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Dynamics of Demand Order Management on the Just In Time Approach: A
Case at a Stationery Distributor

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Abstract

The challenges of demand order management on the underlying Just in Time (JIT) approach need a long-term solution in order to reduce expenses and enhance supply chain performance. Demand management is a very important aspect of managing one's organisation, especially in the presence of a volatile environment, full of competitors, global pressures and sustainability requirements. Thus, organisations are placed in a position where it has become necessary to implement strategies such as the JIT approach to meet demand with minimal resources and costs. Poor demand management decisions taken in forecasting therefore increase business risk and costs. The study aims to establish the effect of information sharing and collaborative forecasting within an organisation.

The demand alignment may pose some problems leading to inefficiency in customer service, poor stock rotation and a high obsolescence rate aggravated by the diversity of products. Demand management sought the rapid and appropriate integration of the needs arising from the market in the direction of the suppliers in order to balance and strategically align demand with operational capacity along the supply chain. However, the concept of demand management is not yet understood by supply chain agents as the major cause of failure is accredited to not achieving chain coordination due to the poor understanding of demand leading to inadequate customer service, poor stock rotation and large obsolescence rates. The main aspects underpinning this study are: demand management; JIT; order fulfilment; information sharing; order synchronisation; and demand order variability and flexibility, and forecasting. The objectives of the study are: to determine the challenges of dynamic demand management under the JIT order fulfilment system; to establish the effects of information sharing and collaborative forecasting for efficient operational demand management; to explore the extent of demand order variability and flexibility on the underlying JIT system; and to analyse the role of order synchronisation fulfilment to facilitate the balanced alignment of demand and supply order management.

The nature of this study suggests the use of an exploratory case study design to explore the dynamics of demand management with the JIT system employed by the organisation under study. A qualitative research approach was used in this study as it added more value when determining the issues faced in the organisation. The study was conducted in KwaZulu-Natal at the Durban head office. The sampling type employed was purposive sampling. The total sample size is three. Face-to-face semi-structured interviews were used as a means of data collection. Thematic analysis was used to analyse data in the primary qualitative research in this study.

The findings of this study suggest that communication and real-time data are matters of concern. These factors contribute to the poor demand management in the organisation. The results indicate that improvements in these aspects are imperative to the success of demand management processes. Effective management of communication between departments is recommended as well as more involvement from top management. Information systems that provide real time data should also be adopted. The managerial implications indicate that demand management does not depend on one specific department and is the responsibility of every supply chain member involved in the supply chain network as synchronisation plays a vital role in the balancing of demand and supply.

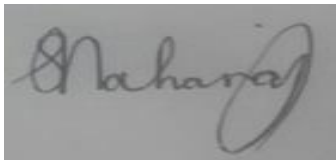
Key concepts: Demand Management, Just-In-Time, Information sharing, Synchronisation, Demand order variability and flexibility, and Forecasting.

Declaration

The researcher of this thesis declares that:

1. The research reported in this thesis, except where otherwise indicated, is original research.
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Serisha Maharaj

A rectangular box containing a handwritten signature in dark ink. The signature is cursive and appears to read 'Serisha Maharaj'.

Date: 11 December 2017

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Abbreviations

AMR	Advanced Market Research
ATO	Assemble to Order
ATP	Available to Promise
BTF	Build-to-forecast
BTS	Back-to-School
CFT	Cross-Functional Teams
CPFR	Collaborative Planning, Forecasting and Replenishment
CTO	Configure-to-Order
DC	Distribution Centre
DDSN	Demand-Driven Supply Networks
DRP	Distribution Requirements Planning
ETA	Estimated Time of Arrival
ETO	Engineer to Order
ETS	Engineer-to-Stock
GATP	Global-Available-to-Promise
GSCF	Global Supply Chain Forum
ITH	Information Technology Hardware
ITS	Information Technology Software
JIC	Just-in-Case
JIT	Just in Time
KZN	KwaZulu-Natal
LSM	Living Standard Measurement
M/BTO	Make/Build to Order
MRP	Master Replenishment Plan
MRP I	Materials Requirements Planning

MRP II	Manufacturing Resource Planning
MTS	Make to Stock
SKU	Stock Keeping Unit
SLA	Service Level Agreement
VMI	Vendor Managed Inventory
WMS	Warehouse Management System

CHAPTER ONE

INTRODUCTION

1.1. Introduction

The management of one's supply chain is of utmost importance. Supply chain is the backbone of any organisation and supply chain mismanagement can lead to an organisation's destruction regardless of market position, loyal customers and suppliers, especially in this constantly rapidly changing environment. A constraint or mismanagement can lead to various difficulties, thus, management of one's demand can assist in the proper management of one's entire supply chain and allow one to achieve success (Melo and Alcantara, 2012).

However, even with systems such as the Just in Time (JIT) in place, organisations still face difficulties of aligning demand with supply. This poor alignment of demand and supply can be attributed to weak demand management processes and a poor market understanding, and the restrictions and opportunities of the environment, both externally and internally to the firm (Melo and Alcantara, 2014; Mentzer and Moon, 2005). This is the result of poor demand management decisions being taken in forecasting, whereby purchasing decisions are made before (and frequently a lengthy period before) the actual products required are acknowledged. Hence, accurate forecasting needs to account for future demand and also for lead times, prices and other costs to reduce business risk and additional costs.

The sharing of information within an organisation, and externally with suppliers, can create an environment conducive to communication thereby increasing the accuracy when forecasting demand. The organisation under study, Company X, is the largest South African office supply company of stationery and office furniture which implements a JIT strategy. This system allows customers to place orders and have them delivered as soon as possible. Although this system is known to have great benefits, problems do arise which lead to increased costs and large backorders. Thus, the sharing of information plays a pivotal role in guiding the members in the supply chain to prevent mishaps and mitigate any uncertainty. Hence, this study is necessary to develop possible recommendations in an attempt to curb the additional cost of purchasing from alternative sources when stock is depleted and there is a delay in receiving new stock.

This study focuses on the challenges of demand management under the JIT system, the strategies under the JIT system, order fulfilment management in relation to information sharing, order synchronisation, demand order variability and flexibility, and demand capabilities.

1.2. Background

Demand management is defined as "a process of supply chain management emphasising the need to implement operational and strategic sub-processes, focusing on understanding, influencing, and managing customers' demand achieving a fast response throughout the supply chain" (Croxtton, Lambert, García-Dastugue and Rogers, 2008). Melo and Alcantara (2012) have cited the many authors who raise the issue of demand management and necessitate that the topic be explored further. These authors include: Adbanjo (2009); Kaipia, Korhonen and Hartiala (2006); Mentzer and Moon (2005); Simatupang and Sowmya (2002); and Croxtton, Lambert, García-Dastugue and Rogers (2008).

One developing area of focus in supply chain management is demand management. The demand alignment may pose additional complications leading to inefficiency in customer service, reduced stock rotation, and an increased obsolescence rate intensified by the assortment of products. Melo and Alcantara (2012) suggest the aim of demand management is the swift and “rapid and appropriate integration of the needs arising from the market in the direction of the suppliers in order to balance and strategically align demand with operational capacity along the supply chain”. The JIT system is an aspect of demand management which is addressed in this study.

Demand management requires “fast and adequate integration of supplier needs to balance and align demand with supply chain capabilities” (Melo and Alcantara, 2014:1). However, the absence of accurate information is one of the demand alignment complications in supply chain leading to inadequate customer service, reduced stock rotation and large obsolescence rates. Research by Mentzer and Moon (2005) suggests that the demand management concept is not yet understood by supply chain agents. The study further states that the major cause of failure is accredited to not achieving chain coordination due to the poor understanding of demand.

Africa represents a huge market for stationery and a host of traders from Dubai. South Africa has been noted as a major destination for stationery products and has emerged as one of the United Arab Emirates’ (UAE) leading trading partners in the region (Africa Business Page, 2017). This is due to the fact that African traders are looking to international markets to meet the changing and diverse needs of customers who are willing to pay the price for good quality products (Africa Business Page, 2017).

In 2014, 3.1 percent of overall retail share was for the market of books, news and stationery which amounted to R29 million (ZAR) (ReportLinker, 2015). The market is forecasted to grow by 6.2 percent over the next five years to reach a value of R39.3 billion (ZAR) in 2019 (ReportLinker, 2015).

This industry is rapidly growing and therefore there is a need for this study to be conducted. Conducting this study will not only contribute to other firms in the industry but also to other industries where demand management poses a challenge. Solutions need to be found to eliminate these challenges in order to achieve increased efficiency and effectiveness in the services of demand, leading to greater profitability and higher customer service.

Company X implements the JIT system; however, it is experiencing problems of very low inventory and occasionally no stock on hand. This has led to increased backlog of orders which results in increased costs. The company has its busiest season in October-February in which supplies are ordered and delivered to schools, which have opted to use Company X as its stationery provider. Any delays in delivery during this season are especially detrimental to the organisation as it is necessary that the schools receive their allocated amounts of stationery. Stationery is a necessity in schools and in any organisation. Thus, this problem needs to be addressed through this study to ensure that customers receive the ordered stationery on time. This in turn will reduce the costs faced by the organisation as it will not have to rush out and buy expensive alternatives. Company X supplies its stationery to the general public, namely the end user, such schools pupils and teachers and universities students and academics. Corporate companies such as in the food industry and banking industry are also some of the end users. Company X supplies South Africa and has a strong presence in Namibia and Botswana.

Company X’s Durban head office does not deal with the importing of goods directly, however, it is constrained when importing problems arise. Unavailability of stock due to delays and stock outs results in the organisation purchasing similar products from alternative suppliers,

however, these are purchased at an increased price. It is for this reason the study needs to be conducted in an attempt to provide possible solutions to the constraints faced.

1.3. Research Statement

Supply chain is the backbone of any organisation and supply chain mismanagement can lead to the destruction of any organisation regardless of market position, loyal customers and suppliers. The sharing of information between the organisations, suppliers and customers, as well as within the organisation, can reap numerous benefits. Although organisations are placed in a position where it has become necessary to implement strategies such as the JIT approach to meet demand with minimal resources and costs, the dynamics of demand management pose some challenges regarding alignment of demand with supply due to issues such as delay in delivery, damages and theft in transit. These challenges have a cumulative effect when an organisation provides seasonal products during certain periods of the year thus further complicating the accuracy of forecasting and demand alignment. Poor demand management decisions are being taken in forecasting, whereby purchasing decisions are made before, and often an extended lead time before, the actual products required are known. Hence accurate forecasting needs to account for future demand, lead times, and prices and other additional costs to reduce business risk and costs. The main aim of this study is to establish the effect of sharing of information and collaborative forecasting within an organisation and externally with suppliers, while creating a conducive environment for a communication mechanism for increasing order synchronisation and mitigating demand order variability while improving accuracy and flexibility in forecasting demand.

1.4. Research Questions

1. What are the challenges of dynamic demand management under the JIT order fulfilment system?
2. What are the effects of information sharing and collaborative forecasting on efficient operational demand management?
3. To what extent does the demand order variability and flexibility influence the demand management of the underlying JIT system?
4. What is the role of order synchronisation fulfilment to facilitate the balanced alignment of demand and supply order management?

1.5. Research Objectives

1. To determine the challenges of dynamic demand management under the JIT order fulfilment system.
2. To establish the effects of information sharing and collaborative forecasting on efficient operational demand management.
3. To explore the extent of demand order variability and flexibility on the underlying JIT system.
4. To analyse the role of order synchronisation fulfilment to facilitate the balanced alignment of demand and supply order management.

1.6. Preliminary Literature Review

The literature review aims to discuss demand management and establish the coherency to the JIT system employed by Company X. Order management will thereafter be analysed in relation to information sharing, order synchronisation, order variability and flexibility, and forecasting.

1.6.1. Demand Management

“The process that balances the requirements of customers with the supply chain capabilities” is known as demand management (Croxtton, Lambert, García-Dastugue and Rogers, 2002:51). The authors’ study elaborated largely on how demand management can be applied within and across organisations in a supply chain and emphasised that the execution of a plan and minimal disruptions with the proactive match of demand and supply is possible when all the right processes are in place (Croxtton *et al.*, 2002:51). There are three demand management activities which must occur in a global supply chain, these are: “demand management, demand planning and sales forecasting management” (Mentzer and Moon, 2004). Mentzer, Moon, Estampe and Margolis (2006:65) suggest that there are three categories of demand namely: “independent demand, derived demand and dependent demand”.

There is only one point of independent demand in any supply chain. This is the quantity of product demanded by the consumer (Mentzer *et al.*, 2006:65). The second type is derived demand as it is a derivative from what other businesses in the supply chain do to align demand from their direct customers’ needs (Mentzer *et al.*, 2006:65). The derived demand for one’s business is generally the dependent demand of its customers as it is the “demand for the component parts that go into a product” (Mentzer *et al.*, 2006:65-66). In a study by Melo and Alcantara (2014), the concept of demand management was sought after in an attempt to provide a guideline for the prerequisites necessary for the implementation of demand management. The finding of the study suggested that in order to implement demand management processes, a cohesive market understanding, including the restrictions and opportunities of the environment externally and internally to the firm, is required. Melo and Alcantara (2014) advocate the necessity of further research in demand management by citing various authors who all raise concern over the topic. Mentzer and Moon (2005) further state that the major cause of failure is attributed to not achieving chain coordination due to the poor understanding of demand.

1.6.2. Just in Time system

The Just in Time (JIT) system is implemented by Company X and this system falls under demand management. This section will look at the challenges of demand management under the JIT approach. JIT has been practiced from the early 1970s and is known as a “Japanese management philosophy” (Kootanaee, Bahu and Talari, 2013:14-15). This system was established and perfected within “the Toyota manufacturing plants by Taiichi Ohno, the father of JIT, as a means of meeting customer demands with minimum delays” (Goddard, 1986 cited by Kootanaee *et al.*, 2013:15). The system gained “support during the 1973 oil embargo and was later adopted by other organisations” (Kootanaee *et al.*, 2013:15). The oil embargo and the growing scarcity of other natural resources gave rise to the widespread adoption of JIT (Kootanaee *et al.*, 2013:15).

Kootanaee *et al.*, (2013:13) note the leading benefit of JIT strategy is the ability it gives firms to make certain that there is at all times a customer for any product manufactured, thereby maintaining low inventories. Hence, use of JIT implies each component is ordered as it is

needed and if there are no customers for the specific product, production is stopped. The JIT approach is based on a pull system. The pull system is based and coordinated on true customer demand rather than forecast demand (Ncube and Bozas, 2016). The organisation is expected to not hold any inventory and to respond to specific orders (Ncube *et al.*, 2016). The implementation of a JIT production process results in minimum inventory levels thus illustrating on the balance sheet a low inventory figure, and in turn showing an increased turnover ratio of inventories, thus, improving the image of the firm and depicting it as efficient (Kootanaee *et al.*, 2013:13-14). Large turnover ratios of inventories are thought of as a respectable indication of operational efficiency, effective purchasing management and productive use of advertising and promotional campaigns designed at sales generation.

The JIT strategy is also beneficial to an organisation's profitability. Sales dependent production implies decreased costs for raw materials and labour (Kootanaee *et al.*, 2013:13-14). A firm that does not intend to produce a backorder of merchandise for sale needs to purchase only the materials necessary for products ordered for by the customer. Labour expenses are also reduced. This is due to the fact that the number of man-hours required to fulfil the orders is now lower than they would have been for full-time production. However, this is not the case for Company X: the company has been experiencing a larger backlog of goods as stock is not available for sale when required due to factors external to, and out of the control of, the organisation. This also results in "loss of individual independence" which is largely "accredited to restricted cycle times or the time between recurring activities". The absence of buffers, for instance "slack or idle time", results in a large amount of stress and pressure placed on a worker to perform (Kootanaee *et al.*, 2013:14-15).

The JIT inventory regulates production to demand allowing for fulfilment of customised orders without additional effort or time, resulting in improved customer satisfaction (Nayab and Bowen, 2013). JIT also aids in the development of human resources. The implementation involves workforce flexibility and a high "skilled and committed workforce" (Nayab *et al.*, 2013). JIT encompasses a firm's Human Resources in the subsequent ways: the "investment in training to develop [present] skills and [widen] skill sets"; "increased effective usage of employees with multiple skills"; increased motivation due to job rotation; and improved productivity (Nayab *et al.*, 2013).

1.6.2.1. The Assemble-to-Order Strategy

Company X also implements a build-to-order strategy for its furniture line. "Assemble-to-order is a manufacturing strategy where parts and sub-assemblies are produced-to-stock", whereas the final product assembly is postponed until a customer places an order (Iravani, Luangkesorn and Simchi-Levi, 2003:389). Iravani *et al.* (2003:389) provide the example of Dell which receives various orders of products consisting of different size monitors, hard drive capacity and keyboard types. Iravani *et al.* (2003:389) further suggest that "assemble-to-orders are multi item inventory systems with dependent demands across items". Iravani *et al.* (2003:389) have identified that the assemble-to-order system has become popular, due to the fact that it permits producers to "achieve a high degree of product variety and quick product delivery" whilst low inventory is maintained. The findings suggest that the ignorance towards "customer preferences and flexibility in the decision making" with regards to a system's parameters may have a substantial destructive consequence on a system's revenue (Iravani *et al.*, 2003:389).

It is necessary that supply chains raise their competitive levels locally and globally with regard to responsiveness and cost structures supported by build-to-order supply chain and agile systems (Mbhele, 2016). The assemble-to-order and build-to-order strategies are similar,

however, in assemble-to-order, the components are outsourced depending on the essential capabilities of partnering firms (Gunasekarana and Ngaib, 2005:425). Gunasekarana *et al.* (2005:425) describe the strategic importance of build-to-order supply chain which can weaken the possible order variability magnification “in the upstream of the supply chain”. This is also known as the bullwhip effect.

Firstly, the build-to-order supply chain offers a “level of responsiveness; cost effectiveness and flexibility” allowing firms to provide customers its products at the desired time (Gunasekarana *et al.*, 2005:425). Secondly, the chain “decreases the dependence on forecasts, batches, inventory or working capital” (Gunasekarana *et al.*, 2005:425). Thirdly, build-to-order supply chain results in significant cost benefits by eradicating the inventory, forecasting, expediting and set up needed to customise products or services (Gunasekarana *et al.*, 2005:425). Fourthly, it assists companies in efficiently utilising people, machinery and floor space (Gunasekarana *et al.*, 2005:425). Finally, it enables the producer to “react on time with the market and shape” market behaviour (Gunasekarana *et al.*, 2005:425).

1.6.3. Order Fulfilment Management

Croxton (2002:19) states that order fulfilment is a crucial process in supply chain management. The Peerless Research Group (2012:2) state that “order management and fulfilment” has always been “considered as one of the core competencies of supply chain and business success”. The study further notes the importance of “maintaining a core competency in order management and fulfilment” as well as the difficulty of managing it. The study notes the reasons as: “an explosion of order and delivery channels, the complexity of global supply chains and the rising expectations of customers and consumers”. Across all business sectors it has become clear that the effective management of its order management and fulfilment procedures have a direct and instant effect on the success and existence of an organisation and this is clearly “evident in the dynamic sectors driving global economy: manufacturing, high tech and retail” (Peerless Research Group, 2012:2). The fulfilment of “customers’ orders efficiently and effectively” is a vital step to provide excellent customer service, however, this process comprises more than fulfilling customer orders (Croxtton, 2002:19). The concept entails “designing a network and a process that permits a firm to meet customer requests and maximise profitability” (Croxtton, 2002:19).

Order fulfilment comprises of generating, filling, delivering and servicing customer needs. At the operational level, order fulfilment concentrates on transactions and is performed within the logistics function. However, at the strategic function, attention is on crucial decision-making about process which influences the performance of the company, customers and suppliers (Croxtton, 2002:19). To achieve this integration of key functions is necessary and it is improved “through collaboration and coordination” with significant suppliers and customers (Croxtton, 2002:19). Croxtton (2002:19) suggests that the order fulfilment process impacts the performance of the organisation financially and that “within the order fulfilment process the team makes decisions about how orders will be filled for each customer segment, assuring that these activities and its costs are aligned with customer profitability”. The effectiveness of the process also affects suppliers’ and customers’ financial performance. The ability of the organisation to provide the right quantity at the correct time to the customer avoids manufacturing disruptions or empty shelves (Croxtton, 2002:19). Under the concept of order fulfilment, this study will discuss information sharing, order synchronisation, demand order variability and flexibility, and forecasting.

1.6.4. Information Sharing

The world is continuously advancing in terms of technology and the advancement of information system technology has led to the rapid progression of supply chain management. Information is available at a click of a button and can be shared with thousands within a supply chain in a matter of milliseconds. This section will look at information sharing, and how information is collected, managed and shared. Information sharing can be defined as the exchange of data from the sender to the receiver. Information shared in a supply chain is critical to the organisation's competitiveness and is required to be free flowing at all times if the firm intends to remain competitive (Hatala and Lutta, 2009:5). In a study by Hatala and Lutta (2009:8), it has been noted that various authors over the years that have agreed that to increase performance, newly obtained information needs to be constantly distributed to vital personnel within an organisation, and it can be treated as an economic resource. Hence, it can be suggested that the sharing of information is a fundamental component for any supply chain management system (Li and Lin, 2006). The sharing of information has many noted benefits such as centralised information, shorter lead times and small batch sizes (Fiala, 2005:419). It has been further noted by Fiala (2005:419) that supply chain partnerships increase the flow of information, and reduce uncertainty and ensure a profitable supply chain. "New business practices and information technology" makes this synchronisation even closer (Fiala, 2005:419).

Rafaeli and Raban (2005:67) note that in a series of experiments by Connolly and Thorn in 1990 on the contribution of information, it was found that some individuals contributed while others free-ride. Rafaeli *et al.* (2005:68) further suggest that the problem of sharing information may be the medium in which it is shared rather than preparedness to share. Sproull, Subramani, Kiesler, Walker and Waters (1996) found that there may be differences in the tendency to share information through databases compared to the inclination to share directly with others. Hence, it can be suggested that the medium in which information is shared is of concern. Another factor may be the lack of trust to share information and methods to create an environment of trust need to be found, this is supported by the empirical study by Li and Lin (2006) suggest that organisations must inspire and allow for information sharing within and among workgroups not only for organisational success but for its survival. Hatala and Lutta (2009:9) advocate that information sharing behaviour will increase the productivity of workers which will lead to an organisation increasing the speed of information flow, improving efficiency and effectiveness and the faster response to changing needs of customers. Thus, organisational information sharing is found to improve competitive advantage in the long run (Hatala and Lutta, 2009:9).

1.6.5. Synchronisation

Lin and Shaw (1998:210) suggest order fulfilment needs to plan the arrival of different layers of materials in the bill of materials to reduce time and cost, and better utilise capacity. The issue is how to synchronise the availability of materials manufacturing, which includes coordinating capacity and materials planning with scheduling of suppliers (Lin *et al.*, 1998:210). Cross-functional teams determine synchronisation procedures necessary to align "demand forecast to the supply chain's manufacturing, supply and logistics capabilities" (Croxtan *et al.*, 2002:57). Synchronisation "requires coordination with marketing, manufacturing and sourcing, logistics and finance" (Croxtan *et al.*, 2002:57). The strategic level determines the processes that the synchronisation process must follow (Croxtan *et al.*, 2002:61). Croxtan *et al.* (2002:57) propose that the process for execution at the operational

level comprises an examination of “forecasted customer demand and [determination] of the requirements back through the supply chain”. An understanding is needed of the level of demand and rate at which product is needed at every point in the chain.

The authors further state that the “output of synchronisation will be a single execution plan that will balance the needs and costs of manufacturing, logistics, sales and suppliers to meet anticipated demand” (Croxtan *et al.*, 2002:57). The execution plan provides the foundation for the “detailed manufacturing and sourcing plan developed within the manufacturing flow management process through the manufacturing requirements planning (MRP I) and the detailed distribution plan developed within order fulfilment through distribution requirement planning (DRP)” (Croxtan *et al.*, 2002:57).

1.6.6. Demand Order Variability and Flexibility

Variability is viewed as an opponent of planning as it is simpler to “plan for the average but deviations” create problems (Croxtan *et al.*, 2002:62). The authors suggest managers spend a large amount of time and money when managing demand variability, and provide two possible solutions to minimise the adverse effect of variability: decrease the variability or increase the organisation’s flexibility to react to demand variability. Increasing flexibility allows the organisation to swiftly “respond to internal and external events and reducing demand variability” helps in forecasting and reducing expenses (Croxtan *et al.*, 2002:62). Croxtan *et al.* (2002:62) suggest management reduces variability and manages the mandatory variability by including flexibility. The authors further indicate that there are many sources of variability, but the most challenging is demand variability as demand is viewed as an uncontrollable input. Croxtan *et al.* (2002:62) cite Bolton and Jamie (1998) who state that demand management “actively seeks to ensure that customer demand ‘profile’ as the input into the demand planning process is as smooth as possible”. Croxtan *et al.* (2002:62) suggest the team should identify “sources of variability and implement solutions to reduce” them. In some instances, competition may be driving demand variability and is inescapable “but can be planned for when developing [a] forecast” (Croxtan *et al.*, 2002:62).

Achieving flexibility allows an organisation to improve management of system variability that cannot be eradicated (Croxtan *et al.*, 2002:62). The authors further advocate that “increasing flexibility can influence the reliability, quality, cost and speed of the process and its products” (Croxtan *et al.*, 2002:62). The team must decide how much flexibility is required as it is expensive and it is imperative that the level of flexibility established is “consistent with the supply chain needs” (Croxtan *et al.*, 2002:62). In order to establish this, the process team must understand “customer needs, demand patterns and capabilities of the supply chain” (Croxtan *et al.*, 2002:62). Attempting to achieve flexibility requires the team to work with various teams within the organisation and externally to determine “opportunities to [build in] flexibility into the supply chain” (Croxtan *et al.*, 2002:62). For instance, the team may collaborate with the order fulfilment team to make adjustments to the network, such as decreasing “lead times or increasing capacity at buffers” (Croxtan *et al.*, 202:62). To increase flexibility the teams should recognise bottlenecks and generate cost-effective solutions, and to decrease variability, root causes should be identified and solutions generated which are consistent with the firm’s business strategy (Croxtan *et al.*, 2002:62).

1.6.7. Forecasting Demand Capabilities

Globally, forecasting demand is a major success factor in organisations (Chopra and Miendel, 2007:42). Forecasting is an essential pillar to the supply chain process (Sayed, Gabbar and Miyazaki, 2009:11662). This is because it directly impacts the supply chain, customer service level and other KPIs. Hence, improvement of the forecasting model is considered an important element for the supply chain process. Purchasing decisions such as “how much to order, when to order, and how to order inventory effectively” are complicated by the rapidly changing environment (Johnson, Leenders and Flynn, 2011:201). The authors further note that “what is too little in one period may easily become too much in the next” due to the changing economic conditions. Good purchasing decisions are made when forecasting takes into account use, supply, market conditions, technology and price (Johnson *et al.*, 2011:201). Quantitative forecasting utilises past data to predict the future (Johnson *et al.*, 2011:202). One type of quantitative forecasting includes a causal model which aims to “identify leading indicators from linear or multiple regression models developed” (Johnson *et al.*, 2011:202). However, the authors suggest that the chosen indicators are usually believed to cause changes in sales, as even good models fail to show cause-and-effect relationships. These indicator figures must also be available to provide a forecast which provides adequate time for managers to make decisions (Johnson *et al.*, 2011:202).

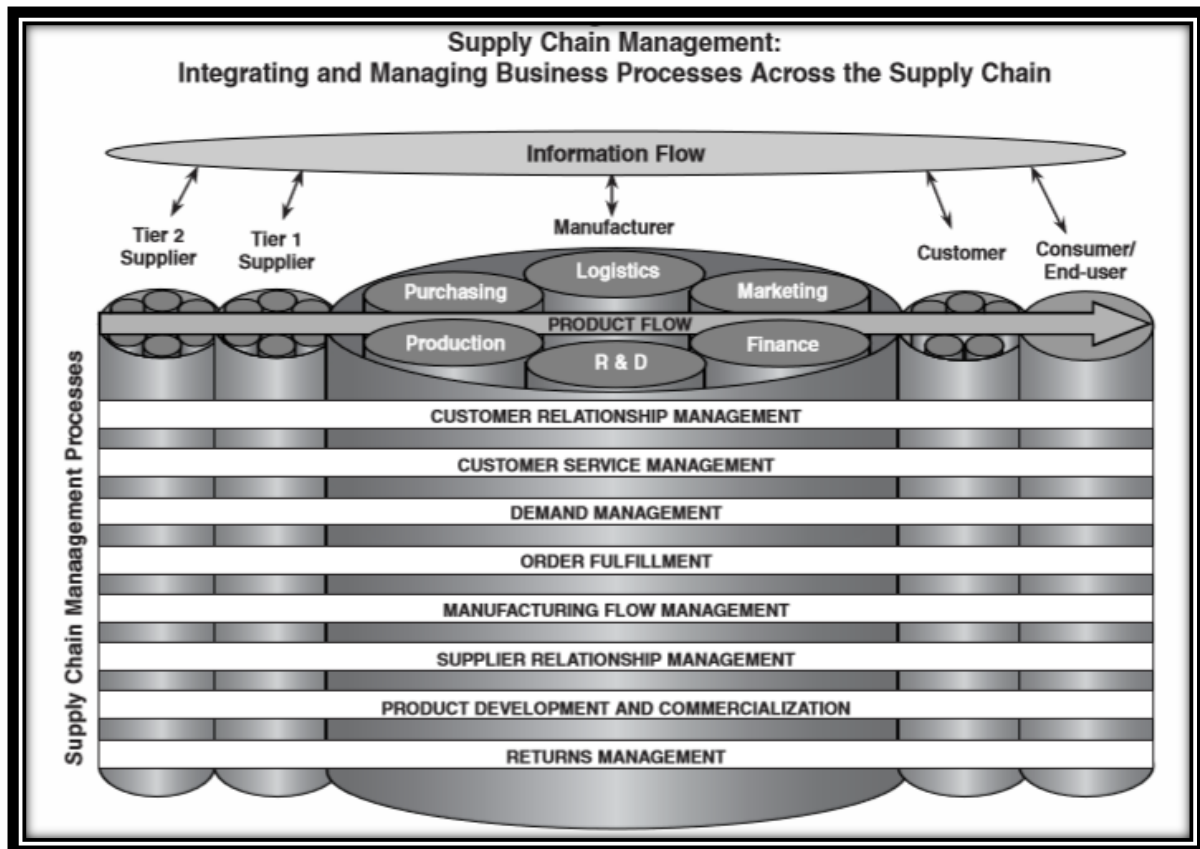
The second type of quantitative forecasting assumes that sales follow a repetitive pattern over time (Johnson *et al.*, 2011:202). The aim in time series forecasts is to identify a pattern and develop a forecast. There are six basic characteristics of the pattern, which are: “constant value, trend, seasonal variations, cyclical variations, random variations and turning points”. Time series also includes: “simple moving average, weighted moving averages and exponential smoothing” (Johnson *et al.*, 2011:202). Johnson *et al.* (2011:202) suggest that one of the most common techniques is the qualitative method of collecting opinions from a number of individuals and using these with a degree of judgement to determine a forecast. “The Delphi Technique is a formal approach” (Johnson *et al.*, 2011:202). The authors suggest that “collective opinion forecasts lack the rigour of the quantitative techniques but suggest these are not any less accurate” as knowledgeable personnel with intimate market knowledge provide good forecasting results (Johnson *et al.*, 2011:202).

1.7. Theoretical Framework: The Demand Management Model

Lamb, Hair and McDaniel (2014:232) provide eight critical business processes on which the major focus of supply chain managers should be centred: “customer relationship management, customer service management, demand management, order fulfilment, manufacturing flow management, supplier relationship management, product development and commercialisation and returns management”. Croxton, García-Dastugue, Lambert and Rogers (2001:14) provide the same eight key processes that have also been identified by The Global Supply Chain Forum (GSCF) which make the core of supply chain management.

Pasanen (2015:25) suggests that these eight key business processes “run the length of supply chain and cut across firms and functional silos within each firm”. This is depicted in figure 1: Supply Chain Management: Integrating and Managing Business Processes across the Supply Chain, below, illustrating the complex entity. The functional silos include “marketing and sales, research and development, finance, production, procurement and logistics” (Pasanen, 2015; Croxton *et al.*, 2001).

Figure 1: Supply Chain Management: Integrating and Managing Business Processes Across the Supply Chain

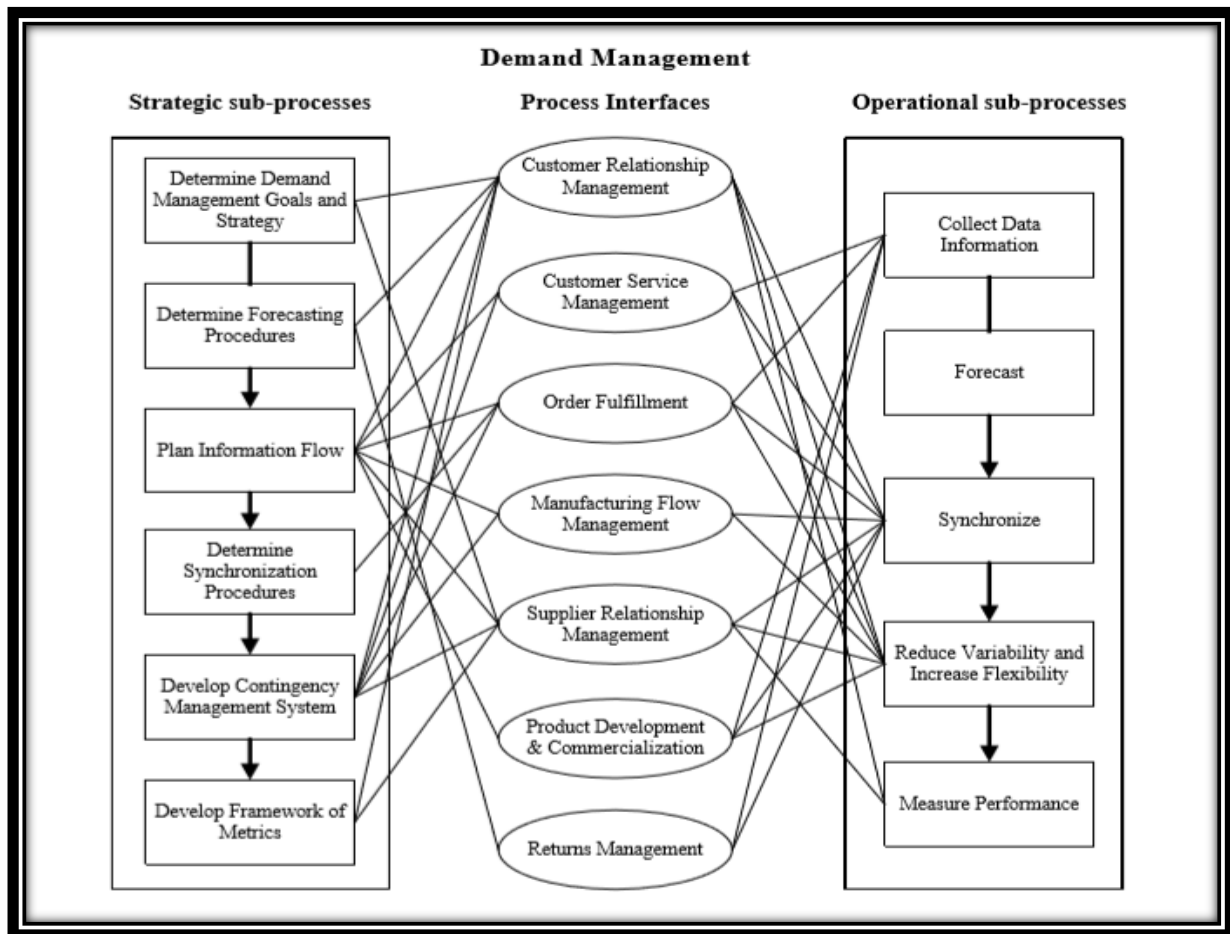


Source: Adapted from Lambert, Cooper and Pagh (1998:2).

Lamb *et al.* (2014, 232) list the eight processes that have been further developed by Croxton *et al.* (2001) as illustrated in figure 1, depicting the demand management process based on research. Croxton *et al.* (2002:53) state that the framework presented is “based on the literature and in-depth interviews with managers in a broad array of industries” and was also validated by the members of the GSCF.

Croxton, Lambert, García-Dastugue and Rogers (2002) propose a demand management framework that explains application process. The model is divided into two portions, namely: strategic sub-process and operational sub-processes. Figure 2 illustrates the interfaces between the respective sub-processes with the seven processes suggested by the GSCF.

Figure 2: Demand Management Process



Source: Croxton, Lambert, García-Dastugue and Rogers (2002:53) adapted from Croxton, García-Dastugue, Lambert and Rogers (2001:19).

For the purpose of this study, the demand management process model, illustrated in figure 2, is used. Specific focus is given to the operational demand process which looks at the elements of order fulfilment providing the constructs for this study, namely: information sharing, synchronisation, order variability and flexibility, and forecasts, as illustrated in figure 3. This model is most appropriate for this study as it relates to the objective of establishing the effects of information sharing and collaborative forecasting for efficient operational demand management. This model further relates to another objective of analysing the role of order synchronisation fulfilment to facilitate the balanced alignment of demand and supply order management.

It should be acknowledged that this demand management model has not been implemented outside of theory and hence the demand requirements model, established by Melo and Alcantara is used in this study to aid the demand management model by Croxton, Lambert, García-Dastugue and Rogers. The reason the demand management model has not been implemented is that the demand requirements model has been implemented and has produced notable results.

1.8. Contribution

This study will contribute academically to a stocked body of knowledge and will provide information that will assist in future research on similar topics. This study aims to contribute to the organisation under study by providing possible findings that the organisation can implement, and improvements it can make, in order to overcome the challenges faced in demand management, and specifically the JIT system employed. This, in an attempt to curb cost and to develop an enhanced supply chain in which backorders are minimised, as well as to ensure there is always stock on hand available to the customer. This study will also contribute to knowledge creation in demand management and efficient management of JIT systems with effective information sharing to create efficient order management.

1.9. Justification

It was necessary to conduct this study as the challenges faced by the organisation are increasing expenses and creating longer than necessary lead times when delivering to customers. The longer the lead time from ordering a product to having it delivered, the greater the negative feelings generated on the part of customers. This in turn will provide customers with a reason to approach a competitor who is able to provide stock on time and the desired product. Therefore, this study having been conducted allows the organisation to gain a deeper understanding of the root of these challenges faced and to use this study to its advantage and make the necessary changes required to remain South Africa's largest office supply company. Should this study not have been conducted the organisation will continue to implement expensive short term solutions which costs the organisation more money in the long run. Hence, this study aims to provide long term solutions to minimise backorders and decrease expenses.

1.10. Research Methodology

The nature of this study suggests the use of an exploratory case study design to explore the dynamics of demand management with the JIT system employed by the organisation under study. Company X as Stationery Distributor uses the JIT system to manage frequencies to order fulfilment from the warehouse to individual retail outlets. A qualitative research approach has more value than a quantitative one when determining the issues faced in an organisation or group of people. The study was conducted in KwaZulu-Natal at the Durban head office. The target population was the individuals in the procurement department, which currently consists of three individuals.

The procurement department consisted of nine individuals (three regional buyers, one procurement manager, one operations manager, one stock controller, two procurement interns and one regional retail manager). Due to structural reorganisation, the procurement manager and operations manager were not available to interview. The stock controller deals mostly with the financial aspects of stock and not with the trends of demand, thereby unsuitable to interview as this study aims to determine the challenges with regards to demand. The regional retail manager deals mainly with the retail aspect of this business. The regional retail manager also does not deal directly with procuring all stock items, thereby unsuitable for the study. This study was looked at from a procurement perspective hence the buyers with more than two years' of buying experience were considered. The intern buyers were in the position for less than 6 months thereby unsuitable to interview for this study. The remaining three buyers were thus the selected sample size. The sampling type employed is purposive sampling.

The definition of a sample design is the process of selecting the number of units in a study, which is a representation of the larger population from which the units were selected (Sekaran and Bougie, 2010:266). Sekaran and Bougie (2003:297) suggests that the “sample size is determined by the level of precision and confidence desired in estimating the population parameters, as well as the variability in the population itself”.

Due to its intensive nature, small sample sizes are generally used in qualitative studies (Sekaran, 2003:296). The researcher aim to determine the challenges of demand management under the JIT order fulfilment system, hence interviewing all buyers was necessary to obtain the precise challenges experienced. Therefore, the participants selected for this study were the three regional buyers. The total sample size is three.

Face-to-face semi-interviews were used as a means of data collection. A recording device was used to record the interviews, which enabled the researcher to transcribe the interviews. Four aspects need to be given consideration when conducting qualitative research namely: credibility/trustworthiness, transferability, dependability and confirmability. Thematic analysis was used to analyse data in the primary qualitative research in this study.

1.11. Ethical Consideration

Ethical consideration has been given to the participants of the study. The information obtained from the respondents has, and will continue to be, treated with strict confidentiality and the respondent’s privacy is of utmost importance. All participants were be treated with respect, and under no circumstances was the self-esteem and self-respect of the subjects violated. Preceding the study, permission was acquired from all respondents. The participants were, at any given time, allowed to stop the interview, and not be forced to continue. The study was explained prior to the interview and confidentiality of the research data acquired from the study will be safeguarded. The research objectives and aims of the study are not deceptive and transparency has been maintained throughout. Misleading information and a preconceived notion have been avoided at all times. This study has been critiqued by the Human and Social Sciences Research Ethics Committee of the University of KwaZulu-Natal. Gatekeeper’s permission was obtained from the organisation under study, granting permission to the researcher to conduct interviews with the necessary personnel before approaching participants.

1.12. Limitations to the Study

This study does face some limitations in many forms. One limitation is that a single organisation was chosen. Therefore, the study has not collected data from competing firms to determine if a similar situation is faced by them. The organisation is large and is South Africa’s largest office supplies provider. However, this study is based in the Durban region and does not consider the locations of the other head offices outside of KwaZulu-Natal. The qualitative research approach was employed, therefore, a small sample size was selected and this results in generalisability of the findings. This is overcome by the measures taken by the researcher, as discussed in the research methodology section above. Bias is a possibility, as it is the place of employment of the researcher. The researcher aims to maintain a relationship of professionalism and remain unbiased, as the aim of the study is to uncover the root issues of the organisation in order to develop possible recommendations that will benefit not only the organisation under study but also other organisations facing a similar situation.

1.13. Conclusion

This chapter has discussed the challenges faced by Company X, the leading stationery and office furniture provider in South Africa. This study focuses on the demand management of this organisation and the JIT system employed, which comes with some disadvantages along with its advantages, and therefore it has become necessary to find possible recommendations that can be implemented by the organisation and other similar organisations facing similar issues. The increased costs faced due to poor management of demand can be detrimental to an organisation and hence this study aims to curb this issue before it becomes too serious. This study will focus on areas of demand management, the JIT system and information sharing in an attempt to provide possible recommendations. This chapter has outlined the problem faced by the organisation underpinning the study, the research questions and problems and the research methodology the researcher will employ.

CHAPTER TWO

LITERATURE REVIEW

2.1. Introduction

Poor supply chain response has caused problems that are notorious and have been documented for decades, due to “the pioneering work of Jay Forrester and Jack Burbidge” (Towill and McCullen, 1997:83). However, decades later, these issues continue to arise with more focus being drawn to demand management. This can be noted in the works of Melo and Alcantara (2012); Adbanjo (2009); Kaipia, Korhonen and Hartiala (2006); Mentzer and Moon (2005); Simatupang and Sowmya (2002); and Croxton, Lambert, García-Dastugue and Rogers (2008). These many authors have raised the issue of demand management and necessitate that the topic be explored further.

One challenge experienced by supply chain members is the planning of demand and management of demand, to which the development of effective demand planning practice is the solution. Wagner, Erhun and Gross-Ruyken (2009) suggest that demand planning and management is recognised as the most significant challenge among supply chain professionals. In an attempt to become competitive in the market, organisations are advised to develop an effective demand planning practice (Gallucci, 2008; Chen *et al.*, 2007; Lapede, 2006; Ross, 2004; Matopoulos, Ranitovic and Bourlakis, 2012).

Demand management remains an emerging topic in supply chain management. Although much research on the topic has been conducted by various authors, there are still elements lacking in this concept. Hence, the continuous challenges present when managing demand. This study aims to deliberate on these challenges by looking at the demand management model developed by the authors Croxton, García-Dastugue, Lambert and Rogers, with major focus given to the operational processes and specifically order fulfilment, which concentrates on the sub-processes of data / information collection, synchronisation and reducing variability and increasing flexibility. Forecasting plays a major role when managing demand. Hence a discussion on this sub-topic is necessary to better understand the demand management process.

This chapter will review various forms of literature to ascertain the theoretical perspective of the research questions. Thus aiming to highlight the dynamics of demand management under the JIT system; information sharing and collaborative forecasting; demand order variability and flexibility and order synchronisation, attempting to answer the research questions.

2.2. Background to the Study

The company under study is the largest stationery distributor in South Africa, which not only deals with stationery but has extended itself into the Information Technology Hardware (ITH) and Information Technology Software (ITS) category, catering and hygiene, furniture and bespoke items that need to be specially procured. Company X does have retail stores based in various areas of KwaZulu-Natal. Therefore, the organisation has to make provisions for these stores, ensuring that when a customer walks into a store to purchase stationery it is easily accessible and readily available.

This organisation is based solely on product distribution, thus, ensuring excellent supplier and customer relationships is imperative to its success. Being a stationer, the organisation faces its

busiest time in the back-to-school season. Preparation for this season is daunting as predictions about customer demand and market trends need to be forecasted months in advance.

With regards to the ITH and ITS, these are fast-moving stock lines and it is essential that stock is ordered only when required so as to avoid stock sitting on shelves becoming obsolete. Bespoke items are especially sourced for customers when an order is placed and the stock is not carried by the organisation. Hence, the JIT system in place provides that all customer order needs are met without having excessive stock sitting on shelves.

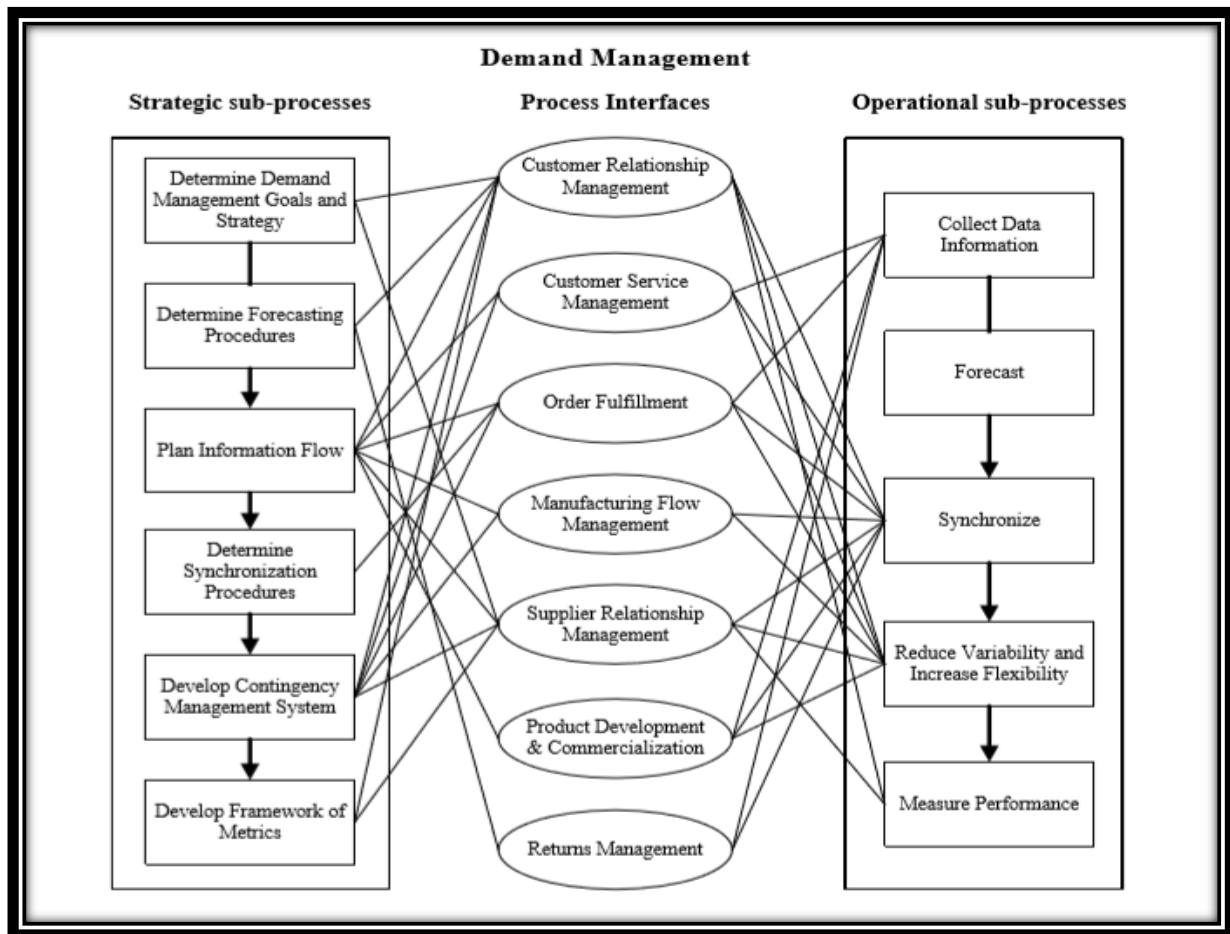
Company X implements the JIT system, however, it is experiencing problems of very low inventory and occasionally no stock on hand. This has led to increased backlog of orders which results in increased costs. The company has its busiest season in October-February during which supplies are ordered and delivered to schools. Any delays in delivery during this season are especially detrimental to the organisation as it is necessary that the schools receive their allocated amounts of stationery. Stationery is a necessity in schools and in any organisation. Thus, this problem needs to be addressed through this study to ensure that customers receive the ordered stationery on time. This in turn will reduce the costs faced by the organisation as it will not have to rush out and buy expensive alternatives and lose potential sales.

2.3. Theoretical Framework: The Demand Management Model

Figure 3: The Demand Management Process, as illustrated below, depicts the strategic and operational elements. “In the strategic process, the team establishes the structure for managing the process and the operational process is the actualisation of demand management” (Croxtton *et al.*, 2002:53). The first essential step is implementation of the strategic process in the integration of the organisation with other supply chain members; the daily activities are executed at the operational level (Croxtton *et al.*, 2002:53).

Figure 3 depicts the interfaces between the respective sub-process and the seven processes. “The interfaces may take the form of transfer data that other processes require or may involve information sharing or ideas with other process teams” (Croxtton *et al.*, 2002:53). The authors define a process team as a team comprising of managers from numerous departments that leads the strategic and operational processes. This team may also comprise of individuals external to the organisation. The team has the responsibility of procedure development at the strategic level and ensuring implementation and management of the day-to-day processes at the operational level (Croxtton *et al.*, 2002:53).

Figure 3: Demand Management Process

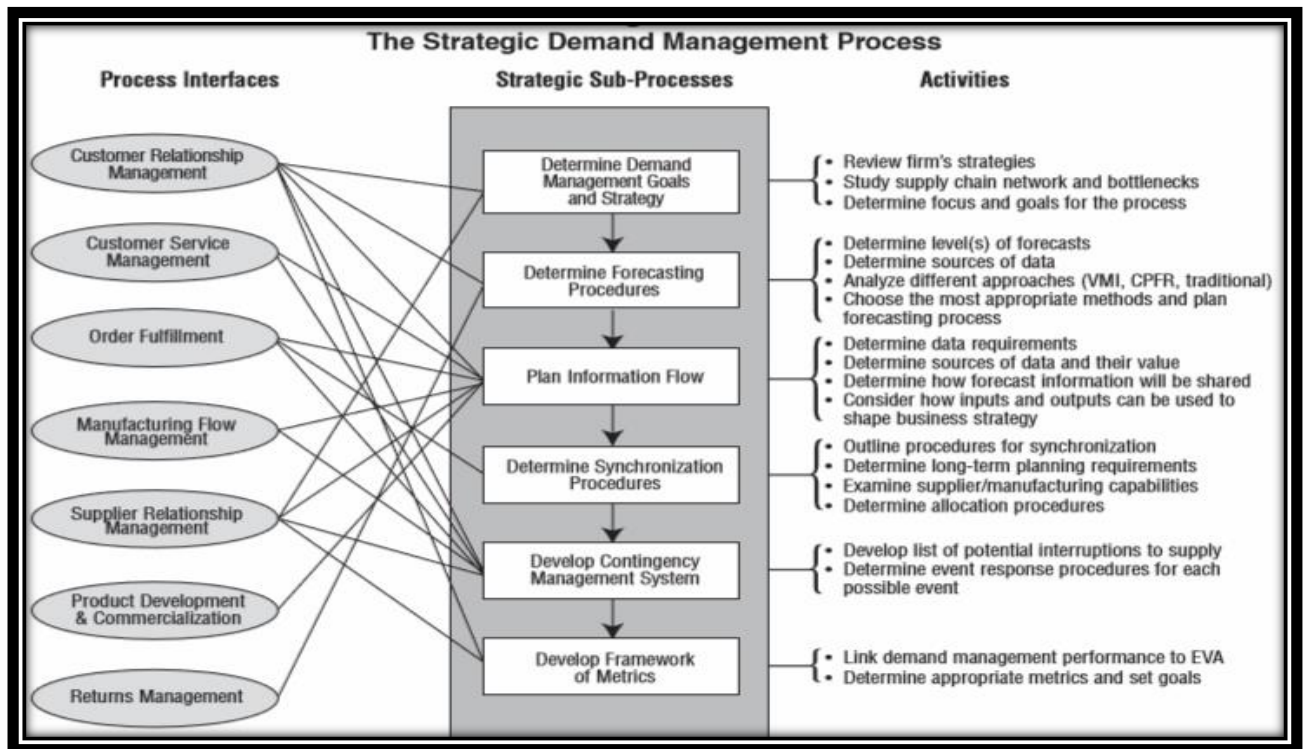


Source: Croxton *et al.*, (2002:53) adapted from Croxton *et al.*, (2001:19).

2.3.1. The Strategic Demand Management Process

Croxton *et al.* (2002:54), state “demand management is about forecasting and synchronising”. The strategic process comprises of six sub-processes “aimed at designing an efficient operational system” to match demand and supply. Figure 4: The Strategic Demand Management Process illustrates the sub-processes, the activities included in each sub-process and interfaces with the processes. The large amount of technology available can assist management with aspects of the demand management process. The team will decide how the organisation should utilise the “technology within the demand management process and how the information system will be incorporated with other supply chain individuals to facilitate the process” (Croxton *et al.*, 2002:54).

Figure 4: The Strategic Demand Management Process

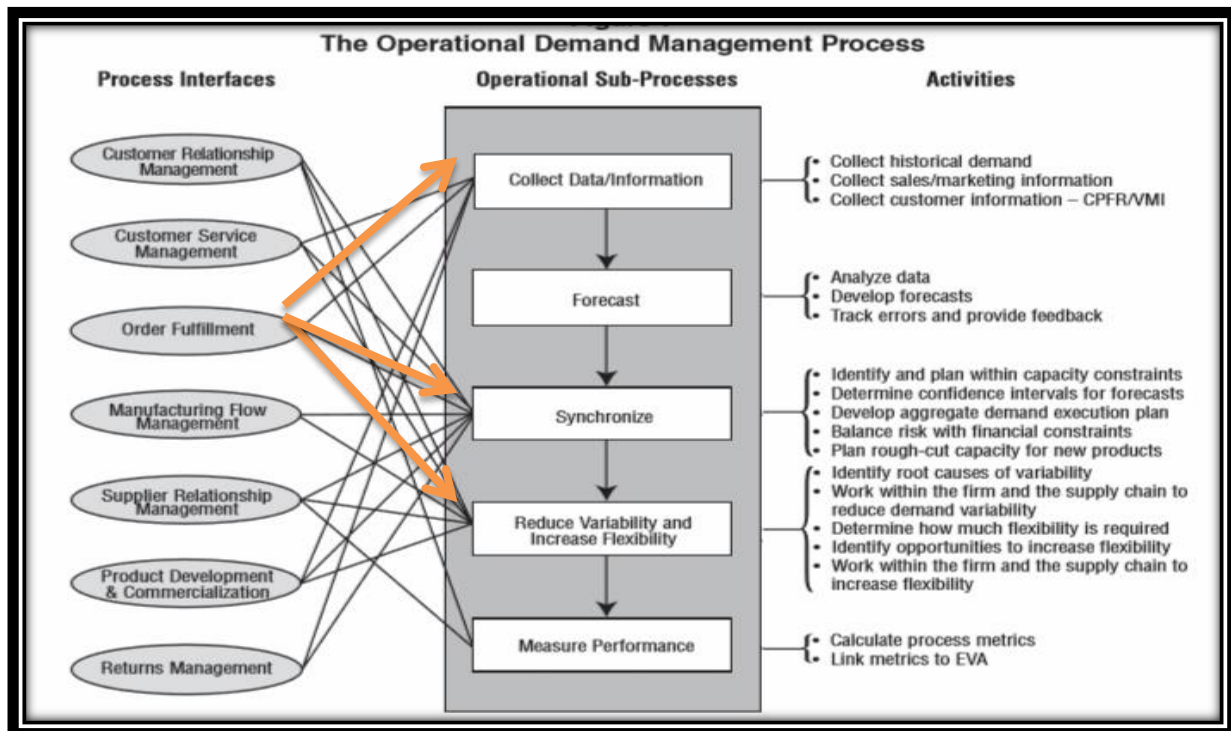


Source: Croxton *et al.*, (2002: 54).

2.3.2. The Operational Demand Management Process

Croxton *et al.* (2002:60) suggest that at the operational level, the process team should implement forecasting and synchronisation as planned in the strategic level. Figure 5: The Operational Demand Management Process illustrates the “five operational sub-processes, the activities within each and the interfaces between each process”.

Figure 5: The Operational Demand Management Process



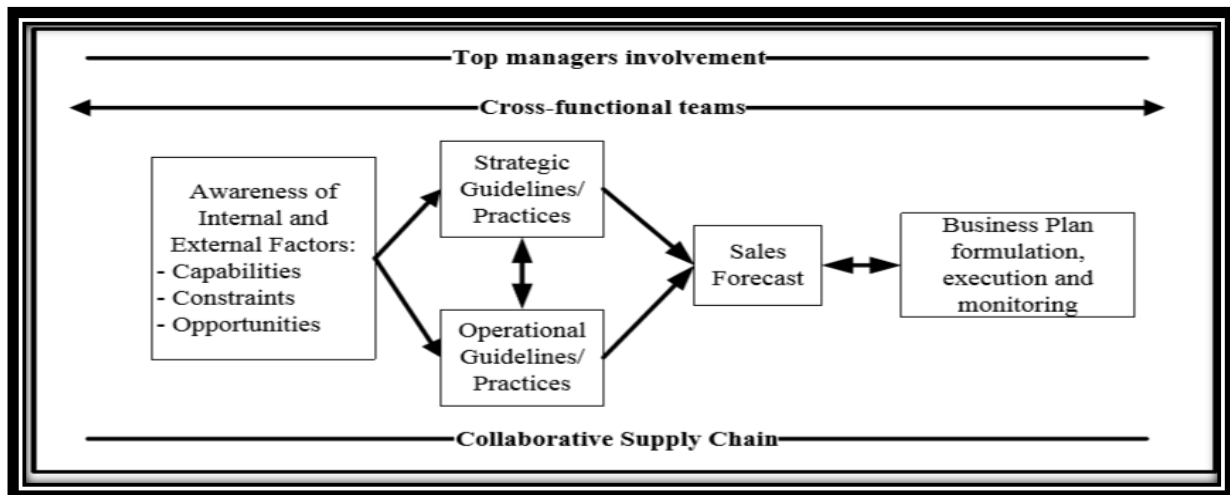
Source: Croxton *et al.*, (2002:61).

However, this proposed model has not been identified in any published empirical work that reports the implementation in enterprises proposed by the authors: Croxton, Lambert, García-Dastugue and Rogers (Melo and Alcantara, 2012). Furthermore, the authors: Croxton, Lambert, García-Dastugue and Rogers, emphasise the need for defining a framework of performance indicators to assess the process, however, the work merely notes two indicators: error forecasting and capacity utilisation (Melo and Alcantara, 2012). Melo and Alcantara (2014) suggest the “interdependence of the demand management process on the other processes” restricts the proposed model since many organisations do not implement all processes.

2.3.3. The Demand Requirements Model

The authors Melo and Alcantara (2012) further identified “requirements for effective implementation of demand management” as depicted in figure 6: The Demand Requirements Model, in an attempt to reduce the interdependence of the processes, thereby proposing an enhanced framework for demand management. The newly proposed model was developed in 2012 by the authors Melo and Alcantara, who aimed to develop a demand management model that catered to the needs of basic wholesaler distributor and the links involving the supplier.

Figure 6: The Demand Requirements



Source: Melo and Alcantara (2014:7).

The framework provides guidelines as to how demand can be managed efficiently and be applied within an organisation and managed across organisations in the supply chain. The model aims to provide enterprises with a method of increasing efficiency and effectiveness in the service of the demand, leading to greater profitability for companies (Melo and Alcantara, 2010). The results have identified that the companies in the study experienced more efficient inventory control, cost sharing and better production planning and control, and were more effective with increased sales and improved levels of service (Melo and Alcantara, 2010).

2.3.4. Top Management Involvement

Min, Roath, Daugherty, Genchev, Chen, Arndt, and Richey (2005) state that “internal alignment includes determining what needs to be done internally and what needs to be done by external partners” and to ensure this alignment top management involvement is of utmost importance. This is imperative to ensure that financial and non-financial investments are supported by top managers. Moreover, “for effective communication and information sharing between supply chain agents, the relationship between top management teams is also necessary to enable identification of business opportunities and areas of improvement” (Min *et al.*, 2005). Another vital aspect is that “top management can facilitate the interaction between different areas and other businesses to encourage collaboration to develop and implement the business plan” (Melo and Alcantara, 2015:4)

Melo and Alcantara (2015:13) found in their study that top management immersion is observed as an essential element in the alignment of expectations between companies and “it is also believed that it reinforces the commitment to carry out actions since the top management team can allocate human and financial resources for the execution of the business plan”. Moreover, the participation by top management provides the business plan with extraordinary impact as the presence of “senior executives in the meetings held to approve and monitor the plan” emphasises its significance for the organisation (Melo and Alcantara, 2015:13). Lastly, “the involvement of top management leads to flexibility and increased responsiveness to unexpected situations and facilitates the resolution of conflicts between organisations” (Melo and Alcantara, 2015:13). Hence, top management participation is crucial to guarantee the “commitment of the teams and companies involved” (Melo and Alcantara, 2015:13).

2.3.5. Collaborative Management

Collaboration between organisations allows for supply chain operational success. This is achieved when organisations share similar goals and objectives, using their resources effectively and efficiently to create an advantage over competitors. In a “collaborative supply chain, two or more companies are working together to plan and execute supply chain operations with greater success” than when performing alone (Simatupang and Sridharan, 2002 cited by Melo and Alcantara, 2015:13). Fawcett, Magnan and McCarter (2008:94) advocate that collaboration transpires when organisations reach agreements about objectives established and use their resources such as “information, people and technology to create synergies and achieve long term competitive advantage”.

Melo and Alcantara (2015:13) have found that the collaborative practices between organisations are the vital elements for demand management process in the supply chain which include; “information sharing, planning and execution of joint actions, resource and knowledge sharing and development of performance indicators”. There are numerous forms of potential supply chain collaboration, which can be divided into two central categories. The first is vertical; which involves collaboration with customers, internally and with suppliers (Barratt, 2004:32). The second is horizontal; which involves collaboration with competitors, internally and with non-competitors (Barratt, 2004:32).

Aarons (2013) acknowledges the difference between supply chain collaborations and partnerships. A collaboration is an open and inclusive procedure, a tool to engage a broad array of diverse entities to come together to find solutions for issues or problems (Aarons, 2013). A partnership is a relationship created through a communicated or implied commitment between two or more parties who merge to achieve a common goal by combining assets to accomplish the desired goal (Aarons, 2013). A partnership is a relationship whereas collaboration is a decision making process to determine the most appropriate solution to a problem.

In an attempt to establish and develop a successful collaboration between organisations, information sharing plays an imperative role. Melo and Alcantara (2015:4) advise that “a successful collaboration requires changes in the standard business practices specifically regarding information exchange”. Data exchange, operational plans and financial information are essential in order to reap the benefits of collaboration (Melo and Alcantara, 2015:4). Melo and Alcantara (2015:4) cite Mouritsen, Skjott-Larsen and Kotzab (2003) who state that “information integration allows the visualisation of customer demand, inventory and production in the supply chain, supporting collaborative planning and forecasting”.

For the purpose of this study, the demand management process model is used aided by the demand requirements model. Specific focus is given to the operational demand process which will look at the elements of order fulfilment providing the constructs for this study namely information sharing, synchronisation, order variability and flexibility and forecasts. This model is most appropriate for this study as it relates to the objective of establishing the effects of information sharing and collaborative forecasting for efficient operational demand management. This model further relates to another objective of analysing the role of order synchronisation fulfilment to facilitate the balanced alignment of demand and supply order management.

2.4. Demand Management

Croxton, García-Dastugue, Lambert and Rogers (2001:18) define demand management as a process that “balances the customers’ requirements with the firm’s supply capabilities” including synchronising the demand forecast with production, procurement and distribution. Demand management can be further explained by its use “to estimate, control, smooth, coordinate, balance and influence the demand and supply for a firm’s products and services in order to reduce total costs for the firm and its supply chain [and] the forecasts are developed at several points throughout the organisation” (Burt, Petcavage and Pinkerton, 2010:28). Vollmann, William and Whybark (1997:4) suggest “demand management coordinates all acts of the business that place demand on manufacturing capacity”. The process further includes establishing and executing contingency plans when operations are interrupted (Croxton *et al.*, 2001:18). Simply, demand management is the process of ensuring that demand meets supply. This is attained by the synchronisation of demand forecasts with production, procurement and distribution to eliminate excessive costs experienced by organisations.

Demand management is an aspect of global supply chain management, comprising of marketing factors as well as other functions, which is reinforced by demand management. Mentzer, Moon, Estampe and Margolis (2006:70) acknowledge that global supply chain management has numerous features, only one of which is demand management. Demand management incorporates the traditional marketing functions and coordinates the marketing activities and other functions in the supply chain. Moreover, the traditional demand establishment component of marketing is strengthened in demand management by a need to “coordinate the flow of demand across the supply chain” known as demand planning and to create motivations for supply chain partners to help manage these flows, known as supply chain relationship management (Mentzer *et al.*, 2006:70).

Demand planning has two components: dependent demand and independent demand. “Demand planning is concerned with the coordination across the global supply chain of derived and dependent demand” and “sales forecasting management is concerned with the independent demand that occurs in any global supply chain” (Mentzer *et al.*, 2006:70). Sales forecasts are a prediction of expected future market demand and accuracy is the focus (Aghazadeh, 2004; Katz, Pagell and Bloodgood, 2003; Mentzer *et al.*, 2007; Taylor and Fearn, 2006; Melo and Alcantara, 2014). It is necessary, when developing sales forecasts to determine the intensities of details and the scope of forecasting, to identify the sources of information and to define the method of forecast, which involves internal and external cross-functional teams (CFT) (Croxton *et al.*, 2008; Melo and Alcantara, 2014).

Demand management began as isolated processes to serve separate business units, product lines and regions (Research Report, 2014:5). After twenty years, demand management has come full circle with consolidation and standardisation (Research Report, 2014:5). The Research Report (2014:5) suggests that the new sources of data, better technology and automation of planning processes remove the non-value-added work of demand management. Traditionally, it was the norm to view departments as separate units each managing demand to serve specific objectives, reducing complication. However, years later it has been realised that this process needs to be merged with the needs of the various demands, and standardised for all departments due to technological improvements. Although easier to manage and handle separately, consolidation and standardisation across the board adds more value to the entire process of demand management.

IBM Global Business Services (2006:5) suggests that recently, enterprises are beginning to draw attention to demand management, rather than responding to its changes. Demand management broadens supply chain management by facilitating a programmed “ecosystem” that concurrently maps demand forecasting against factors such as “supply restrictions, customer commitments, inventory counts, financial predictions and patterns of behaviour that affect demand at any points in time” (IBM Global Business Services, 2006:5). This can be implemented with the use of information systems. The use of an information system will be able to provide the supply chain members with real-time data, providing supply chain visibility.

Demand planning further enables companies to accurately forecast what its industry, market and customer requirements are (IBM Global Business Services, 2006:6). Demand management, however, is a more proactive approach than its predecessors, “relying on highly sophisticated quantitative analytics and advanced modelling techniques to pre-set tolerance levels, predict and pinpoint problem areas, monitor and adjust strategies dynamically and achieve real-time visibility and synergy across all channels” (IBM Global Business Services, 2006:6). This is enhanced with the use of information systems.

According to Sharma (2009) and Barbosa, Chaves and Cardoso (2017), executives around the world attempt to develop the most accurate predictions of future demand to support vital business process activities such as procurement of raw materials and equipment, conducting investments, hiring, training and dismissal of staff, irrespective of global uncertainties. One must acknowledge the reliance on sophisticated quantitative analytics and advanced modelling techniques to pre-set tolerance levels. Any error or distortion could have detrimental effects when taking such critical decisions as noted above.

A system that is able to provide real-time data of demand would assist organisations to procure the right quantity of products. Ettl, Huang, Sourirajan, Ervolina and Lin (2006:1) suggested in 2000 that Advanced Market Research (AMR) recognised the benefits of the 21st century supply chain and introduced the concept of Demand-Driven Supply Networks (DDSN). “A Demand-Driven Supply Network is a system of technologies and business processes that responds to real time demand across a network of customers, suppliers and employees” (Ettl *et al.*, 2006:1-2). The DDSN principle suggests that firms shift from the “traditional push-based supply chain to a pull-based, customer centric approach” (Ettl *et al.*, 2006:2). Ettl *et al.* (2006:2) acknowledge that leading firms have adopted DDSN business strategy to become “more demand sensing, have more efforts on demand shaping and focus on a profitable demand response”. A DDSN system enables organisations to change their traditional approach of push-based supply chain, whereby stock is held and projected to be sold in the market, to a pull-based approach, whereby stock is delivered to the customer according to the demand and desire of the customer. This is enabled as data is provided in real-time, providing supply chain visibility.

Lee (2004) describes how the leading firms have attained sustainable competitive advantage by approaching a DDSN strategy (Ettl *et al.*, 2006:2). Lee (2004) observes that top performing supply chains possess three different qualities: agility, adaptability and alignment (Ettl *et al.*, 2006:2). Agility is the ability to respond quickly to short term changes in demand and supply and manage external disruptions effectively (Ettl *et al.*, 2006:2). Adaptability is the ability “to adjust the design of the supply chain to meet structural shifts in markets and modify supply network strategies, products and technologies” (Ettl *et al.*, 2006:2). Alignment is the ability “to create shared incentives that align the interests of businesses across the supply chain” (Ettl *et al.*, 2006:2). Possession of these three qualities allows the organisation to attain a competitive

advantage in the market as it is able to not only respond to changes, but manage disruptions as well as adjust to changes in the market to meet customer requirements, aligning the goals and objectives of the organisation to the supply chain.

Crum and Palmatier (2003), Sharma (2009) and Barbosa *et al.* (2017) believe that demand management has an essential importance in the productive system competitiveness which leads to various sectors improving their demand forecasting techniques and enables organisations to anticipate uncertainties and plan for the future. This can be accredited to the fact that once an organisation is able to predict demand better than the competitor, it enables itself to procure the correct quantities desired to fulfil customer orders faster than the competition, thus, providing the organisation with shorter lead times.

The correct management of demand can reap numerous benefits not only for an organisation, but the nation as well. It has been confirmed by Li (2007) and Coyle, Langley, Gibson, Novack and Bardi (2008), that effective demand management facilitates financial planning and operational supply chain, aiding “business risk mitigation, operation improvement, backorders reduction” an increased service level. Barbosa *et al.* (2017:14) cite Bean (1997) who claims that studies have confirmed the relevance of this topic and have identified that demand chain management is able to reduce unemployment and subsequently increase the wealth of the nation.

The capability to manage the demand characteristics and variations provides benefits to the entire company production system, aiding the management process and improving accuracy in forecasts (Barbosa *et al.*, 2017:13). Crum and Palmatier (2003) and Barbosa *et al.* (2017) share the similar thought that demand management is a strategic process in directing the decisions of the present towards a competitive position in the future. These decisions can be planned and performed within enough time to allow for improvement, and include but are not limited to: new equipment purchases, materials replacement, establishing a new distribution centre or plant, and increasing or decreasing employee numbers (Crum and Palmatier, 2003).

2.5. Just-In-Time

JIT has several names such as: “zero inventory production system (ZIPS), minimum inventory production system (MIPS), Kaban production, Kaizen production, stockless production, pull-through production and quick response (QR) inventory systems” (Biggart and Gargeya, 2002:1).

Biggart *et al.* (2002:1) acknowledge Harber, Samson, Sohal and Wirth (1990) who suggest that the JIT production philosophy is established upon three vital principles: “the elimination of waste, continuous quality improvement, and worker participation in operations planning and execution encouragement”.

Yeh (2012:2) suggests that JIT manufacturing is to “smooth the flow of materials from the suppliers to the customers”, thereby increasing the speed of the manufacturing process. Yeh (2012:2) further proposes the objectives of JIT are to change the manufacturing system steadily rather than radically:

- To respond quickly to customers;
- To improve communication among departments and suppliers;
- To increase flexibility;
- To attain superior quality; and
- To diminish product cost.

Production that is on-demand results in a smaller amount of products on shelves depreciating in value if sales decline or the product becomes obsolete. Dell is in an industry in which in a matter of days or weeks a product depreciates in value and becomes obsolete rapidly owing to the continuous technological advancements. This relates to Company X as well. The stationery ordered, such as customised covers of files and diaries and year planners, as well as the furniture designs ordered, and especially ITH and ITS stock, may become obsolete as it becomes out of date, “out of fashion” and not the desired shape, size or pattern. Hence ordering too much stock may be a risk the company is not willing to take.

Companies that do not implement JIT strategies invest heavily in large warehouses for the storage of inventories; however, minimal inventory denotes an absence of storage expenditures (Eloff and Carstens, 2013:1). The decrease of these significant manufacturing and operational costs implies increased gross and operational profits, denoting an improved bottom line. The creation and delivery of products swiftly, when requested by a customer, eliminates excessive inventory and allows quick delivery of orders to customers, in addition, the producer does not need to stock inventories (Wilson and McDonough, 2015).

Authors Kootanaee *et al.* (2013:9) suggest that the JIT system implemented in the West (countries which are directly derived from and influenced by European culture also used interchangeably to refer to as developed countries) as detrimental rather than beneficial effects. This is because the West is seen to not be as disciplined as the Japanese. These strong cultural traits are connected with the development of JIT in Japan. The authors emphasise that the Toyota production plants did not succeed separately from these strong traditional influences and the work ethic of the Japanese. The Japanese work ethic is viewed as “an integral part of the Japanese economic success” (Kootanaee *et al.*, 2013:9). The work ethic could be a possible cause of the challenges faced by Company X and more research into this aspect needs to be conducted. The following aspects of the Japanese work ethic are noted by Kootanaee *et al.* (2013:9):

- The workers are highly motivated to find areas that need improvement even though a high standard already exists. This is due to the belief that an already highly met standard does have room for a higher standard to be met.
- The companies focus on group efforts which involve a high degree of information sharing and combination of talents, “problem solving skills” and the aim of achieving a common goal.
- Work is given priority over leisure, as it is normal that a Japanese employee works over 14 hours a day. This contrasts greatly when compared to South African employees and the rules and regulations of the country.
- The employees remain loyal to a single firm throughout the progression of a career span. Thereby an employee is able to develop skills and abilities which in turn offer numerous benefits to the company such as “employee loyalty, low turnover costs and fulfilment of company goals”.
- There is a “high degree of group consciousness and sense of quality among the Japanese”. This is because the Japanese are the same race and there are no other cultures to account for, and individual differences are not exploited or celebrated.

However, Donnelly and King (2010) acknowledge that a fascinating characteristic about Japan is that there is an indication of “rebellion amongst the younger generation within the culture”. Naidoo (2011:81) has noted that the parents of these children and the older generations were raised with the assurance of a lifelong job and worked extended days and nights during the post-war period. However, for the younger generation the old belief no longer holds true.

Additionally, the younger generation see no requirement to continuously work the inflexible and long hours worked by the older generations (Naidoo, 2011:81). This can be seen by the rebellious nature of the younger generation. Donnelly and King (2010) further suggest that change is sluggish in Japan and cultural reality is not helped by the stationary politics and ruling coalition in power since the post-war years.

South African has been referred to as the “rainbow nation” since 1994, which characterises the cultural diversity of the country (Naidoo, 2011:81). The South African population is the most complex and diverse in the world, “with eleven official and foreign languages” (Naidoo, 2011:81). The implementation of JIT in the West has produced successful results, hence, one can argue that in the diverse county of South Africa, JIT can reap these similar results.

Naidoo (2011:84) further provides evidence “that South Africa is a unique country that boasts a diversity of culture” and hence it is imperative that foreigners note that this diversity demands to be learned about to understand the complexities that are rich and vibrant in the South African culture. Du Plessis (2016) cites the Statistics South Africa (SSA) 2014 report, which states that in 2014 South Africa reported 24 689 divorces, a five percent increase in the divorce rate since 2013. Although there are many reasons for these divorces, the main cause is job-related. Thus, one can insinuate that South African’s prioritise work over leisure.

Furthermore, Du Plessis (2016) reports a recent study by Bloomberg, which has illustrated that after Japan, South Africa is the most highly stressed workforce in the world. South Africa is a nation of workaholics and an Ipsos Global and Reuters study has established that 53 percent of the working population do not take annual leave (Du Plessis, 2016).

The SSA report in 2014 further indicated that employee absenteeism is mainly related to workplace stress and burnout, costing R16 million per year. Hence, workers and their families, and the South African economy pay the price for the overworked employees (Du Plessis, 2016). Thus, it can be noted that the JIT system can be as successful as in Japan as the South African culture and the Japanese culture towards work is similar.

Dell has used the JIT principles to its advantage and made its production process a success. However, Dell’s tactic is unique in that its suppliers are its power, thereby achieving its JIT goal (Wilson and McDonough, 2015). Dell increases its uniqueness as it provides short lead times to its customers, compelling its suppliers to carry inventory instead of investing in large warehouses (Wilson and McDonough, 2015). Dell is therefore able to assemble products quickly and ship them to customers. One can suggest that Dell is completely reliant on suppliers for its success, which can be accredited to good collaboration between the suppliers and Dell. However, this reliance on suppliers could be a risky approach, especially if there is an issue with the supplier such as delayed delivery and stock shortages. One has to ensure proper checks are conducted with regard to supplier capacity and capability before a supplier is selected. However, even though these checks are in place, unforeseen risks may occur. Hence, it is advised that in a supply chain there has to be more than one supplier of a product.

Wilson and McDonough (2015) note the significant factors that have led to Dell’s success as: its reliable suppliers that meet Dell’s challenging lead time requirements; the seamlessness of systems which allow for the transmission of component requirements enabling timely arrival at Dell to fulfil lead times; and the “willingness of suppliers to keep inventory on hand” freeing Dell of this obligation (Wilson and McDonough, 2015). It can be assumed that Dell’s reliance on suppliers reduces Dell’s costs and increases profits. Supplier-buyer relationship is based on a good foundation allowing for both organisations to grow and prosper. Nayab and Bowen (2013) identify other benefits of JIT, such as higher facilitation of customisation and increased

customer satisfaction and the development of human resources. The company under study, as noted in the background, has a product line similar to Dell.

It must be acknowledged that Dell, in the west (countries which are directly derived from and influenced by European culture also used interchangeably to refer to as developed countries), has implemented the JIT system successfully, which is accredited to factors besides the work ethic and culture of staff. South Africa should take both practices into consideration as a benchmark to improve the JIT implementation in South Africa.

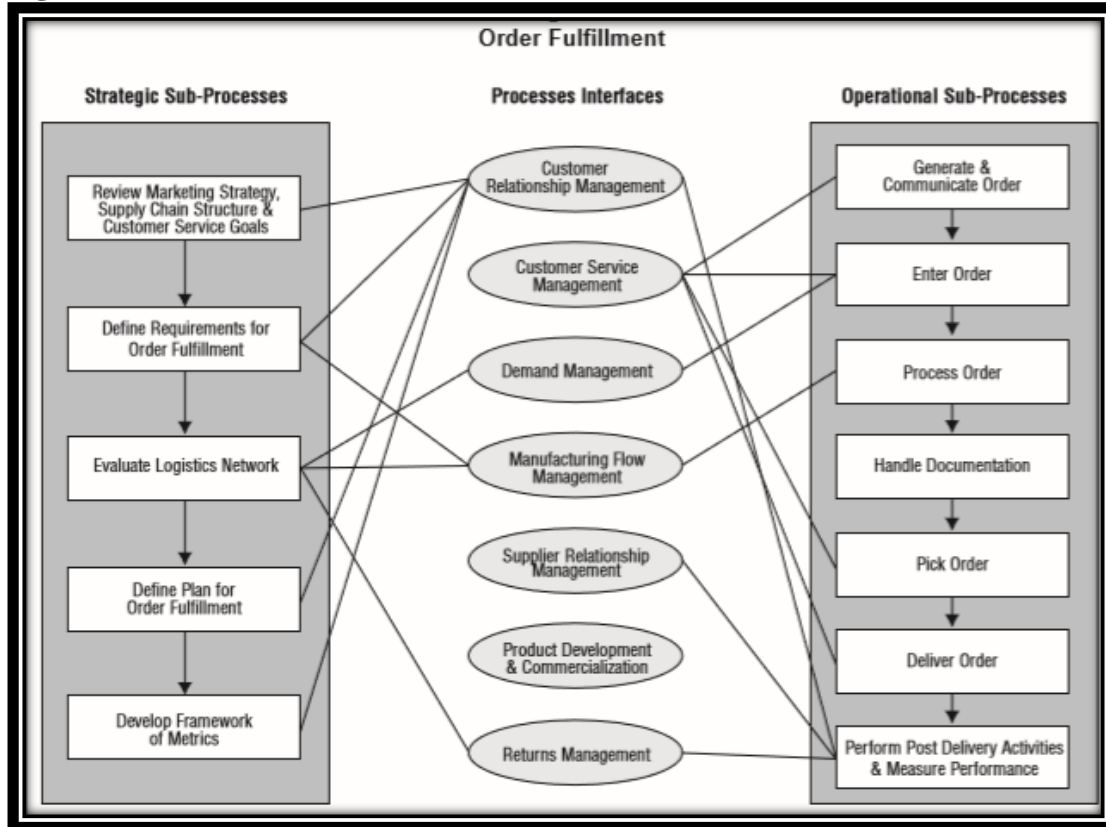
2.6. Order Fulfilment Management

Order fulfilment management is the fulfilling of customer orders by incorporating the various departments of the organisation. Meeting customer requirements with effective order fulfilment necessitates the integration of the firm's manufacturing, logistics and marketing plans and "the partnerships with key members of the supply chain to meet customer requirements and decrease total delivered costs to customers" (Croxtan *et al.*, 2001:18). The key to effective supply chain management is to meet customer requirements in terms of order fulfilment (Kumar and Sharman, 1992:93).

MacCarthy and Brabazon (2008:2) suggest that the majority of industrial and business enterprises strive to react rapidly and resourcefully to customers' demands for particular product variants. Low product variety and highly predictable customer demand diminishes the risks of supplying from stock, however, the authors acknowledge that a large number of companies, specifically those with high product variety that offer product customisation, experience excessive "risks associated with holding high levels of finished goods stock" (MacCarthy and Brabazon, 2008:2). Holding large amounts of finished goods increases the organisation's expenses thus reducing profits. In the event the products become obsolete, are stolen or become unpopular in the market, the organisation has to incur the cost when writing stock off. However, it must be noted that having sufficient levels of stock in the warehouse enables swift fulfilment of customer orders as there are no delays in waiting for stock to be delivered from the supplier.

Croxtan *et al.* (2001:20) suggests that "effective order fulfilment requires integration of the firm's manufacturing, logistics and marketing plans" and the firm should cultivate partnerships with important supply chain members "to meet customer requirements and reduce total delivered cost to customers".

Figure 7: The Order Fulfilment Process



Source: Croxton, K.L., García-Dastugue, S.J., Lambert, D.M. and Rogers, D.S. (2001:21) “The Supply Chain Management Processes”, *The International Journal of Logistics Management*, 12(2):13-36.

In figure 7: The Order Fulfilment Process, illustrated above, the strategic sub-processes consist of assessment marketing strategy, supply chain structure and customer service goals, defining requirements for order fulfilment, evaluation of logistics network, defining a plan for order fulfilment and developing a framework of metrics. (Croxton *et al.*, 2001:20). For the purpose of this study, the operational sub-processes will be the focus.

Croxton *et al.* (2001:21) suggest that the “order fulfilment operational process defines the specific steps regarding how customer orders are: generated and communicated, entered, processed, documented, picked, delivered and handled post-delivery”.

Firstly, orders are generated and communicated, which usually comes from customer service management (Croxton *et al.*, 2001:21).

Thereafter, a member of the order fulfilment team “receives, enters, edits the orders and transmits the data to the customer service management and demand management processes” (Croxton *et al.*, 2001:21). Next, “the inventory and customers’ credits are checked and the orders is provided to the manufacturing flow process” (Croxton *et al.*, 2001:21). The order fulfilment team conducts various processes to ensure that the customer orders are fulfilled correctly and checked to reduce any errors.

Hereafter, the documentation is handled by the team who acknowledge the “order and prepare the bill of lading, picking instructions, packing slips and invoice generation” (Croxton *et al.*,

2001:22). The order is then “picked, packed and staged for loading, the load confirmation is prepared and feedback is provided to customer service management” (Croxtan *et al.*, 2001:22).

The order fulfilment team is “responsible for preparing shipping documents, transmitting delivery confirmation and auditing and paying the freight bill” (Croxtan *et al.*, 2001:22). The team also provides delivery information to the customer service management team. Finally, the team performs post-delivery activities, including “receiving and posting payment, recording bad debt expense and measuring performance” (Croxtan *et al.*, 2001:22). “Feedback is provided to customer relationship management, supplier management and returns management” (Croxtan *et al.*, 2001:22).

There are four customary approaches which are constantly recognised “in production and operations management textbooks to describe how manufacturing companies respond to demand: Make-to-Stock (MTS), Assemble-to-Order (ATO), Make/Build-to-Order (M/BTO) and Engineer-to-Order (ETO)” (MacCarthy and Brabazon, 2008; see also Vollman *et al.*, 1997; Hill, 2004). These approaches contrast with respect to where stock is held in the “system and where the production system is decoupled” (MacCarthy and Brabazon, 2008; see also Olhager, 2003).

MacCarthy and Brabazon (2008:3) suggest that in MTS the assumption is that production is forecast driven whereas in BTO and ETO it is driven solely by customer orders. “In ATO production is forecast driven to the decoupling point and is customer order driven from the decoupling point” (MacCarthy and Brabazon, 2008:3). It is the order fulfilment strategy that establishes the decoupling point (Olhager, 2003; Mbhele, 2014), from a push system which is forecast-driven (Heizer and Render, 2011) to a pull system which is demand-driven (Simchi-Levi, Kaminsky and Simchi-Levi, 2008). Mbhele (2014) and Bowersox, Closs, and Cooper (2010) share the same ideology that it has become progressively compulsory “to move the decoupling point in the supply chain to minimise the dependence on forecasts from an anticipatory model and to maximise the reactionary or demand-driven supply chain elements for a responsive model”.

It is assumed in “MTS that the product range is pre-engineered and that the customer” chooses a compulsory product or combination of products from the offered range (MacCarthy and Brabazon, 2008:3). In ATO and BTO there is some extent to which the choice of product characteristics or configuration is offered to customers (MacCarthy and Brabazon, 2008:3).

Bender (2017) suggests that one of the biggest advantages of a BTO strategy is the specialisation of individual items to meet customer expectations. For instance, customers will place an order with specific requirements and Dell will create this item to the customer’s criteria. Dell achieved its supply chain management innovation by the adoption of a direct sales model, which is a “demand driven supply chain” where the assemble-to-order model replaces the traditional make-to-stock approach. This also reduces the need to rely on forecasts as products are made to customer orders.

Another advantage of the BTO strategy is that there is no extra inventory as unnecessary inventory is eliminated from the stockroom or shelves (Bender, 2017). This strategy allows the manufacturer to order inventory for only what the customer has specifically ordered, rather than stocking inventories that will never be used.

This clears up space in a plant which can be used for other activities that can add value or make money. It also reduces the costs of purchasing large amounts of inventory, insuring the inventory against possible risks and the cost of disposing of the inventory when it becomes

obsolete. Bender (2017) suggests that manufacturers are also given the ability to offer new customisations and products as the market demands, without the worry of selling old inventory.

Bender (2017) notes the disadvantage of the BTO strategy that manufacturers lack sufficient inventory for sale. Inventories are purchased only when orders are placed for the product by phone or the internet. Hence, Bender (2017) suggests that this prevents customers from going to the store and purchasing the product immediately, causing organisations to lose sales from potential customers and decreasing profitability.

The waiting time, which is common in operations management, could also prove to be a disadvantage, as customers have to wait for orders to be filled. This wait time could cause the organisation loss of customers which will result in the customer going to the competitor with full inventories (Bender, 2017). Thus, information sharing plays a pivotal role in JIT as information has to be shared within an organisation to determine the amount required and the amount that can be ordered from suppliers. Information also needs to be obtained from customers as to what is required and then to provide the customer with information as to when the products will be available.

With regards to ETO only “detailed product design, specification and customisation are considered” (MacCarthy and Brabazon, 2008:3). According to MacCarthy and Brabazon (2008:3) MTS is associated with “fast flowing, high volume and low variety commodity products”, however, the choice and option for order fulfilment methods are not constantly clear.

The approach adopted depends on the nature and complexity of the product, the nature of the “customer relationships and the amount of competition in the market” (MacCarthy and Brabazon, 2008:3). The position of a decoupling point is influenced by “technical and design factors related to products and manufacturing processes” including related costs and risks of holding stock to prevent stock outs (MacCarthy and Brabazon, 2008:3).

Available-to-Promise (ATP) has become a well-established in certain “MRP-driven planning systems where products scheduled for production in the Master Production Schedule are allocated to customers dynamically”, improving reliability in promising delivery dates (MacCarthy and Brabazon, 2008). This has been further developed with the use of Enterprise Resource Planning (ERP) tools for products produced across a network of dispersed production units, known as Global-Available-to-Promise (GATP). Some differences of this technique “allow reconfiguration of the product in the production plan to meet the requirements of a customer” (MacCarthy and Brabazon, 2008:7).

An important factor to note is how long a customer is willing to wait with regards to the total lead times for sourcing, planning and producing products in the volumes required. For instance, a manufacturer may prefer to adopt an ATO approach but the customer may demand response times that require the adoption of a “MTS approach with greater costs and risks” (MacCarthy and Brabazon, 2008:3-4). However, planning and control may be simpler using MTS.

Authors Olhager and Ostlund (1990:135-142) and Mbhele (2014:115) state the following:

- Build-to-forecast (BTF) is similar to MTS and ATS as the product is assembled against a sales forecast, the finished goods stock is then sold to customers in the grocery and retail sectors.

- “BTO is similar to MTO as the product is based on a standard design, but component production of the final product is linked to the order placed by the final customer’s specification” Mbhele (2014:115).
- Configure-to-Order (CTO) is similar to Engineer-to-Stock (ETS) as the product is designed and built to customer specifications as once-off products.

Mbhele (2014:115) suggests that ATO focuses on the product which is built specifically to customer requirements from existing stock. The author further states that order fulfilment strategies are based on the P:D ratio, where P is the production lead time, which is the amount of time taken to manufacture a product, and D is the demand lead time, which is the amount of time a customer is willing to wait for the product to be completed (Simchi-Levi, 2008; Syder and Shen, 2011; Mbhele, 2014). The P:D ratio is simply a comparison of the time needed to produce a product to the time given by the customer to deliver the product. A smaller P:D ratio indicates a manufacturer who produced and delivered a product quicker than desired by the customer.

2.7. Information Sharing

Mpwanya (2005:4) acknowledges that over the years firms have begun coordinating with other firms in their supply chain, for instance, sharing information in an attempt to lower the variability of the demand observed instead of responding to this “unknown and variable demand”. Information sharing between supply chain partners has been viewed as one of the major means to improve the performance of the supply chain (Chen and Lee, 2009:781).

In a study by Melo and Alcantara (2012), the authors emphasise the necessity for sharing strategic and operational information between supply chain partners, in addition to knowing each other’s potential. This information facilitates the access to the strategic intent of partners, acquiring greater knowledge about organisational goals and objectives. Hence, companies should share strategic and operational information to learn about their partners’ difficulties and capabilities and generate demand and supply forecasting information such as “information about capacity, initiatives, supplier strategies, technology, industry trends, inventory levels and transportation and storage options” (Melo and Alcantara, 2015:4). Furthermore, attaining access into the partners’ strategic intent, allows knowledge about growth objectives, market share and improvement in the services offered to be shared (Min *et al.*, 2005).

Supply chain efficiency is concerned with activities to improve performance, hence, supply chain visibility is recommended to the extent that members within the supply chain share information which is vital to its operations and provides mutual performance benefits (Mbhele, 2014; Barratt and Oke, 2007). Supply chain operational benefits depend on vital information sharing outcomes with regards to “quality, timeliness and usefulness of information” generating visibility (Barratt and Barratt, 2011; Mbhele, 2014). “The information performance benefits that arise from visibility [include] improved market-responsiveness process, improved planning, improved frequent replenishment capabilities and improved active communication decision-making process” (Barratt and Barratt, 2011:515).

Melo and Alcantara (2015:5) suggest a critical factor for the improvement of demand management performance is information technology support. Hilletofth, Ericsson and Christopher (2009) state that “information technology is a prerequisite to be used in the demand process management and supply process management separately”, however, they believe that this resource can also be useful for synchronising these processes with each other both internally and externally to the organisation.

There are a variety of information systems for demand and supply management, although they are very rarely integrated (Melo and Alcantara, 2015:5). Thus, research by Hilletoft *et al.* shows that information technology is still viewed as a barrier or problem in integrating supply and demand, hence, further attention and investigation is required (Melo and Alcantara, 2015:5).

Melo and Alcantara (2015:5) acknowledge the emphases placed by Al-Mudimigh, Zairi and Ahmed (2004) on the necessity of the integration of demand and supply management, and that “creating an integrated environment based on information technology is a challenge”. Hence, the authors suggest that firms must ensure information technology is constantly enhanced and “optimised to provide real-time knowledge of production processes, consumer demands and activities of the various sub-processes which are crucial to the supply chain principles”. Information provided in real time provides an organisation with visibility of the supply chain and enables it to respond faster to market trends and adapt to the changes faster than the competition, thereby creating a competitive advantage.

Hilletoft (2010) and Lau (2012) argue that information technology should provide data in real-time. Furthermore, Melo and Alcantara (2015) found that the firms in the supply chain with “advanced information technology were able to share information in real-time with internal and external teams and could create a scorecard to assess demand manage performance”.

Information sharing has many noted benefits as well as disadvantages, however, for the purpose of this study focus is given to the manner in which information is collected, managed and shared. The aim is to gain a broadened perspective of this process and identify ways to improve it.

2.7.1. The Collection of Information

Simatupang and Sridharan (2001:2) suggest data collected and meaning attached to it creates information which is used to generate knowledge. Data becomes information when it is acquired during daily activities and meaning is assigned to it through understanding (Simatupang and Sridharan, 2001:3). “Walmart employs online information sharing of point of sales data” this comprises of sales and stock data with key suppliers (Simatupang and Sridharan, 2001:1). The data collection enables suppliers to distinguish fast selling items from the sluggish selling products and make necessary changes. Benetton, a clothing company, “receives orders and sales information from hundreds of company agents located around the world” (Simatupang and Sridharan, 2001:1, citing Foster, 1993).

Organisations need to scan their environment and operations to capture data (Simatupang and Sridharan, 2001:3) about market trends and demand variations. Information technology (IT) is considered as a core of successful supply chain and has the ability to: “improve communication, enable effective decision making, acquire and transmit data, and enhance performance of the supply chain” making it available at the right time to decision makers (Simatupang and Sridharan, 2001; Sanders and Premus, 2002; Marshall, 2015).

Simatupang and Sridharan (2001:5) suggest that retailing companies have more contact with customers and their demands as opposed to upstream members. This is because retailers collect “demand information” and share this “data in [large] sets to the upstream members”. Hence, one can suggest that the information becomes distorted once it reaches upstream members as the information that is shared contains large amounts of data, thereby skewing forecast data.

This provides the organisation with information that is not in real-time, thus reducing organisational visibility.

Data can be obtained from not only sales, but should incorporate organisational purchasing trends, supplier and organisational lead times as well as supplier and organisational capabilities. Chen (2003:341) provides an analysis where focus on data can be “downstream or demand side information such as sales or inventory status at point of sale and upstream or supply-side information for instance lead time, new product introduction and plant operations”. Data obtained from orders is essential when determining “demand forecasting and [planning] when, how much and where to deliver” the goods (Simatupang and Sridharan, 2001:5).

2.7.2 The Management of Information

Data is transformed into information and becomes knowledge when it is internalised to a point that it is available for instantaneous use in solving a problem or providing an explanation (Simatupang and Sridharan, 2001:3). The authors suggest that knowledge is categorised into several classes and cite Polanyi (1996) who distinguishes between tacit and explicit knowledge “based on its degree of articulation”. Shih, Hsu, Zhu and Balasubramanian, (2012) and Mbhele (2014:306) advocate that both tacit and explicit knowledge sharing contribute to improved “efficient and effective decision-making that involve proactive knowledge management”.

Simatupang and Sridharan (2001) and Lotfi, Mukhtar, Sahran, and Zadeh (2013) imply that “knowledge such as beliefs, intuition and judgement” capabilities that are subjective and indescribable are tacit knowledge, whereas knowledge that is communicable into numbers, words, charts and formulas is explicit knowledge. Jensen and Meckling (1992) recommend that “the categories of specific and general knowledge are based on the cost of transfer”. “Specific knowledge” is expensive to share whereas general knowledge is comprised of various forms of knowledge which is inexpensive to share (Simatupang and Sridharan, 2001:3).

The hierarchical interpretation of knowledge describes the creation of knowledge, but does not clarify how it can be used in tracing the necessary “information to answer questions or make decisions”. Hence, an interactive interpretation is suggested by Simatupang and Sridharan (2001) to describe the forward and backward linkages of information.

It is required that organisations know how to derive information from data so that solutions can be found to problems arising and decisions can be made by utilising the information (Simatupang and Sridharan, 2001:3). The authors emphasise that “information is extracted from data by rules of deduction, and becomes knowledge through testing, validating and codification”.

2.7.3. The Sharing of Information

Yu, Yan and Cheng (2001:114) advocate that “a supply chain partnership can be formed between two independent members in supply channels through increased levels of information sharing to achieve specific objectives and benefits” as a win-win situation for all involved members. The authors further emphasise the importance of sharing information among industry firms to elevate the performance of the entire industry system, thereby creating a successful supply chain environment.

The social network analysis uses techniques to study the exchange of resources among actors and information is known to be one resource. Firms in the network can establish a network or relationships through connected activities, resources and similar actors while remaining interconnected and interdependent (Osarenkhoe, 2010:203). Thorgren, Wincent and Öttqvist

(2009) have suggested that participating in inter-firm networks is becoming widespread in the attempt to enhance corporate entrepreneurship. Thorgren *et al.* (2009) further suggest that trust, diversity and knowledge transfer are believed to be the main pillars of well-functioning networks.

Simatupang and Sridharan (2001:5) emphasise that if no information is shared, “decisions are made on the best estimation of available data”, and this may result in biased decisions and prevent members of the supply chain from attaining the optimal solution. Hence, the authors suggest an agreement be developed for sharing information. Simatupang and Sridharan (2001:7) further advocate that an agreement is a “commitment to mitigate asymmetric information amongst supply chain members through providing access to private information”, as the inclination to share information will depend on “trust, and the economic value of the information”.

Trust may be lacking among members in the organisation which impedes information sharing (Lotfi *et al.*, 2013:302), hence, the willingness to share information will result in the redesign of its information structure to gather and transfer private information to make good decisions (Simatupang and Sridharan, 2001:7).

Simatupang and Sridharan (2001:7) suggest that the sharing of information aids data collection, documentation, storage, retrieval and transferal of private information. The authors further suggest that this is dependent on the level of the decision structure which needs detailed data to take decisions at the level of operations, planning and strategy.

Simatupang and Sridharan (2001:17) note that the “collection, dissemination and use of information may lead to differences in benefits and burdens between the receiving and disclosing parties”. The authors suggest a possible way to solve this is to “recognise the externalities surrounding the processes of collection, dissemination and use of shared information”. Marshall and Bly (2004) suggest “the shared information builds and strengthens relationships and social ties among the information receivers and givers”.

The sharing of information through the supply chain can allow for the synchronisation of orders flow.

2.8. Synchronisation

In the strategic demand management process, it is noted by Croxton *et al.* (2001:18) that demand management is about forecasting and synchronisation. After the team completes the forecasting activities, the team determines the synchronisation “procedures required to match the demand forecast to the firm’s production, sourcing and distribution capabilities”. In order to accomplish this, it is necessary to comprehend the capacity and flexibility “available at all points along the supply chain” (Croxton *et al.*, 2001:18).

A determination of the long term planning requirements, especially in the case of demand with high seasonality or long term changes for instance sustained growth as this is where future capacity issues are recognised and recommendations to proactively address these before they become a problem are made (Croxton *et al.*, 2001:18).

In the operational process, the sources of information for the synchronisation sub-process include “customer relationship management, customer service management, manufacturing flow and product development and commercialisation” (Croxton *et al.*, 2001:20). The output of

the synchronisation sub-process is an aggregate production plan and an inventory-positioning plan (Croxtton *et al.*, 2001:20).

Cunnane (2015) reviewed a book by James Cooke, entitled *Protean Supply Chain: Ten Dynamics of Supply and Demand Alignment*, who extensively discussed supply chain synchronisation. Cooke defines supply chain synchronisation as a process in which only the exact numbers of goods necessary to meet the actual demand are produced (Cunnane, 2015). Cunnane (2015) further emphasises the key component of the definition as “actual customer demand”.

Supply Chain Management focuses on the management of materials and information flow within the supply chain, making it more responsive to customer needs while simultaneously lowering total costs (Hahn, Duplaga and Hartley, 2000:33). Hahn *et al.* (2000:33) suggest that supply chain managers need to coordinate and integrate the diverse activities of supply chain members to synchronise these activities. The achievement of synchronisation is extremely important, however, attaining this is a strenuous task and managers often find it “difficult to synchronise the activities of the functional groups within their organisation” (Hahn *et al.*, 2000:33). The authors further state that there is not much empirical evidence presented as to how companies organise their supply chain (Hahn *et al.*, 2000:33). Planning and structural organisation is the foundation of the entity. Management must take time to address organisational structure in an attempt to produce exceptional results. This also allows the organisation to identify the functional groups and synchronise activities with them.

Forecasts are an educated guess when using historical data, however, the utilisation of technology can assist to improve forecasting accuracy. Cunnane (2015) acknowledges that traditionally, major firms have utilised historical sales data when developing a forecast for the replenishment of goods, although producing a good forecast, it is still an educated guess. This is because these forecasts do not account for market disturbances that can disrupt both consumer demand as well as the overall supply chain. Cooke (in Cunnane, 2015) further mentions two technologies that play a significant role in advancing towards actual supply chain synchronisation: inventory optimisation and workforce management.

The competitive strength of a product is determined in the marketplace by the combined capabilities of all supply chain team members rather than by the manufacturing company’s capabilities alone (Hahn *et al.*, 2000:34). Therefore, their activities need to be synchronised to achieve maximum benefits. Synchronisation requires close coordination and timing among the diverse members of the supply chain, which is the main problem for majority companies (Hahn *et al.*, 2000:34).

Lee and Khumawala (1996) conducted a study of five companies. They found that five common causes of misalignment are: “functional organisations are managed independently, functional objectives often conflict, information systems do not provide effective supply chain information, customer focus is lacking in the interior of supply chain and the different needs of customers are not recognised within the supply chain” (Hahn *et al.*, 2000:34).

Hahn *et al.* (2000:34) suggest that effective communication and coordination among all supply chain members are essential. Fraser (1997) has identified the four major factors that characterise synchronised operations as: “a consistent set of shared data, a system wide perspective, rapid communication to all relevant parties and, proactive response to events, changes or exceptions” (Hahn *et al.*, 2000:34).

Inventory optimisation technology enables firms to balance inventory levels with customer demand (Cunnane, 2015). Market conditions such as economic factors, supplier relations and fluctuating and seasonal demand for products, impact inventory management, however, its use of multi-echelon inventory optimisation software can assist with the identification of the appropriate amount of stock needed at stores, warehouses and distribution centres (Cunnane, 2015).

Holding less physical stock can reduce the inventory carrying costs of firms and they can thereby become more profitable. By matching supply with demand, the customer is able to find the product required, and the firm can fulfil it through the appropriate channel (Cunnane, 2015). This is how firms advance in matching manufacturing output to actual demand, however, this technology is under-utilised by many firms (Cunnane, 2015).

Cunnane (2015) suggests that “the workforce management application” guarantees that the suitable staffing levels are in place at the firm. Some strategic constructs of a workforce management application include: “time and attendance, talent management, scheduling and labour management” (Cunnane, 2015). Wroblewski, Bedford, Harwick, and Sheoran (2013:6) suggest that leaders in the organisation should not only guide and support but play the critical role in effectively aiding the coordination of synchronised value chain techniques by assisting in resolving barriers and effectively communicating internally and externally of the organisation.

Wroblewski *et al.* (2013:6) acknowledge that “technologies such as advanced planning systems functionality” have progressed innovatively over the years, and comprise of refined “business optimisation, business process monitoring and event management” in conjunction with the basics of capabilities forecasting planning, “demand-supply planning and detailed scheduling and allocation”. Thus, this technology allows firms to certify that the right employees are performing the appropriate tasks daily, as well as ensuring that the right numbers of people are getting the job done (Cunnane, 2015). This is imperative for balancing supply and demand when it comes to manufacturing as firms use this software to make sure that production, packaging and shipping of all goods can be done without an excess or shortage of labour, resulting in increased costs (Cunnane, 2015). “Workforce management software is one of the most used technologies when it comes to omni-channel fulfilment practices” (Cunnane, 2015).

Cunnane (2015) acknowledges that the use of advanced demand management tools have begun to shift the focus towards supply chain synchronisation for many firms. Research by Cooke found that “nine leading Consumer Packaged Goods (CPG) companies in the United States were able to reduce forecast errors by 40 percent or more in a two year period”, although it seems like an amazing performance turnaround, it depicts the unreliability of developing forecasts using the traditional method (Cunnane, 2015).

Firms need to leverage the substantial amount of customer data on hand to achieve what is actually needed from an inventory standpoint. Especially in today’s global economy, firms “need a seamless flow of goods from manufacturers to end consumer, without carrying excess and expensive amounts of inventory” (Cunnane, 2015). Wroblewski *et al.* (2013:2) also acknowledge the amplified complexity of operating a global company which enhances the effects of supply chain failures due to the increased number of nodes in the network, particularly with globalisation which increases difficulties to sense demand from the market and coordinate demand signals across the supply-side operations. While this is just one statistic, the process is not fast and using real data to bridge the gap between supply and

demand, and realistically synchronising the supply chain, is becoming more of a reality (Cunnane, 2015).

2.9. Demand Order Variability and Flexibility

In 1980, companies focused on improving manufacturing efficiency by implementing strategies such as JIT manufacturing, Kanban and lean manufacturing (Kwaasteniet, 2011:21). Kwaasteniet (2011:21) has noted that the possibilities for further improvements in this area have deteriorated over the years. Kwaasteniet (2011:21) and Simchi-Levi Kaminsky and Simchi-Levi (2008) have acknowledged the change in focus is towards more effective supply chain management to lower costs, and increase profits and market share.

Kwaasteniet (2011:6) provides the three different causes of demand variability in the supply chain. Firstly, global economic business developments and incidents have the most important influence on demand variability upstream the supply chain and on the resulting price levels throughout the supply chain.

Secondly, economic factors outside the immediate supply chain cause demand and price to vary Kwaasteniet (2011:6). Kwaasteniet (2011:7) suggests that “price elasticity of demand, volatility of commodity prices and business cycles” are vital indicators of this influence.

Thirdly, Kwaasteniet (2011:7) states that evidence found that variability is caused within the supply chain itself. This is supported by the bullwhip effect as it provides an understanding of the factors that increase variability and solutions to reduce the effect (Kwaasteniet, 2011:7).

Chen and Lee (2009:781) suggest that order variability could be a genuine cost worry to the retailer’s ordering decision. Chen and Lee (2009) and Balakrishnan, Geunes and Pangburn, (2004) provide the example that a retailer may experience “additional shipping and handling capacity cost when its order exceeds the normal variation range”.

In the operational process level, the supply chain team establishes a rough capacity plan for any innovative products to be launched (Croxtton *et al.*, 2001:20). It is imperative that these plans are communicated throughout the firm and therefore “interfaces with customer relationship management, customer service management, and order fulfilment, manufacturing flow, supplier development and commercialisation” (Croxtton *et al.*, 2001:20).

Flexibility plays an important role in linking operations strategy to marketing strategy which enables an organisation to introduce new products, rapidly adjust capacity and customise products (Awwad, 2007:1). Flexibility in supply chain management is defined as scheduled or planned adaption to unforeseen yet expected external circumstances (Mbhele, 2016).

Awwad (2007:1) further suggests flexibility enables organisations to respond effectively to changing circumstances, especially when responding to the turbulent environment characterised by rapid changes, for instance: “short and uncertain product life cycles, innovative process technology and customised product”. Mbhele (2014:121) notes that the “ability to rapidly respond to unplanned demand or demand variability and supply changes” causes significant cost reduction in the supply chain and better supply chain responsiveness.

Uncertainties in the operating environment of firms decrease the reliability when delivering at the right time, at the right quantity and quality, hence, requiring firms to respond swiftly to changing environments (Önkal and Aktas, 2011:77). “Operating in a flexible supply chain

helps the firms accomplish this rapid adaptation”, however. increased flexibility increases the risks the firm has to confront (Önkal and Aktas, 2011:77).

The essential elements for supply chain risk management are alignment, adaptability and agility (flexibility) (Önkal and Aktas, 2011:77). Awwad (2007:3) notes that flexibility is a complex process therefore there are disagreements regarding its concept and definition. Hence, Sethi and Sethi (1990) deliberate that flexibility is a complex multidimensional concept, which is difficult to capture. Upton (1994) suggests that flexibility has an indefinable quality in manufacturing and operations.

Önkal and Aktas (2011:77) note that flexibility increases resilience, however, firms are hesitant to invest in flexibility, especially while they are unclear as to how much flexibility is required. This is accredited to the notion that the higher the flexibility, the riskier the supply chain becomes.

One significant component of demand management is a constant procedure aimed at increasing flexibility and decreasing variability in the supply chain (Croxton *et al.*, 2001:20). Croxton *et al.* (2001:20) suggest that the increasing flexibility assists management in responding rapidly to both internal and external events, and reducing variability supports in consistent planning and minimising uncertainties. “The supply chain which best succeeds in reducing uncertainty and variability is likely to be the most successful in improving its competitive position” (Towill and McCullen, 1999:86).

For instance, in order to gain flexibility, the team may work with “the manufacturing flow team to find ways to introduce postponement into the manufacturing process” (Croxton *et al.*, 2001:20). To reduce variability the team may work with the customer relationship management team to aid them to better plan promotions (Croxton *et al.*, 2001:20). In an attempt to find ways to increase flexibility and decrease variability, the process team must work with “the sales, marketing and manufacturing organisations, customers and suppliers” (Croxton *et al.*, 2001:20). This involves process interfaces with customer relationship management, manufacturing flow and supplier relationship management (Croxton *et al.*, 2001:20).

2.10. Forecasting Demand Capabilities

In the strategic demand management process, it is noted by Croxton *et al.* (2001:18) that demand management is about forecasting and synchronisation. The team determines which forecasting approach to utilise, including determining the levels and timeframes of the forecasts needed throughout the firm. The team must determine the source of data required to generate the forecasts (Helms, Ettkin and Chapman, 2000:392). This may include: “historical data, sales projections, promotion plans, corporate objectives, market share data, trade inventory, market research and new categories of growth” (Croxton *et al.*, 2001:18-19). The authors Croxton *et al.* (2001:19) further state that if collaborative planning, forecasting and replenishment (CPFR) or vendor managed inventory (VMI) systems are used then the customer is the direct source of data.

At the operational level, the process team executes the forecasting and synchronisation as designed in the strategic level. Once all the relevant data is collected, the team develops the forecasts, tracks and analyses the forecast error, and integrates this feedback to perfect the forecasting method (Croxton *et al.*, 2001:20). This is also known as aggregate planning as the forecast provides the input for matching demand with supply (Croxton *et al.*, 2001:20). Additionally, “any internal or external event that causes a disruption to supply or large forecast

errors needs to be handled with the contingency management plans developed at the strategic level” (Croxtton *et al.*, 2001:20).

Forecasting represents main inputs into planning and decision-making processes in supply chain (Önkal and Aktas, 2011:75). Önkal and Aktas (2011:75) cite Zhao, Xie and Leung (2002) who state that “planning and decision making processes in supply chain rely heavily on forecasts”, hence, forecasting accuracy is a critical element which influences the performance of a supply chain. The authors Önkal and Aktas (2011:76) further suggest that collaborative forecasting may play a substantial role in contributing flexible supply chain when predicting future demands, resource requirements and consumer needs. “The quality of decisions and the resulting outcomes depend [largely] on the extent of information sharing and forecast[ing] communication in flexible supply chains” (Önkal and Aktas, 2011:76).

Organisational flexibility not only provides a competitive edge in the market place but also reduces costs and increases response times. Önkal and Aktas (2011:80) suggest that flexibility improves the performance of the supply chain with regards to cost efficiencies and market response in terms of uncertainty in demand and supply. The authors further discuss the interconnectedness between forecasting and decision making as a vital component in the management of uncertainties when expanding supply capabilities, “resulting [in] enhanced system throughput” (Önkal and Aktas, 2011:80). It can be suggested that using forecasting data to deliberate on decisions is an important factor when uncertainty arises, thereby improving throughput.

The management of flexible supply chains demand “planning for alternative forecast scenarios and building efficient response strategies to confront the possibilities of disruptions, crises and alterations” for a number of factors (Önkal and Aktas, 2011:80). In order to share information, provide adjustments for forecasts, synchronisation and group decision making, it is imperative that robust “coordination mechanisms among supply chain partners” are implemented (Önkal and Aktas, 2011:80). Mbhele (2014:123) suggests that demand forecasting is crucial for inventory planning, especially in a highly dynamic demand environment and where the procurement lead times are long. Managers are highly interested in adjusting inventory planning decisions to demand forecast updates (Mbhele, 2014:123).

Pasanen (2015:28) suggest that forecasts are “an estimate or a calculated guess of future demand” and are categorised into qualitative and quantitative. Nahmais (2001:57) provides the following characteristics of forecasting:

- a) Forecasts tend to be inaccurate – thus planning systems have to be sufficiently robust to react to unanticipated forecast errors;
- b) A good forecast consists of more than a figure, but includes some measure of the anticipated forecast error;
- c) Aggregated forecasts are more accurate. This is because the error made in forecasting sales for an entire product line is generally less than the error made in forecasting sales for an individual item;
- d) The longer the forecast horizon, the less accurate the forecast will be; and
- e) Forecasts should not be used to the exclusion of known information as there is a possibility there is information pertaining to the future demand that is absent in past history.

The implementation demand planning is costly to an organisation, however, reaps numerous benefits by providing data that is more accurate than estimating. The role of demand planning enables sales to achieve goals by utilising optimal resources and working capital (Gallucci,

2008) which is related to establishing safety stock levels, affecting the projection of manufacturing capacity and inventory levels (Chen, Hsu and Blue, 2007; Matopoulos, Ranitovic and Bourlakis 2012).

Bower (2007) and Matopoulos, Ranitovic and Bourlakis (2012) acknowledge that forecast accuracy is a requirement for successful supply chain operations. Bower (2007) further advises that improvement of accuracy is attainable if forecast errors are identified and analysed in time and all events disrupting the forecast baseline are processed correctly. A forecast is the best estimation developed using reliable data. A forecast becomes more accurate when the correct and relevant data is input.

2.10.1. Collaborative Planning, Forecasting and Replenishment

The collaborative, planning, forecasting, and replenishment initiative was developed by the Voluntary Interindustry Commerce Solutions Association in 1999 and reported early successes from forecast reconciliation between retailers and suppliers (Chen and Lee, 2009:782). The aim of the model was to integrate the supply-side and the demand-side, to enable collective conception of an effective environment to meet consumer demands (Mbhele, 2014:143).

Collaborative Planning, Forecasting and Replenishment (CPFR) are examples of “business practices in which multiple trading partners agree to exchange knowledge and share risks to generate the most accurate forecast possible and develop effective replenishment plans” (Johnson *et al.*, 2011:203). “CPFR links sales and marketing processes to supply chain planning and execution processes” (Johnson *et al.*, 2011:203).

Customers enjoy increased product availability and trade partners benefit from increased sales, reduced inventories and costs (Johnson *et al.*, 2011:203). “Trading partners agree to mutual business objectives and measures, develop joint sales and operational plans and electronically collaborate to generate and update sales forecasts and replenishment plans” (Johnson *et al.*, 2011:203). When changes in demand occur, joint management forecast plans can be immediately adjusted, “minimising or eliminating costly after the fact corrections for both parties” (Johnson *et al.*, 2011:203). Joint management forecast plans also allow for any discrepancies to be found and corrected as well as provide a more accurate forecast, thus being able to respond faster to demand changes.

Mbhele (2014:143) suggests that supply chain collaboration and close relationships secured by trust and commitment should embody the contact between “the supply chain analyst and the supplier to agree forecasts, plan promotions and jointly place purchase orders” and CPFR should be part of this collaborative supplier strategy to mitigate demand volatility. The JIT system and vendor managed inventory are used by the retail business especially in order to link replenishment, distribution, transport and logistics as a quick response mechanism to supply chain strategies (Mbhele, 2014:143).

CPFR has many noted benefits. However for it to work successfully, it is imperative that the supplier – buyer relational is a mutually beneficial one. Both the supplier and buyer need to be in agreement as to what the goals and objectives are and sign a contractual agreement. This is to avoid any underhand work that may jeopardise the relationship. The vision must have the best interests of both organisations at heart and trust and loyalty to each other must come first. A collaborative partnership that is formed will enable both organisations to prosper by gaining a larger market share.

2.11. Conclusion

In conclusion, demand management is a topic that requires more in-depth research. The information on this topic is very limited and recommendations to challenges need to be found in an attempt to develop supply chains that are able to fulfil customer orders seamlessly with limited disruptions. It has emerged from studies that top management involvement and a strong, disciplined workforce is required to make organisations' supply chain activity a success. Members in the supply chain need to have a thorough understanding of the processes in order to work to the best of their ability. The importance of demand management has been highlighted throughout this literature review and the benefits and successes that proper demand management can reap for organisations.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1. Introduction

Saunders, Lewis and Thornhill (2007) suggest that research methodology can be referred to as methods of collecting, organising and analysing data. However, Sekaran (2015) defines research methodology as a way to systematically find a solution to a research problem. Cairney and St Deeney (2014:117) suggest that research methodology includes methods, techniques and procedures that are used in the process of implementing a research design.

Greener and Martelli (2015:11) acknowledge the interchangeable use of the terms research methods and research methodology, however, the authors distinguish between the two. Research methods refers to “the specific activities designed to generate data”, whereas research methodology is concerned with the attitude of the researcher and their understanding of the research as well as the strategy or approach chosen to answer the research questions (Greener *et al.*, 2015:11).

This chapter consists of the research methodology used in this study. A qualitative approach and exploratory case study research design was used. Furthermore, the tools and techniques used in the sampling procedure, data collection methods and research instruments and data analysis methods are discussed.

3.2 Research Design

Hair, Clesi, Ortinau and Bush (2013:36) suggest a research design serves the overall plan of the methods used to collect and analyse data. There are three broad categories of research designs: exploratory, descriptive and casual (Hair *et al.*, 2013:36) as depicted in Table 1: Categories of Research Design.

The nature of this study suggests the use of an exploratory case study design as it explores the dynamics of demand management within the current JIT system employed by Company X in relation to order fulfilment. The pivotal purpose of exploratory research is to establish the constraints of the “environment in which the problems, opportunities or situations of interest are most [likely] to [exist] and ascertain the [prominent] factors or variables that may be found or be relevant to the study” (Van Wyk, 2013).

Sekaran (2003:125) suggests that case studies are qualitative in nature and can be used as a tool in managerial decision-making. Case studies involve in-depth “contextual analyses of matters relating to similar situations in other organisations” (Sekaran, 2003:125). Case studies are qualitative in nature, however, supportive in applying solutions to current problems based on former problem-solving experiences and beneficial in understanding certain phenomena and developing further theories for empirical testing (Sekaran, 2003; Sekaran *et al.*, 2013).

Table 1: Categories of Research Design

Categories of Research Design	
Exploratory	<p>Hair <i>et al.</i> (2013:36) suggest it has one of two objectives:</p> <ul style="list-style-type: none"> (i) Generating insights that will help define the problem confronting the researcher; and/or (ii) Deepening the understanding of consumer motivations, attitudes, and behaviour that are not easy to access using other research methods. <p>An exploratory study is undertaken when very little is known about the situation under study, or no information is available on how similar problems or research issues have been solved in the past (Sekaran 2003; Sekaran and Bougie, 2013). Hence, extensive preliminary work is needed to gain familiarity with the phenomena in the situation, and understand what is occurring (Sekaran, 2003; Sekaran and Bougie, 2013).</p>
Descriptive	<p>Involves collecting quantitative data to understand research questions and provides answers to “who, what, when, where and how questions” (Hair <i>et al.</i> (2013:36). Descriptive studies may also provide information about competitors, target markets and environmental factors.</p> <p>“A descriptive study is undertaken in order to ascertain and be able to describe the characteristics of the variables of interest in a situation” (Sekaran 2003; Sekaran and Bougie, 2013).</p>
Casual	<p>Collects data that enables decision-makers to determine “cause-and-effect relationships between two or more variables” (Hair <i>et al.</i>, 2013:36).</p>
<p>Source: Author’s own representation of various definitions provided by various authors.</p>	

According to Yin (1984), the case study research design “investigates a contemporary phenomenon within its real-life context” (McNabb, 2015:237). Greener *et al.* (2015:101) suggest that case study research will contain numerous ways of deriving data about the organisation under study, and will comprise of collecting and analysing documents, surveys and interviews.

“A case study investigates a single subject at a micro level, which is the unit of analysis of one subject, whether it is a person, organisation or institution” (Greener *et al.*, 2015:101). The organisation is the single subject that will be investigated at a micro level. Hence, an exploratory case study research design seems to be the most appropriate. This study focuses on the demand management and its JIT system approach employed, which faces challenges that need a long-term solution in order to reduce expenses and enhance its supply chain. Thus, the exploratory case study research design is the most suitable approach for the study.

3.3. Research Paradigm

The main approaches to research comprise of qualitative approaches, quantitative approaches and the combination of the both known as mixed methods (Creswell, 2014:3). Creswell (2014:3) cites Newman and Benz (1998) who suggest that qualitative and quantitative methodologies are not as discrete as they appear and “should not be viewed as rigid, distinct categories, polar opposites, or dichotomies, however represent different ends on a continuum”. Mixed methods exist in the centre of the continuum because they integrate “elements of both qualitative and quantitative approaches”. A mixed method approach is used when triangulation is required. Triangulation is the use of various research methods of data collection and analysis to enrich and confirm the collection of data and findings of the phenomenon under investigation (Greener and Martelli, 2013:44).

3.3.1. Quantitative Research Method

Quantitative research is defined as a method for “testing object theories by examining the relationship among variables which can be measured on instruments, so numbered data can be analysed using statistical procedures” (Creswell, 2014:4). This also supports the definition of Leedy and Ormrod (2001:1) cited by Naidoo (2011:110) who suggest quantitative research answers questions regarding “relationships among measured variables with the purpose of explaining, predicting, and controlling phenomena”. Quantitative data collection methods are more structured than qualitative data collection methods. Quantitative data collection methods include; surveys, questionnaires, and face to face interviews (Creswell, 2003).

Greener and Martelli (2013:22) suggest quantitative research is associated to with a deductive approach to testing theory, using numbers. A deductive approach analyses a theory to produce hypotheses from a theory, which relates to the focus of the research and thereafter tests the theory (Greener and Martelli, 2013:19).

3.3.2. Qualitative Research Methods

Creswell (2014:4) defines qualitative research as that which explores and understands “the meaning individuals or groups ascribe to a social or human problem”. Typically qualitative research is used to answer questions about the complex nature of phenomena, with the aim of describing and understanding the phenomena from the participant’s viewpoint (Leedy and Ormrod 2001; Naidoo, 2011). Welman, Kruger and Mitchell (2008:6) clarify the description of qualitative research as an approach that covers a collection of interpretative techniques seeking to “describe, decode, translate” and accept the meaning of naturally occurring phenomena in the social world. Qualitative research deals with evaluating behaviour, attitude and opinions.

Greener and Martelli (2013:22) add that a qualitative approach is associated with an inductive approach to generating theory, “using an interpretivist model allowing the existence of multiple subjective perspectives and constructing knowledge rather than seeking to ‘find’ it in ‘reality’”. An inductive approach begins by focusing on the research and “through investigation by various research methods, aims to generate theory from the research” (Greener and Martelli, 2013:19). Therefore, a qualitative research approach will be used as this study aims to identify the challenges of demand management under the JIT approach. The qualitative approach is the most suitable to address this research study.

“Qualitative research allows for a deeper understanding of consumers’ feelings by probing deep into areas that quantitative research may be too superficial to access” (Hair, Clesi, Ortinau and Bush, 2013:79). “Qualitative methods are generally governed by clearly defined rules and

offer a method of exploring issues which cannot be expressed by a number” (Greener and Martelli, 2015:101). In social science and business research, the qualitative method is being increasingly accepted as this area of inquiry “differentiates itself from a scientific positivist paradigm” (Greener and Martelli, 2015:101). This can be associated with the fact that human organisations and behaviour are constantly changing and are therefore difficult to measure in isolation as they “can offer different dimensions of themselves to different audiences” (Greener and Martelli, 2015:101).

Hence, it is of more value to utilise a qualitative approach rather than a quantitative one when determining the issues faced in an organisation or group of people (Greener and Martelli, 2015:101). Therefore, it is the most appropriate approach for this study, which intends to probe deeper into the challenges faced in demand management, specifically the JIT system employed and order fulfilment, the demand management of the organisation and the level of information sharing, in an attempt to generate rich detail data which will allow for the development of possible solutions. Qualitative data collection methods can be unstructured or semi-structured techniques. Common collection methods include focus groups, individual interviews and observations. For qualitative data, the sample size is usually small (Creswell, 2003). This study aims to determine the challenges and thus will generate a theory rather than try to test existing theories. This research will aim to provide new insights into the problem at hand. As noted previous, demand management is a widely studied topic, however requires further investigation. Thus, a qualitative approach will provide the perspective of the buyers at Company X.

Below is a table of the advantages and disadvantages one experiences when utilising a qualitative research method.

Table 2: Advantages and Disadvantages of Qualitative Research

Advantages of Qualitative Research	Disadvantages of Qualitative Research
Except for ethnography, data can be collected relatively quickly or may already exist as naturally occurring conversations on the internet.	Lack of generalisability.
Richness of the data.	Difficulty in estimating the magnitude of phenomena being investigated.
Accuracy of recording marketplace behaviour (validity).	Low reliability.
Preliminary insights into building models and scale measurements.	Difficulty finding well-trained investigators, interviewers and observers.
Insights from qualitative researchers with training in social and behavioural sciences.	Reliance on subjective interpretative skills of qualitative researcher.
Source: Adapted from Hair, Clesi, Ortinau and Bush (2013:79).	

3.4. Study Site

The study site is situated in the KwaZulu-Natal (KZN) region at the Durban head office of a stationery and office furniture distributor. This location is where the issues in demand management, specifically its JIT system, are currently being experienced. Company X is strategically located in a developing business estate, surrounded by numerous logistics companies, warehouses and factories and the N2, which is an arterial route. The study site is able to house the head office for KZN and the regional warehouse.

3.5. Target Population

Welman *et al.* (2008:52-55) suggest the population refers to the study object and consists of “individuals, groups, organisations, human products and events or conditions to which they are exposed”. Naidoo (2011:113) advocates that a research problem relates to a specific population, however, it is not possible to, and too expensive to, involve all members of the population, consequently a researcher must rely on data obtained from a sample.

Target population can be defined as “the entire group of individuals or objects to which researchers are interested in generalising the conclusions” (Castillo, 2009). The target population is the buyers in the procurement department, which consists of three regional buyers for the general product lines and the seasonal product lines.

3.6. Sampling Strategies

“Sampling involves the selection of a portion of the finite population under study” (Battaglia, 2011:523). Nonprobability sampling does not attempt to “select a random sample from the population of interest, instead subjective methods are used to decide the elements to include in the sample” (Battaglia, 2011:523). In contrast, in probability sampling, “each element in the population has a non-zero chance of being selected through the use of a random selection procedure” (Battaglia, 2011:523).

A nonprobability sampling method is the choice of strategy as it is more inexpensive than probability sampling and can be executed quickly, and there is no interest to draw “inferences from the sample to the population” (Battaglia, 2011:523).

“Nonprobability sampling is divided into three categories: quota sampling, convenience sampling and purposive sampling” (Palys, 2008:697). However, Hair *et al.* (2013:146) also include snowballing which entails identifying a set of respondents who can assist the researcher identify additional people to include in the study. Quota sampling is the selection of potential participants according to specific quotas for either “demographic characteristics, specific attitudes or specific behaviours” (Hair *et al.*, 2013:146). Convenience sampling entails drawing samples based on convenience (Hair *et al.*, 2013:145).

Purposive sampling is synonymous with qualitative research (Palys, 2008:697). Purposive sampling, also known as judgemental sampling (Hair *et al.*, 2013:145) or expert sampling (Palys, 2008:697), will be employed as the researcher believes the selected respondents meet the requirements of the study (Hair *et al.*, 2013:145).

Battaglia (2011:524) suggests the aim of purposive sampling is to produce a sample that can represent the population. “The selection of a purposive sample is accomplished by applying expert knowledge of the population to select in a non-random manner a sample of elements that represents a cross section of the population” (Battaglia, 2011:524). Hair *et al.* (2013:145)

further iterate that the underlying assumption is the opinions expressed by the group of experts are a representation of the entire target population.

The purposive sampling method is a thoughtful choice of a participant due to the qualities possessed. Purposive sampling is a non-random method that does not necessitate underlying theories or a set number of participants to support it. The researcher is able to decide upon the individuals whom are most knowledgeable about the phenomenon underlying the study.

The researcher decided upon a criterion by which the individuals interviewed had to be in their current position for two years and longer. The buyers selected were all employed in their current position for more than two years.

3.7. Sample Size

The definition of a sample design is the process of selecting the number of units in a study which is a representation of the larger population from which the units were selected (Sekaran and Bougie, 2010:266). Sekaran and Bougie (2003:297) suggests that the “sample size is determined by the level of precision and confidence desired in estimating the population parameters, as well as the variability in the population itself”.

The procurement department consisted of nine individuals (three regional buyers, one procurement manager, one operations manager, one stock controller, two procurement interns and one regional retail manager). Due to structural reorganisation, the procurement manager and operations manager were not available to interview. The stock controller deals mostly with the financial aspects of stock and not with the trends of demand, thereby unsuitable to interview as this study aims to determine the challenges with regards to demand. The regional retail manager deals mainly with the retail aspect of this business. The regional retail manager also does not deal directly with procuring all stock items, thereby unsuitable for the study. This study was looked at from a procurement perspective hence the buyers with more than two years’ of buying experience were considered. The intern buyers were in the position for less than 6 months thereby unsuitable to interview for this study. The remaining three buyers were thus the selected sample size. The sampling type employed is purposive sampling.

Due to its intensive nature, small sample sizes are generally used in qualitative studies (Sekaran, 2003:296). The researcher aim to determine the challenges of demand management under the JIT order fulfilment system, hence interviewing all buyers was necessary to obtain the precise challenges experienced. Therefore, the participants selected for this study were the three regional buyers. The total sample size is three.

3.8. Sample

“A sample is a subset of the population” and comprises of some of the selected respondents but not all (Sekaran *et al.*, 2013:241). A small sample of individuals, groups or events are consistently chosen due to the in-depth nature of the qualitative study (Sekaran, 2003:296). It is not possible to engage in intensive examination of all factors with a large sample size of hundreds, as this will result in large costs and energy expenditure (Sekaran, 2003:296). Therefore, qualitative studies consist of small sample sizes which results in generalised findings, which are highly restricted (Sekaran, 2003:296).

This study will consist of all three buyers from the supply chain procurement department. These individuals are most knowledgeable of each aspect this study aims to address. The target population selected is most knowledgeable about the issues faced in the organisation.

The population chosen is accessible and the eligibility criterion decided upon is that the individuals who have been employed for longer than two years will be interviewed. The reason for targeting this population is that these individuals experience the challenge under study on a first-hand basis and will be able to provide more insight on the issue. A nonprobability method will be employed, implementing a purposive sampling strategy. The researcher is able to decide upon the individuals who are most knowledgeable about the phenomenon underlying the study. The selected sample size is three individuals, which are the three regional buyers of the organisation.

3.9. Data Collection Methods

The method of data collection employed is face-to-face interviews. Semi-structured interviews will be used, as it is known from the outset what information is required from the participants (Sekaran, 2003; Sekaran *et al.*, 2013). Sekaran *et al.* (2013:123) and Sekaran (2003:236) suggest that, generally, unstructured interviews are conducted face-to-face in business research and structured interviews may either be conducted face-to-face or telephonically, depending on the complexity of the issues involved.

The researcher will prepare a predetermined list of questions that will be asked of the three respondents. As the respondent answers each question, the researcher will note it down. Everyone will be asked the same questions (Sekaran, 2003:227). Sekaran (2003:227) suggests that sometimes, due to the demands of the situation, the researcher may take the lead from the respondent and ask other related questions not in the interview schedule. This allows the researcher to predetermine questions in the interview schedule, but also allows for the questions to deviate from the schedule, which is known as semi-structured interviews (Hair *et al.*, 2013).

This is viewed as an added advantage to the researcher as it provides the ability to probe deeper into the responses of participants. In this manner, new elements may be identified, providing a deeper understanding (Sekaran, 2003:227). The author further states that personal interviews provide rich data when information is offered spontaneously by the respondent instead of answering within the constricted range of responses. This approach is expensive with regards to time and resource consumption, however, the researcher anticipates that this approach will deliver the most appropriate findings in this study (Sekaran, 2003:227).

3.9.1. Data Collection Process

The researcher approached the organisation's Kwa-Zulu Natal Regional Human Resources (HR) manager and verbally requested permission to conduct research at the organisation. Thereafter an official letter of request was sent to the HR department. The HR manager had then provided a letter of approval to conduct research. Ethical clearance was thereafter applied for from the University of KwaZulu-Natal's research office and permission was granted.

The next step was to approach the potential respondents. The respondents all agreed and interview dates were set up and communicated to the General Manager and HR manager. Prior to the interviews, all respondents were provided with an explanation of the study and were asked to sign consent forms. The first interview with regional buyer one was conducted on the 30th of August 2017 during the lunch hour at 1:00 pm. This interview lasted 43 minutes and 11 seconds. Interview two with regional buyer two was conducted on the 31st of August 2017 at 7:00 am and lasted for 49 minutes and 16 seconds. The last interview with regional buyer three was conducted on the 31st of August 2017 as well, during the lunch hour at 1:00 pm and lasted

1 hour, 8 minutes and 8 seconds. During the interviews, the researcher made notes about the interviews and the respondent answers.

Greener and Martelli (2015:113) suggest that preparation of key questions is vital to achieve research outcomes and to be consistent and professional in the interview. A professional interviewer must be able to flex the questions to follow the “directions suggested by the interviewee” (Greener and Martelli, 2015:113).

Research by Bryman and Bell (2011) cited by Greener and Martelli (2015:114), suggests that the interviewer should behave in the following manner: be knowledgeable about the concepts of the study, structuring, clear, gentle, sensitive, open, steering, critical, remembering, interpreting, balancing and ethically sensitive.

After the interviews, the researcher was required to transcribe the recordings. This was a long process and time consuming. The researcher transcribed the entire interviews of all three respondents as in the recordings.

3.10. Data Quality Control

Qualitative research data collection and analysis is suggested to be careful and rigorous, however, most practitioners regard qualitative research as less reliable than quantitative research (Hair *et al.*, 2013:78). Nevertheless, qualitative research may probe more deeply as researchers seek to understand research participants rather than to “fit their answers into predetermined categories with little room for qualifying or explaining their choices” (Hair *et al.*, 2013:78). Therefore, qualitative research uncovers unanticipated findings and reactions and Sekaran *et al.* (2013:350) emphasise that the conclusions drawn from the data are “plausible, reliable and valid”.

It is difficult when conducting qualitative research to ensure whether the research is accurate or correct. Hence, four aspects need to be given consideration when conducting qualitative research, namely: credibility/trustworthiness (with regards to internal validity), transferability (with regards to external validity and generalisability), dependability (with regards to reliability) and confirmability (with regards to objectivity).

These are the terms used by Lincoln and Guba (1985) to replace reliability and validity, which is used in quantitative research (Shenton, 2004:64). Golafshani (2003:600) cites Patton (2001:14) who believes that in quantitative research, “credibility depends on the instrument construction”, however, in qualitative research the instrument is the researcher. Thus, Golafshani (2003:600) states that credibility “in qualitative research depends on the ability and effort of the researcher”. The author further suggests that while validity and reliability are treated separately in quantitative research, it is not viewed separately in qualitative studies and instead terminology used includes, credibility, transferability and trustworthiness.

3.10.1. Credibility

Shenton (2004:64) discusses credibility and cites Lincoln and Guba (1985) who argue that ensuring credibility is one of the significant factors in establishing trustworthiness. The authors have made the following provisions to promote confidence in credibility: the adoption of research methods well-established in both qualitative investigation in general, and in information science; the development of an early familiarity with the culture of participating organisation; random sampling of individuals to serve as informants; triangulation; tactics to ensure honesty in informants; iterative questioning; negative case analysis; frequent debriefing

sessions; peer scrutiny of the research project; the researcher's reflective commentary; the background, qualifications and experience of the researcher; member checks; thick description of the phenomenon under study; and examination of the previous research findings. The researcher will employ these provisions, where possible, to make sure the credibility of this study is ensured at all times.

For instance, the development of an early familiarity with the culture of the participating organisation before the first data collection dialogue takes place is established by the researcher as it is the researcher's place of employment. Therefore, as the authors Lincoln and Guba (1985) recommend, the prolonged engagement between the researcher and the participants will ensure the researcher gains deeper understanding of the organisation and establishes a relationship of trust between the parties (Shenton, 2004:66).

As a tactic to help ensure honesty in informants when contributing data, the researcher will give each participant approached an opportunity to refuse participation to ensure those participating are willing and prepared to offer information freely (Shenton, 2004:66). Iterative questioning may also be employed by probing deeper into the responses, returning to matters previously raised, and extracting related data through rephrased questions (Shenton, 2004:66).

3.10.2. Transferability

Shenton (2004:69) cites Merriam (1998) who suggests that external validity "is concerned with the extent to which the findings of one study can be applied to other situations". Since the findings in qualitative studies are specific to the small sample size chosen, it is impossible to demonstrate that the findings may be applicable to other situations and populations (Shenton, 2004:69). Bassey (1981) "proposes that if practitioners believe [that] its' situation is similar to that defined in the study, it may relate the finding to its own understanding" (Shenton, 2004:69).

Shenton (2004:69) acknowledge Lincoln and Guba (1985) who are among the authors who believe that it is the responsibility of the researcher to ensure adequate background information about the fieldwork site is provided to allow the reader to make a transfer. Hence the researcher will provide sufficient information of the fieldwork site to ensure the reader has a deep understanding of the phenomenon under study thereby allowing the reader to compare the study to its own current situation to before a transfer of findings and conclusions are made.

Shenton (2004:69) suggests the following information should be provided: the number of organisations partaking in the study and where they are situated; any restrictions in the type of people who contributed to the data; the number of participants involved; the data collection methods used; the number and length of the data collection sessions and the time frame of the study in which data was collected. The researcher will ensure that this information is provided in the study to ensure transferability.

3.10.3. Dependability

Lincoln and Guba (1985) emphasise the closeness between credibility and dependability, arguing that a demonstration of the former does ensure the latter as this can be ensured through the use of overlapping methods, for instance focus groups and individual interviews (Shenton, 2004:71). Dependability ensures that the research findings are consistent and can be repeated by another researcher. Therefore, in an attempt to ensure dependability the researcher will report the processes within the study in detail, thereby allowing a future researcher to repeat the work (Shenton, 2004:71). A detailed account will include: the research design and its

implementation, the operational detail of data gathering and a reflective appraisal of the study (Shenton, 2004:71).

3.10.4. Confirmability

The concept of confirmability is the qualitative equivalent of objectivity (Shenton, 2004:71). Steps need to be taken to ensure that the findings of the study are “the results of the experiences and ideas” of the participants rather than “the characteristics and preferences of the researcher”. Therefore, confirmability will be maintained in this study by a detailed account of the choices made in the study, especially with regards to research methodology. Thus, an audit trail is created which can be checked on. The audio recordings of the interview also serve this aspect of confirmability as one can go back to the audio recordings and confirm “the results of the experiences and ideas” of the participants rather than “the characteristics and preferences of the researcher” (Shenton, 2004:71).

As discussed in this section, it is very difficult to ensure reliability and validity in qualitative studies, however, this section has provided the ways in which these will be ensured with regards to credibility, transferability, dependability and confirmability.

3.11. Data Analysis

Thematic analysis is a technique that is generally utilised to examine data in primary qualitative research (Thomas and Harden, 2008). There are three steps of thematic analysis: firstly, line by line coding of text; secondly, the generation of descriptive themes; and thirdly, the development of analytical themes (Thomas and Harden, 2008). The generation of descriptive themes remains relatively similar to the primary study, while “the analytical themes represent a stage of interpretation”, and go beyond the primary research and establish “new interpretive constructs, explanations or hypotheses” (Thomas and Harden, 2008).

However, Braun and Clark (2006:16-23) and Ruggunan (2017) suggest that there are six phases to thematic analysis. These includes:

- Phase 1: Familiarising yourself with your data;
- Phase 2: Generating initial codes;
- Phase 3: Searching for themes;
- Phase 4: Reviewing themes;
- Phase 5: Defining and naming themes; and
- Phase 6: Producing the report.

For the purpose of this study, the three-step approach discussed by Thomas and Harden (2006) will be implemented.

Braun and Clarke (2006:3) have noted that “thematic analysis is [a] poorly demarcated, rarely acknowledged, yet widely-used qualitative analytic method”, however, the authors further argue that the thematic approach provides an “accessible and theoretically flexible approach” when analysing qualitative data. “Thematic analysis provides a flexible and useful research tool, which is able to provide a rich and detailed, yet complex account of data” (Braun and Clarke, 2006:5).

Braun and Clarke (2006:6) define thematic analysis as a “method for identifying, analysing and reporting patterns within the data” which organises and describes the data in rich detail, yet goes further by interpreting various aspects the research topic. The noted benefits of employing

thematic data analysis is its flexibility, the accessibility for researchers “with little or no experience of qualitative research” and its generalisability to the general public, “its ability to highlight similarities and differences across the data set and develop unanticipated insights” (Braun and Clarke, 2006:6).

The data will be analysed by finding codes from the interviews, and then be separated into categories that relate to each sub-theme of the main theme. This will be depicted in the form of diagrams developed by the researcher and discussed in chapter five.

3.12. Ethical Consideration

Ethical consideration has been given to the participants of the study. The information obtained from the respondents has, and will continue to be, treated with strict confidentiality and the respondent’s privacy is of utmost importance. All participants were treated with respect, and under no circumstances was the self-esteem and self-respect of the subjects violated. Preceding the study, permission was acquired from all respondents. The participants were, at any given time, allowed to stop the interview, and not be forced to continue. The study was explained prior to the interview and confidentiality of the research data acquired from the study will be safeguarded. The research objectives and aims of the study are not deceptive and transparency has been maintained throughout. Misleading information and a preconceived notion have been avoided at all times. This study has been critiqued by the University of KwaZulu-Natal’s research office. Gatekeeper’s permission was obtained from the organisation under study, granting permission to the researcher to conduct interviews with the necessary personnel before approaching participants.

3.13. Limitations to the Study

This study does face some limitations in many forms. One limitation is that a single organisation was chosen. Therefore, the study has not collected data from competing firms to determine if a similar situation is faced by them. The organisation is large and is South Africa’s largest office supplies provider. However, this study is based in the Durban region and does not consider the locations of the other head offices outside of KwaZulu-Natal. The organisation’s head office is based in Gauteng and is centralised, hence, decision makers were not interviewed. This limitation was addressed with the understanding that this research problem is current and relevant in the 21st century. The data quality control measure of transferability will enable this study to be applicable to situations which are similar to that defined in this study. The researcher will provide sufficient information of the fieldwork site to ensure the reader has a deep understanding of the phenomenon under study thereby allowing the reader to compare the study to its own current situation to before a transfer of findings and conclusions are made.

The qualitative research approach was employed, therefore, a small sample size was selected and this results in generalisability of the findings. This is overcome by the measures taken by the researcher as discussed in the research methodology section above. Bias is a possibility, as it is the place of employment of the researcher. The researcher aims to maintain a relationship of professionalism and remain unbiased, as the aim of the study is to uncover the root issues of the organisation in order to develop possible recommendations that will benefit, not only the organisation under study, but also other organisations facing a similar situation.

CHAPTER FOUR

DATA ANALYSIS AND INTREPRETATION

4.1. Introduction

This chapter provides an analysis of the data collected from the three interviews conducted. Chapter three discussed the methods by which data was collected and how it is intended to be analysed. This chapter presents the qualitative findings.

Each section of the interview will be presented. The questions will be provided and the purpose of why the question was asked will be justified. Thereafter the relation of the question to the research objectives will be noted. The number of respondents that have answered will also be stated along with each response. The researcher will hereafter refer to respondents one, two and three as R1, R2 and R3, respectively.

4.2. Overview of Results

The first interview with regional buyer one, known as respondent one (R1) hereafter, was conducted on the 30th of August 2017. This interview was an estimated 43 minutes and 11 seconds long. Interview two with regional buyer two, known as respondent two (R2), was conducted on the 31st of August 2017 and lasted for an estimated time of 49 minutes and 16 seconds. The last interview with regional buyer three, referred to as respondent three (R3), was also conducted on the 31st of August 2017, the estimated timing for this interview was 1 hour, 8 minutes and 8 seconds. During the interview, the researcher made notes about the interview and the respondents' answers.

The interview began with asking general biographical questions to get to know the background of the respondent. The interview was divided into six sections, namely sections A – F, as follows;

- Section A: The challenges of demand management;
- Section B: Information sharing;
- Section C: Collaborative forecasting;
- Section D: Demand order variability and flexibility;
- Section E: Synchronisation; and
- Section F: The demand management requirements model.

4.3. Biographical Information

This section asked the respondents to provide personal information such as educational qualifications and years of employment in the organisation and current position.

4.3.1 Question 1: What are your educational qualifications?

Firstly, the researcher had decided to ask the educational qualifications of the respondents. Although this does not relate to any of the research objectives, the aim of the researcher was to establish the level of education of each respondent. This assisted the researcher to understand the amount of theoretical knowledge the respondents have. All three respondents answered this question.

Figure 8: Pie Chart Depicting the Level of Educational Qualifications of Respondents

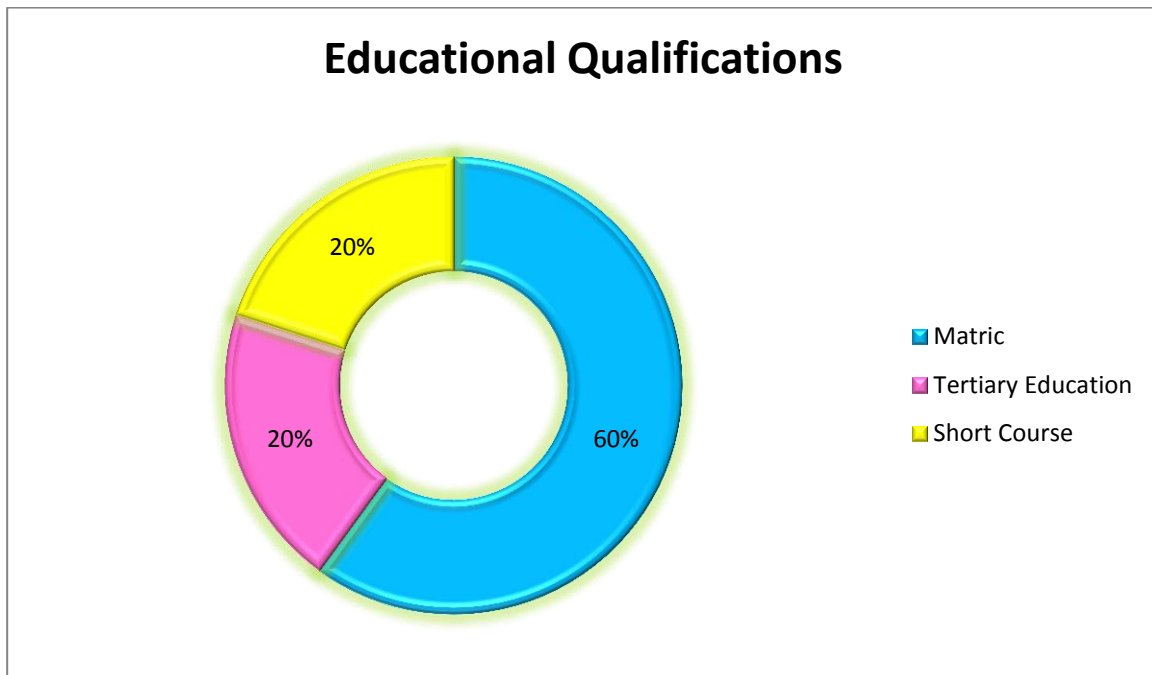


Figure 8 represents the data collected on educational qualifications. This allows one to compare the educational qualifications of respondents. All three of the respondents have a matric qualification, one has matric supported by tertiary education and the other has matric supported by a short course.

4.3.2 Question 2: How many years have you been in the organisation?

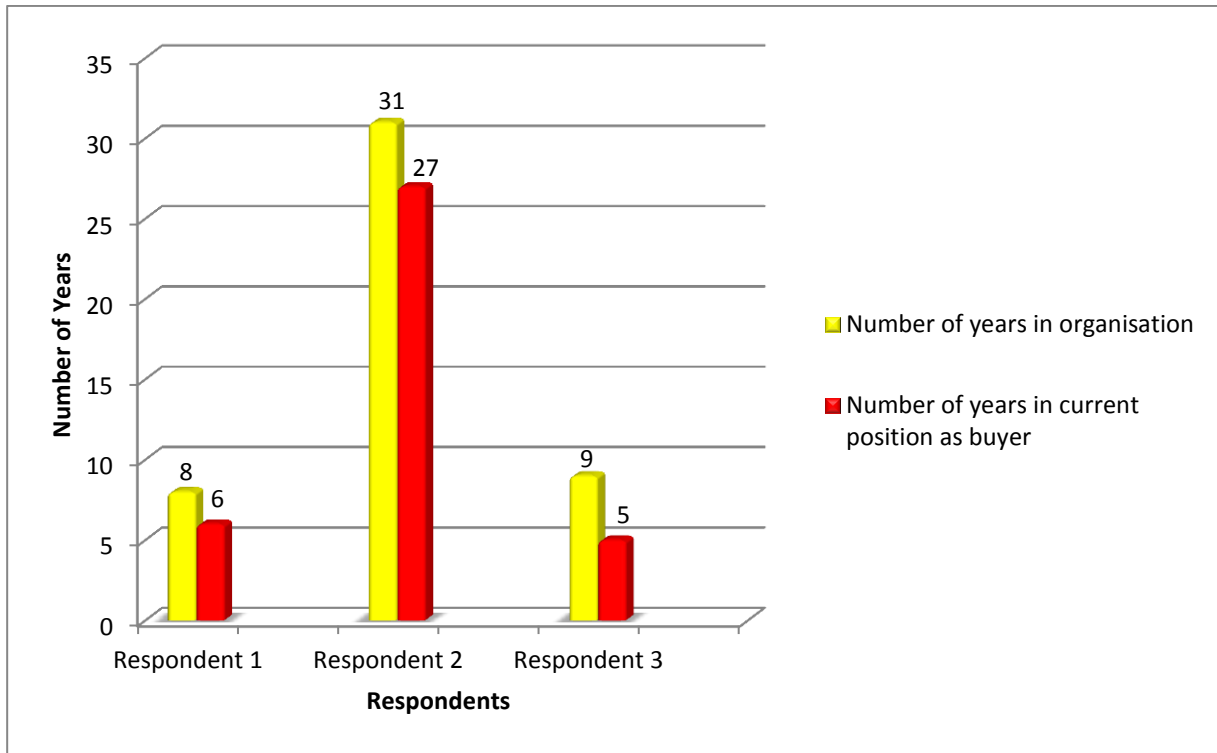
Respondents were asked the number of years they had been in the organisation to gain an understanding of their knowledge of the organisation and its processes. This does not relate to any research objective but will provide the researcher with additional information of the respondents' understanding. All three respondents provided responses.

4.3.3 Question 3: How many years have you been in your current position?

Each respondent was asked how many years s/he had been in his/her current position as buyer in order to establish how knowledgeable s/he is of his/her position and to understand the way in which each responded. This again relates to biographical information and therefore does not relate to any of the research objectives. All respondents provided answers.

Figure 9 depicts the number of years each respondent has been in the organisation in relation to the number of years s/he has been in his/her current position as buyer.

Figure 9: The Number of Years of Respondent in Organisation in Relation to the Number of Years in Current Position



4.3.4 Question 4: What do you source?

This question was asked in an attempt to better understand the categories in which the buyer procures, as the organisation caters for various stock line categories, although it does not directly relate to any research objectives. All respondents answered.

Each buyer has their own categories in which they purchase, as represented in Table 5.

Table :3 Categories Respondents Purchase

Respondent	Category				
	Buyouts	Stationery	Catering and Hygiene	Computer Consumables	Furniture
1	√				
2		√	√	√	
3		√		√	

R1 mainly sources items that are not stocked by the organisation, known as buyouts. These are items that are bespoke. R2 sources a range of product categories such as stationery, catering and hygiene, and computer consumables. R3 sources mainly stationery and some computer consumables.

4.4 Section A: Challenges of Demand Management

This section will review all the questions of section A, which related to demand management. This entire section relates to research objective one: to determine the challenges of dynamic demand management under the JIT order fulfilment system.

4.4.1 Question 1: Provide your definition of demand management

The purpose of this question was to gain an insight of each respondent's own definition of demand management. This was also asked to establish if the respondent is aware of the concept of demand management. All respondents provided answers.

R1 states that: *“Demand management means the way we manage our stock, purchases, forecasts, to ensure we are able to meet customer deadlines and complete all orders placed. In that sense, it is the method used to procure stock, have the right stock at the right price”*.

R2 asked for a further explanation before providing the following response that the *“customer is the most important aspect of our business, the customer is king, everything we do is to service the customer so in terms of the products, we ensure we have systems in place where we are able to work out what the customer needs are and how often they [are] purchasing and procuring and then we keep stock for them – so focus is on [and] around the customer to procure the products that they want to get it out to them as quickly as possible. Everything is revolved, evolved around the customer”*. The researcher probed further by asking about the involvement of the suppliers in demand management, to which R2 replied that *“there is a whole chain of events, [there is a] whole chain of people getting involved. There are items that have to be procured from the supplier and then you got to warehouse it”*.

R3 provided a simple definition stating: *“firstly demand is demand placed on a warehouse to supply either a transfer order or a sales order in the shortest time possible”*.

Question one found the respondents all sharing the similar idea of the concept of demand management in their organisation placing emphasis on the customer and the management of customer orders in the quickest time possible. R1 noted the importance of having the right stock at the right price, at the right time and the right place when managing demand. R2 and R3 both referred to the warehouse holding stock to fulfil customer orders.

4.4.2 Question 2: How are you, in your position in this organisation, personally affected by demand management?

The purpose of this question was to establish the extent to which the respondents are affected by demand management in their position as buyer. This provided the researcher with an understanding as to how knowledgeable the respondents are regarding the challenges experienced with demand management. All three respondents provided answers.

R1: *“I source and purchase all special orders, that as I said buyout... when telesales phone in and telesales representatives [have] confirmed orders or enquire on a product, I am then required to shop around and source the various vendors”*. The job description of R1 is a buyout buyer and therefore has to receive confirmed sales orders before venturing out to source the required product.

R2 states, regarding being personally affected by demand management: *“my job revolves around it. You know I have got to ensure what the customer needs are, we have a set amount of items that we know are popular for the customer if it's not an item that we stock we go out there and get it”*. R2 notes that customer needs and trends are evolving and one has to be aware of these changing market trends and use that as a guideline when procuring and stocking items. R3 responded saying: *“because I am a buyer I have to procure items to sustain those demands. So whichever route it takes either be it a transfer order or sales order... I would have to find a way to procure that item to fulfil that need for the demand”*. R3 provided a basic response stating regardless of the type of demand from a branch or a sales order, items will be sourced to fulfil customer demands.

Question two found all three respondents agreeing to being personally affected by demand management in their positions as buyers as their main purchases are made due to being in a highly demand-driven environment to meet the requirements of customer orders. The buyers are required to source items ordered by customers, thus fulfilling demand.

4.4.3 Question 3: Discuss the challenges of demand management faced by your organisation

The aim of this question was to gain an explicit insight into the buyers' perspectives of the challenges of demand management experienced. This directly relates to research objective one. All respondents answered.

R1 notes the *“major challenge is that the data is not always live. Today's sales will reflect tomorrow and then our pre-order system called MRP, the next morning”*. The MRP referred to is the materials replenishment plan. R1 further added that: *“we also experience various trends in the market that affect demand like, for example, seasonal time, financial year end, the demand exceeds forecast, vendors out of stock and lead times on minimum order quantities”*. R1 notes the various challenges experienced by demand management.

R2 states that: *“there is a lot of things you have got to manage – you got to ensure that whatever you procure is current and is wanted by your customer base, you got to ensure you get quick enough, you have got to ensure you get the best price – there is a whole lot of aspects that go into this from start to finish”*. R2 notes the major challenge of demand management as identifying the correct items to procure to meet the needs of customers, as quickly as possible.

R3 provided various factors that create a challenge for demand management. *“Firstly, we have to give [sister] companies priority to quote on items, the major challenges are when a supplier or preferred supplier does not have stock you have to shop around and because of shared knowledge or because of common knowledge, should I say, they know the supplier that we get it from and they do not match pricing. So, for example, if they corner the market and if they buy stock they have monopoly to charge us the higher price and we have no option but to buy it from them so that reduces our margins in selling. Then obviously you got to look at climate, you got to look at the country as a whole – you have to look at times of wage negotiation, strikes, shortages of raw material, you got to look at the Rand/Dollar exchange – all that*

affects the suppliers on how they buy stock if it's in the manufacturing industry then obviously you get a look at how much of cash that that supplier can outlay to hold stock for us to supply us so the JIT system can work".

R3 noted that, when procuring, companies owned by the same entity have to work together and provide each other services before other outside entities are considered. Another challenge experienced is when a preferred supplier cannot supply and another supplier that can supply increases the price and creates a monopoly in the market.

The challenges of demand management that have emerged are: internal issues, such as the software used; the external challenges of market trends and customer requirements; and national and global factors such as staff wage negotiations, strikes, the Rand/Dollar exchange rate, seasonal time, lead times and availability of stock.

4.4.4 Question 4: How are these challenges affected under the JIT system?

The purpose of this question is to identify how the challenges experienced are further intensified under the JIT system employed. Objective one relates to this question and all respondents provided answers.

R1 had answered saying: *"we say JIT for us, but we have delays with customs, suppliers, no stock, raw materials, manufacturing time"*. The respondent further added that, as buyers, they have to *"see our branches if they have stock, to cover backorders, if we can get another substitute item, if it's similar, then we can, if the quality is at the right price"*. R1 alluded to the challenge of having stock ordered and received JIT due to the factors of delay, lead times and product availability. Products are also sourced from the retail branches and alternatives are sourced if the quality justifies the price.

R3 discusses the following challenges: *"for a DC [Distribution Centre] that has a Sales component to it – we are supplying branches, where the stock is sitting in the shelf – they do not have confirmed orders for them – now in a DC where you have a sales component where you have confirmed orders that you need to supply a showroom or a store if they order more than what is required your JIT system is not going to be accurate because they are eating into a holding stock that you have catered for, for your sales based on history. So that would create a challenge for the warehouse, for the buyer to always have stock, but in all cases that is not true because what if the supplier does not have stock. It means you calling back stock from the branches. So there is triple handling – increase in overheads in the DC"*.

R3 made reference to the retail branches, as did R1, and supported R1 in saying that stock is called back from branches when the DC does not have sufficient stock to meet current demand. This causes the triple handling of stock, where stock is moving back and forth, increasing costs such as labour and transport. Although R1 had stated that sourcing products from the retail branches is one way of fulfilling customer demand when suppliers cannot supply due to delays or stock shortages, R3 drew on the increased cost factors this has for the organisation.

R2 states that: *"there [are] a lot of challenges, a lot of challenges, first of all you got to ensure you got reliable suppliers – you got back-up suppliers. So if there [are] stock constraints you [have to] get it quickly enough. The idea is to get into [this] organisation and get it out fast enough so the customer gets your service – you [are] also able to get your money quick enough from the customer. So [there are] a lot of variables that are involved in terms of, as you say, that JIT system, but it is easier said than done. A lot of factors come into it – you have got to be dependent on your supplier. You depend on your warehouse; you depend on your workers"*. R2

states that the major challenge under the JIT system is the dependency of the organisation on other members of the supply chain, such as the suppliers and other staff in the organisation, to ensure products procured are delivered from the supplier when required so that the internal staff are able to deliver to the customer in the shortest time frame possible.

Question four found all the respondents agreeing that these challenges are exacerbated under the JIT system. The respondents found that the JIT system is fast-paced and ensuring that items get to the customers quickly, and at the same time maintaining a holding stock, is difficult, especially when suppliers do not have sufficient stock. The respondents suggested that they had to rely on suppliers and various other members in the supply chain in order to be successful.

4.4.5 Question 5: The Japanese are highly disciplined and continuously strive for perfection, which is how they have improved and perfected their JIT system. Why do you think this is not the case for South Africa?

This question was to provide the researcher with an insight into the respondents' opinions as to what factors contribute to the success of Japan's JIT system that are not contributed in South Africa. Research objective one relates to this question, establishing the factors that contribute to the challenges of demand management. All three respondents answered.

R1 states that *“as South Africa, we are still developing and I really don't think that we have the technology, infrastructure to beat Japan or compare to them. We are certainly nowhere near the trends in the first world country”*. R1 went on to say *“we [South Africans] stop at eight hours, mostly 12-hour day, these guys [Japanese] they can go on whole night just to be as you said”*. R1 noted the differences between South Africa and Japan comparing the technology, infrastructure and employee work ethic.

R2 notes that *“it is a different society – a different country [South Africa] with multi-cultural [races]. A lot of factors come into this but nothing stops us from going for perfection and improving systems. Maybe it depends from people to people. We can take the best from the Japanese and utilise it here even within our multi-cultural society. I don't see any problems [if] we implement it – it depends [on] how sincere or committed are we to reaching perfection or taking our organisation to another level”*. R2 noted the differences in society culturally, however, states that we can learn from another society and implement what we learn in our own regardless of cultural differences, as what is needed to succeed is sincerity and commitment.

R2 was then asked if the suppliers play a role in the perfected JIT system, to which R2 replied: *“Definitely – suppliers are an integral part and that is why you get suppliers in sync with you. What you want and how you want it and they must do it for you. Maybe everything might not work for us because of our various circumstances but I see no problem in looking at anything progressive and dynamic and taking us to another level. There is no problem with that”*. R2 suggests that suppliers do play a vital role in perfecting the JIT system and it is imperative that one works collaboratively with suppliers to ensure that success is achieved.

R3 raised an issue with the development of JIT at the Toyota Manufacturing Plant. *“I personally would say that is false because if JIT on the production line, yes but the challenges faced by the people that manufacture those items, it starts from there. I wouldn't say it was the Japanese. The JIT system has been around for quite a while. It is in the baking industry”*. R3 did not agree that the JIT system was founded by the Japanese but was implemented and used even earlier.

R3 further added that “*buying and selling is what we do – we buy and sell. So if you are not buying at the right price you are not making proper GP [Gross Profit] and stock items for us depends on raw materials that make up these items depends where in the world you buy it from. [It] depends on the factors that affect that. It’s whole lot of things [that are] too vast to pinpoint and say challenges faced in South Africa compared to Japan. JIT would work if you have got the disciplines of all parties – when I say all parties – all the people that supply the components – the component means all the stationery items that we buy. If everybody’s on board – the only way that would work is if you outlay forecasts to your suppliers and have commitment from them and from yourself that you are going to buy those items – maybe a three month or a six month or a year – hand out forecasts so – they have always got stock on their floor to supply you – Just like Toyota would give their supplier[s]*”.

R3 suggests that one has to be disciplined and that all the members in the supply chain have to be committed to achieving the desired outcome. Providing suppliers with forecasts is one way to ensure that the stock required by an organisation is available when needed.

Two out of the three respondents agreed that South Africa cannot reach the level of success the Japanese experience with their JIT. The reasons provided were that South Africa does not have the necessary infrastructure, nor the work ethic and discipline that the Japanese have. However, one respondent did state that what is practiced in Japan can be brought to South Africa and implemented here although it is a very different society. R1 and R3 both shared the similar idea that the South African work ethic is what stops the JIT system from being the success it could be.

4.4.6 Question 6: In your opinion, do you think that the diverse culture at this organisation affects the JIT system in place? And in South Africa as a whole?

Research states that the homogenous race of the Japanese and their disciplined nature is what has led to the success of the implementation of the JIT system. Therefore, the researcher’s aim was to determine if, based on the opinions of the respondents, the diverse South African culture affects the success of the JIT system. The researcher wished to identify if the diverse culture of South Africa contributed to the challenges faced by the JIT system, which relates to objective one. All three respondents provided answers.

R1 states: *Yes, for sure. Change is always a challenge for the staff [especially] new staff, we also went on a new system, at first it was a real challenge for most of the elderly people but we got used to it – it’s moving smoothly*”. However, R1 does not think that South Africa can reach Japan’s level, as South Africa does not have the work ethic and “*infrastructure*”. Change seemed to be a factor of concern for R1, especially for new and elderly staff.

R2 provided a progressive response saying: “*I think the diverse culture is brilliant for an organisation. It brings a lot of different things to the party – a lot of differen[t] cultures have a lot of benefits for me – I don’t think that is an issue. We can use the cultural diversity to benefit*”. With regards to South Africa as a whole, R2 suggested that “*it depends on you as a[n] individual in your organisation. If you have the intent and you got to see for yourself – doesn’t mean that the Japanese have succeeded in what they doing in their type of work. It might be different, you might have to tweak it, to work for you and there are various systems, I mean JIT is one example, there might be other things in China. Tokyo might have something else. But use the best of the world to bring to your organisation and benefit your organisation so [what] I am saying is you must never be negative towards progress*”. R2 suggests that South Africa can

be as successful as Japan with its JIT system by using Japan as a benchmark and aiming to reach that level of perfection, while at the same time altering the implementation to the needs and culture of this organisation.

R3 found issues with the diverse culture saying, *“let’s start from the smallest component being our company. We have got different cultures – we got different races, we have got public holidays, we have got – cultural needs, family time. Let’s take, for example, if there is a funeral – certain cultures will take maybe two week[s] to mourn or maybe a month to mourn – all depends now if that one person that is doing that specific job it means the company downsizing from somewhere else to take care of that post. So it means that the work is split – so the production or the distribution of work is doubled in that area. It affects from all sides it will affect culture, race, creed, it does [have an] affect in our country”*. Hence, it can be interpreted from the response of R3 that culture plays a very big role in an organisation and thereby does affect the JIT system in place.

The aim is to identify if the diverse culture of South Africa contributed to one of the challenges faced by the JIT system. The respondents each have varying responses to this question. R1 states that change is a challenge to the staff in regard to organisational culture, but does not discuss the multi-cultural diversity of the organisation. R3 notes the effects of cultural differences and the affect it has on the organisation. R2 states that the diverse culture is amazing for an organisation to have as it brings more into an organisation and allows for learning and development of ideas.

4.4.7 Question 7: Do you think the discipline present in Japan can be practiced in South Africa? If so, how?

This question was based on the respondents’ opinions as to whether there is a possibility of practising and achieving the discipline present in Japan. The discipline portrayed by the Japanese is the critical factor contributing to their successful implementation of JIT, thereby relating to research objective one. Answers were provided by all three respondents.

R1 disagreed, stating: *“No, I don’t think so”*, as the work ethic was absent and *“infrastructure definitely”*. R3 also disagreed, stating: *“No, because different cultures – look at discipline in total[ly] different ways – if you tell X race that I don’t want you to do certain things or I don’t want you to take two weeks’ leave for a funeral – they think that its being racist towards them and it can cause a political rift or a cultural rift between manager and worker and it could lead to many different things”*.

R1 and R3 disagreed with the question, stating that due to the cultural differences it is not possible to have the discipline that is present in Japan, in South Africa. This can be accredited to the difference in work ethic and understanding of the different cultures.

R2, on the other hand, suggests that the Japanese teachings can be brought to South Africa, stating: *“the Japanese have been very successful and have been progressive and Africa has a lot of complexities so you have to sit down and see how it is going to work for you and take it forward, but anything that is good you can make it work”*.

Although R2 agreed that the Japanese discipline can be present in South Africa, it was noted that one was first to assess the situation and make the necessary alterations to suit the organisation’s needs before implementation. R1 and R3 had similar responses, while R2 had an opposing view.

4.5 Section B: Information Sharing

Section B concentrated on the information sharing process. This section relates to the former part of research objective two: to establish the effects of information sharing and collaborative forecasting for efficient operational demand management.

Section B considers the information sharing processes of the organisation and comprised of seven main questions and seven sub-questions. Questions 1 to 3 looked at the manner in which information is collected, managed and shared in the organisation. Respondents were also asked their opinions and ways in which to improve these processes, as this information is critical for their duties. Communication was also an aspect discussed.

4.5.1 Question 1: How is information in your organisation collected?

Question one had a main question, followed by sub-questions, in relation to the collection of information. The aim was to identify the manner in which information is collected at the organisation under study. All three respondents provided an answer.

R1 suggested that information was collected by various reports. *“We have various report systems that we can pull out at any time. The information supplied is correct. Just that it is not live”*. The reports R1 refers to are *“backorders, sales orders, [and] stock on hand”*. R1 suggests that there are various reports that can provide the necessary information required, such as backorder reports of products ordered but not yet received from the supplier, sales orders of customers that need to be fulfilled and delivered, and the physical stock on hand.

R2 indicated the re-ordering system: *“we [have] the MRP system which you get on a daily basis that brings together, [all the items] we [are] selling and it works out our quantities. We [do] have ways and means of tweaking it and the amount of stock we want to keep. From this, we have the demand that is created and you fulfil that demand, and monitor the trends and see what is happening. As a procurement person, you look at that MRP system and see what trends are in the marketplace and see what is happening in the marketplace and you prepare yourself. Even though something might be selling for you – it might be becoming End of Life (EOL). You prepare yourself for that type of scenario. You see what is happening in the marketplace [and] you can maybe go out and garner more business. You see what is happening in your organisation [and] you see what is happening in other organisations”*. R2 suggests that in addition to using the MRP re-ordering system, one has to be aware of the environment, competitors and market trends. This can be achieved by continuously monitoring the environment and developing new business relationships. As noted previously, MRP refers to the material replenishment plan.

R3 states that *“it’s not to say how you get information – because our computer system, our [company software] that we have, all the platforms are linked and it’s input into our MRP ordering system. That is how we get to know what we need to order”*. R3 relies on the MRP system in place as it has data inputted and provides the quantities one is required to order.

Question one was the main question and was followed by sub-questions in relation to the collection of information. All the respondents indicated that the information was collected by the MRP system in place, suggesting that the information is collected electronically. R1 noted that the information was a day late and hence increased their lead time as they had to order an item not kept in stock a day later, rather than immediately. R2 added that one has to be aware of the environment and marketplace as well and be able to communicate these trends. R3 relies on the MRP system in place to provide the information.

4.5.1.1 Question 1.1: Is this information collected sufficient?

With regard to the manner in which the organisation collects information, the researcher wished to identify if the information collected is sufficient for the buyers to carry out their duties. Objective two related to this question and all respondents provided an answer.

R1 stated that the information collected is sufficient *“but sometimes we need the information [to show] everything – items ordered, sales order number, time ordered in, how many we ordered already, and check our backorders”*. R1 suggests that the information is sufficient, however, occasionally it is required to see all of the various reports available within the organisation to gain the necessary information.

R2 stated that *“nothing is ever sufficient – you can’t say this is it, we have got it perfect. No, like I said there [are] various factors you [consider], you get reports from other suppliers [and] you see what is happening [with] trends. You go for seminars; you go for training and you [are] continually upscaling yourself”*. R2 does not feel that the information from the MRP system is sufficient and one has to continuously run reports and communicate with suppliers and gain more market-related information external to the organisation. One has to improve one’s knowledge by attending seminars and training.

R3 states that *“over the years I have learnt this: if you rely too much on a computer system, you get burnt – you get burnt in the sense that what if the computer system crashes? Personally, I prefer [to go] on gut feeling to order but 80% of the time you could be correct the 20% is that could lead you astray”*. R3 prefers not to rely on the information provided and would rather rely on gut feeling.

R1 suggests that the information provided by the MRP system is sufficient, however, more information is required at times. R2 and R3 both suggest that what is provided is not sufficient. R2 suggests that one has to manually attain information whereas R3 prefers gut feeling.

4.5.1.2 Question 1.2: Is it what is required to carry out your tasks?

The researcher aimed to identify if the information collected from the MRP system is relevant to the respondents to ensure that their daily tasks can be completed. Research objective one related to this question, which was answered by all three respondents.

R1 states “yes” to this question, suggesting that the information collected is in fact what is required to carry out R1’s tasks. R2, on the other hand, stated: *“It helps. But there [are] various other things to do. MRP is the guidance of what’s happening in your customer base in your organisation. You have got to know trends – you have got to know what is happening in the marketplace and things can change on a day-to-day basis – things can develop. You know a lot of things can happen, you [have] got to be in touch with everything”*. R2 notes the constantly evolving market and that MRP merely provides guidance. It is the responsibility of the buyer to obtain further information about the market.

R3 disagreed and states that the information collected is not what is required to carry out R3’s tasks: *“No, [but] what is fed through the MRP system is sufficient because it’s true and it’s fact, there is an order placed for 20, I need to procure 20 to meet the demand of that order so what is given to us is true”*. R3 states that the information is not what is required to carry out tasks, but the information provided is accurate.

R1 suggests that the information collected is what is required to carry out tasks while R3 disagrees, saying that it is not what is required to carry out tasks. R2 states that it does assist in carrying out tasks but is not enough.

4.5.1.3 Question 1.3: Are there any other ways in which to collect information?

Sub-question three aimed to gain insight as to how else the respondents could receive information besides the current manner employed (i.e. MRP). Research objective two related to this sub-question and all three respondents answered.

R1 states “*that I’m unsure of*”, whereas R2 suggested that “*this is the system we have got and this is the system we [are] working with but we continue as an organisation or as a buyer to evolve to see if there is something better and there is various different means. MRP provides you with a certain specifics and you look outside also – it’s a whole global thing that you do. You [only focus on what] MRP is giving you [or] what are the trends in the marketplace [or] what are the trends elsewhere – you look at all [those aspects] together and you collate everything*”. R2 suggests that one has to combine all the information collected and look at it in a broader scope rather than as separate components. One should also find other means of collecting information rather than relying on only what is given.

R3 replied: “*When we worked with [previous software name] we worked on gut feeling we worked on shelf space and we never had the amount of backorders that we have now. Because we knew our suppliers, we knew our customers; we came to some sort of balance between the two so we always had sufficient stock to cater for the demands of our customers but because we introduced a computer system [software name] which is more in-depth I felt we are lacking with demand that is really required*”. Thus, R3 indicates that the new software used is not as efficient as the previous software used.

It has emerged that the buyers rely on their MRP system in place, however, this is clearly not enough. Other means of information collection need to be found to ensure that the information provided is accurate and provides visibility of the supply chain. It seems that the buyers need to be more aware of other methods in which to collect information to improve the buying process.

4.5.2 Question 2: How is this information handled / managed?

This question is followed by two sub-questions that aim to determine how information is handled and managed in this organisation. Research objective two was considered when asking this question. All three respondents answered.

R1 states that “*it’s my re-ordering system. In the morning, we go to our recording system. We go and check now, it tells us this is our minimum, this is our maximum, [and] it tells us what we have on hand. If need be we order our stock, send it through to our suppliers [who] confirm it, once we send it off to them, we also call them in the morning to make sure they received it as well*”. R1 suggests that information is managed via the MRP system daily. Orders are placed with suppliers via e-mail and followed up with a phone call.

R2 responded saying “*it starts off with sales, new models that goods come in the warehouse, [and] everything has to be managed. And MRP does that for you, it manages that whole process it takes into the factors of sales, when the goods come in and it’s got to be put into a location for you to assess everything, we manage it continually, it is on a day-to-day basis. We monitor and we check*”. R2 also suggests that the MRP system manages the information. When

items come in, they have to go into a location, thereafter one can assess. The system is updated and continuously monitored.

R3 states that *“from my point – I maintain the item coverage which every item that is kept in every store has a minimum and maximum level – whatever information I was given at the initial stages of [software name] I inputted into the system and that was the basis for the holding stock that branches should have had. And then going forward on a monthly cycle they had to go and adjust their own minimum /maximum levels. It’s all based on each branch and how they maintain their stock – so ultimately that is what would affect how I order the stock. Because I got to take into account their minimum/maximum levels, I got to take into account the minimum/maximum levels of this warehouse, because we have a sales component and juggle between all the branches to get equilibrium as to my stock holding”*. R3 suggests that item coverage is maintained by the respondent. The item coverage is what provides the information for the MRP, which manages the information collected.

All three respondents indicated that the MRP system in place manages the information. All respondents provided an explanation as to how the MRP system works. The MRP system manages the information, which is updated regularly by R3.

4.5.2.1 Question 2.1: Is there any distortion in the way it is managed?

Sub-question one was to identify if there is any distortion in the way the information is handled. Research objective two was considered for this question to which all respondents provided answers.

R1 stated *“no”*, there is no distortion in the way it is managed. R2 asked for an explanation of distortion and responded: *“No, I don’t think there is a distortion. At the end of the day MRP collects everything and the next morning when you come, you get your information but also we have [a] back-up system. For instance, if there is a big order we have our telesales people who circumvent the system and e-mail us the information so we got it beforehand and even before MRP. If there are issues in the warehouse, there is a whole communication channel because in warehouse if something goes wrong or if there is a problem or something, the issue with quality and so on, they’ll inform us. We will just not wait for the next day and MRP to do what we have to do”*. R2 explains the process as to how information is managed and that there is no distortion that occurs. R2 further explained the process of an urgent order or any issues with stock quality: one does not necessarily have to wait for MRP to run the next morning as there are alternative processes.

R3 responded that at *“the onset it’s human intervention so it’s what is in the input stage where the minimum and maximum levels are placed. If it’s distorted at that point – there is going to be a chain reaction and that is ultimately [going to] affect the end purchase value or purchase amount”*. R3 provided the response that, initially, there is human intervention and if there is distortion at that point then a chain reaction effect is set in motion.

R1 and R2 share the similar notion that there is no distortion in the way the information is managed. However, R3 states that at the onset, if there is distortion, then a chain reaction follows throughout the process.

4.5.2.2 Question 2.2: Do you think it could be managed / handled in a better manner that prevents distortion?

Question two, sub-question two aimed to ascertain if there are better ways to manage information to prevent distortion. This question alludes to research objective two and was answered by all respondents.

R1 said “no” which was an inaudible whisper. R1 further added that the information is accurate “yes to me it is accurate. I believe it’s accurate because I check transactions, stock on hand, [and] movement of all”. R1 does not think that information can be managed in a better manner that prevents distortion as the information is accurate. R3 states: “no, no when it comes to sales our ordering process is not on a prediction – it is on a true fact sales order. If it is a quote we will not order – if we have a sales order confirmed that is the only time the order will be placed”. R3 agreed with R1 stating that it cannot be improved to prevent distortion as the items procured are based on true sales orders.

R2 said that “it is a system, its’s a MRP system, there [are] ways and means of improving them in terms of software and there [are] better systems and better things in place and we always got to be evolving and looking and assess where we going but this is not done at my level. This is done at international level”. R2 states there are means of improving the system, and one should always look to identify those improvements.

R1 and R3 share the similar viewpoint that the system cannot be improved to prevent distortion, as it is accurate. However, R2 feels that there are, nevertheless, means to improve the system.

4.5.3 Question 3: How is this information shared?

The purpose of question three is to determine the manner in which information is shared. It includes two sub-questions and relates to research objective two. All respondents provided answers.

R1 stated that information is shared via “e-mail or phone call – one of the two mostly, but if it is quite urgent then we try phoning. But other than that I like to have everything in black and white as well”. R1 further added that at the warehouse there is a system to dispatch sales orders, “we have a document handing system. They would pick it up; there is a sales order number. So they know that order must refer to that sales order number”. R1 states that the information is shared via e-mail and phone calls and, at the warehouse, items purchased for a product have a sales order number attached which notifies the staff in the warehouse that that particular item must fulfil a specific customer sales order.

R2 required an explanation and responded as follows: “well there [are] reports in place. You have [a] backorder report in terms of sales, we have supplier reports, and we send reports to suppliers to say we haven’t received [these] items [as yet] – please inform us. Sale, in terms of the customers, the sales have their own reports, warehouse have reports of [products] that have not been put onto the system. There [are] faulty goods. The system allows you [to do] various things in terms of procurement, the warehouse [and] sales. Besides the reports we inform sales if [there are] backorders if there is problem with supply, if there are problems with products”. R2 suggests that there are various reports run by the personnel that require specific information to be shared. The system being referred to here is the MRP system.

R3 said: *“We would try not to share externally because it means us shooting ourselves in the foot. The less other distributors like ourselves know, the better it is for us”*. The researcher felt the need to clarify the question by asking how information is shared with regards to the suppliers and internal staff to which R3 responded *“no, if it comes to our suppliers we need to share information – but information with regard to quantities required”*. R3 further added: *“There are systems in place. You got to look at your notes that come with every product [and] I’ve noticed this with quite a bit of people – a lot of staff do not know how to use it – because they will be calling you however many times a day to find out about a product whereas if they know where to look it saves a phone call and saves time wasted – there is systems in place in [software name] for everybody to know about a product”*.

While in conversation, R3 provided an answer that relates to section A, question seven, with regards to discipline and training. R3 states that *“from the time that I have started in [site of organisation] there’s been many new staff that has started with regards to training. I am not aware if they are getting trained – we should have training. We should have updates every three months because our system changes all the time. There’s lots of scope for people to learn more things because most of the staff that you get, it’s sad to say – they just go there to do their work from eight to half four or eight to six and go home. No-one has the passion and the drive to go out there and go the extra mile to do more than what is required”*. R3 provides an opinion regarding the current work ethic being noticed, stating that there are opportunities to learn, however, some staff are not prepared to do more than what is required.

R3 further added that *“it needs to be a mindset – it needs to be ‘I am employed, I have a job, do it to the best I can’. I was told [that] you are buying a share in your company – this is your company, if you don’t perform, your piece of the pie it is going to get rotten and it is going to affect the next part and the next part and the next part [until] that entire pie crumbles. So if you keep your portion of the pie air-tight and safe and cling-wrapped, you take care of it – the whole pie stays fresh so you get to do the best you can do to the piece you have been given”*. R3 uses a metaphor, suggesting that an employee is buying a share in the organisation by being employed there, and if one does not look after one’s job and perform as expected, the company does not produce the results required to be sustainable for the future.

The purpose of question three is to determine the manner in which information is shared. R1 states that information is shared via e-mail and phone calls, as well as a document handling system. R2 states information is shared via reports and R3 provided the same response as both R1 and R2. R3 further provided information that relates to research objective one.

4.5.3.1 Question 3.1: With whom is this information shared?

The purpose of sub-question one was to establish the extent of information sharing which relates to research objective two. All three respondents answered.

R1 says that *“we share it with the relevant people, management, staff, warehousing”*. R1 lists the pertinent people with whom information is shared. R2 states: *“various people [such as] sales, secondly, the suppliers then thirdly, your warehouse, you communicate with them constantly because they will ask you from time to time [for a particular item if] there is no stock, what is going on or [if there is] a delay, we share it with the whole team. [We] share it with the whole team from sales to purchases to management to everybody”*. R2 enumerated the necessary people with whom information is shared. This included internal personnel, such as the departments of sales, the warehouse and management, as well as externally, referring to the suppliers.

R3 said: “We would like to share it firstly among the buyers at the regional office so everybody is aware of the problems that is happening. Then, for me personally, I would like to have a blocked page – where its updated all the times where X suppliers is out of stock of X product for three weeks – this is the alternate supplier. Just so the buyer in the branch and the managers across [the] regional or nationally – just to inform – somebody across the board could tell you ‘we understand this supplier but I have used that supplier in the past and their price is a bit more than – or their price is a bit less. So in that way, you lessen backorders, you lessen downtime and, overall, you are not stuck in the distribution process – you have a constant flow, maybe a bit of a hiccup, just to get your stock to you but there will be that cost involved”. R3 states that sharing of information should firstly occur between the buyers in the organisation. R3 further provides a way in which information sharing can be improved, which answers section B, question four. R3 suggests that having a system in which items that are currently unavailable due to stock outs or delays are updated regularly, providing alternative suppliers and item prices. This should be shared with all buyers of the organisation nationally to reduce a backorder of customer orders.

R1 and R2 share similar notions of who information is shared with, however, R3 does not elaborate on the people who it is necessary to share information with, other than the buyers. R3 rather provides a suggestion for improving information sharing.

4.5.3.2 Question 3.2: Is the manner in which it is shared appropriate?

This sub-question aimed to identify if the respondents found the method of information sharing to be appropriate. This relates to objective two. All three respondents provided answers.

R1 stated that “it is, yes”. R2 agreed, stating: “I think it is appropriate, but like anything else, you can do improvements. You can tweak certain things and you have to do that in an organisation if you want to progress. You can’t say ‘you got [this] perfect[ed] and [it’s] the best’, it’s got to continue evolving”. R2 suggests that, although the method of information sharing is appropriate, one can still find ways to improve the system.

R2 was asked about social media and the role it has in communication in this organisation and the benefits an Application such as WhatsApp can have. R2 suggests that “that depends on the organisation because some organisation[s] frown on using a phone, so it depends on the organisation, on how they perceive certain things, because if you are in a work environment and a person is constantly on the phone – no work is going to get done. So as an organisation you got to say ‘we going to do this: we’ll have a special procurement WhatsApp group’ but again a lot of organisations, I think they will frown on that because they don’t want staff to use their phone in the environment. But look whatever way you can do to improve for me it’s good as long as you progressing and doing things but it must not be detrimental to what you doing”. R2 does not seem opposed to the use of social media to enhance the sharing of information, however, suggests caution as many organisations are against cell phone usage during work hours.

R3 disagreed stating “no, because we have a distribution of accounts and that account only – but if there is a rotation of accounts – between the buyers, you handle that account then all the buyers will be aware of the problems of a certain supplier[s] and how to handle that supplier, but because you get blinkers on and deal only with that supplier – you only face that problem. So it’s hard to share, you face those problems”. R3 suggests that the manner in which information is shared is not appropriate and suggests that all the buyers need to rotate their

supplier accounts in an attempt to provide all buyers with the experience of handling different problems faced.

R1 and R2 agreed that the manner in which information is shared is appropriate, however, R2 did state that there is always room for improvement. R3 disagreed, stating that the manner was not appropriate and provided a way in which it could be improved.

4.5.4 Question 4: What improvement would you like to occur to this information collection, management and sharing process?

Since the respondents have to work first hand with the information received, they would be the most knowledgeable to provide recommendations as how to improve the process. Research objective two relates to this question, which all three respondents answered. Each respondent provided answers that would help improve their working conditions with regards to information being shared.

R1 suggested *“live data at least – if we could see it live, it wouldn’t take a day later for us to order the stock – we could order it today, get it tomorrow, [if] it [is ordered] in the morning, suppliers deliver in the afternoon, so it cuts down the lead times”*. R1 would like to have data that is live. This would create real-time visibility of the supply chain and enable the buyers to order stock immediately rather than wait for the order to be picked up the next morning on the MRP system, thus reducing lead times.

R2 suggested that *“everything’s got to be more dynamic, more forceful – you got to find quicker means of getting things. You have back-ups in place, everything’s got to evolve – you have got to improve and try and take it to another level and I believe we are getting there but we have to try and do things quicker, to get everybody on the same level that you want to be, so that maybe sales to the warehouse to your suppliers – they have to do things the way you want it done and as quickly as possible but that come[s] with relationships”*. R2 suggests that improvement begins with oneself and, in an attempt to improve the information process, one has to get everyone in the organisation to have the same goal and vision.

R3 suggests to *“have a blocked site and whatever be that problem”*. The researcher probed deeper and R3 responded *“the more information people have the less they will hamper you. If you go onto a product or if you create this website [or a] portal [that] everybody can log into and put your comments – once you put that into play, if there is a problem, or there is a product code there is a problem with, [or] there is a problem with the supplier – it’s available to everybody in [company name] so they know what is going on”*. R3 reiterated the response given for the previous question. R3 wants a system to be developed in which all staff in the organisation are able to see an item, along with the required information such as supplier delays and discontinued items. This will create less pressure for the buyers as they will not be bombarded with questions.

Each respondent provided a response regarding the improvement that would best help him/her in his/her position. R1 wants live data as an improvement to the information sharing process, R2 suggests that everyone in the organisation needs to become more dynamic and that everyone should share the same goal and vision for the organisation. R3 provides a suggestion that would not only improve the sharing process, but also create awareness throughout the whole organisation .

4.5.5 Question 5: How would you describe your organisation's communication?

This question aimed to establish the communication level at the organisation. This related to research objective two and all three respondents answered.

R1 said “*good to excellent*”. R1 states that the communication in this organisation ranges from good to excellent. R2 said “*it's evolving. This organisation is a dynamic organisation. It's a brilliant brand, but it is facing challenges in the market place. The whole economy worldwide, globally is challenged and [similarly, Company name] faces a challenge – but it's evolving. It's got dynamic leadership in our region and we making headway, we [are] trying to get the best of the worlds and improve – we might not be there yet but we [are] aiming to get there*”. R2 suggests that the organisation's communication is evolving, and believes that due to its dynamic leadership and branding the organisation is on its way to improving organisational communication.

R3 suggests that “*in all fairness, sales feel that they are the highest of the hierarchy because they are bringing in [sales] and they feel they need to dictate to everybody else on how things are to be done – but there [are] processes – communication here is not the best that what is could be*”. R3 feels that, due to some departments expressing superiority over other departments, communication is not what it could be.

R1 states that the communication level ranges from good to excellent and R2 states that it could be improved. R3 states that communication is not where it should be in this organisation.

4.5.6 Question 6: In your opinion, is this sufficient? Or are there barriers that are faced?

The researcher wished to identify whether the respondents felt that the information shared and communicated was sufficient. Research objective two related to this question and all three respondents answered.

R1 said “*yeah, except for delays in the data update, we [are] ok*”. With regards to the e-mails, R1 states “*because you would be working from the bottom going up [there is a delay], sometimes if it is something quite urgent, we give a call then also send a mail – this is urgent, please can you make a plan*”. R1 suggests that, aside from the issue of no real-time visibility of the supply chain, the organisation seems to be in a satisfactory average position with regards to information sharing and the information shared is sufficient.

R2 disagreed stating “*no, it is never sufficient, but again it depends on what management wants and what parameters they put in place – communication is never ever enough. The more you communicate, the better it is for different organisation, but again you got to work within the parameters of the leadership of the organisation and what they allow and what they don't allow – what they want you to do and what they don't want you to do but as an individual you always evolve, you always trying to improve that communication [and it] is the best thing. The more you talk the better it gets. And regular meetings and regular discussions and inter dealing – now you talk of with sales people, with different staff – the more you need the more you communicate the better it gets for the organisation*”. R2 suggests that communication is never sufficient and that the more communication an organisation has the better it is. Regular meetings are necessary with cross-functional teams (CFT) as the more communication an

organisation has, the better it will be. However, this needs to be done within the organisation's parameters.

R3 states *“not barriers – it is just the way that it is communicated – if everybody is informed about the problems faced by each department or each sector of the business, [for instance] from the warehouse – warehouse broken down into the receiving, put away and storage, picking, pulling, packing, invoicing, dispatching. If they know the problems faced between each section – then you will have a better understanding as to why the order has not gone out or what is the delay with the order. If you look at procurement, by the time the sales order comes down – maybe there was a massive order that went through which was not told to the buying department and they've taken quite a few lines so there is going to be more backorders created, so communication with large orders should start with procurement – telling us that: 'We are placing a large order what's the lead time? Can I tell the customer to wait? Does the customer need it urgently?' If we are aware then chain reaction doesn't filter down to the stores – doesn't affect other sales people”*. R3 suggests that communication needs to be improved to avoid the situation of no stock due to a large sales order requiring large quantities of items. R3 states that if everyone in the organisation is aware of issues experienced a better understanding as to why there are delays with sales orders can be achieved.

R2 and R3 agreed that communication is not sufficient and more needs to be done to ensure that communication is improved. However, R1 suggests that the information received is sufficient, although real-time visibility of information is necessary.

4.5.7 Question 7: How would you like to see communication improved?

The researcher wanted to gain an understanding as to how the respondents wished to see communication improved. Research objective two was related to this question and all respondents answered.

R1 suggests *“just maybe a phone call – abnormal orders must be communicated to the procurement department as well as the sales person – if they quoting and they know it is something that almost guaranteed, tell us we can push and try and bring stock urgently”*. R1 suggests that abnormal orders must be communicated by a phone call. This will assist in delivering the product to the customer as soon as possible.

R2 suggests *“communication can be improved by meeting on a regular basis – people should meet at least once a week – as a procurement team we could meet daily in the morning. Just to [inform each other] what has happened the last day – you contemplate what happened yesterday and what we going to do today to improve that and with sales [as sales is] continually evolving there might be challenges so the more you meet – but you [have] to be practical – you can't be meeting all the time and then the work does [not] get done so at least on a weekly basis – but if the need arises – you can do it more regularly”*. R2 suggests regular meetings can be a way to improve communication, solve issues being experienced and implement the use of CFT.

R3 says *“you can't because, of the flow system that we have here – if an order is placed it goes through the workflow system, by the time it hits the warehouse and then comes to us they can reserve the stock and it is too late. So a sales person should know when they have a special order it should actually be at the quote stage and sent out to us so we can explain to them: 'This is the lead time, it takes so many days for the product to come to us then you can release your order”*. R3 could not provide an improvement to the processes in place.

R1 and R2 state that there can be improvements made to the communication of the organisation and that it can be improved by regular meetings with internal and external personnel to improve the supply chain. R3, however, found no way to improve the current communication system and believes that it will not be possible to implement any improvements.

4.6 Section C: Collaborative Forecasting

Section C focuses on collaborative forecasting and aims to provide an understanding of objective two: to establish the effects of information sharing and collaborative forecasting for efficient operational demand management.

Section C concentrates on collaborative forecasting and consisted of seven questions. The aim of this section was to establish if the organisation engages in forecasting and to determine the methods used when purchasing stock. Collaborative Planning, Forecasting and Replenishment (CPFR) were also an underlying aspect that was looked into.

4.6.1. Question 1: How are your forecasts made?

Question one aims to understand how forecasts are made in this organisation. Research objective two relates to this question. All three respondents answered.

R1 states that *“we use our MRP system that calculates the forecast for us based on stock, and the previous three months”*. R1 suggests that the MRP system does the forecast for the buyers, taking into account stock and the quantities three months prior.

R2 provided an in-depth response, *“it’s based on MRP but also take into factors for example you have your back-to-school period. Your middle of the year say from October to December in this business [is] very busy [therefore] you prepare – factories are closed [early] December – you have to have stock from November till February because factories only open middle of January. [These factors have to be taken] into account and prepare yourself to say ‘at this stage I am going to need to order [these particular items] so you look at trends – you look at your reports and see what’s happening. You also [have] to factorise suppliers what their requirements [are] and they might be doing certain things in certain ways so it’s going to take two weeks to get a certain product. So you got to plan for that, forecasting is very important – it’s critical in an organisation, planning is critical”*. R2 states that forecasts are based on MRP, however, as a buyer one has to take into account the time of year and the trends associated with that specific time of year. R2 suggests that one has to account for the seasonal time of year when factories close for Christmas and the lead time that it takes for a supplier to deliver regardless of the time of year. R2 notes the important role forecasting plays.

R2 further added that *“I use MRP, secondly I look at the factors [and] the challenges faced. The different periods of time for instance let’s take catering and hygiene. The cold months, the winter months – your sales of the chocolates – hot chocolates and the coffees and the milk increases so come February-March, before you get into April-June which is slightly colder, you make sure you order more – more of these products and then in the hot months it decreased so you got to look at trends and what is happening in the marketplace and then when you come to Back-to-School obviously it is a different challenge there, and then factories are going to close in December – there’s a two month period they won’t be there, so you got to*

take all that into consideration". R2 provides an example of the seasonal demand forecasts that need to be considered when purchasing for the catering and hygiene category. Before winter sets in, the respondent has to plan the purchases of beverages that will be popular during this time.

R3 states: "*Forecast for commercial orders we are starting but not on all, but during Back-to-School it's basically forecast-based*". R3 further states that "*there is no forecast. Forecasts are based on the information that is fed into the computer that gives us the end figure. But this is on previous sales history*". R3 suggests that the organisation is starting to forecast for certain items, but not all. However, the back-to-school season is forecasted for. R3 further states that there are not forecasts as the computer [MRP] provides the figures to order based on previous sales history. This contradicts R1 and R2 who both agree that forecasting does take place. However, one can suggest that forecasting does occur via the MRP system in place, however, the buyers do not actively part take in forecasting.

Question one aims to understand how forecasts are made in this organisation. R1 and R2 state that forecasts are made using the MRP system. R2 provided a discussion as to how forecasts are made depending on the time of year. However, R3 states that the organisation does not forecast except for its back-to-school period and the MRP system is what provides the figures to order.

4.6.2. Question 2: What information is used to make these forecasts?

The type of information used to make forecasts is important to the researcher as it provides an understanding of objective two. All three respondents answered.

R1 states "*we work with just the past three months' sales*". R1 suggests that the three months previous sales data is used to make forecasts.

R2 said "*you look at MRP, trends in the marketplace, you have to communicate with suppliers to see when they closing. You do this constantly because you got to have communication with suppliers – meeting [with] them regularly so you know what product shortfalls there are, then you make you plans – that is why you got to have back-up suppliers around – so the important thing is communicating with your suppliers – [you need to analyse the] the marketplace to do these forecasts*". R2 suggests that MRP is given consideration and thereafter the trends and marketplace are analysed. Suppliers are also contacted regularly to identify shortfalls of products and closure dates for the festive season. All these factors are valuable information taken into account when forecasting decisions are made.

R3 states that "*the demands from the region, [in the form of] sales orders or transfer orders and a safe holding stock margin – you add the whole three up and that would give you a sort of forecast for the month*". R3 suggests that the demand from the region in the form of sales orders, transfer orders and a holding stock is considered valuable information to develop forecasts.

The type of information used to make forecasts is important to the researcher as it provides an understanding of objective two. The three respondents each gave varying responses. R1 suggests that the past three months' sales history is used; whereas R2 suggests MRP, the market trends and suppliers; and R3 suggests the demand from the regions. Each respondent provided responses in relation to how they manage their portfolio of suppliers and the forecast method used and preferred respectively.

4.6.3. Question 3: What method of forecasting do you use (Qualitative or Quantitative) and how accurate is this?

The researcher aimed to understand the type of forecasting used and its accuracy, which relates to objective two. All respondents answered.

R1 suggests qualitative: *“I used my personal experience on the buyouts – for the stock line sometimes we sit down and we [make a decision] as a team”*. R1 further added *“yes”* it is accurate. R1 uses personal experience when forecasting and also engages in team consultations. This is regarded as qualitative forecasting and R1 believes it is accurate.

R2 states: *“You use both: you have to intertwine both because you use your experience with what’s happening on the trend. For me it’s three-fold – using your experience, using MRP, using what is in the marketplace [by] you communicating with suppliers. You have to know trends – what is happening. For instance, if I take the computer industry: There might be a cartridge. Currently as we sit, it can be selling 3[00] – 400 – 500 a month. We can be selling but next month it can just die. The printers have changed, they [the suppliers are no longer] selling the printers [and] there is a shortage [therefore] they phase it out. It’s a very collective thing – you use your experience, you use MRP [in terms of] what is happening. Then you got to be in touch with what the suppliers are doing – what the marketplace is doing”*. R2 further added regarding the accuracy *“yes, it is. I would say it is helpful, but you continue to look at trends and see ways of improving this. You look at different organisation[s] and you see what’s best and you try to benefit your organisation”*. R2 suggests that, apart from the MRP, one has to be knowledgeable about the market trends and product life cycles and this is enhanced by using one’s experience when making these forecast decisions. R2 further suggests that it is accurate, however, one cannot stop at that and needs to continuously find methods to improve, such as using another organisation for as a benchmarking.

R3 states that *“I generally use the quantitative”*. R3 further added *“you would use that as [a] guideline – that is the numbers. I need to order an A4, 72 pages book – my figures tell me I need to order 2600 – based on sales – but because of transport costs, labour, the type of vehicle that is used to transport that stock – whether I take 2600 [or] whether I take 3500, which comes on a pallet, I am still going to be charged the same transport cost [and] labour. [In] my opinion, I would go with a higher quantity so if I do happen to run out, I am not going to run out so quickly – so my cost most probably for that month is not going to be duplicated – so I use both”*. R3 added that with regard to a forecast *“a forecast is not accurate. A forecast is a guideline to put you in the running that you are not over spending that you are not incurring too much of overheads, that is what a forecast is”*. R3 professes using a quantitative approach when making forecasting decisions. The decision is based purely on numbers. However, R3 feels that this forecast is not accurate as forecasts are merely a guideline.

The respondents mentioned various types of forecasts. R1 uses qualitative, whereas R3 prefers quantitative, however, R2 suggests the use of both. Depending on the type of items procured, the manner in which to forecast differs. The method used to forecast depends on the product and the buyer, who uses their preferred method of forecasting. Each respondent manages their portfolio of suppliers differently and therefore uses methods which are preferred rather than a set forecast method across the board.

4.6.4. Question 4: Does this organisation engage in collaborative planning, forecasting and replenishment? Why or why not?

In an attempt to achieve a further understanding of research objective two, this question was asked. All three respondents provided responses.

R1 states: *“Yes, it does”. “Collaboration happens between suppliers, procurement, retail and the customers as well. The supplier is often in a position to offer us the realistic information and trends of a new product. Then one considers the supplier’s lead time, demand trends and price increase and promo’s suppliers may be running”*. R1 suggests that CPFR does occur between the various departments and with suppliers as well, as they are able to provide valuable information with regards to market trends.

R2 said: *“We do. We got our system in place, we communicate, we look at last year’s trends, for example BTS [back-to-school], what went well, what didn’t go well and from there we assess and look at the marketplace [and] at suppliers. Have we as an organisation got the market? – What are the reasons that these products are not selling or what are the reasons that these products are selling? Can we do more? You have to take all that into consideration”*. R2 suggests that CPFR does exist in the organisation and various factors are considered when making purchasing decisions.

R3 states: *“Just over BTS, because of the value that is spent over this season, the large volumes that need to be procured, we need different aspects of the business to come together to get an accumulative number that will safely guide us through this between season”*. R3 suggests CPFR occurs just over BTS due to the value of the large quantities purchased.

R1 and R2 both agree that CPFR does occur in the organisation. However, R3 states that this occurs only during the BTS season. It must be acknowledged at this point of the type of products procured by each respondent. R1 and R2 purchase mainly buyout items and ITH/ ITS which requires a lot of CPFR. However R3 mainly procures stationery which is stock line and therefore does not require as much CPFR as the special items.

4.6.5. Question 5: How long in advance do you forecast for and what challenges do you experience?

The researcher aimed to identify the time period taken before forecasts are made and the challenges experienced when predicting for the future. Research objective two relates to this question. All three respondents provided feedback.

R1 states that *“we work in a two week space – two weeks minimum – four weeks maximum cycle. Then our BTS forecast is done at least six months previous so they have time to manufacture and supply [to our required quantities]”*. R1 suggests that forecasting occurs between two to four weeks prior to delivery date.

R2 said: *“You forecast – it depends on the daily business – you forecast on a daily basis [and] check on a daily basis. There might be BTS you need to forecast four to five months in advance, six months in advance. It depends on the products, it depends on the sections. Furniture will be different, computers will be different. The danger with [forecasting for] computer [consumables is that] you cannot forecast too far in advance because prices are changing. Prices are [fluctuating]”*. R2 suggests that the forecasting time frame depends on the types of products being forecasted for. Different product ranges have different time frame periods, such as

computer consumables, which cannot be forecasted for long periods prior to purchases due to the rapidly advancing technological environment.

R3 states: *“I am solely going to go with BTS – we need at least five months for our forecast figures to reach the supplier – most case its takes four months for the products to be in [company name] [from the time] it reaches the supplier – supplier has to check for breakage – shortages – be it whatever they need to overcome, obstacles and ultimately get the product to us in good saleable conditions”*.

With regard to the challenges, R3 states that it is hard to discuss challenges as *“we don’t really forecast. You must understand a supplier will outlay cash between eight to nine months before he is getting any revenue back from that, he could say ‘I am only doing a delivery in September but this forecast [for this order] has been given to me in May. Do you outlay the cash now or not?’ If he takes the option of not outlaying the cash, are you guaranteed to get that stock? We have had that in the past where a supplier just did not supply us stock – it was printed, it was in the catalogue but we did just not get stock”*.

R3 discusses only the BTS forecasting period. Forecasts have to be provided to the supplier five months prior to receiving stock. This is to ensure that the supplier has the necessary capabilities and capacity to supply the organisation during this period. R3 states that it is difficult to discuss the challenges as the organisation does not generally forecast. R3 further notes that it depends on the supplier as to whether they are capable of supplying the desired quantities and acknowledges a past experience when a supplier had not supplied stock.

All three respondents provided different forecasting time frames due to the various product categories being procured. However, all three respondents agreed that for the BTS season, the forecasting time frame is between four to six months. R1 did not discuss the challenges. R2 and R3 elaborated on the challenges, which included: product category and supplier capabilities and lead times.

4.6.6 Question 6: Once forecasts are made, how are they communicated and to whom and within what time frame?

The purpose of this question was to establish the communication process for forecasts and the time frame within which this process is completed. This question relates to research objective two and all respondents answered.

R1 states: *“We create purchase orders and [thereafter] we e-mail that to the supplier sales rep, and we phone them as well”*. R1 suggests that a purchase order is sent to the supplier and it is backed up with a phone call.

R2 states: *“You order on a daily basis and send it to your suppliers. The other forecast is if the supplier requires. For example, BTS – you e-mail and get in touch with them and tell them this is what I perceived is going to happen and you e-mail them what you worked out and there is communication – there is constant communication with management. We [meet with] people concerned, with management, with the boss [and discuss what we are going to do] and ‘what are your thoughts?’ You take what the computer system is giving you and see what trends are there – what suppliers are doing and then you sit down as a team and work out what is best for the organisation”*. R2 says that orders are sent to suppliers daily and, when the supplier requests other forecasts, these are provided. Communication is constantly occurring externally and internally to ensure the best decisions are made.

R3 said: *“Once we get out of one BTS season it takes about a month till the next products are chosen and it takes our panel about a month to choose the products. Then forecasting is done by each region with a panel. Numbers are out then [and] we agree on the number we want to order – so around about April or May there is a forecast that is sent to the supplier. The forecast would be sent to the sales persons you would normally deal in that organisation, or it will be sent through the owner of that company, and they in turn will confirm that they have received the forecast and that gives them the time to procure the item and bring it over into South Africa till you require that product for your BTS season”*. R3 further added that *“it’s within months”*. R3 provides a detailed account of how the forecast decisions occur prior to the BTS period. Communication externally and internally occurs between the relevant personnel. Once items are decided upon, based on a panel decision, the buyers discuss the quantities required for that period. Suppliers are thereafter notified.

The purpose of this question was to establish the communication process for the forecasts and time within which it is completed. R1 suggests that an e-mail and follow up phone call are the means of communicating the forecasts. R2 also points out that suppliers are provided with daily orders. During the BTS season, suppliers are notified well in advance via e-mail and communication is constantly occurring internally and externally. R3 provides a detailed account of how the forecast decisions occur prior to the BTS period.

4.6.7. Question 7: What is taken into account when forecasting decisions are made?

The aim of this question was to establish what is taken into account when forecasting decisions are made. This question relates to research objective two, and all three respondents answered.

R1 states: *“Past sales – it’s better to work with three months”*. R1 further added *“current trends in the markets as well, seasonal demands”*. R1 suggests that three months’ sales are taken into account along with current market trends and seasonal demand.

R2 said: *“You look at your sales [and product] availability. There is demand and supplier – there are also other vendors – other people they deal with, the supply, the market that you consider. There are many things, from your own sale, from the trends: ‘What’s [going to] happen six month[s] down the line? Is that product going to be popular?’ You [discuss] with various people, your suppliers, the manufacturers and you see what is happening not only in South Africa but what is happening in the world”*. R2 suggests that one has to account for sales and product availability, the numerous vendors in the market place and market trends.

R3 states that *“firstly we got to look at on hand stock. We got to look at the trends that is happening in the country, globally – trends changes all the time – so you have to be on par with what is happening in the country or within schools or within the neighbourhood – what would sell, so you have to look at all of that before you forecast”*. R3 suggests that one has to account for the physical stock in the organisation, the market trends locally and globally and to match that demand.

The respondents provided various responses as to what is taken into account when forecasting decisions are made. Sales and market trends were factors that were noted by more than one respondent.

4.7 Section D: Demand Order Variability and Flexibility

Section D relates directly to research objective three: to explore the extent of demand order variability and flexibility on the underlying JIT system. This section focuses on the organisation's demand order variability and flexibility and has seven questions. The researcher's intent was to gain an insight into how the organisation manages its demand order variability and to ascertain how flexible the organisation is in this respect, as well as to understand the challenge it poses under demand management and the JIT system employed.

4.7.1. Question 1: Discuss the demand order variability in this organisation

Question one required the respondents to discuss the demand order variability in the organisation under study. This was to provide the researcher with an understanding of the demand order variability in the organisation. This relates to research objective three and all three respondents provided feedback.

R1 states: *"We are occasionally faced with demand order variability during the year either due to the increase in demand or sometimes manufacturing issues. [During] peak time [which is] our BTS season – where demand exceeds forecast and supply [for instance] abnormal orders such a winning a tender"*. R1 suggests that demand order variability rarely occurs, but if it does occur it is caused by demand increases or manufacturing difficulties. This generally occurs during the peak season of BTS or for irregular orders.

R2 said: *"That's why we stock – that's why we have a warehouse. We carry stock – we know what is popular with our customers. And the aim is to get it out as quickly as possible; [so that] we can service our customers. Well, obviously it is also dependent on the suppliers, that's why your forecasting helps, but it's never perfect. It's dependent on a lot of factors, for instance, there could be a shortage – there is never perfect scenario in procurement [where] one can state that there are no backorders or you can always supply and keep your customer [satisfied] but we [continuously] aim [to improve]"*. R2 suggests that stock is always kept on hand for situations of demand order variability as the goal is to ensure customers are continuously satisfied. R2 further notes that the organisation depends on the suppliers and although forecasting assists in demand planning, product shortages do occur.

R3 said: *"When you look at BTS the demand is taken care of for probably seven months – from April or May we start to cater for that demand but on a monthly basis or a daily basis the demand will have to be challenged as and when it comes – [as mention earlier] we could have an odd order"*. R3 discusses that although demand is forecasted seven months prior to BTS, challenges are experienced which are solved when they occurred.

The purpose of question one was to get the respondents to discuss the demand order variability in the organisation under study. R1 and R3 provided a discussion of BTS. R1 proposes that demand order variability occurs mainly during BTS, whereas R2 stated that the organisation holds stock annually. This suggests that the organisation not only implements the JIT system but the Just-in-Case (JIC) system as well. R3 noted that challenges do occur even though demand is forecasted.

4.7.2. Question 2: How does the organisation view order variability?

The purpose of this question was to gain an insight into the organisation's view of order variability. This relates to objective three and all three respondents provided answers.

R1 states: “*We view it quite seriously and then make all efforts to prevent negative effects*”. R1 proposes that demand order variability is taken seriously in the organisation in an attempt to eliminate destructive results.

R2 suggests order variability is “*very important – it’s a critical part [of the organisation], but we have to ensure [that] we have what the customer needs and get it to them as quickly as possible and you have [to have a back-up plan] because if [one] supplier doesn’t have [stock] you have a network where you can get it elsewhere and quickly too*”. R2 suggests that demand order variability is a vital to the organisation. Therefore, to meet customer requirements, as a buyer one has to have a network of relationships in which to find the product from alternative vendors if the preferred supplier cannot supply.

R3 said: “*You have this large order – it is [has] caused a mess up in your system because – do you supply the one customer and leave the other ten customers out or do you supply the ten customers and tell this customer your got to wait an extra two days [for stock to come in]? It’s a challenge for you to [procure] the stock for the this order in the least possible time so yes it is something that you wants to get over with so you can go back to the normal ordering process*”. R3 puts forward a scenario where a large order is received and the stock holdings are not sufficient and, therefore, one has to decide which customer receives the stock now and which customer has to bear the lead time.

The purpose of this question was to gain an insight into the organisation’s view of order variability. R1 and R2 acknowledged the importance of demand order variability and eliminating the negative effects. R2 and R3 noted that challenges faced with order variability and R2 provided how to overcome this obstacle.

4.7.3. Question 3: How flexible is the order variability?

The purpose of this question was to ascertain how flexible the organisation is in terms of order variability. Research objective three relates to this question and all three respondents provided a response.

R1 said: “*We are relatively flexible with the ability to draw stock from the branches, regions [such as] Cape Town [and] Johannesburg. We can also supply alternatives as I said previously from other supplier, a different brand, but just the same quality, just to meet the demand*”. R1 suggests that the organisation is reasonably flexible as it has the ability to get stock from retail branches and other regions where the organisation is based. Alternative suppliers are also contacted to source a similar item of the same quality.

R2 said: “*You have to be very flexible – customer is king, you have to satisfy the customer and the customer brings in money into the organisation. If we have to go to somebody who we don’t normally deal with and even pay cash to get the goods, we will do that. We will go to the end of the earth to satisfy and keep our customer happy*”. R2 advocates that the customer is king and in an attempt to satisfy customer demands one has to source from alternative suppliers just to ensure customer orders are fulfilled.

R3 said: “*Immediately, because you know who your suppliers is, you need to know your supplier’s stock holding and if you know they are capable of handling that amount you place an order immediately and you ask them for an Expected Time of Arrival (ETA) and that you can communicate to the sales taker who will in turn communicate to the end user*”. R3 advises that the organisation is flexible. As the supplier is known, the stock holding capacity and supplier capability is also known. Once an order is placed, the supplier is required to provide

ETA dates, which are communicated to the sales taker who informs the end customer of the ETA.

The purpose of this question was to ascertain how flexible the organisation is in terms of order variability. All three respondents agreed that they are very flexible and that it is imperative that they are able to be flexible to fulfil customer orders in the quickest time possible.

4.7.4. Question 4: How do you ensure the right quantity is delivered at the right time, accounting for the large amount of variations?

This question was asked in an attempt to understand how the organisation's processes in place ensure customer orders are processed in the event of large amounts of variations in customer ordering. Research objective three relates to this question, which was answered by all three respondents.

R1 states: *“That is difficult to manage. We try our best to make a plan but it's really hard”*. R2 suggests that ensuring the right quantity is delivered timeously is difficult to manage, especially when large amounts of variations in customer ordering are involved.

R2 states: *“No, you can never have the right quantity. Again I will go back to the computer industry [which has] its trends but sometimes its trend can [fluctuate], and as an organisation your sales people know, for instance a [specific] cartridge, normally we [are constantly] selling ten a month [and] a certain organisation [purchases] fifty printers and they want four cartridges per printer so you looking at two hundred cartridges, that sales person will immediately contact me as a buyer and say ‘I have a big order for this item, what can you do?’ [We react] immediately as it impact[s] everybody. [You] suddenly demand extra from the supplier and supplier has got their own measures in place to keep stock – so you manoeuvre. As I [said previously], you have alternative suppliers, you ask the supplier. The supplier says ‘I can get it for you’. This is [why you] have a network of people that can assist you and you not stuck with just one [supplier]. So you have various people that you have developed contacts with over the years and it is not a problem. And again, you communicate and tell the sales person and the customer. [If you want to survive] in the business world you got to make a plan”*.

R2 suggests that in order to survive in the business environment one has to cater for the needs of the customer and find alternative means of procuring the specific item for the customer. R2 also indicated that one never has the correct quantity required as the market trends do not allow one to carry sufficient stock. Abnormally large orders need to be communicated to the necessary personnel who are in a position to make the necessary arrangement to procure the products desired by the customer.

R3 says: *“You got to ask your supplier – do you have that amount in stock”*. R3 merely states that in order to ensure one has the right quantity required; one has to first communicate with the supplier if the quantity required is available.

This question was asked in an attempt to understand how the organisation's processes ensure customer orders are processed when there are large variations. R1 and R2 stated that it is difficult to manage as one can never have sufficient stock, whereas R3 stated that one should enquire with suppliers to ensure that they are able to provide the required amount of stock. R2 provided a more detailed response than R1 and R3, acknowledging the necessity of having a good network of alternative suppliers. Communication within the organisation emerges as an

important factor to ensure the correct quantity is procured to fulfil customer orders. Communication with suppliers also plays a vital role in ascertaining the required quantity.

4.7.5. Question 5: How does the organisation keep track of order variability?

The purpose of this question was to establish the manner in which the organisation keeps a record of its order variability, relating to research objective three. All respondents provided answers.

R1 states: “*We have procurement staff – certain staff orders from certain vendors, that also consistently monitor the stock on hand, sale on return*”. R1 further added that “*catering and hygiene and consumables will be [a buyer], I have [a specific category], [the other buyer] has mostly [stationery-specific suppliers]*”. R1 suggests that the procurement staff each manage specific product categories and the vendors that deal with those categories. Hence, the staff is able to keep a record of the order variability.

R2 states that “*we [have] our reports – we got our MRP system and we check on a constant basis. Even though we have MRP, we do our reports during the day because things change, it can change by the second, it change by the minute. The sales people communicate if there is a major order we get told immediately*”. R2 suggests that there are reports used to monitor the order variability. Although the MRP system does provide the re-ordering quantities, throughout the day other reports are produced to ensure that the trends are accounted for. Communication also plays a critical factor in providing a record of the order variability.

R3 said: “*Personally, I have been in the company [for many years] – so I know certain trends, certain stock, how they move, its history and knowledge of products and how they sell. Obviously you have to look at past history, that’s where we merge the both [qualitative and quantitative] ordering*”. R3 acknowledges that both qualitative knowledge and quantitative information play a major factor in keeping a record of the order variability.

The purpose of this question was to establish the manner in which the organisation keeps a record of its order variability. The respondents all provided responses as to how they personally keep track of order variability. R1 suggests that due to the division of product category, each buyer is more or less knowledgeable about order variability. R2 suggests that reports produced allow for a buyer to monitor order variability as well as communication. R3 advocates that both experience and sales trends allow one to monitor order variability.

4.7.6. Question 6: How does order variability affect the organisational flexibility?

This question aimed to determine the effect order variability has on the organisation’s flexibility. Research objective three relates to this question, and all three respondents answered.

R1 said that “*it can be negatively affect the business, [such as] out of stock, delays, order fulfilment, customer complaints, stock loss, decrease in revenue, and loss of sale*”. R1 suggests that it has a negative effect on the organisation and provides a list of issues affecting flexibility that are experienced due to order variability.

R2 states that “*it will affect flexibility if demand changes but that is why we got to be in sync, we got to be in tune, as a buyer you got to be touching edge of everything. As soon as it happens – you got to react – you can’t delay, [you delay and you are not competitive]*”. R2

suggests that flexibility is affected, however, this can be reduced by reacting immediately to these demand changes.

R3 said: *“I don’t think it would to that extent – it all depends on the cash flow problem that a company would have but I think in our instance that doesn’t affect us that much. It would if you happen to go out on a limb and supply a customer and the customer does not pay you back within the terms supplied by our concern”*. R3 suggests that order variability would not affect flexibility in this organisation, rather it depends on the cash flow of the organisation. Supplying a customer who does not pay within the credit agreement is what will affect flexibility.

This question aims to determine the effect order variability has on the organisation’s flexibility. R1 and R2 agreed that order variability would affect flexibility. However, R3 suggests that order variability would not affect flexibility as much as cash flow problems would.

4.7.7. Question 7: Does it pose a challenge in demand management, especially under the JIT system?

The purpose of this question was to establish the challenges order variability poses in demand management, especially when there is the JIT system employed. This relates to research objective three and all three respondents provided feedback.

R1 said: *“Yes, most definitely, we won’t be able to meet our demands – is always a big challenge for us”*. R1 suggests that order variability does pose a challenge, especially under the JIT system.

R2 said that the *“JIT system is something that we have not really implemented here, but there will be challenges. But you overcome challenges. If you want to take your organisation to another level you [have to] adapt”*. R2 puts forward that this organisation does not implement the JIT system, but regardless, there are the challenges experienced that have to be overcome by adapting to change.

R3 states that *“it wouldn’t if you know now how to handle it – if the order is still at the quote stage and if it’s handled properly – it will not affect the JIT system at all. You order the stock specifically for that sales order or for that quote and as it comes in they will release the stock for that sales quotation which will be turned into a sales order. So it will not affect our JIT system”*. R3 acknowledges that if at the initial stages a sales order or quotation is managed it should not affect the JIT system implemented.

The purpose of this question was to establish the challenges order variability poses in demand management, especially when there is the JIT system employed. R1 and R2 agreed that order variability would pose a challenge to the JIT system employed. However, R2 states that the JIT is not really implemented in the organisation. R3 suggested that if managed well, the JIT would not be affected.

Section E: Synchronisation

Section E focuses on synchronisation. This section relates directly to research objective four: to analyse the role of order synchronisation fulfilment to facilitate the balanced alignment of demand and supply order management. Section E looked at synchronisation and its role in the organisation. The aim was to establish the role of order synchronisation fulfilment to facilitate

the balanced alignment of demand and supply order management. This section comprised of four questions.

4.8.1. Question 1: Discuss the role of order synchronisation in your organisation

Question one aims to understand the role of order synchronisation in the organisation. Research objective four relates to this question and all three respondents answered.

R1 says that *“our order synchronisation is a systematic, with a flow from orders placed to stock received to orders dispatched”*. When questioned further as to whether it works continuously without any problems, the respondent explained the process: *“Well, we do have some struggles because once we place an order – it gets received, they [warehouse receiving staff] check it and it goes into an inbound location, from an inbound location that goes straight to the shelf [location]. Inbound means it has been checked and waiting to be put into a location so that [is] a delay as well”*.

R1 suggests that the organisation has a systematic order synchronisation process from the purchase order being placed, to receiving the stock until it is dispatched to the customer. R1 acknowledges that there are problems experienced with the synchronisation process, such as when stock is received it has to go into an inbound location before it goes onto the shelf location in the warehouse, which causes a delay in dispatching the product to the customer.

R2 states that *“its role is very simple – it’s to make things work. If it’s not in sync, it is not going to work. If one part is missing – it [is not] going to happen and you [are] never going to have perfection so you got to ensure, that is why it’s important for the role players to meet on a regular basis, to ensure that synchronisation works. It’s imperative for you to keep on tweaking it to make it best for your organisation. That’s critical – you don’t have synchronisation – you not working together – you not working as a unit – it [is not] going to work”*.

R2 suggests the role is fairly simple. For things to work, it has to be in sync. If a process or element is missing or not performing as desired there is a disruption in the flow of the synchronisation process. R2 suggests tweaking the system to make the necessary changes to ensure it works specifically for this organisation. R2 further refers to CFT having regular meetings to ensure that synchronisation is always free flowing.

R3 says that *“I think that is the most important in the JIT system because the more knowledge you [have] of your suppliers the better you can handle your customer, if you know that your supplier has a delivery lead time of three days then you in turn can relay that to your customer and [for instance] you have placed this large order – it will take us three days then you can better supply information to your sales person who can relay that to your customer”*. R3 suggests that synchronisation plays an important role in the organisation, especially under the JIT system employed. R3 further asserts that the more information that is known about the supplier, the more information the organisation is able to provide to the necessary personnel.

Question one aims to understand the role of order synchronisation in the organisation. R1 suggested that the process is systematic and flows. R2 suggests that the role is simple and every individual in the organisation has to play his/her role for the continuous flow to occur. R3 suggested that the role is important, especially to for JIT system in place.

4.8.2. Question 2: How does order synchronisation fulfilment facilitate the balanced alignment of demand and supply order management?

Question two is directly related to research objective four. The purpose was to provide answers as to how the order synchronisation facilitates the balance between demand and supply under order management. All three respondents responded.

R1 said “[as discussed previously] *the stock location, it goes from an inbound location to the stock location – that delays the process, but with our guys in receiving we can fast track it – we can fast track them to put into a location quicker than the other items that come before and then invoice and dispatch to the end-user*”. R1 discusses the synchronisation process and how the supply meets the required demand. R1 suggests that, once an item is received, it goes into an inbound location and has to be transferred to a shelf location before it is dispatched. However, it is possible to fast track the item to a shelf location, thereby allowing the product to be invoiced and dispatched quicker.

R2 said: “*If everything is in sync, it’s going to work. The flow of information is going to be there – and it going to work because if you have got synchronisation – in terms of systems – it’s going to work – because we got the urban flow correct – everyone is playing their part – everyone is doing everything and it’s going to work, it’s going to make it brilliant*”. R2 suggests that if everyone plays his/her part in the organisation the information will flow freely.

R3 states “*because we are a warehouse we buy stock, we warehouse stock and ultimately supply to the end user, so we do have the capacity to warehouse stock – so it gives us time till we run out of [stock] that’s how our JIT system works – because of our min/max levels that we have created that we have in play – the warehousing holding – the warehouse capacity and the knowledge that we have from our suppliers – they all sync most of the time*”. R3 suggests that because there is a warehouse, which has the capacity to stock items, it provides the buyers with time to restock holdings, thereby synching the process of supply balancing demand.

Question two is directly related to research objective four. The purpose was to provide answers as to how the order synchronisation facilitates the balance between demand and supply. R1 provided an explanation of the process and R2 discussed the importance it plays. R3 discussed how the warehouse managed the synchronisation process.

4.8.3 Question 3: How is order synchronisation managed in this organisation?

Question three aimed to establish how order synchronisation is managed. This relates to research objective four. All three respondents answered.

R1 states: “*Systematically*”. When asked how, R1 states, by “*various reports*”. R1 suggests that order synchronisation is managed systematically by various reporting systems.

R2 states that “*I play my role in terms of doing whatever one has to do. Giving out the information, communicating with people and ensuring that whatever information I get and whatever I have to do in terms of my role I do it and I do it as quick as possible and do it within the quickest means because I am one part of the organisation. If I don’t play my role, a lot of things will fall out of place – as a procurement person – it’s a very dynamic role because I communicate with various people in the organisation. If it’s not in sync then we have a*

problem”. R2 suggests that each member in the supply chain has an important role to play and order synchronisation is managed by each one playing his/her role in the organisation.

R3 responded by saying: *“It all starts from the item coverage and the minimum/maximum levels – it starts from the branches and it starts from how the sales orders are being processed. The minimum/maximum levels are set at the beginning of the month. That in turn creates a demand on our ordering system, including the sales order[s] that are in place. It gives us a figure that we need to order at the beginning of the month and thereafter we just need to top up stock, but if we do get the odd order that is over and above what we require or what we can handle, then we order that stock specifically for that sales order”*.

R3 suggests that order synchronisation is managed by the item coverage and the minimum and maximum levels set on MRP. At the beginning of the month the minimum and maximum stock levels are set, thereafter the branches and sales orders are fulfilled by ordering the quantities of the minimum and maximum levels. Odd customer orders are ordered for separately and specifically for that customer.

Question three aimed to establish how order synchronisation is managed. R1 suggested that this is done systematically with various reports. R2 suggested that by playing one’s role in the organisation, order synchronisation is managed. R3 discussed the process by which order synchronisation is managed.

4.8.4. Question 4: What system is in place to ensure that it [order management] is always synchronised? MRP?

This question aimed to establish how synchronisation is always ensured. Research objective four relates directly to this question. All three respondents provided answers.

R1 states: *“MRP”*. R1 simply suggests that the system in place to ensure the processes are always synchronised is MRP.

R2 said: *“Everything is there in place. Everything is overseen by management when they do reports. Those reports are critical, MRP serves that purpose but you as a buyer have opportunities of doing reports and checking, and people do this on a constant basis. The warehouse will send outstanding sales orders, we will check what suppliers are supplying and [have not supplied yet]. So we follow through with reports with back-up systems we have and as you go over the years you have experience in this and it takes you through”*. R2 suggests that there are reports that are used in conjunction with MRP to ensure there is synchronisation. These reports are done constantly, and continuously monitored.

R3 states: *“MRP is what we use”*. R3 asserts the MRP system is used.

This question aimed to establish how synchronisation is always ensured. All the respondents (R1, R2 and R3) agreed that the MRP system in place ensures that processes are always synchronised.

4.9. Section F: The Demand Requirements Model

Section F concentrates on the demand management requirements model proposed by Melo and Alcantara in 2012. The purpose of this section was to gain the respondents’ perspective of the requirements model in relation to the organisation. This section does not relate to any research

objectives, however, it relates to the theoretical framework and aims to gain a better understanding of the practical aspects of the model in relation to the organisation.

This section consisted of three questions and three sub-questions. The aim of this section was to ascertain the views and opinions of the respondents with regards to the demand requirements model and whether its aspects are currently implemented, or play a role in, their organisation.

4.9.1 Question 1: How active are cross-functional teams in your organisation?

The purpose of this question is to establish the presence of CFT in the organisation. This question relates to the theoretical framework. All three respondents provided answers.

R1 states that *“we are relatively cross-functional but there is still some room for improvement and better communication”*. When asked if cross-functionality could be improved, and how, R1 stated: *“Definitely, maybe a Monday morning, have procurement meetings. Well I am talking from a procurement perspective. We can try. This is what we having problems with, this supplier and how can we better ourselves”*. R1 suggests that the organisation is fairly cross-functional. However, improvement is needed, such as better communication.

R2 states that *“its active – it could be better. It is active but there is not enough of it”*. When asked if it could be improved, and how, R2 states that *“that is driven from a management level that it’s how management wants it and perceives it. I think if we had more communication even from our own department. I would have meetings on a weekly basis with inter-departments of the organisation – those which are relevant and communicate – communication helps in an organisation. You got to work as a team, as a unit – putting your shoulder to the wheel. You can’t be putting a knife up everybody’s back to achieve your goals – it doesn’t work. So if you want to have a team, [as a team you have] to do everything together and you are able to evolve and you able to do things better because a united team is better than a divided team”*. R2 suggests that CFT are active, however, it could be improved and communication within the department could be the start. R2 also acknowledged the parameters of management’s choice of hosting CFT.

R3 states: *“I guess it only comes into play during Back-to-School”*. R3 further adds: *“When we forecasting and when there’re outlays of the large amount of cash”*. R3 also added that *“I wouldn’t say non-existent – like some sales personnel will tell you my customer only wants that brand of product – so between sales and procurement, yes, there is sort of communication in that way but in the rest of the organisation, no – it only happens during Back-to-School”*.

R3 suggests that CFT are active only during the BTS forecasting period when large amounts of cash are laid out. CFT is active among sales and procurement, but other than that interaction, there is not much CFT.

The purpose of this question is to establish the presence of CFT in the organisation. This question relates to the theoretical framework. All the respondents agreed that CFT do exist in the organisation, however, improvement is required as it is not as active as it should be.

4.9.2 Question 2: How involved is top management in demand management? And in other procurement decisions?

This question aimed to understand the involvement of top management in procurement decisions. The theoretical framework relates directly to this question and all three respondents responded.

R1 stated: *“They are very involved – they get daily and weekly – they get reports and they view them and ask us – we get questioned – why is this out of stock – why?”*

R2 stated: *“They are very involved. Management is very involved. We fortunate here we got a very dynamic leader so that helps and it’s an open-door policy – you can communicate when you want – you get to speak when you want and it’s not perfect but it is dynamic – it is...there’s opportunities to do things here”.*

R3 said: *“Ok, let’s say if there is going to be a problem – let’s say there is going to be a pending strike, let’s say if X supplier is [going to] go on strike like for eight weeks I would obviously have taken that up to any person in the executive team – but preferably we will go to the GM and tell her that this is pending and can I bring in two months’ [of] stock. So with regards to that – she will have to or she would know. Yes, I can outlay half a million rand over the next two months because that is my normal [expenditure] with this supplier and, yes, she would give us the go ahead – or she may not give us the go ahead”.* However, it is not day-to-day decisions.

This question aimed to understand the involvement of top management in procurement decisions. The theoretical framework relates directly to this question and all three respondents responded that management is involved but not in the day-to-day decision-making.

4.9.3 Question 3: How aware is procurement of the internal and external factors of: Capabilities? Constraints? Opportunities?

This question aims to gain a deeper understanding of the organisation’s awareness of certain factors, relating to the theoretical framework. All three respondents replied.

4.9.3.1 Capabilities

R1 says that externally *“our knowledge is limited on the supplier and branch level”*. With regards to the internal capabilities, R1 states that *“we judge by our minimum and maximum levels”*. R1 suggests that, externally, knowledge regarding the capabilities of suppliers is limited. The same is true regarding the internal capabilities of the organisation at the branch level. Internally, R1 judges capabilities by the minimum and maximum levels of the MRP system.

R2 says that personally, as a buyer R2 is *“very aware, we have to be aware or down goes our organisation but obviously you can always evolve to be better. I wouldn’t say it’s 100% perfect but we are where we are”*. R2 suggests that, personally, he is very aware of external capabilities although it could be improved. Internally, *“the complexities and the challenges that you face as a department, we [have to] help each other, we are a team. But everywhere there are challenges – you get new people, we got people that we trained. It is a whole network of things that needs to happen and that is another aspect – training is very important. The warehouse training – because people receive the product – do they know the products? If they*

receive the wrong thing – you got a problem – wrong [items] go to the customer. There are a whole lot of challenges. Sometimes we may be neglecting training [which is] very important". R2 asserts that, internally, training is an area of concern. R2 is aware of the internal capabilities and, therefore, suggests the need for more training of staff.

With regards to the external, R2 states: *"We have to know [market] trends, you have to go for training, seminars. You have got to have various suppliers because one supplier might want you to believe certain things – so you got to be independent of that and see and know what's happening in the marketplace"*. R2 suggests that, externally, one has to know the marketplace and market trends.

R3 stated: *"As a department we share information [such as] if there is a problem with the suppliers. If there is a problem with a product – if there is problems at a certain warehouse, we do share information amongst ourselves"*. R3 suggests that internally, as a department, all capabilities external and internal are discussed and shared. However, R3 states that they are not aware of all external capabilities: *"...not all – we would make it known that there is a problem with X suppliers but it solely becomes your problem because you have your specific suppliers. If it only plays [a part] if you share a supplier – [for instance] a buyout buyer needs to buy something from [supplier named] and if there is problem with their shipments... I will tell him there is a problem with the shipment – it's a three week delay or a month's delay – so he is aware so he can source that product from somewhere else"*. R3 suggests that, externally, they are not always aware of capabilities as they should be.

R1 and R3 both suggest that knowledge of external capabilities is limited, whereas R2 suggests that as a buyer one has to be very aware of external capabilities due to his product category. With regards to internal capabilities, R1 uses the MRP to judge, whereas R2 notes that training is required for staff. R3 suggests that, internally, both internal and external capabilities are discussed.

4.9.3.2 Constraints

R1 says that externally with regards to the supplier, if the organisation is aware of the supplier problem then they can provide help if necessary: *"We can help them wherever possible – we can give them advice – say this is your problem why don't you try this person or that person"*. Internally, R1 states *"time constraints do allow for regular visits to various trade shows, but we are also restricted by national procurement in terms of appointments of staff to viewing new products"*.

R1 suggests that if they were more aware of constraints externally they could provide the necessary assistance to prevent or avoid those issues. Internally, R1 suggests that, as a department, there are time constraints, which do not allow for regular supplier visits. In addition, national procurement makes new product listings and they (as a regional department) are unable to view the new products themselves.

R2 states: *"Yes, in any organisation there are constraints and you got to work within parameters but that's fine. You rely on the parameters and you work within that and you achieve what you have to achieve within that spectrum"*. R2 suggests that there are organisational constraints that have to be worked within.

R3 states: *"If they [the supplier] are having an issue or if they have problems – they have to, by law, communicate that to us."* R3 suggests external constraints, such as supplier problems.

The respondents each provided constraints experienced and noticed individually.

4.9.3.3 Opportunities

R1 said: *“We do internally consistently try to improve our efficiency by doing supplier comparison on pricing, lead time and quality – we also try to identify our opportunities, source products that can generate and contribute to our profits”*. External opportunities were not discussed by R1. R1 suggests that, internally, they do try to improve efficiencies by identifying external opportunities.

R2 said: *“You have to be aware of that, besides your MRP system – your trends in the marketplace and products that will sell you have to know and you got to keep on evolving because some things work and some things don’t work, so you got to work within those parameters. That’s why you got to be knowing what’s happening throughout the business world”*. R2 suggests that you have to be aware of internal and external opportunities as some things may work for your organisation and others may not.

R3 said *“because of the vastness of our footprint in South Africa – and most things are taken into account from a national level – this we can ask for it to be listed from national level but ultimately it has to be taken from a national team – and if they find it feasible to be introduced into our organisation”*. R3 further added *“what normally happens when a new item is introduced, it will go on a promo and they would obviously garnish this item so the item can pick up the sales and that only affects the sales team”*. R3 suggests that awareness of opportunities is mainly for those in national procurement as they take the necessary decisions.

It has come across that more awareness is needed in these three aspects (capabilities, constraints and opportunities) to provide the buyers with more substance when making decisions.

4.10 Conclusion

This chapter provided the data collected from the respondents. Each question was dissected and the purpose of it was elaborated. Each respondent’s answers were provided in quotation to support the finding that will be discussed in chapter five. This was also a thematic approach, which helped the researcher identify the themes that emerged.

CHAPTER FIVE

FINDINGS AND DISCUSSION

5.1 Introduction

Chapter five will provide a discussion of the data analysed and presented in chapter four in relation to each research object and the themes. The researcher will provide an overview of each section and thereafter analyse the themes that emerge.

Each section of the interview guide focused on a research objective and therefore found emerging themes, which will be discussed in detail. One has to consider that although the researcher had a structured interview guide, the researcher was able to execute the appropriate skills of interviewing and asking more questions to probe deeper into the phenomenon at hand as discussed in chapter three, therefore, there may be one theme but more than one sub-theme emerging in each section.

5.2 Overview of Interviews

Some respondents provided direct answers to most of the questions but did require clarification on a number of questions, whereas for others, more probing was required to get the desired answers. From the researcher's interpretation of the interviews, it was noted that some respondents had very progressive ideas and views to change. However, some found it difficult to create an environment of change and improvement.

Below will follow a discussion on each research objective the study aims to understand. The questions asked in relation to the research objective will be discussed and respondents' answers will be compared to the literature provided in chapter two. The themes that have emerged will also be discussed under each research objective.

5.3. Research Objective One

To Determine the Challenges of Dynamic Demand Management Under the JIT Order Fulfilment System

Section A: the challenges of demand management of the interview guide were directed to research objective one: to determine the challenges of demand management under the JIT order fulfilment system.

The definition of demand management was first asked to gain an insight into each respondent's understanding of the concept of demand management. The challenges experienced by the organisation and under the JIT system were also investigated. JIT is a concept developed and improved by the Japanese, as discussed in chapters one and two, hence, it was necessary to conceptualise the understanding, views and opinions of the respondents with regards to this aspect.

Question one found the respondents all sharing a similar idea of the concept of demand management in their organisation, placing emphasis on the customer and the management of customer orders.

The authors, Croxton *et al.* (2001:18), define demand management as a process that balances the customers' requirements with the firm's supply capabilities, including synchronisation the

forecasting demand with production, procurement and distribution. Demand management can be further explained by its use “to estimate, control, smooth, coordinate, balance and influence the demand and supply for a firm’s products and services in order to reduce total costs for the firm and its supply chain [and] the forecasts are developed at several points throughout the organisation” (Burt *et al.*, 2010:28). This definition, provided by the various authors, directly relates to the answer provided by R1 presented in chapter four, and partly to the answers provided by R2 and R3.

One can suggest that demand management varies from organisation to organisation, however, the principle remains the same, whether or not the terminology is understood in organisations. The general notion is that demand management is the manner in which one is able to balance demand requirements with the necessary supply capabilities.

Question two found all three respondents in agreement to being personally affected by demand management in their positions as buyers as their main purchases are made due to being in a highly demand-driven environment to meet the requirements of customers. JIT implies each component is ordered as it is needed and if there are no customers for the specific product, production is stopped and with reference to the organisation under study, procuring of that product is stopped. The JIT approach is based on a pull system. The pull system is based and coordinated on true customer demand rather than forecast demand (Ncube and Bozas, 2016). The organisation is expected to not hold any inventory and responds to specific orders (Ncube and Bozas, 2016). Thus, the responses provided are supported by literature.

Question three found various challenges faced by each respondent. The responses provided varied amongst the buyers due to the items that each one procures. Orders are placed one day late due to receiving updated sales information late. The challenges of demand management that have emerged are those of internal issues such as the software and market trends; and the national and global factors such as staff wage negotiations, strikes, the Rand/Dollar exchange, seasonal time, lead times and availability of stock.

With regards to the internal software issue of data not being live, orders are placed one day late due to receiving updated sales information late. Therefore, Lee (2004) describes how the leading firms have attained sustainable competitive advantage by approaching a DDSN (Demand-Driven Supply Network) strategy (Ettl *et al.*, 2006:2). Lee (2004) observes that “top performing supply chains possess three different qualities: agility, adaptability and alignment” (Ettl *et al.*, 2006:2). Thus, the importance of implementing a DDSN, which “is a system of technologies and business processes that responds to real time demand across a network of customers, suppliers and employees” (Ettl *et al.*, 2006:1-2), has been noted with regards to the organisation under study. Not having real-time data thus poses a challenge and does not enable the organisation to possess the supply chain qualities of agility, adaptability and alignment.

Mentzer *et al.* (2005) suggest that the major cause of failure of demand management is attributed to not achieving chain coordination due to the poor understanding of demand. However, the respondents did not acknowledge this factor in their responses.

“Demand planning is concerned with the coordination across the global supply chain of derived and dependent demand” and “sales forecasting management is concerned with the independent demand that occurs in any global supply chain” (Mentzer *et al.*, 2006:70). Sales forecasts are a prediction of expected future market demand and accuracy is the focus (Aghazadeh, 2004; Katz, Pagell and Bloodgood, 2003; Mentzer *et al.*, 2007; Taylor and Fearn, 2006; Melo *et al.*, 2014). It is necessary when developing sales forecasts, to determine the intensities of details and the scope of forecasting, to identify the sources of information and

to define the forecast method, which involves internal and external cross-functional teams (Croxtton *et al.*, 2008; Melo *et al.*, 2014).

It must be noted that in an attempt to improve demand management one needs to enhance the accuracy in forecasts thus creating a competitive advantage to sustain the organisation. The capability to manage the demand characteristics and variations provides benefits to the entire company production system, aiding the management process and improving accuracy in forecasts (Barbosa *et al.*, 2017:13). Crum and Palmatier (2003) and Barbosa *et al.* (2017) share the similar thought that demand management is a strategic process in directing the decisions of the present towards a competitive position in the future.

Staff wage negotiations, strikes and the Rand/Dollar exchange rate are not noted in literature as challenges of demand management. However, one should look to these challenges, noted by the respondents, to identify the effects they have on demand management.

As noted in chapter two and previously in this section, the definition of demand management provided by the authors Croxtton *et al.* (2001:18), is that demand management is a process that balances the customers' requirements with the firm's supply capabilities, including synchronisation of the forecasting demand with production, procurement and distribution. Hence, it is necessary to acknowledge that if there is no availability of a product, if it is a seasonal item or there are time delays, as mentioned by the respondents, then those are challenges of demand management as customer requirements are not balanced by supply capabilities.

Question four found all the respondents agreeing that these challenges are enhanced under the JIT system. The respondents found that the JIT is fast paced and ensuring those items get to the customers quickly and at the same time maintain a holding stock is difficult, especially when suppliers do not have sufficient stock. The respondents suggested that they had to rely on suppliers and various other members in the supply chain in order to be successful. The JIT approach is based on a pull system. The pull system is based and coordinated on true customer demand rather than forecast demand (Ncube and Bozas, 2016). Companies that do not implement JIT strategies invest heavily in large warehouses for the storage of inventories, however, minimal inventory denotes an absence of storage expenditures (Eloff and Carstens, 2013:1). The challenges of demand management are intensive under the JIT system. This is discussed below under the theme that has emerged from this research objective.

Questions five, six and seven allude to the discipline of the Japanese. Two out of the three respondents agreed that South Africa cannot reach the level of success the Japanese experience with their JIT. The reasons provided were that South Africa does not have the necessary infrastructure, nor the work ethic and discipline that the Japanese do. However, one respondent did state that what is practiced in Japan can be brought to South Africa and implemented here although it is a very different society. In section B, question three, of the questionnaire, R3 made reference to the fact that training is required. R3 provides an opinion on the current work ethic being noticed, stating that there are opportunities to learn, however, staff are not prepared to do more than what is required.

Research states that the homogenous race of the Japanese and their disciplined nature is what has led to the success of the implementation of the JIT system. Therefore, the researcher's aim was to determine, based on the opinions of the respondents, if diverse culture affects the success of the JIT system. The researcher wished to identify if the diverse culture of South Africa contributed to one of the challenges faced by the JIT system.

The possibility of practicing and achieving Japan's discipline in South Africa, based on the respondents' opinions, was the aim of this question. The discipline of the Japanese is a factor contributing to their successful implementation of JIT.

Naidoo (2011: 84) further provides evidence "that South Africa is a unique country that boasts a diversity of culture" and hence it is imperative that foreigners note that this diversity demands to be learned about in order to understand the complexities that are rich and vibrant in the South African culture. As noted in chapter two, Du Plessis (2016) reports a recent study by Bloomberg, which has illustrated that after Japan, South Africa is the most highly stressed out workforce in the world. South Africa is a nation of workaholics and an Ipsos Global and Reuters study has established that 53 percent of the working population do not take annual leave (Du Plessis, 2016).

Research does state that South Africa's diversity can in fact provide an environment that can implement the JIT system successfully. The respondents' opinions are based on what is seen and experienced first-hand and not on what is being experienced nationally.

Research objective one, which aimed to determine the challenges of dynamic demand management under the JIT order fulfilment system, has led to the emergence of the following themes, depicted in the figures below.

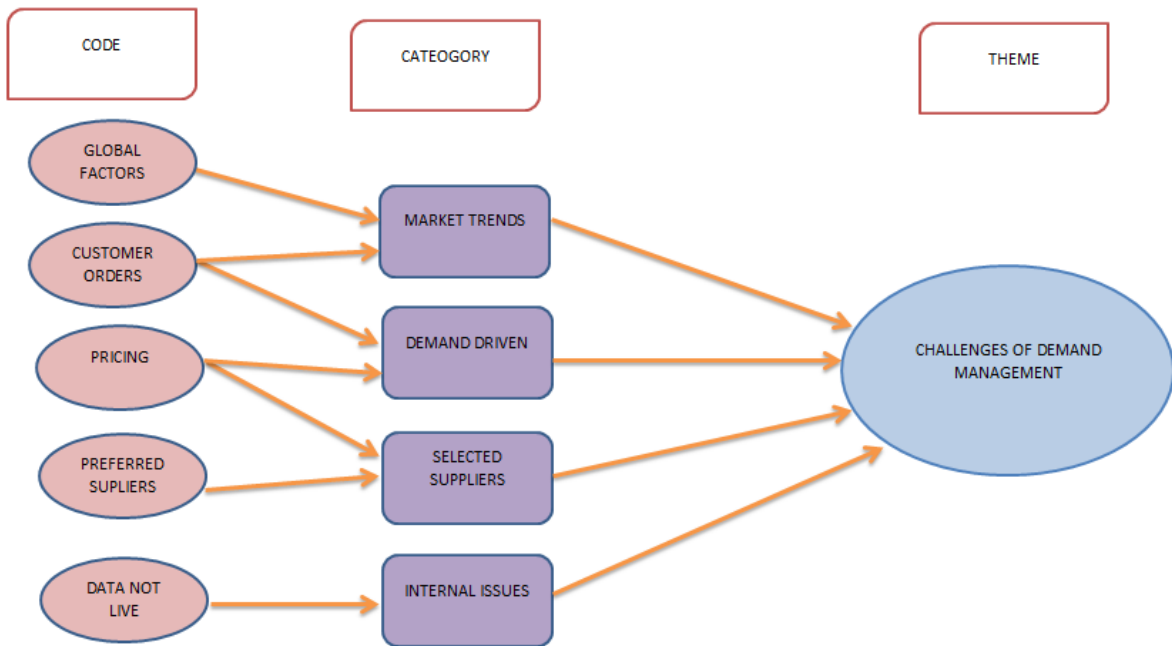
Figure 10 depicts theme one: The Challenges of Demand Management. Line by line coding was used to determine categories that related to a specific theme. The codes were from the interviews and the categories provided a pattern, which determined a theme. A code can relate to more than one category that is depicted in figure 10. "Global factors" related to the category of market trends". The code "customer orders" links to the categories of "market trends" and "demand driven". The code "pricing" relates to "demand driven" as well. "Pricing" and "preferred suppliers" relate to the category of "selected suppliers" and the code "data not live" relates to the category of "internal issues". These categories all directly link to the challenges experienced by demand management. It has been found that the challenges experienced are the categories.

The challenges of demand management were the market trends and the fact that it is demand driven. Another challenge that emerged was the calibre of suppliers used. The service provided by the suppliers was indicated to be not reliable and hence poses a challenge to managing demand. Another challenge that was indicated was the fact that the software system in place is not live, hence, it does not provide the buyers with data needed immediately.

As discussed in chapter two, demand management, however, is a more proactive approach than its predecessors, "relying on highly sophisticated quantitative analytics and advanced modelling techniques to pre-set tolerance levels, predict and pinpoint problem areas, monitor and adjust strategies dynamically and achieve real-time visibility and synergy across all channels" (IBM Global Business Services, 2006:6). Hence, if the system is not providing live data to the buyers, demand is not being managed properly, thus posing a challenge.

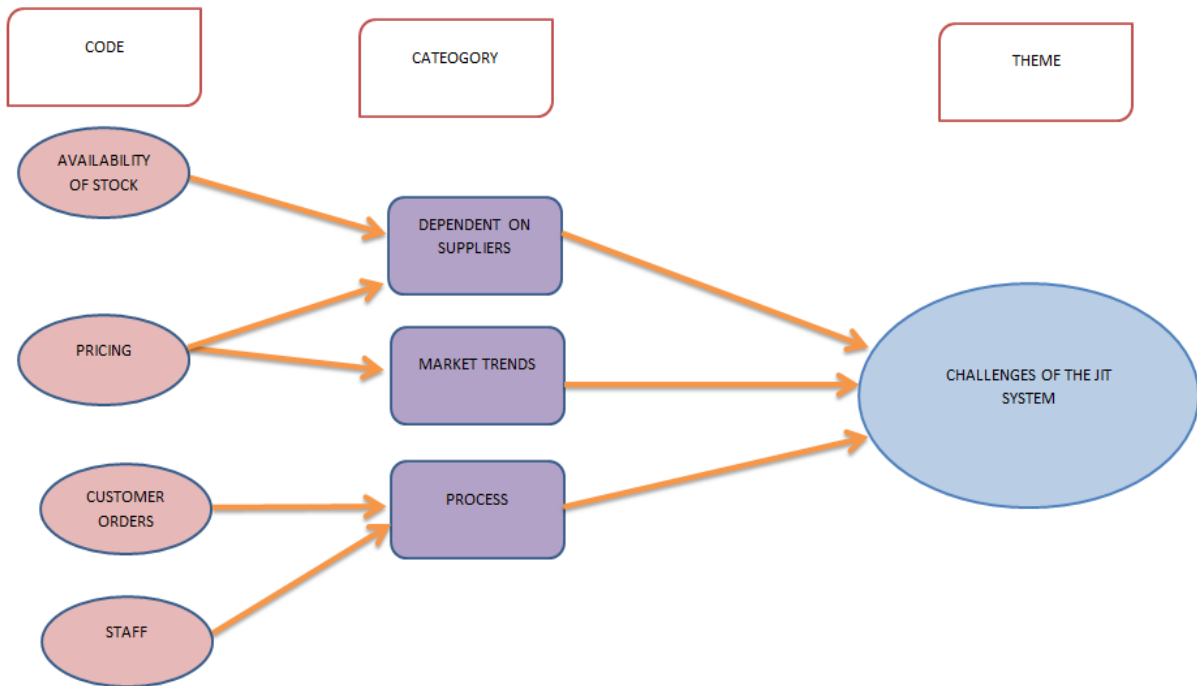
Melo *et al.* (2012) have developed the demand management requirements model, and they indicate that knowledge of market trends is imperative to demand management. The selection of suppliers is also a critical factor to consider as good buyer-supplier relations are imperative for the success of the organisation.

Figure 10: Theme 1: The Challenges of Demand Management



(Source: Author's Own)

Figure 11: Theme 2: The Challenges of the JIT System



(Source: Author's Own)

In figure 11, depicting theme two: The Challenges of the JIT System, the codes of “availability of stock” and “pricing” relate to the category of “dependent on suppliers”. “Pricing” also relates to the category of “market trends”. The codes “customer orders” and “staff” relate to the category of “processes”.

Wilson *et al.* (2015) note the significant factors that have led to Dell’s success as: its reliable suppliers that meet Dell’s challenging lead time requirements; the seamlessness of systems which allow for the transmission of component requirements, enabling timely arrival at Dell to fulfil lead times; and the “willingness of suppliers to keep inventory on hand” freeing Dell of this obligation (Wilson *et al.*, 2015). As discussed in the literature of chapter two, these are the factors that lead to the success of the JIT process. However, according to the respondents, these are the challenges faced under the JIT system employed.

The challenges experienced with the JIT system under study were the fact that the respondents had to depend on suppliers that were not reliable; the market trends also provided a challenge with the buyers having to predict trends in an attempt to ensure there was always sufficient stock to fulfil customer orders fast enough. The process in place to ensure how stock is ordered and goes out was also a challenge experienced.

It has emerged that the challenges of dynamic demand management under the JIT order fulfilment system are found to be the market trends which are demand driven; and the selection of suppliers. The selection of suppliers is important as the organisation has to be able to depend on the suppliers, who, if they are not reliable, pose a major challenge resulting in a large number of backorders and having to carry stock. The internal issue of not having live data poses another challenge when orders need to be released immediately under the JIT system employed.

These challenges are also exacerbated by the calibre of the workers of the organisation. The findings reveal that the employees are not motivated like the Japanese and thus they slow the success of the JIT system employed. The discipline present in Japan is not present in South Africa.

5.4. Research Objective Two

To establish the effects of information sharing and collaborative forecasting for efficient operational demand management

Section B considered the information sharing processes of the organisation and comprised of seven main questions and seven sub-questions. The questions 1 to 3 looked at the manner in which information is collected, managed and shared in the organisation. Respondents were also asked their opinions and ways in which to improve these processes, as this information is critical for their duties. Communication was also an aspect discussed.

Question one was the main question and was followed by sub-questions in relation to the collection of information. All the respondents indicated that the information was collected by the MRP system in place, suggesting that the information is collected electronically. However, R1 acknowledged that the information was a day late and hence increased their lead time as they had to order an item not in stock a day later.

Ettl *et al.* (2006:1-2) suggest “a Demand-Driven Supply Network (DDSN) is a system of technologies and business processes that responds to real time demand across a network of customers, suppliers and employees”. Ettl *et al.* (2006:2) acknowledge that leading firms have

adopted DDSN business strategy to become “more demand sensing, have more efforts on demand shaping and focus on a profitable demand response”. Therefore, having information in real time is critical to organisational success. This is supported by Lee (2004) who describes how the leading firms have attained sustainable competitive advantage by approaching a DDSN strategy (Ettl *et al.*, 2006:2). Lee (2004) observes that top performing supply chains possess three different qualities: agility, adaptability and alignment (Ettl *et al.*, 2006:2).

R2 acknowledged that, besides the MRP system in place, one has to be aware of the environment, competitors and market trends. This can be achieved by continuously monitoring the environment and developing new business relationships.

Organisations need to scan their environment and operations to capture data (Simatupang and Sridharan, 2001:3) about market trends and demand variations. This supports the response given by R2. Information technology (IT) is considered as a core of successful supply chain as it has the ability to: “improve communication, enable effective decision making, acquire and transmit data, and enhance performance of the supply chain” making it available at the right time to decision makers (Simatupang and Sridharan, 2001; Sanders and Premus, 2002; Marshall, 2015). This supports the responses that suggest that the MRP system employed collects the information electronically for the buyers based on data such as stock on hand and sales. It should be noted that the MRP system referred to in the interview is the materials requirements planning system.

Question one, sub-question one, with regards to the manner in which the organisation collects information, aimed to identify if the information collected is sufficient for the buyers to carry out their duties. R1 suggested that the information collected was sufficient, however, more information is required before an order is placed. R2 noted that it is sufficient, however, improvement is possible by constantly working towards finding alternatives and other means to collect information. R3 did not provide a direct answer and instead stated that computer systems can let one down and therefore would rely on gut feeling. It can be interpreted from the respondents that the collection of information needs improvement to provide more information.

Simatupang and Sridharan (2001:5) suggest that retailing companies have more contact with customers and their demands than do upstream members. This is because retailers collect “demand information” and share this “data in [large] sets to the upstream members”. Therefore, the buyers in head office are not exposed to the actual data and are exposed to large data batches, hence, suggesting the need for more information as what they are exposed to is not sufficient to make purchasing decisions.

Chen (2003:341) provides an analysis where focus on data can be “downstream or demand side information such as sales or inventory status at point of sale and upstream or supply-side information for instance lead time, new product introduction and plant operations”. Data obtained from orders is essential when determining “demand forecasting and [planning] when, how much and where to deliver” the goods (Simatupang and Sridharan, 2001:5). This, therefore, supports the responses provided.

Hilletofth (2010) and Lau (2012) further argue that information technology should provide data in real-time. Furthermore, Melo and Alcantara (2015) found that the firms in the supply chain with “advanced information technology were able to share information in real-time with internal and external teams and could create a scorecard to assess demand manage performance”.

Question one, sub-question two, aimed to identify if the information collected is relevant to the respondents to ensure that their daily tasks can be completed. R1 stated that the information received was what is required. R2 suggested that it is helpful but there are other factors to consider such as market trends, whereas R3 disagreed, stating the information was not sufficient.

The “requirements of effective implementation of demand management” developed by Melo and Alantara (2012) and discussed under the theoretical framework, suggest that one needs to be aware of both internal and external capabilities, constraints and opportunities. One can suggest that if the information collected by the system in place is not sufficient, then other means of attaining this information should be founded, such as attending seminars and meeting with suppliers regularly.

Sub-question three aimed to gain insight as to how else the respondents could receive information besides the current manner employed. R1 did not know of any other way in which to collect information, R2 provided various other ways to collect information, while R3 did not provide a direct answer and instead spoke of the system currently in place.

Melo and Alcantara (2015:5) acknowledge the emphases placed by Al-Mudimigh, Zairi and Ahmed (2004) on the necessity of the incorporation of demand and supply management, and that “creating an integrated environment based on information technology is a challenge”. Hence, the authors suggest that firms must make certain information technology is constantly enhanced and “optimised to provide real-time knowledge of production processes, consumer demands and activities of the various sub-processes which are crucial to the supply chain principles”.

It has emerged that the buyers rely on their MRP system in place, however, this is clearly not enough. Other means of information collection need to be found to ensure that the information provided is accurate and provides visibility of the supply chain. It seems that the buyers need to be more aware of other methods in which to collect information to improve the buying process.

Question two is followed by two sub-questions, which aim to determine how information is handled and managed in this organisation. All three respondents indicated that the MRP system in place manages the information. All respondents provided an explanation as to how their MRP system works.

The responses are supported by Melo and Alcantara (2015:5) who suggest a vital aspect for the enhancement of demand management performance is information technology support. Hilletoft, Ericsson and Christopher (2009) state that “information technology is a prerequisite to be used in the demand process management and supply process management separately”, however, they believe that this resource can also be useful for synchronising these processes with each other both internally and externally to the organisation.

Question two, sub-question one, was to identify if there is any distortion in the way the information is handled. R1 and R2 both suggested that they do not think that there is any distortion in the way in which information is managed. However, R3 notes that the collection of information involves human intervention and, therefore, distortion can occur at this initial stage, which will carry throughout the process. Although R1 and R2 do not think distortion occurs, one must note that on more than one occasion the respondents refer to “tweaking” the minimum and maximum levels.

Simatupang and Sridharan (2001:5) suggest that retailing companies have more contact with customers and their demands as opposed to upstream members. This is because retailers collect “demand information” and share this “data in [large] sets to the upstream members”.

Chen (2003:341) provides an analysis where focus on data can be “downstream or demand side information such as sales or inventory status at point of sale and upstream or supply-side information for instance lead time, new product introduction and plant operations”. Data obtained from orders is essential when determining “demand forecasting and [planning] when, how much and where to deliver” the goods (Simatupang and Sridharan, 2001:5).

Question two, sub-question two, aimed to ascertain if there are better ways to manage information to prevent distortion. R1 stated that the information received is correct and therefore does not think it could be handled better. R2 stated there are means of improving to prevent distortion but could not be specific. R3 stated that there cannot be any way to prevent distortion because orders are ordered on true sales orders.

It can be established again that the respondents rely on the MRP system to manage the information. There were varying answers as to whether there was distortion in the management of information and ways to better manage the information.

The purpose of question three is to determine the manner in which information is shared. R1 states that information is shared via e-mail and phone calls, as well as a document handling system. R2 states information is shared via reports and R3 provided both the response of R1 and R2. R3 provided further information, which relates to research objective one.

It should be noted that sharing information via e-mail and telephone calls are not systems in place to share information. There are information systems in place to share information regarding demand and supply, however, it is hardly incorporated.

There are a variety of information systems for demand and supply management although these are very rarely integrated (Melo and Alcantara, 2015:5). Thus, research by Hilletoft *et al.* shows that information technology is still viewed as a barrier or problem in integrating supply and demand, hence, further attention and investigation is required (Melo and Alcantara, 2015:5). The authors Melo and Alcantara (2015) support the response that information technology is still viewed as a barrier.

The social network analysis uses techniques to study the exchange of resources among actors and information is known to be one resource. Firms in the network can establish a network or relationships through connected activities, resources and similar actors while remaining interconnected and interdependent (Osarenkhoe, 2010:203).

The purpose of question three, sub-question one, was to establish the extent of information sharing and with whom information is shared. R1 and R2 share similar notions of with whom information is shared, such as the buyers, sales, warehousing and management. R3, however, does not elaborate on the people with whom it is necessary to share information, besides the buyers. R3 rather provides a suggestion for improving information sharing.

In a study by Melo and Alcantara (2012), the authors emphasise the necessity for sharing strategic and operational information between supply chain partners, in addition to knowing each other’s potential. This information facilitates the access to the strategic intent of partners, acquiring greater knowledge about organisational goals and objectives. Hence, companies should share strategic and operational information to learn about their partners’ difficulties and capabilities, and generate demand and supply forecasting information such as “information

about capacity, initiatives, supplier strategies, technology, industry trends, inventory levels and transportation and storage options” (Melo and Alcantara, 2015:4). Furthermore, attaining access into the partners’ “strategic intent, allows knowledge about growth objectives, market share and improvement in the services offered to be shared” (Min *et al.*, 2005).

Question three, sub-question two, aimed to identify if the respondents found this method of information sharing to be appropriate. R1 and R2 agreed that the manner in which information is shared is appropriate, however, R2 did state that there is always room for improvement. R3 disagreed, stating that the manner was not appropriate.

Question four was asked as, as the respondents have to work first hand with the information received, they would be the best people to provide recommendations as how to improve the process. Each respondent provided answers that would help improve their working conditions with regards to information being shared.

The need for real time information to be shared was one improvement acknowledged which is supported by Mbhele (2014) and Barratt and Oke (2007). Supply chain efficiency is concerned with activities to improve performance, hence, supply chain visibility is recommended to the extent that members within the supply chain share information which is vital to its operations and provides mutual performance benefits (Mbhele, 2014; Barratt and Oke, 2007). Supply chain operational benefits depend on vital information sharing outcomes with regards to “quality, timeliness and usefulness of information” generating visibility (Barratt and Barratt, 2011; Mbhele, 2014). “The information performance benefits that arise from visibility [include] improved market-responsiveness process, improved planning, improved frequent replenishment capabilities and improved active communication decision-making process” (Barratt and Barratt, 2011:515).

R3 reiterated the response given for the previous question. R3 wants a system to be developed in which all staff in the organisation are able to see an item along with the required information such as supplier delays and discontinued items. This will create less pressure for the buyers as they will not be bombarded with questions. This system can be developed by the use of information systems. This suggestion is supported by Melo and Alcantara (2012) and discussed above in question three, sub-question one.

Question five aims to establish the communication level at the organisation. R1 stated that the communication level was good to excellent, while R2 stated that it could be improved. R3 stated that communication is not where it should be in this organisation. This question expected respondents to provide their opinion of the communication level in the organisation.

Question six wished to identify if the respondents felt that the information shared was sufficient. R1 suggested that it is, except for the delays experienced. R2 and R3 agreed that it is not sufficient and more needs to be done to ensure that communication is improved.

Simatupang and Sridharan (2001:5) emphasise that if no information is shared, “decisions are made on the best estimation of available data”, and this may result in biased decisions and prevent members of the supply chain from attaining the optimal solution. Hence, the authors suggest an agreement be developed for sharing information. Therefore, one can conclude that communication needs to be improved to ensure that a conducive environment for information sharing emerges. Without information sharing and proper communication channels, decisions will be made on the estimation of data received and thus the best possible decision, that would have been taken had all the information been present, cannot be made.

Question seven aims to gain an understanding as to how the respondents wish to see communication improved. All three respondents agreed that communication can be improved by regular meetings with internal and external personnel to improve the supply chain. Marshall and Bly (2004) suggest that “shared information builds and strengthens relationships and social ties among the information receivers and givers”.

Section C concentrated on collaborative forecasting and consisted of seven questions. The aim of this section was to establish if the organisation engages in forecasting and to determine the methods used when purchasing stock. Collaborative Planning, Forecasting and Replenishment (CPFR) were also an underlying aspect that was looked into. Section C also relates to research objective two.

Question one aims to understand how forecasts are made in this organisation. R1 and R2 stated that forecasts are made using the MRP system. R2 provided a discussion as to how forecasts are made depending on the time of year. However, R3 stated that the organisation does not forecast except for its back-to-school period. This contradicts R1 and R2 who both agree that forecasting does take place. However, one can suggest that forecasting does occur via the MRP system in place, however, the buyers do not actively part take in forecasting.

Question two aims to identify the type of information used to make forecasts. This is important to the researcher as it provides an understanding of objective two. All respondents stated that three months’ prior sales are considered when making forecasting decisions.

Croxton *et al.* (2001:18) support the responses of question one and two by suggesting that the team determines which forecasting approach to utilise, including determining the levels and timeframes of the forecasts needed throughout the firm. The team must determine the source of data required to generate the forecasts (Helms *et al.*, 2000:392). This may include: “historical data, sales projections, promotion plans, corporate objectives, market share data, trade inventory, market research and new categories of growth” (Croxtion *et al.*, 2001:18-19).

Question three wishes to understand the type of forecasting used and its accuracy. All three respondents stated that both methods are used when making forecasting decisions. Purchasing decisions such as “how much to order, when to order, and how to order inventory effectively” are complicated by the rapidly changing environment (Johnson, Leenders and Flynn, 2011: 201). Therefore, the respondents use both qualitative and quantitative methods of forecasting.

In an attempt to further achieve an understanding of research objective two, question four was asked. Although the terminology was not understood by the respondents, the concept was understood once explained. R1 and R2 both agree that CPFR does occur in the organisation, however, R3 states that this occurs only during the BTS season.

Mbhele (2014:143) suggests that supply chain collaboration and close relationships secured by trust and commitment should embody the contact between “the supply chain analyst and the supplier to agree forecasts, plan promotions and jointly place purchase orders” and CPFR should be part of this collaborative supplier strategy to mitigate demand volatility. The JIT system and “vendor managed inventory are used by the retail business especially in order to link replenishment, distribution, transport and logistics as a quick response mechanism to supply chain strategies” (Mbhele, 2014:143).

Question five aims to identify how far in advance forecasts are made and the challenges experienced when predicting so far ahead. All three respondents provided different forecasting

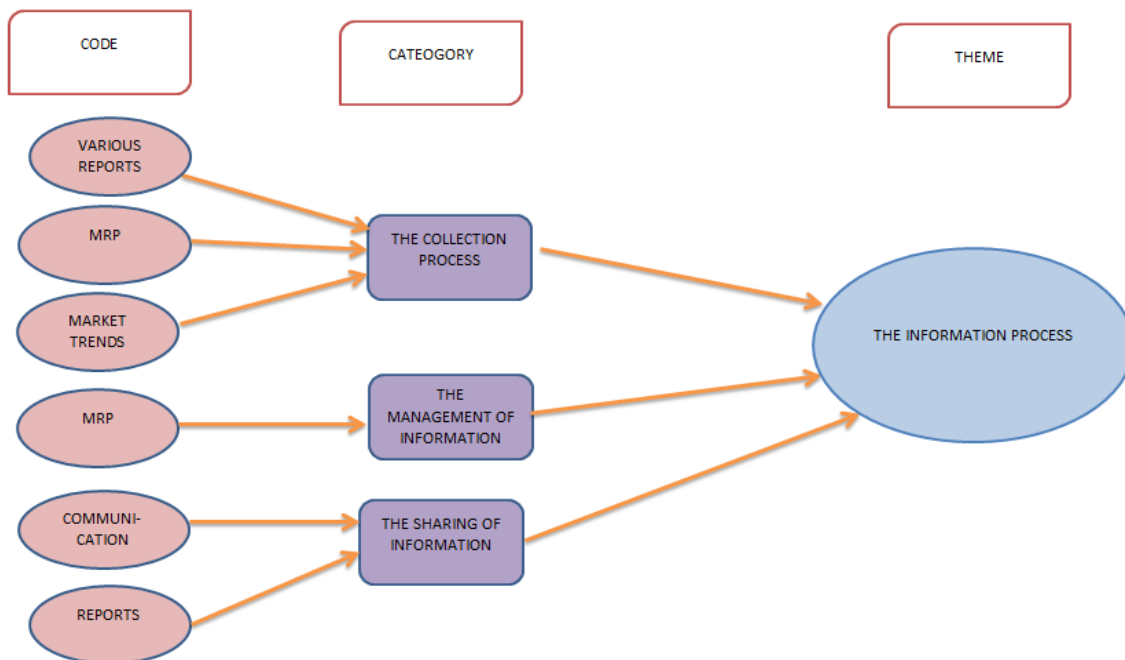
time frames, but all three agreed that for the back-to-school time frame is 4 to 5 months. The challenges were not discussed much by the respondents.

Question six aims to establish the communication process of the forecasts and within what time it is completed. All the respondents agreed that e-mail is the means of communicating forecasts, followed up with a phone call.

The management of flexible supply chains demands “planning for alternative forecast scenarios and building efficient response strategies to confront the possibilities of disruptions, crises and alterations” for a number of factors (Önkal and Aktas, 2011:80). In order to share information, provide adjustments for forecasts, synchronisation and group decision making, it is imperative that robust “coordination mechanisms among supply chain partners” are implemented (Önkal and Aktas, 2011:80). Mbhele (2014:123) suggests that demand forecasting is crucial for inventory planning, especially in a highly dynamic demand environment and where the procurement lead times are long. Managers are highly interested in adjusting inventory planning decisions to demand forecast updates Mbhele (2014:123).

The aim of question seven was to establish what is taken into account when forecasting decisions are made. Each respondent provided various responses as to what is taken into account when forecasting decisions are made. R1 suggests that three months’ sales are taken into account, along with current market trends and seasonal demand. R2 suggests that one has to account for sales and product availability, the numerous vendors in the marketplace and market trends. R3 suggests that one has to account for the physical stock in the organisation, the market trends locally and globally, and to match that demand. This may include: “historical data, sales projections, promotion plans, corporate objectives, market share data, trade inventory, market research and new categories of growth” (Croxtan *et al.*, 2001:18-19). The authors Croxtan *et al.*, (2001:19) further state that if collaborative planning, forecasting and replenishment (CPFR) or vendor managed inventory (VMI) systems are used then the customer is the direct source of data.

Figure 12: Theme 3: The Information Sharing Process



(Source: Author’s Own)

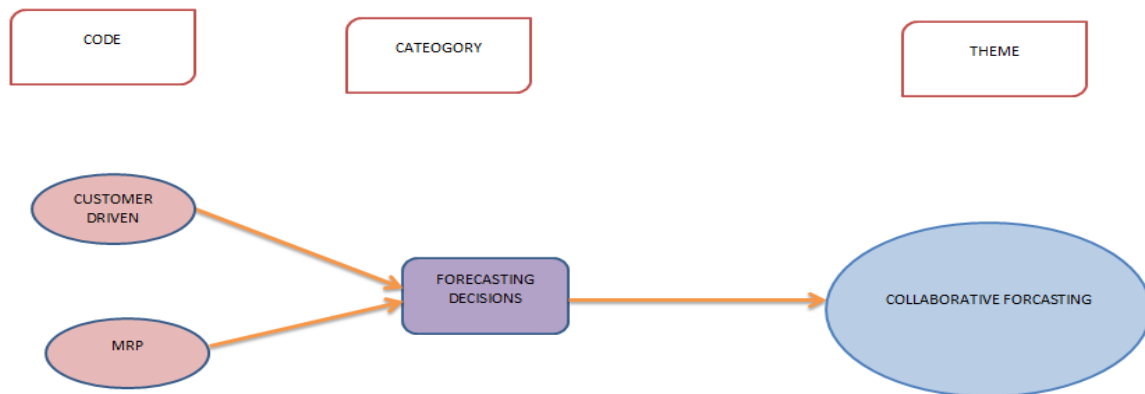
The codes “various reports”, “MRP” and “market trends” relate to the category of “the collection process”. The code “MRP” also relates to “the management of information”. The codes “communication” and “reports” relate to “the sharing of information”.

As discussed in chapter two, organisations need to scan their environment and operations to capture data (Simatupang and Sridharan, 2001:3) about market trends and demand variations. Information technology (IT), considered as a core of successful supply chain, has the ability to: “improve communication, enable effective decision making, acquire and transmit data, and enhance performance of the supply chain”, making it available at the right time to decision makers (Simatupang and Sridharan, 2001; Sanders and Premus, 2002; Marshall, 2015).

It is required that organisations know how to derive information from data so that solutions can be found to problems arising and decisions can be made by utilising the information (Simatupang and Sridharan, 2001:3). The authors emphasise that “information is extracted from data by rules of deduction, and becomes knowledge through testing, validating and codification”. Although the respondents rely on their MRP system to manage their data, it is their responsibility to derive the information and extract the information required to carry out the necessary task at hand.

Marshall and Bly (2004) suggest “the shared information builds and strengthens relationships and social ties among the information receivers and givers”. The authors Yu, Yan and Cheng (2001:114), further emphasise the importance of sharing information among industry firms to elevate the performance of the entire industry system, thereby creating a successful supply chain environment.

Figure 13: Theme 4: Collaborative Forecasting



(Source: Author’s Own)

The codes “customer driven” and “MRP” relate to the category of “forecasting decisions” which directly relates to the theme of collaborative forecasting.

Sales forecasts are a prediction of expected future market demand and accuracy is the focus (Aghazadeh, 2004; Katz, Pagell and Bloodgood, 2003; Mentzer *et al.*, 2007; Taylor and Fearn, 2006; Melo and Alcantara, 2014).). It is necessary, when developing sales forecasts to determine the intensities of details and the scope of forecasting, to identify the sources of information and to define the method of forecast, which involves internal and external cross-functional teams (Croxtton *et al.*, 2008; Melo and Alcantara, 2014), as discussed in chapter two.

This research objective is to establish the effects of information sharing and collaborative forecasting for efficient operational demand management. It has emerged that the respondents rely on the MRP system to collect the information; the respondents do not play an active role in collecting information and in putting it into the system. Had an active role been played, the management and sharing would allow all in the organisation to see issues and problems experienced with certain products and suppliers. More needs to be done and the respondents do acknowledge that there are better means and ways to improve. Communication was also an aspect which emerged. The communication level of the organisation needs to be improved to create a conducive environment for information sharing.

Another finding was that the organisation does not actively partake in forecasting. As sales orders are placed, the buyers then make a purchase of the item not stocked. For stock line items, a minimum and maximum level is decided upon using the weighted average method of three months. Active forecasting only occurs during the back-to-school period.

5.5 Research Objective Three

To explore the extent of demand order variability and flexibility on the underlying JIT system

This section focused on the organisation's demand order variability and flexibility and has seven questions. The researcher's intent was to gain an insight into how the organisation manages its demand order variability and to ascertain how flexible the organisation is in this respect, as well as to understand the challenge it poses under demand management and JIT system employed.

Question one required the respondents to discuss the demand order variability in the organisation under study. This was to provide the researcher with an understanding of the demand order variability in the organisation. R1 and R3 provided a discussion of Back-to-School, whereas R2 stated that the organisation holds stock. This suggests the finding that the organisation not only implements the JIT system but the Just-in-Case (JIC) system as well.

The JIC inventory management system, where large amounts of inventory are kept on hand to reduce the risk of backorders when uncertainty occurs, is the opposite of JIT (Haliday, 2014). Large inventories make it possible to accommodate the factors that can damage business such as "supplier reliability problems, weather, traffic, fuel prices and unexpected customer orders", while still maintaining business activities without these interruptions (Haliday, 2014).

Question two aims to gain an insight into the organisation's view of order variability. All respondents agreed that the organisation viewed order variability as an important. R3 noted that challenges are faced with order variability. R3 put forward a scenario where, when a large order is received and the stock holdings are not sufficient, one has to decide which customer receives the stock now and which customer has to wait the lead time.

Chen and Lee (2009:781) suggest that order variability could be a genuine cost concern to the retailer's ordering decision. Chen and Lee (2009) and Balakrishnan, Geunes and Pangburn, (2004) provide the example that a retailer may experience additional shipping and handling capacity cost when its order exceeds the normal variation range. This supports the response by R3.

Question three aims to ascertain how flexible the organisation is in terms of order variability. All three respondents agreed that they are very flexible and that it is imperative that they are able to be flexible to fulfil customer orders. This is supported by Awwad (2007:1) who suggests flexibility plays an important role in linking operations strategy to marketing strategy which enables an organisation to introduce new products, rapidly adjust capacity and customise products. Awwad (2007:1) further suggests flexibility enables organisations to respond effectively to changing circumstances, especially when responding to the turbulent environment characterised by rapid changes, for instance: "short and uncertain product life cycles, innovative process technology and customised product".

Question four was asked in an attempt to understand how the organisation's processes are to ensure customer orders are processed when there are a large amount of variations. R1 and R2 stated that it is difficult to manage as one can never have sufficient stock, whereas R3 stated that one should enquire with suppliers to ensure that they are able to provide the required amount of stock.

Uncertainties in the operating environment of firms reduce the reliability when delivering at the right time, at the right quantity and quality, hence, requiring firms to respond swiftly to changing environments (Önkal and Aktas, 2011:77). "Operating in a flexible supply chain helps the firms accomplish this rapid adaptation", however, increased flexibility increases the risks the firm has to confront (Önkal and Aktas, 2011:77). This supports the statements of the respondents that ensuring the right quantity is delivered at the right time is difficult and, hence, it is imperative that the organisation increases flexibility to avoid the risks that may emerge.

Question five intends to establish the manner in which the organisation keeps a record of its order variability. The respondents all provided responses as to how they personally keep track of order variability. R1 suggests that due to the division of product categories, each buyer is more or less knowledgeable about order variability. R2 suggests that reports conducted allow for a buyer to monitor order variability as well as communication. R3 advocates that both experience and sales trends allow one to monitor order variability.

Kwaasteniet (2011:6) provides the three different causes of demand variability in the supply chain. Firstly, global economic and business developments and incidents have the most important influence on demand variability upstream the supply chain and on the resulting price levels throughout the supply chain.

Secondly, economic factors outside the immediate supply chain cause demand and price to vary Kwaasteniet (2011:6). Kwaasteniet (2011:7) suggests that "price elasticity of demand, volatility of commodity prices and business cycles" are vital indicators of this influence.

Thirdly, Kwaasteniet (2011:7) states that evidence found that variability is caused within the supply chain itself. This is supported by the bullwhip effect as it provides an understanding of the factors that increase variability and solutions to reduce the effect (Kwaasteniet, 2011:7).

Question six wishes to determine the effect order variability has on the organisation's flexibility. R1 and R2 agreed that it will affect flexibility, however, R3 suggested that it

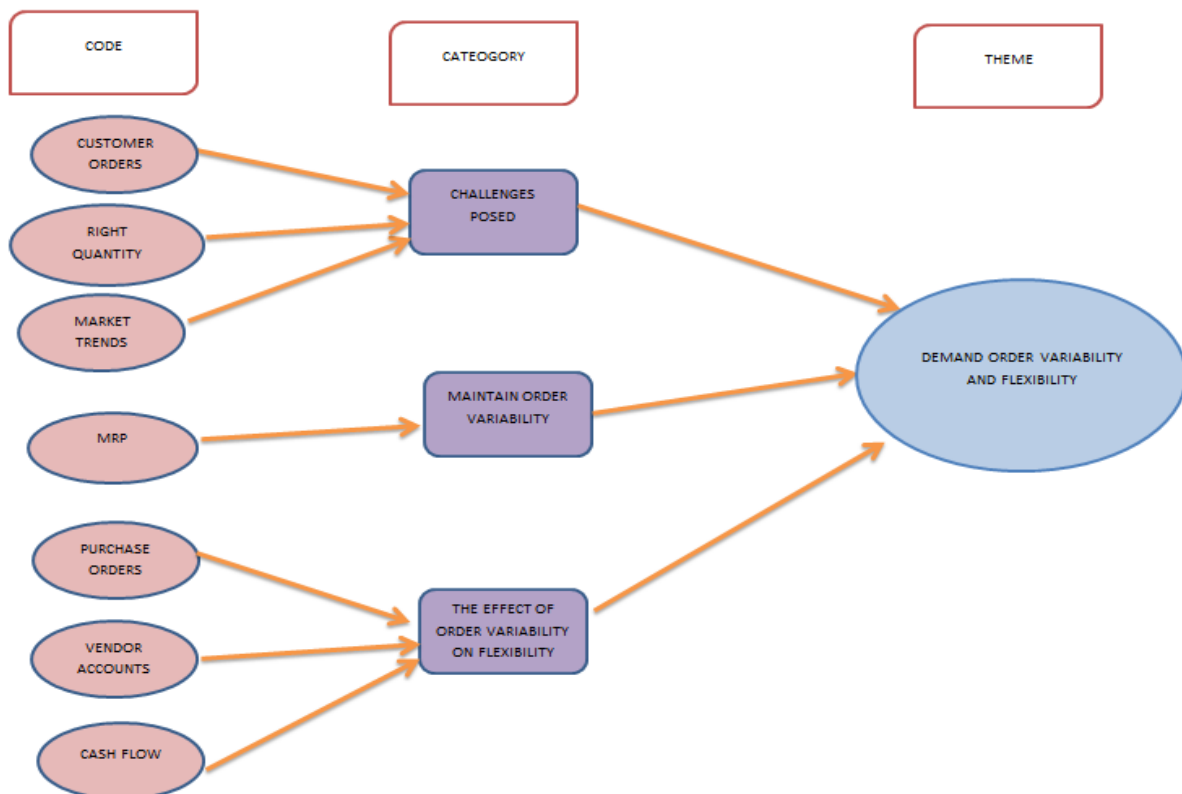
wouldn't affect flexibility as much as cash flow problems would. Önkal and Aktas (2011:77) note that flexibility increases resilience, however, firms are hesitant to invest in flexibility, especially when they are unclear as to how much flexibility is required. The higher the flexibility, the riskier the supply chain becomes.

One of the key components of demand management is a constant process aimed at increasing flexibility and reducing variability in the supply chain (Croxtton *et al.*, 2001:20). Croxtton *et al.* (2001:20) suggest that the increasing flexibility assists management to respond quickly to both internal and external events, and reducing variability supports in consistent planning and minimising uncertainties. "The supply chain which best succeeds in reducing uncertainty and variability is likely to be the most successful in improving its competitive position" (Towill and McCullen, 1999:86).

The purpose of question seven is to establish the challenges order variability pose to demand management, especially when there is the JIT system employed. R1 and R2 agreed that order variability will pose a challenge to the JIT system employed, however, R2 states that the JIT is not really implemented in the organisation. R3 suggested that if managed well, the JIT system will not be affected.

It has emerged that although the organisation states it employs a JIT system, in reality this is not true, based on the statements made by the respondents. This has emerged more than once. It can be suggested that the organisation implements a JIC system rather than a JIT system. It could also be possible that the organisation implements both a JIT and JIC system, however, this did not emerge from the interviews, therefore, such an assumption cannot be made.

Figure 14: Theme 5: Demand Order Variability and Flexibility



(Source: Author's Own)

The codes “customer orders”, “right quantity” and “market trends” relate to the category of the “challenges posed”. The code “MRP” relates to the category of “maintaining order variability”. The codes “purchase orders”, “vendor accounts” and “cash flow” all relate to “the effect of order variability on flexibility”. All these categories directly relate to the theme of “demand order variability and flexibility”.

Kwaasteni (2011:6) provides the three different causes of demand variability in the supply chain, only two of which are relative here. Firstly, global economic and business developments and incidents have the most important influence on demand variability upstream the supply chain and on the resulting price levels throughout the supply chain. Secondly, economic factors outside the immediate supply chain cause demand and price to vary. This supports the statements made by the respondents with regard to the challenges that are posed due to demand order variability as noted previously.

Awwad (2007:1) further suggests flexibility enables organisations to respond effectively to changing circumstances, especially when responding to the turbulent environment characterised by rapid changes, for instance: “short and uncertain product life cycles, innovative process technology and customised product”. Mbhele (2014:121) notes that the “ability to rapidly respond to unplanned demand or demand variability and supply changes” causes significant cost reduction in the supply chain and better supply chain responsiveness.

Research objective three aimed to explore the extent of demand order variability and flexibility on the underlying JIT system. It has emerged that demand order variability and flexibility is a challenge on its own, but adding the JIT system to it creates more challenges that have to be faced. Due to the implementation of the JIT system, the organisation is faced with the major challenge of fulfilling customer orders while at the same time reducing lead times. The respondents do not believe that JIT is currently active as it should be as they do hold a large amount of stock and have a warehouse holding stock. This should not be the case with the JIT system in place.

5.6 Research Objective Four

To analyse the role of order synchronisation fulfilment to facilitate the balanced alignment of demand and supply order management

Section E looked at synchronisation and its role in the organisation. The aim was to establish the role of order synchronisation fulfilment to facilitate the balanced alignment of demand and supply order management. This section comprised of four questions.

Question one aims to understand the role of order synchronisation in the organisation. R1 suggested that the process is systematic and flows. R2 suggests that the role is simple and every individual in the organisation has to play his/her role. R3 suggested that the role is important, especially to understand the JIT system in place.

Question two is directly related to research objective four. The purpose was to provide answers as to how the order synchronisation facilitates the balance between demand and supply. R1 provided an explanation of the process and R2 discussed the importance it plays. R3 discussed how the warehouse managed the synchronisation process.

Holding less physical stock can reduce the inventory carrying costs of firms and thereby become more profitable. By matching supply with demand, the customer is able to find the product required, and the firm can fulfil it through the appropriate channel (Cunnane, 2015).

This is how firms advance in matching manufacturing output to actual demand, however, this technology is under-utilised by many firms (Cunnane, 2015).

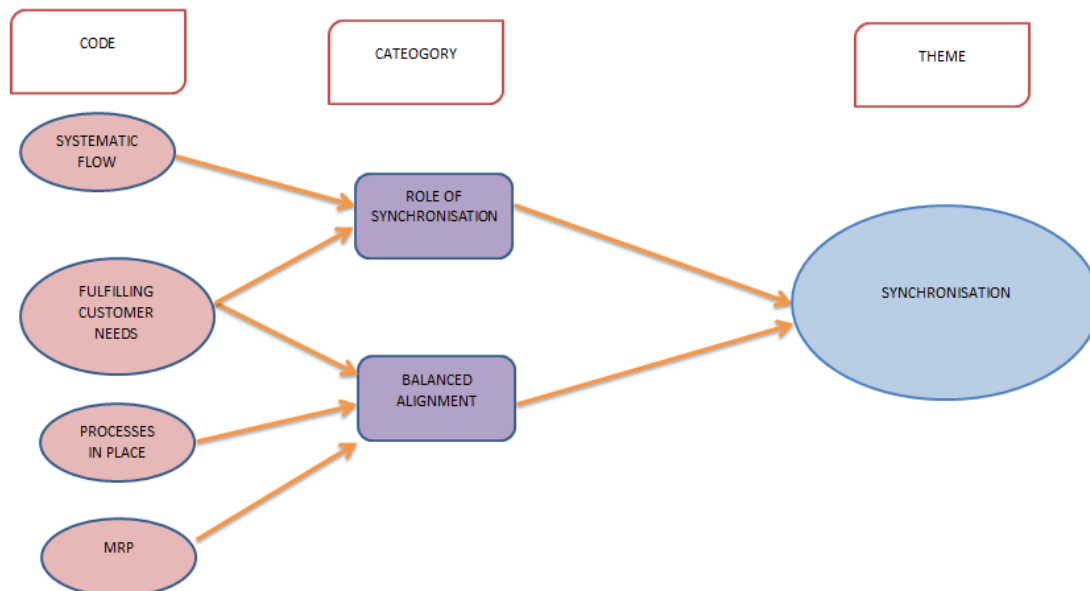
Firms need to leverage the substantial amount of customer data on hand to achieve what is actually needed from an inventory standpoint (Cunnane, 2015). Especially in today’s global economy, firms “need a seamless flow of goods from manufacturers to end consumer, without carrying excess and expensive amounts of inventory” (Cunnane, 2015). The process is not fast and using real data to bridge the gap between supply and demand, and realistically synchronising the supply chain is becoming more of a reality (Cunnane, 2015).

Question three aimed to establish how order synchronisation is managed. R1 suggested that this is done systematically with various reports. R2 suggested that synchronisation is managed by each person playing his/her role in the organisation. R3 discussed the process as to how order synchronisation is managed.

Question four aims to establish how synchronisation is always ensured. All the respondents agreed that the MRP system in place ensures that processes are always synchronised.

Melo and Alcantara (2015:5) suggest a critical factor for the improvement of demand management performance is information technology support. Hilletoft, Ericsson and Christopher (2009) state that “information technology is a prerequisite to be used in the demand process management and supply process management separately”, however, they believe that this resource can also be useful for synchronising these processes with each other both internally and externally to the organisation.

Figure 15: Theme 6: Synchronisation



(Source: Author’s Own)

The codes “systematic flow” and “fulfilling customer needs” relate to the category of the “role of synchronisation”. The codes “fulfilling customer needs”, “processes in place” and “MRP”

relate to the “balanced alignment”. These categories relate directly to the theme, “synchronisation”.

After the team completes the forecasting activities, the team determines the synchronisation procedures required to match the demand forecast to the firm’s production, sourcing and distribution capabilities. In order to accomplish this, it is necessary to understand the capacity and flexibility available at all points along the supply chain (Croxtton *et al.*, 2001:18). Supply chain management focuses on the management of materials and information flow within the supply chain, making it more responsive to customer needs while simultaneously lowering total costs (Hahn, Duplaga and Hartley, 2000:33). Hahn *et al.* (2000:33) suggest that supply chain managers need to coordinate and integrate the diverse activities of supply chain members to synchronise these activities.

Lee and Khumawala (1996) conducted a study on five companies. The study found that five common causes of misalignment are: “functional organisations are managed independently, functional objectives often conflict, information systems do not provide effective supply chain information, customer focus is lacking in the interior of supply chain and the different needs of customers are not recognised within the supply chain” (Hahn *et al.*, 2000:34).

Research objective four aimed to analyse the role of order synchronisation fulfilment to facilitate the balanced alignment of demand and supply order management. The findings have emerged that order synchronisation is imperative to facilitate the balanced alignment of demand and supply. The flow of processes is necessary to ensure that demand is met. A halt in a point in the process can hold up the entire process.

5.7 The Demand Management Requirements Model

Section F explores the demand management requirements model proposed by Melo and Alcantara (2012). This section consisted of three questions and three sub-questions. The aim of this section was to ascertain the views and opinions of the respondents with regards to the demand requirements model and whether its aspects are currently implemented, or play a role in, their organisation.

The purpose of question one was to establish the presence of CFT in the organisation. This research objective relates to the theoretical framework of demand management in this study. All the respondents agreed that CFT do exist in the organisation, however, improvement is required. R1 suggests that the organisation is fairly cross-functional. However, improvement is needed, such as better communication. R2 suggests that CFT are active, however, they could be improved and communication within the department could be the start. R2 also acknowledged the parameters of management’s choice of hosting CFT. R3 suggests that CFT are active only during the BTS forecasting period when large amounts of cash is laid out. CFT are active among sales and procurement but other than that interaction, there is not much CFT activity.

Question two aims to understand the involvement of top management in procurement decisions. The theoretical framework relates directly to this question and all three respondents responded that management is involved but not in the day-to-day decision making.

Melo and Alcantara (2015:13) found in their study that top management involvement is perceived as an important factor in the alignment of expectations between companies and “it is also believed that it reinforces the commitment to carry out actions since the top management team can allocate human and financial resources for the execution of the business plan”.

Moreover, the involvement by top management gives the business plan an extraordinary impact as the presence of senior executives in the meetings held to approve and monitor the plan emphasises its importance for the organisation (Melo and Alcantara, 2015:13). Lastly, “the involvement of top management leads to flexibility and increased responsiveness to unexpected situations and facilitates the resolution of conflicts between organisations” (Melo and Alcantara, 2015:13). Hence, top management involvement is crucial to guarantee the commitment of the teams and companies involved (Melo and Alcantara, 2015:13).

Question three aims to gain a deeper understanding of the organisation’s awareness of certain factors, relating to the theoretical framework. It has come across that more awareness is needed in these three aspects of internal and external capabilities, constraints and opportunities to provide the buyers with more substance when making decisions.

It has emerged from section F that CFT teams are necessary and wanted by the respondents as this motivates them and aids in making more informed decisions. More top management involvement would also be appreciated by the respondents. This will improve communication flow and create a conducive environment for information sharing.

It has also emerged that the respondents need to be more aware of the external factors of capabilities, constraints and opportunities. The respondents should also become more informed regarding internal factors. This can be achieved by the development of better communication methods.

5.8. Data Quality Control

In chapter four, it was acknowledged when respondents agreed or disagreed with each other. Qualitative research data collection and analysis is suggested to be careful and rigorous, however, most practitioners regard qualitative research as less reliable than quantitative research (Hair *et al.*, 2013:78). Conversely, qualitative research may probe more deeply as researchers seek to understand research participants rather than to “fit their answers into predetermined categories with little room for qualifying or explaining their choices” (Hair *et al.*, 2013:78). Therefore, qualitative research uncovers unanticipated findings and reactions and Sekaran *et al.* (2013:350) emphasise that the conclusions drawn from the data are “plausible, reliable and valid”.

It is difficult when conducting qualitative research to ensure whether the research is accurate or correct, hence, four aspects need to be given consideration when conducting qualitative research namely: credibility/trustworthiness (with regards to internal validity), transferability (with regards to external validity and generalisability), dependability (with regards to reliability) and confirmability (with regards to objectivity).

These are the terms used by Lincoln and Guba (1985) to replace reliability and validity, which is used in quantitative research (Shenton, 2004:64). Golafshani (2003:600) cites Patton (2001:14) who believes that in quantitative research, “credibility depends on the instrument construction”, however, in qualitative research the instrument is the researcher. Thus, Golafshani (2003:600) states that credibility “in qualitative research depends on the ability and effort of the researcher”. The author further suggests that while validity and reliability are treated separately in quantitative research, it is not viewed separately in qualitative studies and instead terminology used includes, credibility, transferability and trustworthiness.

As discussed in chapter three, the researcher maintained credibility by developing an early familiarity with the culture of the participating organisation as it was the researcher’s place of

employment. The researcher also provided reflective commentary in chapter five. A rich description of the phenomenon under study was also discussed in chapters one and two.

As a tactic to help ensure honesty in informants when contributing data, the researcher gave each participant approached an opportunity to refuse participation to ensure those participating were willing and prepared to offer information freely (Shenton, 2004:66). Iterative questioning was also employed by probing deeper into the responses, returning to matters previously raised, and extracting related data through rephrased questions (Shenton, 2004:66).

The researcher has also provided sufficient information of the fieldwork site to ensure the reader has a deep understanding of the phenomenon under study thereby allowing the reader to compare the study to their own situation to before a transfer is made.

Lincoln and Guba (1985) emphasise the closeness between credibility and dependability, arguing that a demonstration of the former does ensure the latter as this can be ensured through the use of overlapping methods, for instance focus groups and individual interviews (Shenton, 2004:71). Dependability ensures that the research findings are consistent and can be repeated by another researcher. Therefore, in an attempt to ensure dependability the researcher has reported the processes within the study in detail, allowing a future researcher to repeat the work (Shenton, 2004:71).

A detailed account includes: the research design and its implementation, the operational detail of data gathering and a reflective appraisal of the study.

The concept of confirmability is the qualitative equivalent of objectivity (Shenton, 2004:71). Steps need to be taken to ensure that the findings of the study are “the results of the experiences and ideas” of the participants rather than “the characteristics and preferences of the researcher”. Therefore, confirmability was maintained in this study by a detailed account of the choices made in the study, especially with regards to research methodology. Thus, an audit trail has been created which can be checked on. The audio recordings of the interview also serve this aspect of confirmability as one can go back to the audio recordings and confirm “the results of the experiences and ideas” of the participants rather than “the characteristics and preferences of the researcher” (Shenton, 2004:71).

As discussed in this section, it is very difficult to ensure reliability and validity in qualitative studies, however, this section has provided the ways in which these have been ensured with regards to credibility, transferability, dependability and confirmability.

5.9 Conclusion

This chapter provided the discussion of the findings that have emerged from the respondents through data collection. The findings were compared to supporting literature. This chapter also related the findings to the research objectives that were aimed at, at the commencement of the study.

CHAPTER SIX

RECOMMENDATIONS AND CONCLUSION

6.1. Introduction

This study has investigated the issues faced by the organisation under study. Hence, this chapter aims to provide suggestions to help alleviate the challenges experienced with demand management under the JIT system employed by the organisation. The main aspects underpinning this study are: demand management; JIT; order fulfilment; information sharing; order synchronisation; and demand order variability and flexibility, and forecasting.

The main aim of this study is to establish the effect of sharing of information and collaborative forecasting within an organisation and externally with suppliers, while creating a conducive environment for a communication mechanism for increasing order synchronisation and mitigating demand order variability while improving accuracy and flexibility in forecasting demand.

6.2. Objectivity and Problem Statement

The problem statement articulated the importance for an organisation and its position to implement strategies such as the JIT approach to meet demand with minimal resources and costs. The dynamics of demand management pose some challenges regarding alignment of demand with supply due to issues such as delay in delivery, damages and theft in transit.

The challenges of demand order management on the underlying Just in Time (JIT) approach need a long-term solution in order to reduce expenses and enhance supply chain performance. Demand management is a very important aspect of managing one's organisation, especially in the presence of a volatile environment, full of competitors, global pressures and sustainability requirements. Thus, organisations are placed in a position where it has become necessary to implement strategies such as the JIT approach to meet demand with minimal resources and costs. Poor demand management decisions taken in forecasting therefore increase business risk and costs. The study aims to establish the effect of information sharing and collaborative forecasting within an organisation.

The nature of this study suggests the use of an exploratory case study design to explore the dynamics of demand management with the JIT system employed by the organisation under study. A qualitative research approach was used in this study as it added more value when determining the issues faced in the organisation. The study was conducted in KwaZulu-Natal at the Durban head office. The sampling type employed is purposive sampling. The total sample size is three. Face-to-face semi-structured interviews were used as a means of data collection. Thematic analysis was used to analyse data in the primary qualitative research in this study.

The participants were all from the procurement department and knowledgeable about the issues at hand in the organisation. All the participants have been with the organisation for longer than two years and in their current positions as buyers for more than two years. The participants shared valuable information with regards to the issues at hand and the stemming of these issues, as well as providing suggestions as to how change could be implemented to reduce these issues. A lack of academic knowledge was found among the participants, however, their

understanding of practical concepts and situations displayed amazing insights to the issues at hand.

6.3. Discussion of Objectives

Each objective will be looked at and discussed with regards to whether the research study has achieved these research objectives with the integration of literature. The main aspects underpinning this study are: demand management; JIT; order fulfilment; information sharing; order synchronisation; and demand order variability and flexibility, and forecasting. The objectives of the study are: to determine the challenges of dynamic demand management under the JIT order fulfilment system; to establish the effects of information sharing and collaborative forecasting for efficient operational demand management; to explore the extent of demand order variability and flexibility on the underlying JIT system; and to analyse the role of order synchronisation fulfilment to facilitate the balanced alignment of demand and supply order management.

6.3.1. Research Objective One

To determine the challenges of dynamic demand management under the JIT order fulfilment system

The demand alignment may pose some problems leading to inefficiency in customer service, poor stock rotation and a high obsolescence rate aggravated by the diversity of products. Demand management sought the rapid and appropriate integration of the needs arising from the market in the direction of the suppliers in order to balance and strategically align demand with operational capacity along the supply chain. However, the concept of demand management is not yet understood by supply chain agents as the major cause of failure is accredited to not achieving chain coordination due to the poor understanding of demand leading to inadequate customer service, poor stock rotation and a large obsolescence rate.

The challenges experienced with the JIT system were the fact that the respondents had to depend on the suppliers that were not reliable. The market trends also provided a challenge with the buyers having to predict trends in an attempt to ensure there was always sufficient stock to fulfil customer orders fast enough. The process in place to ensure how stock is ordered and goes out was also a challenge experienced.

It has emerged that the Challenges of Dynamic Demand Management Under the JIT Order Fulfilment System are found to be the market trends which are demand driven; and the selection of suppliers. The selection of suppliers is important as the organisation has to be able to depend on the suppliers, who if they are not reliable, pose a major challenge resulting in a large number of backorders and having to carry stock. The internal issue of not having live data also poses another challenge when orders need to be released immediately under the JIT system employed.

These challenges are also exacerbated by the calibre of the workers of the organisation. The findings reveal that the employees are not motivated like the Japanese and thus they slow the success of the JIT system employed. The discipline present in Japan is not present in South Africa.

6.3.2. Objective Two:

To establish the effects of information sharing and collaborative forecasting for efficient operational demand management

The sharing of information between the organisations, suppliers and customers, as well as within the organisation, can reap numerous benefits. These challenges have a cumulative effect when an organisation provides seasonal products during certain periods of the year, thus, further complicating the accuracy of forecasting and demand alignment. Poor demand management decisions are being taken in forecasting, whereby purchasing decisions are made before, and often an extended lead time before, the actual products required are known. Hence accurate forecasting needs to account for future demand, lead times, and prices and other additional costs, to reduce business risk and costs.

This research objective is to establish the effects of information sharing and collaborative forecasting for efficient operational demand management. It has emerged that the respondents rely on the MRP system to collect the information. The respondents do not play an active role in collecting information and inputting it into the system. Had an active role been played, the management and sharing would allow all in the organisation to see issues and problems experienced with certain products and suppliers. More needs to be done and the respondents do acknowledge that there are better means and ways to improve. Communication was also an aspect which emerged. The communication level of the organisation needs to be improved to create a conducive environment for information sharing.

Another finding was that the organisation does not actively partake in forecasting. As sales orders are placed, the buyers then make a purchase of the item not stocked. For stock line items, a minimum and maximum level is decided upon using the weighted average method of three months. Active forecasting only occurs during the back-to-school period.

6.3.3. Objective Three:

To explore the extent of demand order variability and flexibility on the underlying JIT system

Kwaasteniet (2011:6) provides the three different causes of demand variability in the supply chain. Firstly, global economic and business developments and incidents have the most important influence on demand variability upstream the supply chain and on the resulting price levels throughout the supply chain.

Secondly, economic factors outside the immediate supply chain cause demand and price to vary Kwaasteniet (2011:6). Kwaasteniet (2011:7) suggests that “price elasticity of demand, volatility of commodity prices and business cycles” are vital indicators of this influence.

Thirdly, Kwaasteniet (2011:7) states that evidence found that variability is caused within the supply chain itself. This is supported by the bullwhip effect as it provides an understanding of the factors that increase variability and solutions to reduce the effect (Kwaasteniet, 2011:7).

This research objective aimed to explore the extent of demand order variability and flexibility on the underlying JIT system. It has emerged that demand order variability and flexibility is a challenge on its own, but adding the JIT system to it creates more challenges that have to be faced.

Due to the implementation of the JIT system, the organisation is faced with the major challenge of fulfilling customer orders while at the same time reducing lead times. The respondents do not believe that JIT is currently active as it should be as they do hold a large amount of stock and have a warehouse holding stock. This should not be the case with the JIT system in place.

6.3.4. Objective Four:

To analyse the role of order synchronisation fulfilment to facilitate the balanced alignment of demand and supply order management

In the strategic demand management process, it is noted by Croxton *et al.* (2001:18) that demand management is about forecasting and synchronisation. Order fulfilment management is the fulfilling of customer orders by incorporating the various departments of the organisation. Meeting customer requirements with effective order fulfilment necessitates the integration of the firm's manufacturing, logistics and marketing plans and "the partnerships with key members of the supply chain to meet customer requirements and decrease total delivered costs to customers" (Croxton *et al.*, 2001:18). The key to effective supply chain management is to meet customer requirements in terms of order fulfilment (Kumar and Sharman, 1992:93).

Research objective four aimed to analyse the role of order synchronisation fulfilment to facilitate the balanced alignment of demand and supply order management. The findings have emerged that order synchronisation is imperative to facilitate the balanced alignment of demand and supply. The flow of processes is necessary to ensure that demand is met. A halt in a point in the process can hold up the entire process. It must also be acknowledged that, although this process is fundamental to supply chain and demand management success, it is a topic that is not given much focus in research.

6.3.5. Overview of Findings

The findings of this study suggest that communication and real-time data are matters of concern. These factors contribute to the poor demand management in the organisation. The results indicate that improvements in these aspects are imperative to the success of demand management processes. Effective management of communication between departments is recommended, as well as more involvement from top management. Information systems that provide real time data should also be adopted. It has also emerged that the respondents need to be more aware of the external factors of capabilities, constraints and opportunities. The respondents should also become more informed of internal factors. This can be achieved by the development of better communication methods. The managerial implications indicate that demand management does not depend on one specific department but is the responsibility of every supply chain member involved in the supply chain network as synchronisation plays a vital role in the balancing of demand and supply.

6.4. Recommendations

This section aims to provide possible recommendations to the organisation under study in an attempt to reduce the challenges at hand, as well as to create a competitive edge.

- The researcher feels that training and development is a major factor of concern. Hence, it is recommended that training of current and new staff will be an investment for the future success of the organisation. This recommendation comes after the findings suggest that training and development are required.

- With regards internal to communication, a better system needs to be put into place to ensure a more effective means of communication. The researcher suggests that regular meetings be held between the buyers at least once a week. This will create an environment of free-flowing information on challenges faced by each buyer and allow for discussions on how to solve these areas of constraints.
- Regular meetings should also be held with the necessary personnel of sales and buying. This is to ensure that everyone in the organisation is on the same page with regards to issues currently being experienced. This will also develop the CFT of the organisation. In addition, it is a means of reducing backorders and lead times as the sales personnel will be aware of items discontinued and items that are currently unavailable, as well as increase the sales personnel's knowledge of alternative products that can be substituted.
- Communication with the supplier is extremely important. By developing strong supplier-buyer relationships, communication can be improved. This will also enable the buyer to get the necessary information required sooner, as a direct relationship is formed.
- It has emerged from the findings that suppliers are not as loyal as they were in the past. Hence, the researcher recommends that the Service Level Agreements (SLAs) between the organisation and each supplier be reviewed regularly. Penalties should be charged for poor service when stock is not received as promised.
- The JIT system is employed by the organisation. As discussed in chapter two, suppliers play an essential role in the achievement of the JIT system at Dell, hence, it is suggested that the organisation under study develop strong relationships with suppliers and act together as a collaborative team rather than as separate entities. This can be achieved by reviewing its SLAs and further developing the relationships. One aspect to ensure that suppliers are able and willing to carry the stock for this organisation is to allow for the buyers and other necessary personnel (creating CFT) to go to the suppliers' sites to analyse and evaluate their capabilities before reviewing SLAs. This constant interaction with suppliers will build relationships.
- The following policy and procedure needs to be put into place; the supplier should be informed that penalties will be incurred when deliveries are late. Once a purchase order is created the supplier should be contacted via email or phonecall and each item on the purchase order should be given an ETA date, which should be noted next to the item on the purchase order. Each buyer should share an electronic calendar with the warehouse manager, assistant manager and receiving staff which notes the delivery dates of each supplier as well as which items and quantities to be delivered as per the purchase order number. The receiving staff must acknowledge these dates and the items that will be delivered and note which supplier delivered and which did not for the day. Should a supplier be scheduled to deliver for a specific date and fail to do so, a penalty will be incurred as per their SLA. This will also increase the security level, as the security will become more aware of which supplier will be delivering each day. This also enhances the synchronisation level between the warehouse and procurement department.
- The findings also show that the JIT system in place is not one hundred percent implemented in the organisation. Hence, it is suggested that the organisation revisit its

business plan and goals and realign their objectives to meet their goals. The balanced scorecard is an example of a tool that the organisation can implement to better understand and align their goals.

- The JIT in Japan is a perfected system, as noted in chapter two. However, this is accredited to the discipline and homogenous race of the Japanese. Research noted in chapter two has also suggested that the second hardest working country after Japan is South Africa. Hence, one can suggest that the perfected JIT system can be fully implemented in South Africa even though South Africa has a rich and vast cultural diversity.
- The organisation should use this cultural diversity to its benefit, and allow workers to voice opinions and provide solutions to issues faced. These employees should be able to provide insights into their cultures and combine these findings with other cultures to develop and establish new ways and means of solving issues that may arise.
- The finding of low motivated staff has emerged again. Staff simply come to work, do what is required, and leave. The finding has also suggested that today staff do not go the extra mile to improve. The recommendation is that staff be provided with an incentive to work towards as a team. This creates an atmosphere of healthy competitiveness between employees. This motivates staff and gives them a reason to go the extra mile.
- Backorders have also emerged as an issue from the findings. In an attempt to reduce this, the buyers need to gather more market information about various vendors and alternative products. This will help as when the preferred supplier is unable to supply stock, the buyer will be able to procure it elsewhere quickly and efficiently, thus, reducing backorders and meeting customer demand immediately.
- Another way to effectively reduce backorders is to have the supplier notify the buyer, as soon as an order is placed, of any items that are currently out of stock, along with Estimated Time of Arrival (ETA). This will allow the buyer to procure items quicker from another supplier without making the customer wait.
- The findings suggest that forecasting does not occur and this could be the reason for the large amount of backorders. One way to alleviate this issue would be to provide suppliers with a forecast at least a month in advance to ensure stock is reserved specifically for this organisation. This can be agreed upon in negotiation. There can also be terms in place suggesting that this is merely a forecast and the organisation is not obligated to purchase the entire amount forecasted. This will ensure that the organisation does not order holding stock, as they utilise a JIT system, but instead force the supplier to carry the stock for them, thus reducing the risks and costs of holding stock in the warehouse.
- The buyers need to be in charge of their portfolio of suppliers and keep track of their Stock Keeping Units (SKU). However, regular rotation of buyers with various vendors will allow a buyer to be faced with a new challenge and be given the opportunity to think out of the box to better manage, and create better relationships with, the supplier. This will also provide the buyer with an opportunity to generate new methods that can

be implemented when dealing with a new vendor or problematic vendor. In addition, suppliers will become acquainted with all the buyers. This will allow for the development of new relationships and, for instance, if a buyer is on leave or leaves the company, the supplier will know other buyers in the organisation. All buyers will also be familiar each supplier and how to manage each supplier.

- Back-to-School has been continuously discussed as it is the organisation's busiest season. Hence, the researcher recommends that the organisation engage in a blue ocean strategy and widen its Back-to-School market to the universities as well. Many students wait until the last minute to purchase textbooks, hence, this organisation should develop a relationship with a university, for example the University of KwaZulu-Natal, and sell textbooks, as well as the necessary stationery, to students. This organisation could receive the textbook list well in advance of the new academic year and students and parents can place their orders with this organisation and have them delivered. Accounting for the high price of textbooks, customers are willing to pay a higher price for extremely good service.
- Currently the trends of schools especially the private schools, which have implemented the use of iPads and tablets. Schools are becoming techno-savvy and this is a market that does have potential. This can be seen as another blue ocean strategy. It must be acknowledged that as a stationery distributor this organisation does not have market power in the industry of high end technology products. This would require high negotiating skills to enter this market and attain these devices at a reasonable cost with full sale on return. The suppliers of study guides and could partner with the organisation to preload this onto the devices. This could be similar to the back-to-school box orders.
- This organisation should partner with the schools to obtain school lists at least seven months before the lists are released to parents. This will allow for the organisation to better forecast for demand to ensure that there are no shortages during this period.
- This organisation should develop a catalogue designed specifically for the lower Living Standard Measure (LSM). The organisation will generate a larger volume of sales thus increasing profit margin. It must be acknowledged that the profit margin will be lower than when selling at normal higher prices; however, the increased market share gained will surpass the expenses endured.
- The organisation holds stock in its warehouse which could become obsolete. Therefore the organisation should donate this stagnant stock to under privileged schools instead of writing it off. Thereby, promoting a positive company image and also ensuring their corporate social responsibility is improved and taken care of. The company will also benefit by receiving a tax return for donating stock. The company also gains more control of slow moving stock.

6.5. Contribution

This study will contribute academically to a stocked body of knowledge and will provide information that will assist in future research on similar topics. This study aims to contribute to the organisation under study by providing possible findings that the organisation can implement, and improvements it can make, in order to overcome the challenges faced in demand management, and specifically the JIT system employed. This, in an attempt to curb expenses and to develop an enhanced supply chain in which backorders are minimised, as well as to ensure there is always stock on hand available to the customer. This study will also contribute to knowledge creation in demand management and efficient management of JIT systems with effective information sharing to create efficient order management.

It was necessary to conduct this study as the challenges faced by the organisation are increasing expenses and creating longer than necessary lead times when delivering to customers. The longer the lead time from ordering a product to having it delivered, the greater the negative feelings generated on the part of customers. This in turn will provide customers with a reason to approach a competitor who is able to provide stock on time and the desired product. Therefore, this study will allow the organisation to gain a deeper understanding of the root of these challenges faced and to use this study to its advantage and make the necessary changes required to remain South Africa's largest office supply company. If this study had not been conducted, the organisation would continue to implement expensive short term solutions which costs the organisation more money in the long run. Hence, this study aims to provide long term solutions to minimise backorders and decrease expenses.

6.6. Ethical Consideration

Ethical consideration has been given to the participants of the study. The information obtained from the respondents has, and will continue to be, treated with strict confidentiality and the respondent's privacy is of utmost importance. All participants were treated with respect, and under no circumstances was the self-esteem and self-respect of the subjects violated. Preceding the study, permission was acquired from all respondents. The participants were, at any given time, allowed to stop the interview, and not be forced to continue. The study was explained prior to the interview and confidentiality of the research data acquired from the study will be safeguarded. The research objectives and aims of the study are not deceptive and transparency has been maintained throughout. Misleading information and a preconceived notion have been avoided at all times. This study has been critiqued by the Ethics Review Board of the University of KwaZulu-Natal. Gatekeeper's permission was obtained from the organisation under study, granting permission to the researcher to conduct interviews with the necessary personnel before approaching participants.

6.7. Implications

This study aims to assist the management of this organisation to better manage their demand order variability in the stationery sector. This is one of the largest and fastest growing sectors, in South Africa and globally hence, proper management of demand is crucial to survive. The organisation under study is known to be the largest in South Africa, therefore, management should implement strategies to continuously growth and gain a larger footprint in the country. This can be achieved by investing in more research to identify areas of concern specific to the organisation. One such area of concern is the management of demand. Various researchers have conducted research on this aspect and have identified areas of improvement that have been noted in the discussion chapter. The researcher has also provided suggestions to the

organisation in this chapter. Adhering to these suggestions could help the organisation eliminate these areas of concern in demand management and allow it to become more efficient and effective in the marketplace.

6.8. Limitations and Delimitations

The delimitations of the study are that a single organisation was chosen. Therefore, the study has not collected data from competing firms to determine if a similar situation is faced by them. The organisation is large and is South Africa's largest office supplies provider. However, this study is based in the Durban region and does not consider the locations of the other head offices outside of KwaZulu-Natal. The organisation's head office is based in Gauteng and is centralised, hence, decision makers were not interviewed. This limitation was addressed with the understanding that this research problem is current and relevant in the 21st century. The data quality control measure of transferability will enable this study to be applicable to situations which are similar to that defined in this study. The researcher will provide sufficient information of the fieldwork site to ensure the reader has a deep understanding of the phenomenon under study thereby allowing the reader to compare the study to its own current situation to before a transfer of findings and conclusions are made.

The limitation to the study was the qualitative research approach employed, therefore, a small sample size was selected and this results in generalisability of the findings. This was overcome by the measures taken by the researcher, as discussed in the research methodology section. Bias is a possibility, as it is the place of employment of the researcher. The researcher aimed to maintain a relationship of professionalism and remain unbiased, as the aim of the study was to uncover the root issues of the organisation in order to develop possible recommendations that will benefit, not only the organisation under study, but also other organisations facing a similar situation. The researcher attempted to avoid formulating personal opinions and exercised boardroom judgement while conducting the study. From the interviews, the researcher has found that the lack of tertiary educational qualifications made it harder for respondents to respond on concepts due to the terminology used, even though the concepts had been implemented in the organisation. The research therefore explained each question and concept before the respondent answered.

6.9. Future Study

This research study has identified a number of opportunities for further research. The organisation under study provided numerous aspects which research has not focused on previously. A study on demand management in the South African Stationery sector has not hitherto been conducted. Future studies should expand on this sector as it is one of the fastest growing as has the potential to improve its footprint in South Africa. Future research should look at more than one stationery outlet and determine if similar issues of demand management are experienced. It would be fascinating to see how the stationery sector competitors can cooperate and collaborate to create an environment of cooptation and eliminate the challenges of demand management. Future study could also look at the demand and supply perspectives together to determine how to better manage demand, rather than viewing demand management from an isolated perspective.

6.10. Conclusion

This chapter provides various recommendations that the organisation under study could possibly implement. These recommendations have been made in conjunction with taking into account the numerous bodies of literature available, the feedback provided by the respondents and the interpretation of the researcher.

This study has provided a deeper insight into the areas of demand order management of the JIT approach for a stationery distributor. The study aimed: to determine the challenges of dynamic demand management under the JIT order fulfilment system; to establish the effects of information sharing and collaborative forecasting for efficient operational demand management; to explore the extent of demand order variability and flexibility on the underlying JIT system; and to analyse the role of order synchronisation fulfilment to facilitate the balanced alignment of demand and supply order management. These objectives were all fulfilled through this study. The study focused on various aspects of demand management such as challenges of demand management under the JIT system; the strategies under the JIT system; order fulfilment management in relation to information sharing, order synchronisation, demand order variability and flexibility; and demand capabilities.

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Appendices

Appendix A: Consent Form and Interview Guide



School of Management, IT and Governance
Discipline of Marketing and Supply Chain Management
Westville Campus

CONSENT FORM

Researcher: Serisha Maharaj

Tel: 074 071 1694

Supervisor: Dr T.P. Mbhele

031 260 7524

Research Office: Mariette Snyman

031 260 8350

Thank you for your participation. It is highly appreciated. Please take a few minutes to read about the study and provide your consent to partake in the interview.

Dynamics of Demand Order Management on the Just in Time Approach: Case of a Stationery Distributor

Brief statement of the problem: The challenges of demand order management on the underlying Just in Time (JIT) approach need a long-term solution in order to reduce expenses and enhance supply chain performance. Demand management is a very important aspect of managing one's organisation, especially in the presence of a volatile environment, full of competitors, global pressures and sustainability requirements. Thus, organisations are placed in a position where it has become necessary to implement strategies such as the JIT approach to meet demand with minimal resources and costs. Poor demand management decisions taken in forecasting therefore increase business risk and costs. The study aims to establish the effect of information sharing and collaborative forecasting within an organisation and externally with suppliers, while creating a conducive environment for a communication mechanism for increasing order synchronisation and mitigating demand order variability, while improving accuracy and flexibility in forecasting demand.

Brief background information: Demand management is an emerging topic in supply chain management. The demand alignment may pose some problems leading to inefficiency in customer service, poor stock rotation and a high obsolescence rate aggravated by the diversity of products. Demand management sought the rapid and appropriate integration of the needs arising from the market in the direction of the suppliers in order to balance and strategically align demand with operational capacity along the supply chain. However, the concept of demand management is not yet understood by supply chain agents as the major cause of failure is accredited to not achieving chain coordination due to the poor understanding of demand leading to inadequate customer service, poor stock rotation and a large obsolescence rate. The main aspects underpinning this study are: demand management; JIT; order fulfilment; information sharing; order synchronisation; and demand order variability and flexibility, and forecasting.

I, _____, have been explained the purposed of this study by the researcher, Serisha Maharaj, and give full consent/do not consent to be interviewed.

I acknowledge that I can stop the interview at any given time and I am not obligated to answer all the questions.

I consent/do not consent to being voice recorded.

I give full permission to be interviewed on _____ at _____ at _____.

I have been/have not been shown ethical clearance permitting Serisha Maharaj to conduct this research.

Thank you for your participation.

INTERVIEW GUIDE

Interview Duration: _____

Date: _____

Company: _____

Person interviewed: _____

Educational qualification: _____

Number of years in company: _____

Number of years in current position: _____

Products sourced: _____

INTRODUCTION

The introduction phase will ensure that participants of the research understand the purpose of the study and will further explain the role they play in ensuring that the objectives of the study are met. In addition, the aim is to assure the participants' confidentiality and request permission to use a tape recorder to record the individual responses of participants.

SECTION A: CHALLENGES OF DEMAND MANAGEMENT

1. Kindly provide your definition of demand management.
2. How are you, in your position in this organisation, personally affected by demand management?
3. Please discuss the challenges of demand management faced by your organisation.
4. How are these challenges affected under the JIT system?
5. The Japanese are highly disciplined and continuously strive for perfection, which is how they have improved and perfected their JIT system, why do you think this is not the case for South Africa?
6. In your opinion, do you think that the diverse culture at this organisation affects the JIT system in place? And in South Africa as a whole?
7. How do you think the discipline present in Japan can be practiced in South Africa?

SECTION B: INFORMATION SHARING

1. How is information in your organisation collected?
 - 1.1. Is this information collected sufficient?
 - 1.2. Is it what is required to carry out your tasks?
 - 1.3. Are there any other ways in which to collect information?
2. How is this information handled/managed?
 - 2.1. Is there any distortion in the way it is managed?
 - 2.2. Do you think it could be managed/handled in a better manner that prevents distortion?
3. How is this information shared?
 - 3.1. With whom is this information shared?
 - 3.2. Is the manner in which it is shared appropriate?
4. What improvement would you like to occur to this information collection, management and sharing process?
5. How would you describe your organisation's communication?
6. In your opinion, is this sufficient? Or are there barriers that are faced?
7. How would you like to see communication improved?

SECTION C: COLLABORATIVE FORECASTING

1. How are your forecasts made?
2. What information is used to make these forecasts?
3. What method of forecasting do you use (Qualitative or Quantitative) and how accurate is this?
4. Does this organisation engage in collaborative planning, forecasting and replenishment? Why or why not?
5. How long in advance do you forecast for and what challenges do you experience?
6. Once forecasts are made, how are they communicated and to whom and within what time frame?
7. What is taken into account when forecasting decisions are made?

SECTION D: DEMAND ORDER VARIABILITY AND FLEXIBILITY

1. Discuss the demand order variability in this organisation.
2. How does the organisation view order variability?
3. How flexible is the order variability?
4. How do you ensure the right quantity is delivered at the right time, accounting for the large amount of variations?
5. How does the organisation keep track of order variability?
6. How does order variability affect the organisational flexibility?
7. Does it pose a challenge in demand management, especially under the JIT system?

SECTION E: SYNCHRONISATION

1. Discuss the role of order synchronisation in your organisation.
2. How does order synchronisation fulfilment facilitate the balanced alignment of demand and supply order management?
3. How is order synchronisation managed in this organisation?
4. What system is in place to ensure that it is always synchronised? MRP?

SECTION F: DEMAND MANAGEMENT MODEL



Source: Melo, D. and Alcantara, R.L.C. (2014:7) “Defining Demand Management”, *Global Journal of Management and Business Research: e-Marketing*, 14(5):1-13.

1. How active are cross-functional teams in your organisation?
2. How involved is top management in demand management? And in other procurement decisions?
3. How aware is procurement of the internal and external factors of:
 - 3.1. Capabilities?
 - 3.2. Constraints?
 - 3.3. Opportunities?

Appendix B: Ethical Clearance



24 August 2017

Ms Serisha Maharaj (213533459)
School of Management, IT & Governance
Westville Campus

Dear Ms Maharaj,

Protocol reference number: HSS/1239/017M

Project title: Dynamics of demand Order Management on the Just in Time approach: A case at a stationery distributor

Approval Notification – Expedited Application

In response to your application received on 31 July 2017, the Humanities & Social Sciences Research Ethics Committee has considered the abovementioned application and the protocol has been granted **FULL APPROVAL**.

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

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

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

I take this opportunity of wishing you everything of the best with your study.

Yours faithfully

Dr Shamila Naidoo (Deputy Chair)

/ms

Cc Supervisor: Dr TP Mbhele
Cc Academic Leader Research: Professor Brian McArthur
Cc School Administrator: Ms Angela Pearce

Humanities & Social Sciences Research Ethics Committee

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Appendix C: Letter from Editor

08 December 2017

To whom it may concern:

I, Dr Katharine Geldenhuys (7711120033084), in my capacity as an English language editor, hereby confirm that I proof-read and language-reviewed the Master of Commerce (in Supply Chain Management) dissertation entitled: "Dynamics of Demand Order Management on the Just In Time Approach: Case at a Stationery Distributor" by Ms Serisha Maharaj (Student number: 213 533 459) between 24 November and 08 December 2017, and that I returned the document (with review comments) to Ms Maharaj on 08 December 2017.

It is my understanding that Ms Maharaj intends to submit the above-mentioned dissertation to the School of Management, IT and Governance (Discipline of Marketing and Supply Chain Management) at the University of KwaZulu-Natal.

Yours faithfully



Dr Katharine Geldenhuys

PhD (UFS); MPhil. (Cantab.); MA (UFS)

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