and a half. The exception was the interview

held with the demand planner which took two hours due to the fact that he had more information to share since he was at the inception of the supply chain department at Coke South Africa and had seen all the teething problems the system had encountered. In addition, he was in possession of most of the records that bottlers could not provide.

Due to the fact that bottler representatives were located in various parts of the country, the Researcher used telephone interviews to gather data. All interviews with Coke associates were held individually and took place at their offices. No recordings were made this time.

3.5.3 Questionnaire

The other means of data collection used was a questionnaire where respondents were asked to rank the causes of write-offs in their organisations (see Appendix 2). The Researcher intended to enquire about the experiences of the interviewees with the current process and understand the various enablers and barriers in implementing a CPFR process. The responses were compared between the employees of CCSA and the bottlers' in order to eliminate blame.

3.5.4 Other Data Sources

Audio recordings of the initial meetings with the planning managers were done using a digital voice recorder. The Researcher also made hand written notes for all the discussions held with respondents during interview meetings.

3.6 Data analysis and interpretation

The research propositions that shaped the data collection process formed the basis for data analysis. This is a single-case study and a narrative was used to describe and analyse the case.

Data was categorised into the various themes to help give meaning to it. In addition, tables were used to help package the data. The interviews with planning and supply chain managers provided the content that was analysed. Each respondent helped detail the process as it stands and where they expect improvements. The other interviewees gave a different perspective which helped contrast or verify the bottlers' input. Any differences in opinions were highlighted, together with areas of improvement.

Ranking of stock write-off problems helped highlight priorities for the bottler as well as CCSA.

3.7 Validity and reliability

"Validity is the ability of a measure to measure what it is supposed to measure" (Zikmund 2003:301). In this case it refers to whether interviews and to a lesser extent, questionnaires would lead to a valid conclusion about stock write-offs allocation and whether CPFR will address the issues at hand. These concerns are addressed below.

3.7.1 External validity

This is the ability of the research to be generalised across the entire population. It has to do with "the quality of being able to generalise beyond the data of an experiment to other subjects or other groups in the population under study" (Zikmund 2003:273). Rowley (2002:25) states that "the need for generalisation derives from a positivist approach in which generalisation on the basis of samples is the norm". In this case the entire population would include other beverage companies and the entire FMCG industry.

External validity in quantitative research requires the use of a random and representative sample. This will not apply in this study since it is qualitative research done within one system. In order to reduce bias, interviews were held

individually with each representative. Despite the operations being on different levels of technology for inventory management, the information gathered did not vary drastically.

The result of the study may not be applicable to other manufacturing operations due to underlying factors brought about by the organisational structure, i.e. the bottlers own manufacturing operations and TCCC owns brands. This makes it a challenge to achieve the optimal solution. Similar operations may not necessarily have the same structure. However, given the nature of the industry – capital and labour intensive – it can be expected that some of the results of this study can be applied to other manufacturing and FMCG companies.

3.7.2 Internal validity

This refers to whether “the experimental treatment was the sole cause of the observed changes in the dependant variable” (Zikmund 2003:271). It has to do with words being used. Rowley (2002:20) argues that internal validity is about “establishing a causal relationship whereby certain conditions are shown to lead to other conditions, as distinguished from spurious relationships”.

In order to achieve internal validity, the Researcher chose respondents who are familiar with the issues being investigated. The questions are simple, encouraging questions that can develop further as the interview progresses. Supply chain and planning managers have the necessary technical background and were able to understand the consequences of stock write-offs.

3.7.3 Construct validity

Rowley (2002:20) describes construct validity as “exposing and reducing subjectivity, by linking data collection questions and measures to research questions and propositions”. As mentioned in 3.6, the proposition formed the basis for data collection and analysis for this study.

3.7.4 Reliability

This has to do with the accuracy and precision of the measurement procedure. It is the degree to which measures are free from error and therefore yield consistent results (Zikmund 2003). As mentioned, the interviews were held with each bottler representative and CCSA associates who deal directly with the issues concerned. The former consists of technical managers who understand the subject matter. The Researcher was therefore able to eliminate any potential bias as all stakeholders were represented.

The semi-structured interview questions are not specific to this case and can be applied in any other similar environment. However, the role and interpretations of the Researcher played a significant part in the final interpretations. Similar research conducted by another researcher might not lead to similar interpretation.

4 CASE DESCRIPTION

4.1 Introduction

The discussions in this chapter represent the views and opinions of the respondents. The core objective of this work was to determine the causes of stock write-offs within the system and explore whether successful supply chain collaboration can help ensure a fair allocation of stock write-offs between CCSA and its bottling partners.

4.2 System Overview

TCCC manufactures concentrate that is used as a key ingredient in the manufacture of non-alcoholic ready-to-drink brands that it owns. It has a franchise agreement with the bottling operations to manufacture these according to TCCC's high quality standard. Bottlers mix the concentrate with water and sugar, pack them into finished products and then distribute them to the trade who, in turn, supply consumers. It is therefore in the interest of TCCC to market its products to the consumers. In the recent past, the company has changed from being a carbonated soft drink company to becoming a total beverage company. This has resulted in more innovation as new products and packs are brought onto the market.

Bottlers own the capital intensive manufacturing operations and are accountable to their own shareholders for the returns they generate. The growth has resulted in challenges as bottlers have to manufacture new products and packs they are not used to. It is often the case that bottlers have to write off stock due to products not moving in the trade. TCCC, on the other hand, has innovation as a key priority and as such, has faced resistance from bottlers each time a new pack or product is introduced. A process of bringing new products has recently been put in place but, as discovered in this case study, it does not seem to provide the ultimate solution.

The key problems that have stalled the successful implementation of a collaborative process such as lack of vision, planning, structure, culture, poor relationships, lack of agreed process and lack of alignment were some of the broad themes identified in the study.

4.3 Vision

As stated by one bottler, some of the barriers preventing the implementation of collaborative planning and forecasting are the lack of leadership in supply chain and the lack of system and processes to handle the issues. According to Poirier (2003), organisations that made progress on supply chain management are the ones that implemented it with an intention to move the organisation towards an advanced level of performance that would have meaning for the organisation and its customers.

According to him, prior to implementing supply chain, the leader needs to understand the potential savings from it. The leadership team should then get buy-in and support for the clearly articulated vision from key players.

CCSA's leader took the initiative by forming a supply chain department. At the time of writing this report, the Researcher could not establish a clear vision and objectives for the department. It seems to be addressing some of the issues faced by the trading partners. The department falls under the franchise general manager who heads a team that forms the link between CCSA and the bottlers. It also works closely with the finance department on building business models for the stills business. However, as highlighted by the findings of this study, there is scope for improvement. Managerial competence and understanding as well as an appropriate alignment of intra and inter-organisational power and incentives were cited as the two basic success factors for successful SCM strategies (Cox et al. 2003). This, according to the Authors, means that management need to be aware of the tools and techniques used in SCM and what is required from the relevant functions to manage demand effectively. In addition, in order for the investment to be made in SCM, there must be an incentive from internal and external actors. The incentives are therefore a function of power.

All bottler planning and supply chain managers agreed that there is a benefit to having focus on supply chain management. The CCSA associates thought that the current process that is in place is working.

4.4 Structure

The literature highlighted the fact that a supply chain network that is too complex to understand is one of the statements mentioned by people opposing SCM implementation (Walker 2005). Interestingly, as stated in 3.5, CCSA head of innovations, supply chain and commercialisation had a similar concern regarding the structure of the Coke business model, saying that CPFR would not work due to the fact that CCSA and bottlers report to different shareholders. They indicated that this structure could be a cause for lack of optimisation in the entire system. As mentioned in the literature review, the level of trust that exists between two firms, together with the quality of information exchanged are factors that have an impact on the effectiveness of decision-making process in collaborative planning (Petersen et al. 2003).

Undoubtedly, transparency is imperative if we are to avoid conflict. This fact is fully aligned to the interview findings. The demand planner said “the franchise system agreement allows each bottler to agree individual prices for some of the ingredients and every bottler has been focused on maximising their individual performance without much interest in the other bottlers’ operations”. This meant that some bottlers, due to size, are able to negotiate good prices and benefit on the purchase discounts whilst smaller bottlers are unable to do so. These are ingredients other than the ones secured globally by the TCCC procurement division. The feeling of the smaller bottlers is that the bigger bottlers should negotiate on behalf of everyone.

According to the demand planner, since 2008, there has been no supply chain capability at CCSA, someone with a bird’s eye view on the entire system. There was a strong belief from the bottler planning managers that the supply chain information should be centrally located. When questioned about barriers preventing improvement in the process, one bottler answered “de-centralised control”, indicating that the way the process is currently

structured whereby bottlers determine their production and planning needs individually does not seem to work.

During the interview process, the Researcher observed, however, that the central manufacturing operation had almost all of the data relating to its own plants. This was not the case with individual bottlers as evidenced by the fact that most operational managers referred the Researcher to the CCSA demand planner for information. De-centralised control was cited by all bottlers as one of the major organisational barriers to improving collaborative and forecasting process. There is heavy reliance on the supply chain department to make operational decisions on stock and, in future, the required capital investments on behalf of the bottlers. Capital investments have been an issue in the past where CCSA made bottlers invest in manufacturing lines to produce products that end up not selling in their territories.

Another concern raised by CCSA innovations manager was that information does not flow between bottlers' marketing and supply chain department due to the fact that the bottler supply chain department is centrally located whilst bottler marketing happens at various bottler manufacturing departments and depots. Coke's supply chain department communicates directly with the bottler's supply chain department. The respondent thought it is much easier with a smaller bottler like Penbev as everything is in one location. According to this manager, Penbev have always been committed to write-offs. However, Penbev does not produce still beverages, but instead sources them from another bottler. Yet, stills are the ones posing a supply chain challenge for the system. The CCSA innovations strongly felt that write-offs must be addressed at CCSA's franchise level. At this forum, franchise managers and bottler representatives can sit down and reduce any disconnect within the system.

4.5 Planning

The business planning process starts with the CCSA marketing department outlining the gaps in the market and how they propose to close those gaps in order to achieve the targets set out by head office. The CCSA customer marketing function then uses the

brand plans to come up with channel plans while the franchise function works with the bottlers to translate all these into bottler business plans. The system is therefore believed to be aligned.

The problem happens at execution stage where these plans need to be translated into day to day manufacturing and selling plans. During the interviews, there was a consensus from bottler planning and finance managers as well as CCSA's supply chain and innovations managers that the budget planning process needs to be revisited. To quote the demand planner, "the system needs to look at five year value chains", indicating that the current one year view may be short-sighted.

The demand planner agreed that SKU rationalisation, a responsibility of the CCSA supply chain department, does not necessarily align with brand strategies or what consumers want. Rather, it is done to minimise losses for the system. In contrast, the innovations manager thought that from CCSA's side the processes that are in place where the demand planner does planning and the research department does volume research, are sufficient. They mentioned that only 20% of SKUs bring 80% of revenue. Therefore a decision was made to concentrate on bigger volume and high margin products. As a result, 90% of recent write-offs were linked to rationalisation and 10% were due to normal causes – quality, expiry date, spoilage, etc. Accordingly, if one takes this into consideration, stock write-offs are not a bad thing as the system is becoming more strategically focussed.

SKU rationalisation started 18 months ago and the objective was to reduce losses in the system. According to the demand planner, there have been a few write-offs due to human error on the technical side. These, however, have been minimal. For example, there was a misjudgement whereby the system produced a product with 30% juice when the standard required either 100 or 50%. This meant that TCCC's product did not have a place in the cooler's long or short life category.

As indicated by a bottler finance manager, some of the write-offs incurred are intentional or of a strategic nature. For example, a product gets introduced to fill short-term gaps in the market and, as soon the job is done, it gets taken out of the market. Examples include Fresca, Beat and Bibo. Other products get written off because the market does

not accept them as originally intended for. However, according to one bottler, products that may not be accepted in the Gauteng province may work very well in other regions due to different consumer tastes and behaviour. PineNut was an example of a product that was once discontinued nationally (and written off) when it could have been moved to Cape Town. The Researcher thought that, in most instances, a consumer is not necessarily the main focus when these decisions are made. The respondent suggested that central visibility would have addressed this issue.

4.6 Process

Everybody in the system supply chain agrees with the fact that stock write-offs originate from centrally manufactured products. Examples are cans and some stills (non-carbonated soft drinks). The latter are produced by one of the bigger bottlers, on behalf of all the bottlers.

One of the bottler planning managers explained the process for manufacturing centrally produced products as follows:

- Forecast and demand planning takes place during the annual business plan;
- CCSA and bottlers marketing agree to the forecast;
- Supply plan (CCSA and bottlers') produce a six month rolling forecast; and
- Monthly firmed orders produced.

These monthly orders are fed back to the manufacturing operation and are aligned to the annual bottler business plan. The implication of this is that the operation works on fixed lead time for raw material at a concentrate plant. This, together with the fact that there was dependency on one source of supply, has been a major contributor to juice concentrate write-offs due to an unnatural influence on juice demand. In order to address this, the system has recently introduced multiple sources of supplies for juice (small amounts at regular basis) in the northern and southern hemisphere.

Bottler supply chain and finance managers also agreed with the fact that the root cause of the write-off results from centrally manufactured products where each bottler places orders needed with the central operation. These operations, however, operate on minimum production runs in order to optimise line effectiveness. In other words, they will not produce an order if it is below the minimum run. This, for example, results in Cannery, pushing production out (upside) and vice versa (downside). What makes things even worse is if every bottler does not take their full order, Cannery sits with stock that has a short shelf life which other bottlers have no interest in as everyone wants a “fresh run”. One bottler finance manager confirmed this when he mentioned that “we buy more than required due to pressure from Cannery and, when the product fails, plants have to “foot the bill”. In addition, the central operations have to have a certain level of inventory cover. This planning manager highlighted the fact that the “order fulfilment has become an important metric for the system to look at”.

Furthermore, he indicated that CCSA’s forecast accuracy is between 50 to 93%. The former is mainly on juices whilst the latter, mostly flavour range extension, is higher due to the knowledge of brand-pack performance within our system. According to him, the company has had 15 to 20 years’ experience with stills and six years with water. Yet it has achieved the number one and two statuses for some of its brands. This achievement, however, has not been a smooth one as some products have had to be recalled and re-launched in the market. This has had material implications for the system as cost and image were affected.

During the course of this research, the supply chain department came up with guiding principles for stock write-offs, all in an effort to reduce costs for the system. This process was designed to deal with SKU rationalisation as well as write-offs arising from day to day operations. It is an attempt to address products manufactured at the canning operation, at third party operations, as well as those manufactured by one bottler but distributed to all other bottlers. The principles are illustrated in Appendix 5

When asked about these agreed principles a bottler finance manager indicated that “it will be of good use in reducing stock write-offs. However, the system needs to be careful not to be dominated by supply chain rather than marketing strategies. There needs to be a balance in-between; forecasting must be done objectively, bearing in mind marketing

objectives". According to them, "this process will work depending on who is running it". Overall, establishing the principles was a good concept. However, the bottler respondents didn't seem to trust the process fully, citing things like "new approach will work if there is commitment; their planning manager's comment on barriers preventing process improvement as "commitment to agreed principles".

Since the rationalisation process began, bottling operations had 386 SKUs that were written off, 200 of which was from own manufacturing and 186 were products manufactured centrally. However, there was a material exception discovered. Over the past three years, the system wrote off R10 million on one brand alone due to the product not doing well in the market. The SKU rationalisation process saw 30 SKUs being discontinued over the past six months. Seventy percent of the discontinuations came from brands and line extensions. The system reduced stock write-off losses from R10 million to the value of R2.2 million. This was achieved through the supply chain department's run-out plan resulting from visibility of the entire system stock. Bottlers' losses came to R3.6 million, making system write-off costs of R5.8 million. This translates to less than 1% of system revenue.

Despite having the rules in place, proper execution of the agreed principles is still required and, as indicated by the demand planner, the process to reduce losses took longer than anticipated. Furthermore, the demand planner stressed the fact that, as a system, we need to look at five year value chains. In addition, there must be a process, criteria and buy-in from all parties involved. This means that the level of trust needs to improve - transfer prices must be fair and production costs must be transparent.

At the completion of this report, the SKU rationalisation process was still being refined and will hopefully be fully completed by the end of 2010. Products will be taken through the gate screening process, similar to the one that is used for new products development. Appendix 6 illustrates the proposed process.

4.7 Relationship

The initial meetings described in section 3.5 were held with planning managers at bottler operations. Interviews with them revealed the following areas of concern and potential improvements to the system:

- Demand forecasting, planning and working capital management need to improve to address competitive pressure;
- Price parity would address issues of margin preservation;
- Need to solve the route to market issues;
- Need for continuous change in technology;
- Order book visibility;
- Need for more flexibility within manufacturing; with big volume runs, flexibility is a challenge;
- Forecasting – rules of engagement required, frequency of change and how to contain it;
- Make-to-forecast at 90% versus make-to-order. High care products problematic;
- Three month forecast accuracy can eliminate forecasting problems;
- Forecast accuracy and improvement on machine efficiencies can theoretically reduce inventories;
- Variability in order sizes between summer and winter months;
- Warehousing problem at canning operation due to lack of continuous flow of finished goods to bottling operations;

- Need for fixed inventory plan. Finished product production plan linked to raw material planning;
- Current processes - Supply chain forum, Commercialisation innovations forum (CiF), new product development are not working;
- Bottlers have no knowledge of what CCSA wants to do with their brands, e.g. Coke Zero;
- Learning experiences from other countries are not incorporated;
- Communication – decisions to discount on certain brands not communicated and lead to problems such as stock shortage due to unavailability of concentrate;
- Coke SA is a only marketing company, no supply chain knowledge exists;
- Coke SA doesn't know its demand;
- Bottlers, especially Canners, aren't geared for peaks;
- Process of introducing SKUs not clearly defined;
- Complexity in manufacturing process; change overs result in lost capacity;
- Opportunity to find synergies between regions exists and needs to be exploited;
- Demand forecasting accuracy required. No detail but high level;
- Consumer buying patterns have changed;
- Pricing strategy might be a problem;
- One bottler thought fleet management at Canners was not okay – warehouse utilisation was not great; stacking ability not up to scratch, time wasted in turnaround time, triple inspection points;

- ABI focus was on primary distribution - to reduce waste time, turn trucks around, road infrastructure improvements in Johannesburg (travel time analysed in detail), utilisation of A frame vehicles that take many pallets;
- System has no standardisation of pallets and that makes the shift of products between bottlers impossible;
- Some bottlers invest in crates, others do not; and
- Availability of material like glass is still a challenge for bottlers. Local suppliers cannot cope.

The conclusion reached is that the supply chain department cannot address all of these issues due to insufficient capability and capacity to deal with them.

One of the causes of stock write-offs cited by the demand planner was lack of penetration in the market place. This, according to them, means that the number of times bottlers called on customers was insufficient to achieve the desired sale. They mentioned another incidence where CCSA had a gentlemen's agreement with a partner not to supply a product with a particular ingredient as it would cannibalise an existing product that was bottler owned. The result was that Coke had to write off stock of this ingredient and the manufacturing operations that had already ordered the ingredient (as directed by marketing plans) suffered the loss.

The demand planner estimated that R30 to R50 million costs could be saved if they were to consolidate the production runs for the system. On average, the canning operations estimated stock write-offs from their operations to have been 60% of their manufacturing costs, 30% of distribution and 10% of stock holding costs. Interestingly, the manager said "the related marketing cost is estimated at zero percent". This is because operations do not see the marketing department as sharing the burden of write-offs. According to them, however, marketers are the root cause of the stock write-off issues. Under normal circumstances, production variances would be charged to the brand. However, there is no process to do that within the system; bottlers are responsible for their own profits and cannot pass the losses to CCSA.

On a positive note, Coke customers are not neglected. As indicated by the marketing director, the task of any marketing function is to make sure their products are special, differentiated and consumers can switch to them. Assuming it has been tested, at launch stage a product will have the right quality, will drive price and will be good enough for people to buy it. CCSA, however, did not always have a point of difference nor did they drive enough volume, largely due to competition. The quality of the products remains high, thus it is seldom the reason for lack of movement in stock.

According to the marketing director, the support given to customers include among others giving them the right margin, appropriate performance trading terms, executing the right way, driving sale and making sure they understand the need to push the product. He agrees with what Poirier (2003:66) says that “automating processes intended to generate new sales, without doing something to make things better for the customer... generally does not work”. The Researcher has discovered that it is often the case that customers require more than just the right margin and good trading terms. As suggested by the literature, from a retailer’s perspective, not only must a product have the best price to qualify to be on the shelf but it has to be the right brand, fashionable, of the highest quality, easy to buy and return, etc. (Walker 2005). Major customers have, on numerous occasions, requested that CCSA takes the lead on category management in their operations. Progress is being made on that. Collaborative customer relationship management (CCRM) is the organisations’ major focus globally.

4.8 Culture

There appears to be no accountability for actions taken in CCSA. The Researcher could not come across proof of invoicing from bottlers for any stock write-offs. That confirmed the belief that write-offs become bottlers’ responsibility. A bottler manager cited lack of leadership in supply chain as well as lack of systems and processes to handle the issues as one of the barriers preventing an improvement in the process of allocating stock write-offs.

As mentioned, there was a general feeling from the bottler planning and supply chain managers that brand teams do not share in the write-off costs despite being responsible for innovating products that fail in the market place. On the other hand, bottler forecasts have proven more accurate and have been used by the demand planner in securing concentrate orders on behalf of the bottlers. The canning operation is partly owned by the bottlers and is therefore accountable to them. Undoubtedly, Cannery's forecast is based on bottlers' orders.

Sales and operational planning came up to be the other causes of write-offs from an operational side. Operational planning relates to factors influencing write-offs from a supply side (e.g. minimum production run and lead times) while sales remain the responsibility of the sales department (e.g. number of times Coke calls on customers). Sales teams belong to bottlers.

Even more interesting were the findings from a questionnaire where interviewees were asked to rank what they thought are the causes of write-offs in the organisation. Fifty percent of the respondents rated forecasting as the number one cause, 25% pointed to marketing as the second main cause, cross-functional coordination problem was rated third and cross functional organisational problem was ranked number four. Interestingly, none of these are addressed by the SKU rationalisation process.

Bottler supply chain managers thought that marketing tries too hard to guess what the customer will buy without adequately communicating with the customer (forecasting incorrectly) whilst the general feeling was that marketing rushes to have a product made without a firm sale or customer commitment (new product development process). There was a consensus that forecasters need more knowledge and training. Order fulfilment and CPFR were cited by 70% of the respondents as a possible continuous improvement processes that need to be implemented to help reduce excess inventories. The central manufacturing operations thought that building ahead of schedule to reduce set-up costs, together with minimum production runs is a problem that results in stock write-offs. In other words, blame is not solely put on marketing but production and planning accept some responsibility.

As indicated, the current SKU rationalisation process was set up after it was agreed that the system has too many SKUs and therefore agreed to share losses. Bottler forecasts have proven more accurate than brand teams'. As a result, the demand planner uses bottler numbers but, according to him, does not fully discard brand numbers. They thought that they cannot be held responsible if a product doesn't sell but their sole responsibility remains that of minimising losses through a run-out plan. The Researcher thought that plan is a reactive rather than a proactive one. The relationship he has with the bottlers helps him to action or to correct things he sees from the visibility he has. The process has resulted in potential losses of R5 million being reduced to nil, for example.

Product life cycle management is crucial for our system, especially with the increasing rate of new product introduction and line extensions. There was a concern by the demand planner that there may be a lack of understanding from the brand teams' side "where in the product life cycle our products are". The question the Researcher has is whether supply chain should be the department taking the lead on which product or pack should be discontinued or whether marketing should take the lead.

4.9 Alignment

Linked to the above theme was the issue of new product development (NPD). The NPD manager's belief is that there is a lack of alignment within the system, whereby bottlers in particular, do not believe in the projects initiated by brand teams. According to them, write-offs occur due to not having a strong enough pipeline in the system. During the business plan process, targets are set for a three year period. Gaps between current reality and targets are identified and projects to fill the gaps are also identified. There is a limited idea scoping session as there is not enough time to collect research data for all the new projects. New projects drive incremental volume (say 10%) of which 40% is new product development.

As changes in the environment occur and consumer tastes change, there is usually a need to reduce the number of projects. This, however, does not mean that the business plan targets reduce. Due to limited research information and pressure to make target,

individuals find themselves backing projects through the commercialisation process, a new product development process whereby projects are screened and approved by CCSA and bottler representatives. Project managers tend to over forecast to convince the team to plough money into their projects. This leads to bottlers not believing in the projects. The respondent thought that decisions should be made incrementally as the system goes through the process and that this new product development process requires a strong pipeline. They believe that, in this way, write-offs of new products or brand extensions will be reduced.

Having agreed with the above-mentioned thought, the demand planner indicated that “once marketing has done their research, it would be an advantage for the system to prioritise the adoption of an integrated planning and forecasting process”.

5 FINDINGS RELATIVE TO RESEARCH OBJECTIVES

5.1 Introduction

In this section the research findings discussed in the previous section are examined in light of the research objectives.

5.1.1 RESEARCH OBJECTIVE 1

Poor demand management, planning and forecasting are some of the main causes of stock write-offs within the system

Seventy percent of the respondents thought that the system does not have appropriate tools to forecast demand. Before the formation of the supply chain department, bottlers had no faith in our forecasting system. As mentioned, the demand planner has developed good relationships with the bottling partners. The Researcher noticed that, despite the fact that concentrate orders were placed based on bottler forecast, there continued to be reluctance from the bottlers to take responsibility and accountability when write-offs occurred. This became worse with the introduction of non-carbonated products. The SKU rationalisation process is now forcing bottlers to commit to the input they provide.

As mentioned, the forecast used is based on bottler concentrate requirements and is focussed on ensuring smooth run of bottling operations to ensure product availability for customers. The assumption is that these are taken into account in arriving at the forecast. As indicated, trade customers have on numerous occasions requested CCSA to take the lead on category management for their operations. Due to lack of necessary forecast information (stock movement in the trade, SKU ranking order, etc.), this has not been made possible.

According to the SKU rationalisation process, bottlers will still be responsible for their individual forecasts. The responsibility of placing concentrate orders still remains that of the supply chain department at CCSA. As mentioned in the literature review, planners

require a specific set of skills – analytical abilities, coupled with the ability to use statistical analysis tools. In addition, communication, negotiation and facilitation skills are critical if a consensus process is being employed (Gattorna 1998). The demand planner can only trust that bottlers do take these factors into account in arriving at the forecast.

The concern was raised that the organisation needs to invest in more capability so that one department becomes the centre of excellence for all forecasting in the system. Next is the list of the causes of write-offs as indicated by respondents as well as a summary analysis of the proposed solution and associated risks.

Table 2: Poor Demand and Forecasting – Main Causes of Write-offs

Issues by Respondents	CCSA Proposed Solution	Potential Risk
“Forecasting ranks as the number one reason for write-offs”.	SKU rationalisation process to ensure a fair allocation.	Pro-active rather than re-active solution.
“Brand forecast inaccurate, bottler forecast more accurate”.	High dependency on bottler forecast as bottlers presumed to be closer to the customers.	No collaborative effort; limited brand visibility; no full accountability by bottler as losses still shared somewhat.
“Lack of analytical ability in CCSA supply Chain”.	Demand planner consolidates bottler forecast input and manages run-out plan.	Analytical skills critical with the growing stills business. Bottlers may not see the role of a planner at CCSA.

Table 2: Poor Demand and Forecasting – Main Causes of Write-offs (continued)

Issues by Respondents	CCSA Proposed Solution	Potential Risk
“Seasonality and history used to forecast”.	Tools incorporating macro-economic indicators currently being developed to be used for forecasting.	Separating the role of demand planner and volume analyst may lead to communication breakdown.
“Lack of product life-cycle management”.	CiF forum addresses NPD; SKU deals with retiring of packs.	Reactive process - each product and pack’s life expectancy should be detailed upfront.
“SKU rationalisation not linked to brand strategy”.	In the past, rationalisation strategic to ensure focus, in future it’s estimated to reduce.	Customer is not the key focus.
“Rush to launch without doing enough research”.	Make use of research data provided by the likes of Nielsen, etc.	Reactive process. More focus needed upfront.

It can be concluded that the current SKU rationalisation process does not quite address the problem of forecast accuracy in the system.

5.1.2 RESEARCH OBJECTIVE 2

The most crucial parts of the CPFR process that will reduce stock write-offs and help ensure a fair allocation between partners are:

Step 1 – Develop Collaboration Agreement

Most respondents were in favour of implementing a CPFR process. The SKU rationalisation process provides a sound base to develop a memorandum of understanding and agreement between CCSA and its bottling partners. Run-out plans and write-offs can be presented and debated at monthly forums. Ideally, debates should not occur if the handling of variances to forecast is agreed and, most importantly, signed upfront. However, as mentioned, the SKU process is currently aimed at minimising losses for the system and not at addressing forecast accuracy.

The literature suggested that the level of trust that exists between two firms, together with the quality of information exchanged are factors that have an impact on the effectiveness of decision-making process in collaborative planning (Petersen et al. 2003). On the other hand, if collaborative demand and supply planning is carried out properly, it reduces the need for collaborative promotion process (Rudberg et al. 2002). It can be debated that a proactive process would include an agreement signed by all parties, stating how resources will be allocated as well as how conflict resolution is to be handled. This idea was welcomed by the respondents as it ensures alignment on objectives as well as commitment by stakeholders.

The process can be updated regularly and even be extended to include retail customers. The starting point, however, would be to make sure there is the right capability to do the volume forecasting. The canning operation implemented a process to share the allocation of losses but the process does not seem to work accordingly as stated by one bottler finance manager: “We usually buy out lots of amounts due to pressure at Cannerys and then the product fails and plants have to foot the bill”.

Step 2 – Create Joint Business Plan

Currently, CCSA develops brand and channel business plans which are communicated to bottlers who then put together a bottler Business Plan (BP). Volume and profit targets are set by headquarters. This is a top-down approach. Bottler business plans are only reviewed after the CCSA BP has been agreed and approved by headquarters. This is partly due to the fact that bottler year-end close is different to CCSA's and so the current process is aligned to CCSA's calendar. During CCSA's BP, there is no exchange of minimum order quantities, lead time and frequency of orders at business plan stage. Bottlers are expected to manage this process on their own.

Some bottlers indicated that they can access customer information but there was no mention of these being taken into account when deciding on the business plan targets. Clearly, CCRM needs to be taken to another level. A lack of cohesive CRM strategies has been the reason for slow progress in all industries (Poirier 2003). Category management should form the basis for building customer business plans. These, in turn, need to help determine bottler business plans which feed into brand and channel plans for CCSA. Alignment is required at all stages. This means plans will be done in more detail long before the head quarter deadlines become due. That is not the case currently. As demonstrated in section 4.8, high level targets are agreed for business plan presentation purposes and, once agreed, they are translated into brand, channel and bottler plans.

Step 3 – Create Sales Forecast

Reporting sales volumes is currently the responsibility of the volume manager. They translate the headquarter targets into various brands and packs using historical performance. This forecast is revised and reported as a monthly rolling estimate. In 2011, the brand teams will be required to take over the role of forecasting unit case sales. Brand teams are expected to use available research data to forecast unit case sales but they do not forecast to the pack and channel level. Their limited visibility prevents them from performing this task to the best of their ability. On the other hand,

bottlers have an interest in producing packs that help recover overheads quickly. This does not always align to brand strategy. Therefore, a paradigm shift may be required.

Once completed, the so called “optimistic” brand forecasts are not checked with bottlers for feasibility. However, since manufacturing capacity has not been an issue in the past, bottlers are able to take above normal size orders should the need arise. This is because mostly performed at below capacity levels. New products, however, still remain a challenge. For example, at launch stage, Coke Zero volume was forecasted below what the market actually demanded. As a result, most of our bottlers ran out of stock in the first few months that the product was in the market. Interestingly, the Researcher observed at one of the meetings that bottlers did not assume responsibility for the shortage, despite having used their forecast for concentrate orders. The stills business poses an even bigger challenge in that most brands do not meet the minimum margin requirements required by bottlers. As a result, the central manufacturer for stills has had to consider dropping some of the brands. The CCSA supply chain has successfully secured alternative means of getting the products to market.

Retail data (POS) and promotional plans do not form part of the business plan and rolling estimate forecasts. Promotional plan calendars are presented at business plans but are not directly translated into orders and sales forecast. The exact quantities required by the trade remain unknown at this stage.

Step 6 – Create Order Forecast

The order volume should ideally be based on inventory targets per product and the destination of the goods. At CCSA, daily sales inventory is calculated by the finance department at the end of each quarter to check whether bottlers were on target and that stocking up did not occur due to concentrate price increases. This is a reactive process as there is no link between these stock numbers and what the demand planner uses to place concentrate orders. Consolidating the two processes could be useful.

Due to the fact that creating an order forecast is the responsibility will be within the supply chain function, visibility allows the demand planner to check each and every

bottler inventory submitted to him and be able to plan concentrate orders accordingly. However, the objective is not necessarily to create a supply chain advantage. Instead, it is to ensure minimal write-offs occur. The demand planner does not take into account stock in the trade. Therefore, CCSA could be pushing unwanted products to the trade. Once again, the customer does not become the focus. The next table summarises the issues that came up with regards to the CPFR steps discussed.

Table 3: CPFR – Necessary Steps to Ensure Fair Allocation

Issues by Respondents	CCSA Proposed Solution	Potential Risk
“Once marketing is done with their market testing, CCSA and bottlers should always be one integrated system; planning and forecasting should be a priority for all three”.	Current business planning process still followed, detailed plan left to the end of the process.	System buy-in difficult; bottom-up approach more aligned.
“Limited idea scoping”, market do not accept the products as originally intended for”.	Business plan process forces brands to develop ideas for bridging gaps in the market.	Over-forecasting and under-performance forces teams to plough money into projects that don’t bring intended results.
“There needs to be links between forums – marketing, CiF, procurement”.	Head of CCSA Supply Chain department attends all forums.	Limiting the effects of communication breakdown in terms of write-offs is the focus, not the customer.

Table 3: CPFR – Necessary Steps to Ensure Fair Allocation (continued)

Issues by Respondents	CCSA Proposed Solution	Potential Risk
“No alignment – managing system requirements or demand versus producing bottler minimum run requirements and bottler inventory policy.	CCSA Demand planner has visibility of the bottling system.	CCSA planner expected to take more than just forecasts responsibility but to include production plans.

The analysis illustrates the fact that bottlers need assistance in ensuring the smooth running of their operations. The CCSA supply chain department may not be equipped with the necessary capability to address this need.

5.1.3 RESEARCH OBJECTIVE 3

The rewards for improved collaboration, with a well designed CPFR process outweigh the risk of maintaining status quo

The literature suggested that supply chain orientation not only affected internal process performance but also affected customer performance, financial performance, innovation and learning performances (Tomas et al. 2008). According to Seifert (2003), changes in the global market place make it a challenge for organisations to meet the expectations of shareholders and consumers. He cited the following facts as drivers of the challenges faced by organisations:

- a. The pie is not going to get bigger;
- b. Prices are going down, not up;
- c. Margins are going down, not up;

- d. Operations costs are going up, not down;
- e. Demographics and the collapsing birth rate;
- f. High/low, or everyday low price;
- g. It's not win-win; it's I win, you lose; and
- h. We are still demand forecasting using the rear view mirror.

The system is certainly not immune to these challenges and respondents thought there is a need to change the way the Coke system does things.

In order for demand planning to improve in the organisation, there needs to be focus, that is, people must be fully dedicated to it (Gattorna 1998). Furthermore, the silo mentality and the trap of personal comfort zones must be done away with (Seifert 2003).

There is still a debate amongst the interviewees whether supply chain should drive business strategy or not. On the other hand, all bottler operations managers looked forward to the supply chain department to resolve supply chain issues in their operations. The impression created to the Researcher was that the responsibility is shifting from bottler to CCSA. In other words, there is hope that this newly formed supply chain department will bring improvements to the entire system.

The lack of alignment between the brand teams and bottler forecast is still a challenge for the demand planner. The SKU rationalisation process is designed such that it punishes the responsible parties for error in forecasting by making them take accountability and responsibility for the write offs. The bottlers often blame CCSA for innovating products that don't sell in the market.

Once again, since the brand team forecasts are not the final input used for placing concentrate orders, the responsibility for forecasting is slowly shifting to the CCSA supply chain department. Currently, when bottlers run out of concentrate, the demand planner takes the blame for not ensuring that the concentrate plant produces to bottlers' requirements. The opposite is also true. Central manufacturing operations also suffer losses when bottlers don't take all the orders they requested, indicating that there is no

joint responsibility and accountability. Planning on an inter-enterprise basis requires the planning to be done jointly among many of the chains trading partners (Rudberg et al. 2002). CPFR, on the other hand, is a joint process where issues get agreed upfront and the team takes joint responsibility. The central manufacturer for stills started implementing a CPFR process but this has since shifted to CCSA's supply chain department.

Understanding the impact of supply chain decisions on system costs is still not clear. Ideally, every promotional analysis should indicate the implications on supply chain costs. Currently that is not the case. Every other department at CCSA is involved in some cost saving initiative that has a bearing on supply chain. An example is line optimisation whereby an evaluation is done on whether certain lines can be moved to the right location to ensure optimal costs. The finance department, on the other hand is trying to understand bottler supply chain costs in order to recommend savings. Technologically, this may mean forming collaborative relationships called intelligent supply chain networks, ones that can be extended to customers' customers and suppliers' suppliers (Green 2001).

Clearly, keeping the status quo is not an alternative. All parties seem to be doing the right things but, due to lack of consolidation, the overall impact is not known. The respondents did not have an idea how exactly CPFR would be structured within the system. Interestingly, all planning managers including the demand planner chose collaborative planning and forecasting as the solution to the problem (question 6 of Appendix 1).

The system needs alignment. SMART objectives need to be set. Joint responsibility and accountability is required. The various skills and capability need to be combined to ensure an optimal solution. CPFR can provide that solution. A dedicated team that will focus on getting the forecast accurate, to the benefit of both the bottlers and CCSA is required. This team could be housed within the supply chain department at CCSA. The mere fact that responsibility has shifted from bottlers to supply chain is an indication that the system wants to centralise this role. However, it has to be for the benefit of all parties involved.

As indicated, bottler planning and supply chain managers were in favour of implementing CPFR. Seifert (2003) mentioned the benefits of CPFR to be thus:

- Drastically improved reaction times to consumer demand;
- Higher precision of sales forecast;
- Direct and lasting communication;
- Improved sales; and
- Reduced costs.

Amongst the benefits of implementing a CPFR process, as highlighted by the bottler respondents, were the following:

Table 4: Rewards for CPFR outweigh keeping status quo

“Alignment”
“Winning in the market place”
“Make money”
“Customer satisfaction”
“Improved demand/supply planning”
“Reduced stock-outs and improved order fulfilment”
“Supply chain visibility”
“Improved customer service”

Table 4: Rewards for CPFR outweigh keeping status quo (continued)

“Reduced wastage/write-offs”
“System can react quicker”
“Bottler relationship enhanced”
“Continuous link of what is happening outside”
“Reaction to competitor activity quicker and swifter”
“Bottlers can learn from each other’s best practice”

6 CONCLUSION

6.1 Introduction

This chapter summarises the main research findings, discusses briefly how the research objectives were attained and identifies some recommendations for management. In addition, some areas for future research are suggested.

6.2 Main Findings of the Research

Findings from the research indicated that stock write-offs are not material for the Coca-Cola system. However, they are a symptom of underlying supply chain problems that can potentially delay the intended growth in the business. Central manufacturing operations are the most affected by stock write-offs. The bottlers, on the other hand, are reluctant to produce new products due to the high probability of sales not occurring and stock becoming obsolete as a result. The relationships could become dysfunctional if improvements to the current process do not take place.

As mentioned, the idea of having a CPFR process was welcomed by all parties concerned. It was discovered that SKU rationalisation was the reason behind most of the write-offs in the last six months. However, it became apparent that the lack of trust between CCSA and its bottling partners is the underlying issue and these result from a lack of an appropriate process in the system. Eliminating these obstacles can result in a joint ownership, responsibility and accountability for the decisions made in the business.

The SKU rationalisation, however, is not an all-inclusive process in that its main aim is to reduce production losses in the system. It is a reactive process that is not quite aligned to brand strategy. Furthermore, since the forecasts used by the demand planner do not come from marketing, it seems unfair to seek marketers' input at the gate screening stage when they were not involved in the forecast that led to write-offs. There is a need for a process that can consolidate and deal with all system needs. Someone needs to

take ownership and accountability for the forecast. Internal alignment within the system is vital.

CPFR appears to be the solution to the organisation. It should drive the business plan. It can provide a supply chain advantage by ensuring alignment throughout the value chain. However, given that CPFR is not a well understood term within the system; everyone looks up to the big bottler to make it work first. CCSA has taken the initiative by setting up a supply chain department to deal with SKU rationalisation. It can leverage on the skill and capability to implement the CPFR internally and, later on, can include trade customers. The hurdle the organisation faces is lack of IT systems that can collect all POS data in order to forecast more accurately. SAP has been launched in 75% of the bottling system. Opportunities to use this tool for SCM need to be explored.

6.3 Recommendations for Management

The recommendation from this research is for CCSA to consider implementing CPFR as the tool to help address the supply chain issues it faces. Seifert (2003) defines CPFR as a business strategy between trading partners to collaborate on a single shared vision of forecasted consumer demand (Seifert 2003). This means CCSA has no option but to improve its forecasting, given the rate at which new products are introduced in the market. While the main focus remains the consumer, it is vital for bottlers and CCSA to align on the strategy to the lowest possible level of detail.

Seifert (2003) clarifies that CPFR is not the elephant one imagines it to be. It's not about technology, paradigm shift; new process or adding staff; it's not about quarterly summit meetings, multiple forecasts; it's not about strategy with a broad brush approach or a rising tide-lifts-all-boats mentality; it's not about a targeted, specific outcome; it's not about a new "can-do-all" software package; it's not a retailer to primary supplier collaboration.

From this research, a number of recommendations can be made for management.

6.3.1 Organisation Culture

The first recommendation relates to the evolving cultural change required for the organisation. The silo mentality between CCSA and its bottling partners needs to come to a complete end; relationships have to improve if the system is to give better service to the customers. Today, more and more trading partners are working together with a shared view that the end consumer is their common customer, producing more effective solutions and improved business practices (Seifert 2003). Furthermore, a company that is conditioned to internal collaboration is more capable of collaborating with upstream and downstream trading partners.

The literature stressed that unless there are more confirmed and potential allies than enemies and zombies, SCM approaches will not work, despite the strong relationships with suppliers (Cox et al. 2003). Furthermore, in order for supply chain to be taken seriously within the system, SCM needs to form an important part of organisational strategy and all the barriers to implementation will have to be addressed. The organisation will need to be structured accordingly.

Bottlers need to move away from only producing products that just meet minimum margin and production run requirements whilst marketing should introduce products that consumers need and should avoid forcing the organisation to apply the push principle. Product life cycle management need to be introduced where value chains are evaluated with focus on a long term view. In addition, all functions must work towards attaining the supply chain strategy. CPFR focuses on organisations working together in improving the supply chain process by creating a joint market strategy.

CCSA is not just a marketing company and the pre-conceptions that marketing should lead in providing strategic direction for the organisation may need to change. Supply chain strategies need to be formulated by a team capable of doing so. Given the capital intensive nature of manufacturing operations run by bottlers, supply chain has to be the most important area of focus as indicated by the findings on this research. Supply chain

should drive business strategy. Brand budgets need to be adjusted down for any negative variances caused by inappropriate decisions. Production variance should also be treated in a similar way. In that way, losses will be fairly and equitably apportioned.

We live in times where there are huge demands from shareholders to improve Economic Value Added, Return on Invested Capital, Market Value Added and measures such as lean production are not the only solution.

6.3.2 System Alignment

Secondly, investments should be aligned towards achieving a supply chain advantage. Capital budgets should not just be about furniture and fixtures, land and equipment but should be driven by supply chain strategy. In addition, direct marketing investments such as promotions should evaluate the impact on supply chain. IT investments need no longer be individually based but must be viewed holistically. Investing in systems together with or on behalf of customers and suppliers must be considered as priority. All major expenditure should be prioritised based on supply chain impact. This will ensure that all the actions taken are to the benefit of the consumer.

Having a function fully dedicated to ensuring compliance to SCM strategies will prove beneficial.

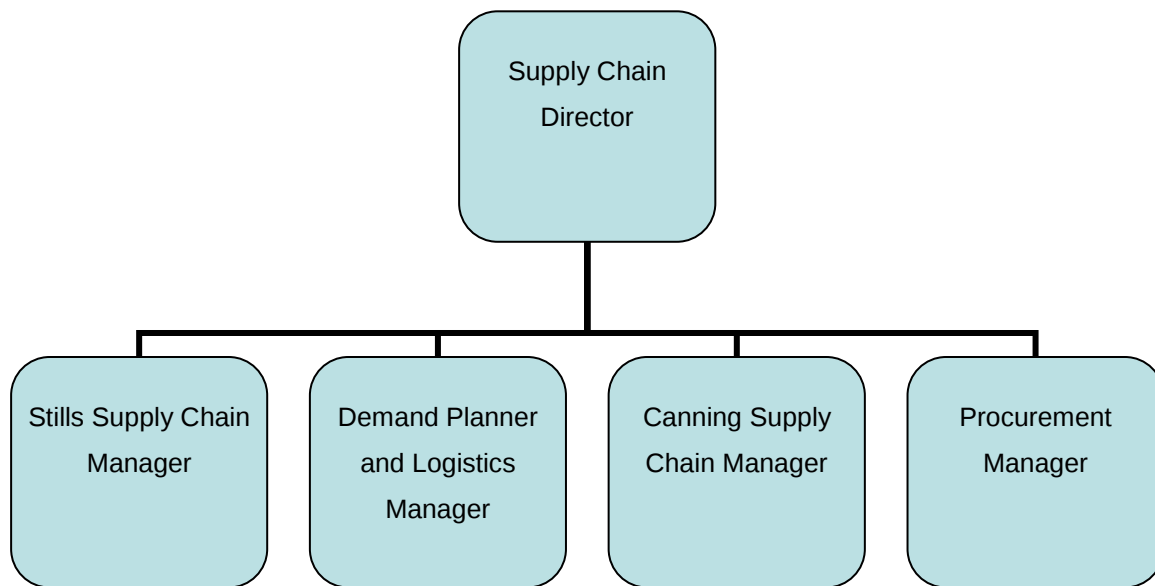
Currently, the system has various sources of volume data, one of the key indicators of business performance. Bottlers use their own sources and CCSA has more than one department handling volume information. There should be one source of volume information. In addition, a tool better than Microsoft Excel may need to be considered. The literature indicated that excel is the most widely deployed demand planning tool in the world, but it lacks sophisticated forecasting algorithms, cannot track multiple inputs and cannot slice and dice the data for different audiences (<http://www.gartner.com> cited in Seifert 2003).

6.3.3 Organisational Structure

Thirdly, the company structure needs to change. Maintaining the status quo can prove costly for the organisation. Currently, the supply chain team is not fully staffed. The demand planner is also expected to deliver more than what he is capable of. The analytical skills required in understanding and managing the planning processes at the manufacturing plants may be lacking. Furthermore, the procurement manager is currently reporting to the CCSA technical director, with a dotted line to global procurement. That role may prove more beneficial if it is incorporated under the supply chain function, with clear roles and responsibilities.

Although the impact from a write-off perspective is not as material, a lot of management time is wasted in resolving supply chain issues. The establishment of a supply chain department at CCSA has been welcomed by all. The vision must be clearly articulated and understood. Inviting bottler capability into the function will be even better as these associates understand the manufacturing operation, as well as logistics which include warehousing and distribution.

Permanent employees need to be sourced to form part of the already existing supply chain department. These will need to be people who understand bottling operations and have the necessary analytical skills to do forecasting. Having identified the fact that centrally manufactured products are the most problematic for the system, the immediate focus should be in addressing these. The ideal structure for the system is the network structure as depicted below.



This team will be charged with implementing CPFR and will liaise with ingredient suppliers and other functions within the system. They will formulate SCM strategies, the memorandum of understanding, service level agreements (SLA), etc. Their diverse roles bring the cross-functional understanding of the system. The fewer layers of management levels will ensure quick decision-making. The level of trust between CCSA and bottlers may improve due to the fact that the team is not solely comprised of CCSA employees. The supply chain managers can also have dotted lines to the bottling operations they serve in order to avoid duplication of efforts. The same thinking would apply to procurement. However, this team's focus should be on collaboration in order to provide an optimal solution for the entire system. The sparkling planning managers can remain at the bottlers to ensure smooth running of the operations. Once CPFR has been successfully implemented, it can be incorporated into the sparkling category and then rolled out to include the trade customers.

6.3.4 Pilot Project

This recommendation was sourced from Seifert (Seifert 2003). The recommendation is also aligned with Kotter's eight steps of transformation which are: establishing a sense of urgency; forming a powerful coalition; creating and communicating the vision and empowering others to act on the vision; planning for and creating short-term wins;

consolidating improvements and producing still more change; and institutionalising new approaches (Kotter 1996).

The recommendation from this research is that CCSA, using the structure discussed in 6.3.3, takes over the running of the central manufacturing operations for stills and canning and implements CPFR immediately. Permanent resources will need to be allocated, from both bottlers and CCSA. The business unit president will need to fund this department and empower them to make decisions on behalf of the system. Setting up this team will ease the pressure currently experienced by the bottler and canning plants. The team can then roll out the CPFR process to one of the bottlers, Shanduka, as a pilot project. Shanduka has a smaller territory and was the first in the world to implement a bottler specific SAP module. CCSA and its bottlers should pull a team together to help understand the bigger picture; put strategies, objectives and metrics in place; ensure everyone understands the role they play in the collaboration process and the need to share information. The forecasters should consist of individuals with strong analytical skills.

Resources can be pulled from bottlers, marketing and support functions of both CCSA and its bottling partners. The trade customers can be engaged as well. A cross-functional steering committee can be set up to talk to the users and document their needs. Wins must be celebrated whilst focus remains on the bigger picture. Once completed, results must be shared with the project sponsor (Business Unit President) whose continued support is vital for the successful implementation of CPFR. The relationship with suppliers stands to improve from using CPFR. Suppliers may not need to generate forecasts but use CCSA's. This will eliminate the risk from their side.

Once the pilot project has proved to be a success, it can then be rolled out on a larger scale to the rest of the bottling operations and their trading partners. The numerous forums currently in place – marketing, supply chain, volume consensus – may need to be dissolved. The organisation could bring the learning experiences documented about other FMCG companies that have already implemented CPFR. Examples include Procter and Gamble, Wal-Mart and Henkel (Seifert 2003).

6.4 Attainment of Research Objectives

The main objective of this research was to explore whether successful supply chain collaboration can help ensure a fair allocation of stock write-offs between CCSA and its bottling partners.

A process of semi-structured interviews was followed whereby people directly affected by stock write-offs and supply chain issues, senior and middle management, were interviewed. The interviews were analysed using the major themes that came out during the interview process. The main objectives of the research were discussed in length in the previous chapter, reflecting the achievement of the objectives of this research.

The study cannot be regarded as definitive. The research aided in uncovering some of the underlying issues around stock write-off problems in the system. As such it lays the foundation for further study.

6.5 Suggestions for Future Research

The topic of supply chain, although not new in South Africa, offers a wide range of interesting subject areas to look at. Some companies may have certain areas working and others may have nothing at all. These are just some which have been suggested by ideas from this research:

- The impact of lack of collaboration on CCSA customers;
- An in-depth comparison of how different companies have dealt with supply chain issues in their business and what contributed to the improvements made;
- The extent to which IT facilitates the improvements in the supply chain process; and
- The development and application of a mechanism for measuring supply chain performance in the organisation.

6.6 Conclusion

A conclusion that can be drawn from this study is that stock write-offs and the allocation thereof is not the root cause of issues within the system. Rather the lack of a process that is designed to improve collaboration, forecasting and planning between the manufacturing and marketing operations is the reason for dysfunctional relationships within the Coca-Cola system. Thus CPFR is a process that has become a necessity for the beverage industry.

Implementing a CPFR process requires far more than just a single function. All parties in the value chain need to buy into the process and commit resources towards its improvement. It takes bold leadership to steer the organisation towards this strategic direction as it requires a cultural change for the entire organisation. A vision must be known, clear goals and objectives must be set and buy-in is required from all parties concerned. However, the customer should remain the focus.

A fitting conclusion is the one offered by Drucker as quoted in Seifert (2003). "Inside an organisation there are only cost centres. The only profit centre is a customer whose check has not bounced" (Seifert 2003:122). CCSA's customer and consumer needs will drive the organisational change.

REFERENCES

Autry, C.W. and Griffiths, S.E. (2008) Supply Chain Capital: The Impact of Structural and Relational Linkages on Firm Execution and Innovation, *Journal of Business Logistics*, 29(1) pp. 157-173.

Batson, R.G. and McGough, K.D. (2007) A New Direction in Quality Engineering: Supply Chain Quality Modelling, *International Journal of Production Research*, 45(23) pp. 5455-5464.

Cox, A., Ireland, P., Lonsdale, C., Sanderson, J. and Watson, G. (2003) *Supply Chain Management: A Guide to Best Practice*, Pearson Education Ltd, London.

Crandall, R.E. and Crandall, W. R. (2003) Managing Excess Inventories: A Life-Cycle Approach, *Academy of Management Executive*, 17(3) pp. 99-113.

Ehlers, T. and Lazenby, K. (2004) *Strategic Management: Southern African Concepts and Cases*, Van Schaik Publishers, Pretoria.

Fliedner, G. (2003) CPFR: An Emerging Supply Chain Tool, *Industrial Management and Data Systems*, 103(1). pp. 14-21.

Ganesh, M., Raghunathan, S. and Rajendran, C. (2008) The Value of Information Sharing in a Multi-Product Supply Chain With Product Substitution, *IIE Transactions*, 40 pp. 1124-1140.

Gattorna, G. (1998) *Strategic Supply Chain Alignment: Best Practice in Supply Chain Management: Best Practice in Supply Chain Management*, Gower Publishing, Hampshire.

Green, F.B. (2001) Managing the Unmanageable: Integrating The Supply Chain With New Developments in Software, *Supply Chain Management: An International Journal*, 6(5) pp. 208-211.

Hassini, E. (2008) Supply Chain Optimization: Current Practices and Overview of Emerging Research Opportunities, *Information*, 46(2), pp. 93-96.

Holmstrom, J., Framling, K., Kaipia, R. and Saranen, J. (2002) Collaborative Planning, Forecasting and Replenishment: New Solutions Needed For Mass Collaboration, *Supply Chain Management*, 7(3) pp. 136-145.

Kaminsky, P. and Kaya, O. (2009) Combined Make-to-Order or Make-to-Stock Supply Chains, *IIE Transactions*, 41, pp. 103-119.

Kavouridis, K. (2007) *Collaboration in Fast Moving Consumer Goods Supply Chains*, Published Thesis, Cranfield University, Bedfordshire.

Kotter, J. P. (1996) *Leading Change*, Harvard Business School Press, Massachusetts.

Leedy, P.D. and Ormrod, J.E. (2005) *Practical Research: Planning and Design*, Eighth Edition, Upper Saddle River: Merrill Prentice Hall.

Manuj, I. and Mentzer, J.T. (2008) Global Supply Chain Risk Management, *Journal of Business Logistics*, 29(1) pp. 133-155.

Mentzer, J.T., Stank, T.P. and Esper, T.L. (2008) Supply Chain Management and Its Relationship To Logistics, Marketing, Production and Operations Management, *Journal of Business Logistics*, 29(1) pp. 31-46.

Petersen, J.K., Ragatz, G.L. and Monczka, R.M. (2003) An Examination of Collaborative Planning Effectiveness and Supply Chain Performance, *Journal of Supply Chain Management*, 41(2) pp.14-25.

Poirier, C.C. (2003) *The Supply Chain Manager's Problem Solver: Maximising the Value of Collaboration and Technology*, The St Lucie Press, New York.

Qing, L.I. and Ha, A.Y. (2008) Reactive Capacity and Inventory Competition Under Demand Substitution, *IIE Transactions*, 40 pp. 707-717.

Roethlein, C. and Ackerson, S. (2004) Quality Communication within a Connected Manufacturing Supply Chain, *Supply Chain Management: An International Journal*, 9(4) pp. 323-330.

Rowley, J. (2002) Using Case Studies in, *Management Research News Journal*, 25(1) pp. 16-27.

Rudberg, M., Klingenberg, N. and Kronhamn, K. (2002) Collaborative Supply Chain Planning Using Electronic Marketplaces, *Integrated Manufacturing Systems*, 13(8) pp. 596-610.

Samaranayake, P. and Toncich, D. (2007) Integration of Production Planning, Project Management and Logistics Systems for Supply Chain Management, *International Journal of Production Research*, 45(22) pp. 5417-5447.

Seifert, D. (2003) *Collaborative Planning, Forecasting and Replenishment: How to Create a Supply Chain Advantage*, American Management Association, New York.

Sheremetov, L. and Rocha-Mier, L. (2008) Supply Chain Network Optimisation Based on Collective Intelligence and Agent Technologies, *Human Systems management*, 27 pp. 31-47.

Simchi-Levi, D., Kaminski, P. and Simchi-Levi, E. (2003) *Designing and Managing the Supply Chain Concepts, Strategies and Case Studies*, Second Edition, McGraw-Hill, New York.

Tomas, G., Hult, M., Ketchen, D.J. Jr, Adams, G.L. and Mena, J.A. (2008) Supply Chain Orientation and Balanced Scorecard Performance, *Journal of Managerial Issues*, xx(4) pp. 526-544.

Van Niekerk, C.J. (2003) *Franchising for Black Economic Empowerment*, Published Thesis, University of the Witwatersrand, Johannesburg.

Wadhwa, S., Saxena, A. and Chan, F.T.S. (2008) Framework for Flexibility in Dynamic Supply Chain Management, *International Journal of Production Research*, 46(6) pp. 1373-1404.

Wagner, S.M. and Bode, C. (2008) An Empirical Examination of Supply Chain Performance Along Several Dimensions of Risk, *Journal of Business Logistics*, 29(1) pp. 307-325.

Walker, W.T., CFPIM, CIRM (2005) *Supply Chain Architecture: A Blueprint for Networking the Flow of Material, Information and Cash*, CRC Press, Florida.

Walters, D. (2006) Effectiveness and Efficiency: The Role of Demand Chain Management, *The International Journal of Logistics*, 17(1) pp.75-94.

Yin, R.K. (1994) *Case Study Research: Design and Methods*, *Applied Social Research Methods Series Volume 5*, Second Edition, Sage, California.

Yin, R.K. (2009) *Case Study Research: Design and Methods*, Fourth Edition, Sage, California.

Zikmund, W. G. (2003) *Business Research Methods*, Sixth Edition. Mason, Ohio.

APPENDIX 1

Planning and Supply Chain Managers

1. How many new products can be deemed as failures during the past three to five years (as percentage of all new product introductions)?
2. What is the forecast accuracy of new product introduction?
3. What was the value (ZAR) and quantity (litres) of stock write-offs in the past 3 - 5 years?
 - a. What was the planned days coverage of these write-offs and what was the manufacturing lead time of these products (aggregated for all bottlers)?
4. What have been some of the worst consequences of those write-offs in terms of:
 - a. Manufacturing cost;
 - b. Distribution cost;
 - c. Stock holding cost;
 - d. Marketing cost; and
 - e. Market share or competitive positioning?
5. What are the main causes of these write-offs in terms of:
 - a. Sales and Operations Planning;
 - b. Organisational barriers;
 - c. Other;
6. What are the initiatives that must be implemented to improve this, e.g.

- a. Collaborative planning and forecasting;
 - b. Supply chain visibility;
 - c. Other;
7. What are the five major organisational barriers preventing this improvement?
8. What will be the major benefits if implemented successfully?
- a. Internal and
 - b. External competitive positioning.

Finance Managers

1. How many new products can be deemed as failures during this time (as percentage of all new product introductions)?
2. What is the forecast accuracy of new product introduction?
3. What was the value (ZAR) and quantity (litres) of stock write-offs in the past 5 years?
 - a. What was the planned days coverage of these write-offs and what was the manufacturing lead time of these products (aggregated for all bottlers)?

Consumer Marketing Director

1. How many new products can be deemed as failures during the past three to five years (as percentage of all new product introductions)?
2. What is the forecast accuracy of new product introduction?
3. What was the value (ZAR) and quantity (litres) of stock write-offs in the past 3 - 5 years?

- a. What was the planned days coverage of these write-offs and what was the manufacturing lead time of these products (aggregated for all bottlers)?
- 4. What have been some of the worst consequences of those write-offs in terms of:
 - a. Manufacturing cost;
 - b. Distribution cost;
 - c. Stock holding cost;
 - d. Marketing cost; and
 - e. Market share or competitive positioning?
- 5. What are the main causes of these write-offs in terms of:
 - a. Sales and Operations Planning;
 - b. Organisational barriers;
 - c. Other;
- 6. What are the initiatives that must be implemented to improve this, e.g.
 - a. Collaborative planning and forecasting;
 - b. Supply chain visibility;
 - c. Other;
- 7. What are the five major organisational barriers preventing this improvement?

Forecasting Manager

- 1. What is the forecast accuracy of new product introduction?

Commercialisation Process Manager

1. What problems do you encounter with the current new product development process?

Commercialisation and Customer Leadership Director

1. From a customer perspective, why does a product fail?
2. What have we done to support the customer?

APPENDIX 4

To : Carel Engelbrecht

From : Michelle Kgobe

Subject: Research Project: Stock write-offs allocation

Date : 19 March 2009

My name is Michelle Kgobe; I work as a business analyst in the Coca-Cola finance department. I am in my final year of the MBA program at Wits Business School and am currently busy with my thesis on stock write-offs and the fair allocation of the resulting costs.

I intend doing a study with each bottler representative and will be evaluating the impact of collaboration on reducing stock write-offs and the overall efficiency of the Coca-Cola value chain. The scope of the study will use the principles of collaborative planning, forecasting and replenishment (CPFR) as a framework to review the level of supply chain alignment and to define improvement strategies.

The reason to pursue this topic is based on current stock write-off issues that continue to pose challenges within KO community due to our brand teams' limited visibility in the planning process. This is further exacerbated with the introduction of new products, resulting in even higher stock write-offs, without anyone assuming accountability or responsibility.

The thesis will be a high level strategic view of the problem, but will be followed by a detailed study for internal purposes.

Your assistance is highly appreciated.

Yours sincerely

Michelle Kgobe

APPENDIX 5

6.6.1 General Principles

1. The overriding principle is that cost accountability will rest with the responsible party
2. The decision to discontinue should only be made after full disclosure and consideration of all write-off costs involved for the system
3. In the case of juice, due consideration must be given to when in the crop season production will be halted and to what extent alternative uses/buyers can be found for juice orders already in place
4. Write-off costs for concentrate, ingredients and packaging materials will only be shared by the system if those items in stock were ordered or manufactured in terms of firm volume forecasts in the last three months. Any items to be written off in excess of that will be for the sole account of the responsible entity.
5. The only exception will be where supplier lead times are greater than three months or minimum production runs were applied. Such exceptions are subject to verification and audit by South Africa Business Unit Supply chain.
6. Bottler specific SKUs to be run out at a bottler's discretion and own cost.
7. Supply chain will make proposals to the marketing forum once per quarter on products/SKUs to be discontinued

6.6.2 Cost Sharing

1. TCCC will share 50% of write-off costs where a new product/SKU was launched by agreement.
2. Where a product/SKU has been in the market for more than 36 months and write-off is due to forecast then only bottlers will absorb the write-off.

3. The allocation of costs will be based on variance from forecast in the last six months. The six month period is counted from the date that the proposal to discontinue was first tabled
4. In the absence of any other basis, 12 months sales history will be used counting from the date that the proposal to discontinue was first tabled.
5. Where stock or materials at a manufacturing entity (including concentrate plant) are written off due to non-collection by a bottler for goods ordered and/ or manufactured to a firm forecast, such write-off costs are for the account of the bottler.

6.6.3 Volume Run-out Allocation

1. The allocation of volume for run-out to discontinuation will be based on variance to bottlers business plan (BP) forecast in the last six months. The six month period is counted from the date that the proposal to discontinue was first tabled.
2. The allocation of concentrate held at concentrate plant will be based on variance to bottlers BP forecast in the last six months. The six month period is counted from the date that the proposal to discontinue was first tabled.

In the absence of any other basis, 12 months sales history will be used counting from the date that the proposal to discontinue was first tabled.

APPENDIX 6

SKU Rationalisation Process

GATE 1 Decision to investigate	Investigative Phase	GATE 2 Decision to Correct Course	Course Correction Trial Phase	GATE 3 Decision to Reinstate
Key Questions -Consumer relevance -Product life-cycle stage -Implications for mother brand -Implications for competition Decisions 1. Retire SKU 2. Move to investigative phase	Team led by brand team to be identified to investigate root cause of decline/poor performance and possibly turnaround strategy Team to put together detailed report clearly showing: -Reasons for poor decline -Detailed turnaround strategy -Revised financials where appropriate	Key Questions -Has sufficient work been done to understand root cause -Is the turnaround strategy feasible -Is the plan logistically feasible -What incremental shift will be achieved vs. current performance Decisions 1. Retire SKU 2. Move to trial phase	-Team implements turnaround strategy for 9 months -Team monitors key metrics to evaluate effect of turnaround plan -Prior to gate 3, team prepares report detailing results of revival plan and team recommendation	Key Questions -Has turnaround plan worked -Has success criteria for key metrics been achieved Decisions 1. Retire SKU 2. Reinstate into Portfolio