SUPPLY CHAIN PRACTITIONERS' PERCEPTIONS OF SUPPLY CHAIN INTEGRATION IN FMCG MANUFACTURING FIRMS

by

PHENYO SHABANGU

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SUPERVISOR:
Mr. W. Niemann

CO-SUPERVISOR:
Mr. T.G. Kotzé

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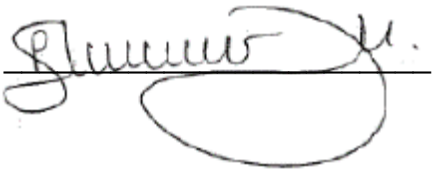
DECLARATION

I, Phenyo Shabangu (Student Number 27179355), declare that this dissertation, which I hereby submit for the degree **Magister Commercii (Business Management)**, at the **University of Pretoria**, is my own work and has not previously been submitted by me for a degree at this or any other tertiary institution.

Signature **Date**



13 March 2020

DEDICATION

This dissertation is dedicated to my parents, Modjadji le Sipho, for their unwavering support and unconditional love throughout my life.

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Firstly, I'd like to thank my Almighty God and Father for giving the strength and fortitude to persevere and overcome all challenges and adversities throughout this journey. "*Blessed is the man that endureth temptation; for when he is tried, he shall receive the crown of life, which the Lord hath promised to them that love him*." *James 1:12*

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ABSTRACT

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by

Phenyo Shabangu

Supervisor: Mr. W. Niemann
Co-supervisor: Mr. T.G. Kotzé
Department: Business Management
Degree: Magister Commercii (Business Management)

Supply chain integration (SCI) is a phenomenon that has received growing attention from academia and industry practitioners alike. Studies suggest that firms with highly integrated supply chains can positively influence firm performance from both an operational and financial standpoint. The literature emphasizes three distinct dimensions of SCI; internal integration, supplier integration and customer integration. However, the scarcity of highly integrated supply chains could be widespread in South Africa due to the SCI perception gaps prevalent among supply chain practitioners in South Africa. The literature reveals that there are countless inconsistencies pertaining to the interpretation and execution of supply chain management practices among supply chain practitioners, across myriads of industries. This study aimed to investigate the various perceptions of the SCI construct harboured by supply chain practitioners in fast-moving consumer goods (FMCG) manufacturing firms.

A generic qualitative research strategy was used as the method of inquiry in this research. Five FMCG manufacturing firms were sampled and a total of fifteen participants were interviewed though semi-structured interviews.

The main findings of the study reveal that supply chain practitioners in FMCG manufacturing firms interpret the SCI construct differently. While some supply chain practitioners interpret the SCI construct in line with what is documented in the literature, others have misaligned

interpretations of the construct. These differences in interpretation span across all tiers (strategic, tactical and operational) within FMCG manufacturing firms. The findings also reveal that supply chain practitioners in South African FMCG manufacturing firms, to a significant extent, identify with all the supply chain integrative practices relating to supply chain collaboration, intra/inter firm interaction and information sharing, as documented in the literature.

The study's findings contribute to the supply chain discipline by helping researchers as well as supply chain practitioners develop a complete understanding of the SCI construct which deliberately elaborates on the associated SCI dimensions, and explicitly articulates the integrative practices associated with the phenomenon. Managerial implications emanating from this study suggest that supply chain functions should strive to create awareness around the focal firm's end-to-end supply chain activities, and how these activities impact each other. This can be done through building a culture of frequent inter- and intra- organisational interaction, as well as implementing relevant organisational learning interventions across all tiers within the focal firm. In addition, focal firms should also adopt and leverage off new technologies to ensure more reliable and real-time data, thus enabling more effective decision-making.

Keywords: Supply chain integration, internal integration, external integration, perceptions, supply chain trading partners, integrative practices, manufacturing firms, fast-moving consumer goods (FMCG), qualitative research, South Africa

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CHAPTER 1:INTRODUCTION AND PROBLEM STATEMENT

Chapter outline:

The purpose of this chapter is to:

- introduce the SCI construct and highlight its importance in South Africa's FMCG manufacturing industry;
- summarise the findings of related previous studies;
- articulate the study's proposed research questions;
- highlight the significance and benefits of the current study;
- provide definitions of key terms, acronyms and abbreviations used in the current study;
- give an overview of the chapters this dissertation is comprised of.

1.1 INTRODUCTION AND BACKGROUND OF THE STUDY

Today's constantly evolving business environment continues to pressure manufacturing firms to enhance their internal processes and systems, as well as develop synergistic relationships with their upstream and downstream supply chain trading partners alike (Birasnav & Bienstock, 2019:142). With the upsurge of competition in both the local and global economies, firms have started searching for improved and collaborative business practices in order to grow their competitive positioning locally and globally, ultimately growing their market share (Kumar, Chibuzo, Garza-Reyes, Kumari, Rocha-Lona & Lopez-Torres, 2017b:815). This has subsequently encouraged supply chain practitioners to consider integration as a solution for creating strategic partnerships with upstream and downstream supply chain trading partners, in order to improve overall supply chain performance through, *inter alia*, cost and lead time reduction (Kumar *et al.*, 2017b:815). Integration of the end-to-end supply chain stems from a system perspective which considers firms within the internal as well as external supply chain working together in a collaborative manner (Porter, 2019:50). According to Kumar *et al.* (2017b:815), operating models of many manufacturing firms in the past were vertically inclined with the focal firm operating in complete isolation and fully owning its raw material suppliers. However, manufacturing firms realised the inefficiencies and losses yielded by this model and altered their models to a

horizontal one where firms along the end-to-end supply chain strived for integration, thus adding value to the overall performance of the supply chain (Kumar *et al.*, 2017b:815).

The literature suggests that the supply chain integration (SCI) construct is comprised of three dimensions, namely *internal integration*, *supplier integration* as well as *customer integration* (Abdallah, Abdullah & Mahmoud Saleh, 2017:697; Chavez, Yu, Gimenez, Fynes & Wiengarten, 2015:83; Khalaf & El Mokadem, 2018:4; Szász, Scherrer & Deflorin, 2016:760). An overview of these dimensions is provided in Section 2.3 (p. 18) of this dissertation. Supply chain scholars have also recognised SCI as a fundamental contributor towards a firm's operational and financial performance (Ataseven & Nair, 2017:252-253; Hill, Zhang & Miller, 2018:21; Kaliani Sundram, Chandran & Awais Bhatti, 2016:1448; Lii & Kuo, 2016:143). Section 3.3 (p. 49) of this dissertation provides a comprehensive overview of SCI's influence on a focal manufacturing firm's operational as well as financial performance.

According to Ataseven and Nair (2017:252), supply chain integrative practices such as information sharing, collaboration as well as joint decision-making will support the attainment of SCI across the end-to-end supply chain. These practices aid in aligning the interests, tasks and objectives of all stakeholders involved in the end-to-end supply chain, thus helping in improving the overall performance of the supply chain while maximising the internal efficiencies of the focal firms (Ataseven & Nair, 2017:252). Supply chain scholars have documented various SCI practices which both advantage and disadvantage the attainment of internal and external supply chain integration (Alfalla-Luque, Marin-Garcia & Medina-Lopez, 2015:254; Asare, Brashear-Alejandro & Kang, 2016:1; Ding, Ferry, Parton & Matanda, 2014:93; Frankel & Mollenkopf, 2015:21; Fredendall & Hill, 2016:4; Hudnurkar, Jakhar & Rathod, 2014:192-193; Luzzini, Brandon-Jones, Brandon-Jones & Spina, 2015:52; Mathu & Phetla, 2018:1; Qrunfleh & Tarafdar, 2014:340; Yan, Xin, Liu, Xu, Yang, Fan, Chen & Wang, 2014:1; Zhao, Feng & Wang, 2015:163). Section 3.2 (p. 33) of this dissertation provides an overview of SCI practices documented in the literature by supply chain scholars.

Flynn, Koufteros and Lu (2016:4) suggest there are supply chain uncertainties that exist among supply chain practitioners at large. The primary aim of this study is to explore supply chain practitioner's perceptions pertaining to the SCI construct. Numerous studies on the SCI construct have been carried out across various industries (Abdallah *et al.*, 2017:694;

Filho, Dias & Moura, 2018:528; Nguegan Nguegan & Mafini, 2017:1; Vermeulen, Niemann & Kotzé, 2016:1). This study focuses on SCI in the FMCG industry, because of the industry's high level of supply chain maturity when compared to other industries' supply chains in South Africa (Joubert, Havenga, Simpson, Kumar, Ittmann, Gertenbach, Rossouw, Steyn, Bean, Nordengen, Luke & Heyns, 2014:ii). The subsequent section articulates this study's problem statement as well as research gap.

1.2 PROBLEM STATEMENT

According to Flynn *et al.* (2016:2), uncertainties regarding SCI practices are highly prevalent among supply chain practitioners across myriads of industries. An element of this uncertainty originates internally from the supply chain practitioner's own firm, largely due to intra-firm inconsistencies in data quality, communication efficiency as well as cross-functional alignment (Flynn *et al.*, 2016:4). From an external standpoint, uncertainty emanates from the quality and frequency of information shared (Flynn *et al.*, 2016:4).

Downey and Slocum (1975:573) identify physical environment, perceptions, behavioural response repertoire and social expectations as the fundamental causes of uncertainty. Thus Carter, Meschnig and Kaufmann (2015:94-95) describe uncertainty as a multilevel phenomenon which exist at individual, functional or firm levels. In this context of supply chain uncertainty, perceptions are regarded as an interpretive and selective process, due to the firm environment's absence of innate supply chain meaning, subsequently triggering the supply chain practitioners' limited understanding of supply chain practices (Flynn *et al.*, 2016:5).

A study conducted by Lu and Ertek (2015:136) reveals that supply chain practitioners' perception gaps have a significant impact on supply chain performance. Another similar study suggests that these perception gaps stem from supply chain practitioners not aligning, internally and externally, on important and value adding activities along the supply chain (Lu, Asian, Ertek & Sevinc, 2019:46). This subsequently spurs differences in supply chain practitioners' perceptions pertaining to the importance of several supply chain practices and key performance indicators (KPIs) (Lu *et al.*, 2019:46).

South African scholars have contributed significantly to the existing body of supply chain knowledge (Agigi, Niemann & Kotzé, 2016:1; Mathu & Phetla, 2018:1; Mvubu & Naude, 2016:271; Pillay & Mafini, 2017:1; Sibasa, 2013:2; Vermeulen *et al.*, 2016:1). Sibasa (2013:1) conducted a study which focused on the implementation of downstream supply chain integrative practices in FMCG firms, and its various impacts on operational performance.

Research topics surrounding the perception gap, along with its influence on firm performance are sparse and have not formed a recognisable body of knowledge (Lu & Ertek, 2015:123). Vermeulen *et al.* (2016:1) explored SCI perceptions existing among supply chain practitioners in the plastic manufacturing industry. However, research surrounding the SCI perceptions of supply chain practitioners in South African FMCG manufacturing firms remains a gap that needs to be explored.

1.3 PURPOSE STATEMENT AND RESEARCH QUESTIONS

The sub-sections below articulate the purpose statement as well as the study's proposed research questions.

1.3.1 PURPOSE STATEMENT

The purpose of this research is to explore the various perceptions that supply chain practitioners, within South African FMCG manufacturing firms, have of the SCI construct. This includes perceptions pertaining to the current state of SCI within these firms, dimensions of the phenomenon as well as the associated supply chain integrative practices.

1.3.2 RESEARCH QUESTIONS

This research was guided by the following research questions:

- To what extent does the interpretation of the SCI construct differ among supply chain practitioners within an FMCG manufacturing firm?

- To what extent do supply chain practitioners, at various levels of an FMCG manufacturing firm, identify with the SCI practices documented in the literature?
- What are the current SCI practices prevailing in the South African FMCG industry?
- How does SCI, along with its associated practices, influence firm performance?

1.4 IMPORTANCE AND INTENDED CONTRIBUTION OF THE STUDY

From a managerial perspective, this research aims to underpin the importance of establishing a common understanding of the SCI construct. This research also aims to give insights into the current state of SCI within South African FMCG industry as well as outline the SCI construct's potential to improve the overall performance of FMCG manufacturing firms. The study contributes to the development of theory by providing a better understanding of the state of SCI practices in South African FMCG manufacturing firms, thus providing a better understanding on how integrative practices are leveraged within South African FMCG manufacturing firms. This will assist FMCG manufacturing firms in making adequate inferences regarding the scope of integration required optimally drive SCI across the end-to-end supply chain.

This research also aims to illuminate the extent to which the supply chain practitioners sampled in this study, identify with SCI practices documented in the literature. The study's findings indicate that the interpretation of the SCI construct is not consistent among the study's participants. This is largely due to the participant's role within their focal firm. Findings also reveal that the study's participants identify with all the practices documented in the literature.

1.5 DEMARCATION OF THE STUDY

The following factors should be borne in mind when reviewing the demarcation of this study:

- The study was limited to binary and non-binary genders working in supply chain functions within FMCG manufacturing firms.
- Data collection only took place in FMCG manufacturing firms within the Gauteng province.
- The study was focussed on the FMCG manufacturing industry, overlooking other manufacturing industries in South Africa.

1.6 IMPLICIT ASSUMPTIONS OF THE STUDY

This study is underpinned by numerous assumptions. It was assumed that:

- the participants were aware of tasks and activities required to execute their duties;
- the participants were able to verbally articulate their views and perceptions pertaining to the SCI construct;
- the views expressed by most of the participants were adequately descriptive of the SCI construct, along with its associated practices;
- the researcher was able to encourage the participants to express their views regarding the SCI phenomena, its associated practices as well as its value-add to the overall performance of their respective firms;
- qualitative research was the most feasible method to explore participants' perceptions of the SCI construct;
- the sampling methods employed were practical for obtaining participants' views pertaining to the SCI construct, across all tiers of the sampled FMCG manufacturing firms.

1.7 DEFINITION OF KEY TERMS

The key concepts associated with this study are ***supply chain integration***, ***focal firm***, ***FMCG***, ***trading partner***, ***upstream supply chain*** and ***downstream supply chain***. The definitions of these key terms are articulated below.

Supply chain integration: Extant literature suggests that supply chain integration refers to the degree to which a firm can collaborate with its supply chain trading partners (Huo, Ye, Zhao & Zhu, 2019:237; Liu, Wei, Ke, Wei & Hua, 2016:14). The literature also distinguishes between three dimensions of supply chain integration: Internal integration, customer integration and supplier integration (Chavez *et al.*, 2015:83; Khalaf & El Mokadem, 2018:4; Yang, Kull, Nahm & Li, 2017:1095). A detailed overview of the SCI construct, along with its three dimensions, is presented in Section 2.3 (p. 18) of this dissertation.

Focal firm: According to Frostenson and Prenkert (2015:86-87), focal firm refers to those firms which govern the end-to-end supply chain, have direct contact to the supplier and customer, as well as owns the design of the primary product or service being offered.

Fast-moving consumer goods: Fast-moving consumer goods refers to everyday products with a limited shelf-life of not more than nine months, comprising of categories such as food, personal care, beverages, detergents, pet care and baby care (Zeeuw van der Laan & Aurisicchio, 2019:2).

Trading partner: A trading partner refers to a person, firm or country with whom a focal firm customarily conducts business activities with (Collins Dictionary, 2019).

Upstream supply chain: The upstream supply chain relates to the activities and processes executed on the buy-side of the focal firm. These activities involve the focal firm's suppliers of raw materials, components and packaging materials (Shkoukani, Alnagi & Abulail, 2013:2).

Downstream supply chain: The downstream supply chain refers to those activities and processes relating to the sell-side of the focal firm. These activities involve distributors as well as customers (Shkoukani *et al.*, 2013:4).

Table 1.1 (p. 8) lists all abbreviations used throughout the study.

Table 1.1: List of abbreviations used in the study

Abbreviation	Meaning
B2B	Business-to-business
CPFR	Collaborative planning, forecasting and replenishment
CSCMP	Council of Supply Chain Management Professionals
EDI	Electronic Data Interchange
ERP	Enterprise resource planning
FMCG	Fast-moving consumer goods
GDP	Gross domestic product
IBP	Integrated business planning
IOS	Inter-organisational systems
I.T.	Information Technology
KPIs	Key Performance Indicators
RFID	Radio Frequency Identification
S&OP	Sales and operations planning
SCI	Supply chain integration
SCM	Supply chain management
SLA	Service-level agreement
VMI	Vendor-managed inventory

1.8 SUMMARY OF RESEARCH DESIGN AND METHODOLOGY

According to Babbie (2012:270), qualitative research entails the soliciting of detailed views, descriptions and understandings of phenomena which relates to a specific context. This study employed a qualitative enquiry, thus allowing the researcher to effectively solicit views of participants pertaining to the SCI construct. This ultimately allowed for the proposed research questions to be effectively addressed. Semi-structured interviews were adopted as means for collecting data from the sampled participants. An interview guide was used to carry out the interviews (see Appendix D).

Inclusion/exclusion criteria were used to establish the target population. The target population comprised of participants who had a career in the supply chain management field and are working within FMCG manufacturing firms located in South Africa. Purposive

sampling was carried out at a firm level and a participant level. Maximum variation sampling was used to sample the FMCG manufacturing firms. At a participant levels, inclusion criterion as well as snowball sampling was employed. A total of fifteen participants were interviewed.

The researcher explained to all participants of the study how the data would be used prior to start of the interviews. The researcher also explained all ethical issues outlined in the informed consent form (Appendix C) which was signed by all the study's participants, prior to commencing with the interviews. All data was analysed using the ATLAS.ti software and three themes were derived from the analysed data.

1.9 CHAPTER OUTLINE

Chapter 1 of this dissertation introduces the SCI phenomenon, along with its different dimensions, and outlines the study's research objectives and proposed research questions. Implicit assumptions and demarcation pertaining to the study are also considered. This is proceeded by definitions of key terms, along with an explanation of used abbreviations associated with the study's construct. The chapter is concluded by a concise summary of the research methodology employed.

Chapter 2 provides an extensive account of supply chain management (SCM), as well as its strategic importance in manufacturing firms. This is followed by an extensive overview of the SCI construct, including the three dimensions that the construct is comprised of. Contemporary supply chain management challenges are reviewed, followed by a discussion relating to the importance of SCI in modern day supply chains. The chapter is concluded by an extensive overview of the FMCG industry in South Africa.

Chapter 3 discusses the various integrative practices associated with SCI, such as *cross-functional interaction* and *joint decision-making*. Chapter 3 also includes an overview of two SCI enablers namely, trust and commitment. This is followed by a discussion pertaining to the various influences, positive and negative, that the documented integrative

practices have on overall firm performance, from both a financial and an operational standpoint.

Chapter 4 begins with an account of the chosen research design, research paradigm as well as research strategy. This is followed by a discussion relating to the employed sampling and data collection methods. This chapter also provides an overview of the employed data analysis procedures and is concluded by an account of ethical considerations considered throughout the duration of the study.

Chapter 5 starts with providing a contextual background of the study's participants, proceeded by an extensive discussion of the emerging themes derived from analysing the collected data. These themes are *Supply chain practitioners' perceptions of SCI*, *Trust and commitment as SCI enablers*, and *SCI and firm performance*.

Chapter 6 provides a presentation of the findings associated with the study. The findings validate several findings in similar studies which were conducted in first world countries. The chapter also outlines the theoretical and managerial implications that have been considered. This dissertation is concluded by an account of the study's limitations including suggestions for future research.

CHAPTER 2: SUPPLY CHAIN MANAGEMENT AND SUPPLY CHAIN INTEGRATION

Chapter outline:

The purpose of this chapter is to:

- provide an overview of the SCM construct;
- discuss the SCI construct, along with its associated dimensions;
- highlight existing SCM challenges in South Africa;
- illuminate the importance of SCI in today's supply chains;
- provide an overview of South Africa's FMCG manufacturing industry.

2.1 INTRODUCTION

As manufacturing firms are becoming more cognisant of the competitive advantage that can be realised within their supply chains, the use of the term SCM has grown, and continues to grow, at a rapid rate as firms aim to improve the sourcing of raw materials, manufacturing operations, as well as the warehousing and distribution of finished goods to customers (Duong, Truong, Sameiro, Sampaio, Fernandes, Vilhena, Bui & Yadohisa, 2019:2). According to du Toit and Vlok (2014:26), the topic of SCM is complex phenomenon as it embraces a myriad of activities, functions, and role players within a firm. The topic of SCM has received broad interest from researchers and industry practitioners because of its relevance in rapidly changing and competitive markets (Blackman, Holland & Westcott, 2013:133; Klueber & O'Keefe, 2013:295-296; Sabet, Yazdani & De Leeuw, 2017:29-30). Furthermore, the rapid pace of change along with the uncertainty of how consumer trends and markets evolve has made it important for manufacturing firms to, firstly, be cognisant of the supply chains they participate in and, secondly, understanding the roles they play in those supply chains (Hugos, 2018:2).

This chapter provides an overview of the SCM and SCI constructs respectively. The chapter also provides insights on the current challenges emerging from the South African supply

chain industry and highlights the importance of SCI in an agile and modern supply chain. The chapter is concluded with an overview of the current stance of the South African FMCG industry.

2.2 AN OVERVIEW OF SUPPLY CHAIN MANAGEMENT

The Council of Supply Chain Management Professionals (CSCMP) defines Supply Chain Management as:

> "... the planning and management of all activities involved in sourcing and procurement, conversion, and all logistics management activities. Importantly, it also includes coordination and collaboration with channel partners, which can be suppliers, intermediaries, third party service providers, and customers. In essence, supply chain management integrates supply and demand management within and across companies." (CSCMP, 2014)

Similarly, researchers interpret the SCM construct in line with the CSCMP definition and have articulated varying nuances to their interpretations (Chen & Gong, 2013:1003; Prajogo, Oke & Olhager, 2016:221; Wisner, Tan & Leong, 2014:8). Prajogo *et al.* (2016:221) posit that SCM comprises of the management and coordination of the internal and external aspects of a manufacturing firm's operations including the purchasing, primary logistics, secondary logistics, production as well as distribution processes involved in the provision of goods to end-users. Chen and Gong (2013:1003) state that a supply chain should be seen as a set of facilities, distribution mechanisms, purchasing transactions, products and methods of controlling inventory that link suppliers and customers in all processes relating to the transforming of raw materials into finished products. Wisner *et al.* (2014:8) postulate that the common themes within the various definitions of SCM relate to the coordination and integration between a firm's internal function, along with its external supply chain trading partners participating in different activities related to the provision of finished goods.

It can therefore be deduced from these interpretations that SCM should be viewed as one integrated function, characterised by integrated processes and aligned practices. The CSCMP (2014) definition will be adopted for the purpose of this research. Mainly because it is evident that researchers' interpretations of the construct is aligned to this definition. The

following two sub-sections focus on SCM as a key component in Porter's value chain model as well as the overall strategic importance of SCM, which encompasses the relationship between supply chain strategy and overall business strategy.

2.2.1 SUPPLY CHAIN MANAGEMENT WITHIN MICHAEL PORTER'S VALUE CHAIN MODEL

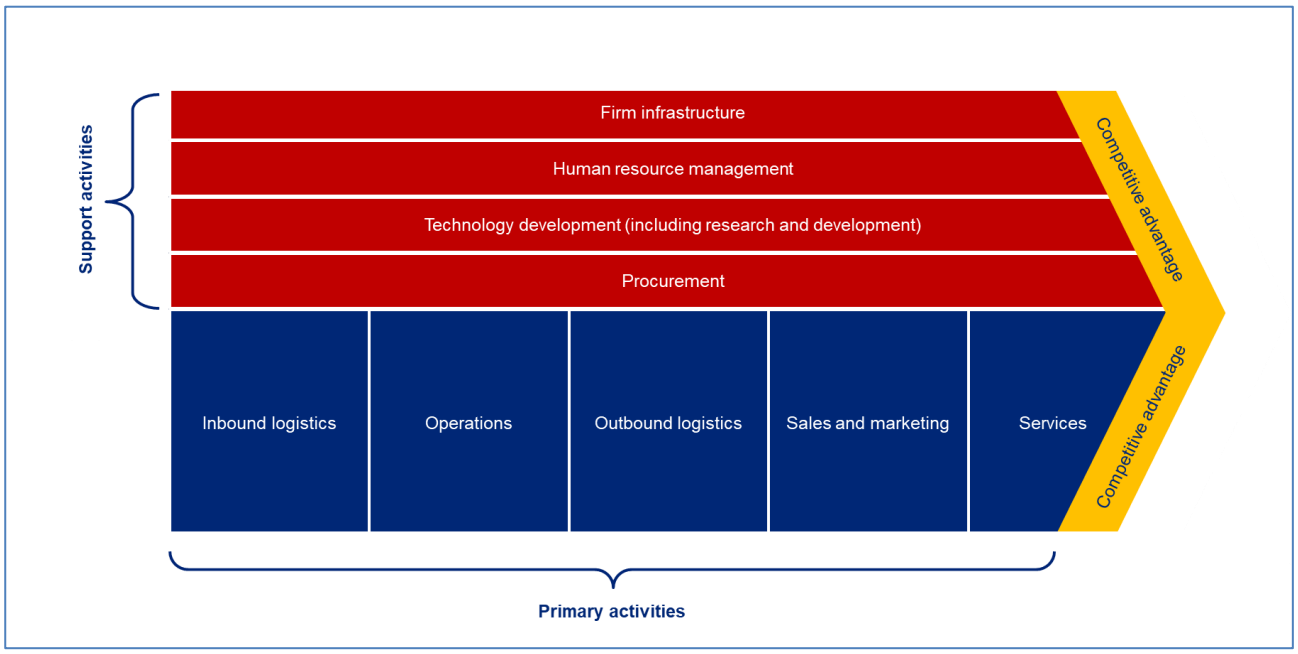
Martek and Chen (2016:501) state that the most tangible measure by which firms may be compared are their activities such as sourcing raw materials, manufacturing products as well as warehousing and distribution of finished goods to consumers. The most enduring theoretical framework for analysing a firm's core and non-core activities is Porter's value chain model (Porter, 1985:36). Porter (1985:36) argues that it is by deconstructing a manufacturing firm's integrated processes and activities into its discrete process and activities that allows for sources of competitive advantage to be analysed in isolation and as a result, improved. While a firm in its entirety may be relatively efficient, each stage of the focal firm's value chain can be assessed for its anticipated efficiencies (Martek & Chen, 2016:502). Thus, by dissecting the entire firm into its thread of linked activities, sources of advantage and sources of weaknesses can be identified and addressed accordingly. Martek and Chen (2016:502) state that a value chain is the whole process by which raw materials are extracted in their natural form, manipulated, shaped, and assembled, through various stages and processes, until they reach their complete state, subsequently being placed in the competitive market.

According to Porter (1985:36), the *value* of the value chain is ultimately the price that the target market is willing to pay for the focal firm's finished product, less the costs incurred at every stage of the value chain process, which transforms the raw materials into the finished product. There are however scholars who have shared contrasting views of Porter's theories and models, with the majority of these contrasts being anchored around the adoption of technology as well as customised customer preferences (Bashir & Verma, 2017:9; Mekic & Mekic, 2014:13). Mekic and Mekic (2014:13) have critiqued Porter's theories pertaining to competitive advantage and posit that one of the fundamental shortcomings associated to Porter's model is that it does not consider nor follow the pace of technology, along with its

influence on development of competitive advantage. Bashir and Verma (2017:9) postulate that the concept of Porter's optimisation of value chain is primarily relevant for mass markets' low-cost strategy where that targeted customer would always typically be at the end of the value chain. In today's social landscape, firms must clearly distinguish themselves to be more profitable and achieve majority market share over their competitors. Current technological and macroeconomic trends indicate that customised products are not meant to be targeted towards the one percent of the intended target market but rather for the majority of the target market thus, the position of customer has moved from the end of the value chain to the centre of the value chain (Bashir & Verma, 2017:9).

Prajogo *et al.* (2016:221) state that Porter distinguishes between primary activities and support activities. Primary activities directly affect and influence the creation or delivery of a product or service. As depicted in Figure 2.1, these primary activities can be grouped into five main areas, namely inbound logistics, operations, outbound logistics, marketing and sales, and service. Each of these primary activities is linked to support activities which help to improve their overall effectiveness and efficiency (Prajogo *et al.*, 2016:221). There are four main areas of support activities: technology development (including R&D), human resource management, infrastructure and procurement (e.g., systems for planning, finance, quality and information management) (Porter, 1985:40-43).

Figure 2.1: Porter's value chain model



Source: Porter (1985:37).

Scholars have however questioned whether it's appropriate to identify procurement as a support activity (Abdelhadi, 2017:32; van Weele & van Raaij, 2014:59-60). Abdelhadi (2017:32) questioned the reasonableness of including procurement as part of the support activities within Porter's value chain model. The researcher postulates that the purpose of value chain system is to add value to product creation or service execution. Therefore, procurement is an activity undertaken to source raw materials to aid primary activities which subsequently add value to the product or service. Thus, procurement can then not be regarded as a primary value adding activity (Abdelhadi, 2017:32).

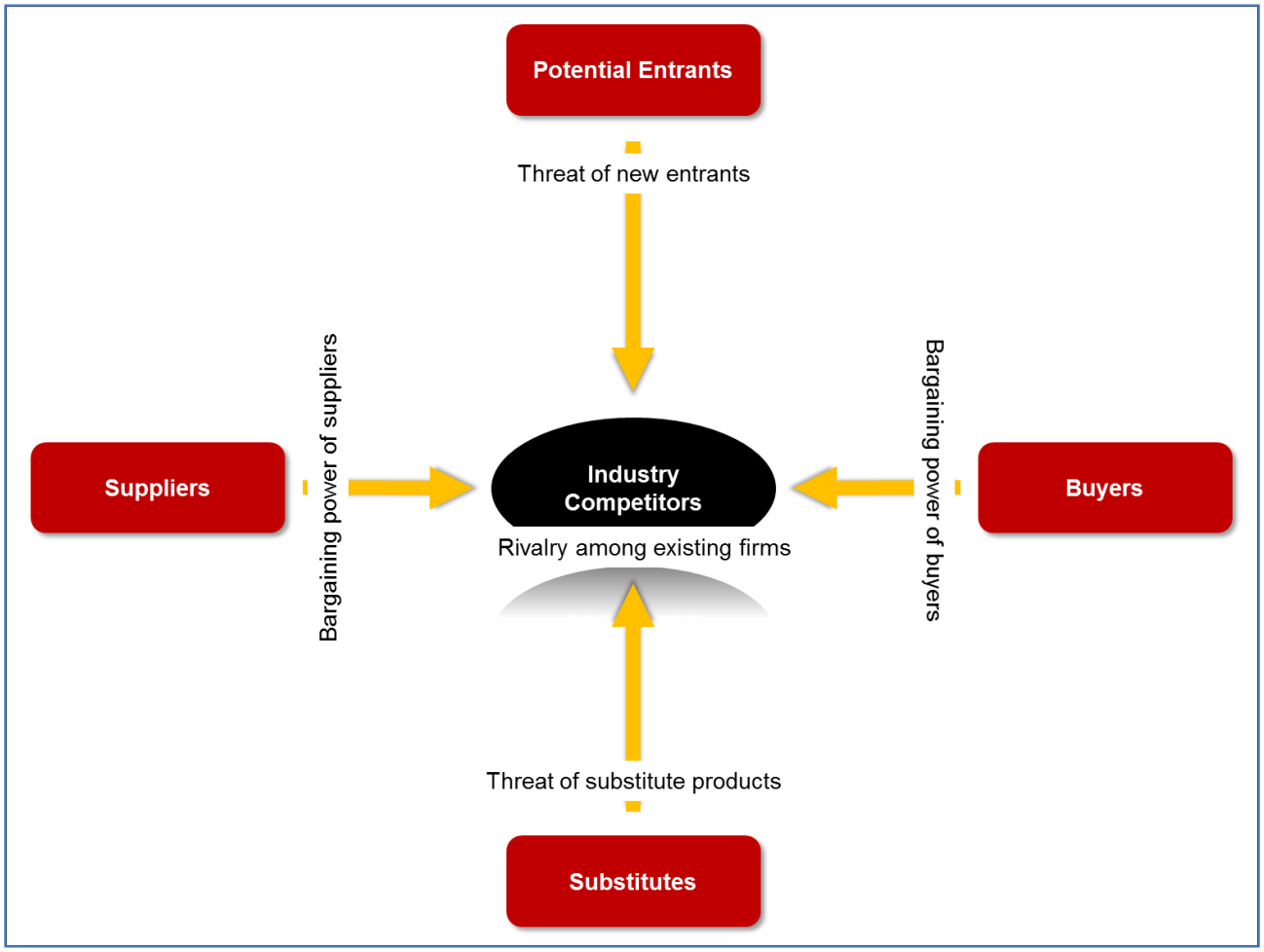
2.2.2 THE STRATEGIC IMPORTANCE OF SUPPLY CHAIN MANAGEMENT

At its core, supply chain strategy should encompass the focal firm's upstream suppliers as well as their associated downstream customers (Nag, Han & Yao, 2014:353). To ensure continuity from the previous sub-section, Porter's Five Forces model is used as a departure point in this section which will usher in a further discussion of the strategic importance of SCM.

Figure 2.2 illustrates how the return on investment of a particular industry may be affected by the dynamic interactions of five forces, namely:

- *Competition between rivals* within the industry;
- *Threat of new entrants, which* relates to the defence against threats of new rivals entering the industry.
- *Threat of substitutes*, which relates to the defence against the threat of potential customers using substitute products.
- *Supplier power*, which relates to the power of suppliers in negotiating and maintaining raw material supply parameters.
- *Buyer power*, which relates to the power of buyers in determining finished goods availability and supply parameters.

Figure 2.2: Five forces model



Source: Adapted from Porter (1985:5).

According to Nag *et al.* (2014:355), the factors described in the five forces model may have direct impacts on raw materials, components, subcomponents as well as finished goods inventories within a focal firm's supply chain. Porter (1985:1) states that an organisation's competitive strategy should aim to establish a profitable and sustainable position against the forces depicted in Figure 2.2, which ultimately determine industry competition.

However, Dobbs (2014:33-35) articulates the challenges that emanate from using the five forces model. These are namely:

- *Lack of depth*: Many supply chain practitioners only understand the five forces framework and its use in a superficial way. In most instances, this leads to partial, inaccurate, and unsupportive analyses. Furthermore, at worst, inadequate decision-making and insufficient operational and financial firm performance outcomes.
- *Lack of structured analysis*: Porter (2008:29) expresses that there is insufficient use of quantitative analytical techniques that need to be complimentarily used in applications of the five forces framework. These types of analyses of industry circumstances are arbitrary and allow for poor alternative supply chain strategies.
- *Lack of strategic insight*: Porter (2008:29) also states that his biggest frustration regarding the misapplication of the five forces framework is the perception that the framework is fundamentally a tool to gauge the attractiveness levels of industries, rather than gain strategic insight pertaining to how a manufacturing firm can compete more effectively within its industry.

Therefore, in order to determine the applicability of the five forces model in the current commercial landscape, Dälken (2014:4) analysed the manufacturing industry with a specific focus on structural changes brought about by contemporary trends adopted by manufacturers, big and small, across the global landscape. This analysis was largely driven by the increasing prevalence of digitisation. According to Dälken (2014:4), the increasing adoption of digitisation by manufacturers have brought about two further forces which affect competition: globalisation and deregulation. Firms operating only within their national boundaries have seemingly built an international presence due to numerous technological advancements, along with the improvement of communication and transportation modes and nodes (Dälken, 2014:4). In addition, Bienhaus and Haddud (2018:981) suggest that the

impact of technology adoption and digitisation towards the firms' end-to-end supply chain has a lucrative benefit and firms should take the future role of SCM into account when aligning its procedures and processes towards its digital strategy. Furthermore, the SCM function in manufacturing firms should gear itself towards building up the required capacities and capabilities to support the focal firms' vision and mission from both a strategic and innovative standpoint. This requires manufacturing firms to rethink value-adding roles and responsibilities of all supply chain stakeholders and set-up cross-functional roles to speed-up transactions and processes in a technologically-enabled and innovative manner (Bienhaus & Haddud, 2018:981). In the current digital age, the five forces model can be applied in areas within manufacturing firms where operational inefficiencies can be curbed by automating process that do not require human intervention.

2.3 AN OVERVIEW OF SUPPLY CHAIN INTEGRATION

The SCI construct has received great interest from supply chain scholars (Ataseven & Nair, 2017:252-253; Huo *et al.*, 2019:237; Liu *et al.*, 2016:15). In addition, Ataseven and Nair (2017:252-253) state that SCI is one of the prominent research topics in operations and supply chain management literature. Huo *et al.* (2019:237) have aligned their interpretation of the SCI construct to that of Flynn, Huo and Zhao (2010:59). These researchers interpret SCI as the degree to which a firm can strategically collaborate with its supply chain trading partners and cooperatively manage internal and external firm processes in order to achieve effective and efficient products, information, financial and decisions flows, with the objective of providing maximum value to its customer at a low cost and high speed (Huo *et al.*, 2019:237). Similarly, Liu *et al.* (2016:14) posit that SCI refers to the degree to which a firm collaboratively deploys its resources and capacities with channel partners.

These scholars have all highlighted the importance of conceptualising SCI as a multi-dimensional construct comprising of internal integration among internal functions within the focal firm and external integration with both upstream and downstream supply chain trading partners. The influences and practices required to foster and attain high levels of integration among supply chain trading partners mainly focus on information sharing and collaboration in the design of processes and procedures, joint decision-making as well as coordination (Ataseven & Nair, 2017:252-253). These practices assist in aligning the desires

of all stakeholders explicitly and implicitly involved in the end-to-end supply chain, thus improving overall supply chain performance, both financially and operationally (Ataseven & Nair, 2017:252-253).

In this study, three mutually exclusive dimensions of SCI, namely internal integration, supplier integration and customer integration, will be investigated from the perspective of the participating firms. These three dimensions are discussed in Sections 2.3.1 to 2.3.3 below.

2.3.1 INTERNAL INTEGRATION

Khalaf and El Mokadem (2018:4) suggest that internal integration refers to coordinating various tasks within a firm in order to, efficiently and effectively, make the product available to the customer. Riley, Klein, Miller and Sridharan (2016:957) consider the importance of communication and posit that internal integration aids in facilitating process interaction. The researchers also state that internal integration provides a firm structure that enables rapid communication, ultimately enabling collaboration across internal firm boundaries. Makepeace, Tatham and Wu (2017:32) define internal integration as the extent to which separate internal functions work collaboratively to arrive at mutually satisfactory results. These scholars recognise the importance of customer satisfaction, cross-functional collaboration as well as effective communication as key attributes of internal integration.

Makepeace *et al.* (2017:32) postulate that to improve customer-driven supply chains, greater emphasis is placed on cross-functional processes which led to identifying that achieving integration across internal firm functions is not only a prerequisite to successful external supply chain integration, but reasonably more challenging to achieve. Similarly, Riley *et al.* (2016:957) consider the benefit of systems and posit that integrating internal tasks and activities include cross-functional cooperation along with systems integration. Within firms with well-integrated internal functions, supply chain practitioners leverage information and ERP (Enterprise Resource Planning) systems to make proactive inferences which can be timely adjusted thus avoiding later consequences (Riley *et al.*, 2016:957). Thus, internal

integration seeks to remove the old-fashioned functional silo approaches and promote coordination among the different internal functions (Khalaf & El Mokadem, 2018:4).

Szász *et al.* (2016:771) found that a strong positive relationship exists between internal integration along with its efficiency and effectiveness of firm performance improvement. This result suggests that manufacturing firms are able to translate a higher level of internal integration into operational performance benefits. However, Szász *et al.* (2016:771) also found that manufacturing firms in developing and less developed countries do not possess the requisite abilities to identify and transfer value-adding knowledge from their own domains and to combine it with existing firm knowledge in such a way that it would contribute to an improvement in cost efficiency.

2.3.2 CUSTOMER INTEGRATION

Customer integration as an SCI dimension has received attention from supply chain scholars (Afshan & Motwani, 2018:2186; Chavez *et al.*, 2015:83; Hochdörffer, Buergin, Vlachou, Zogopoulos, Lanza & Mourtzis, 2018:106; Schuh, Pitsch & Kühn, 2015:277). Chavez *et al.* (2015:83) centre their view and interpretation of customer integration around collaboration and information sharing, while Afshan and Motwani (2018:2186) suggest a view centred around building long-term relationships with downstream trading partners. According to Chavez *et al.* (2015:83), customer integration refers to the information sharing practices as well as collaborative practices, between a focal firm and its downstream customers, in order to respond more proactively to customer needs (Chavez *et al.*, 2015:83). Afshan and Motwani (2018:2186) state that customer integration assists a manufacturing firm in forming long-term relationships with downstream trading partners, which reduces contracting costs by reducing the costs of negotiation along with the drafting of contractual agreements. Thus, firms with high levels of customer integration have the potential to decrease costs pertaining to conducting business, due to savings in total transaction costs (Afshan & Motwani, 2018:2186). Frequent customer contact, the evaluation of customer satisfaction as well as clearly capturing customer expectations are, inter alia, the downstream collaboration activities associated with customer integration (Chavez *et al.*, 2015:85).

According to Schuh *et al.* (2015:277), customer integration can be realised to different degrees. A low degree of customer integration is realised through the use of a third-party service provider, which means that the manufacturing firm is transferring information to and soliciting information from the customer through a selected service provider without receiving adequate or accurate information directly from the customer. A medium degree of customer integration indicates that a direct mutual exchange of information takes place. From this perspective, the participating firm is also getting valuable information from the customer, in return. Lastly, a high degree of customer integration means that the manufacturing firm strives to fully adopt the customer's process and has, to a full extent, taken the responsibility to effectively execute this task (Schuh *et al.*, 2015:277). In this instance, the downstream trading partner relies heavily on the participating firm to coordinate processes and practices relevant to the integration (Yu, Jacobs, Salisbury & Enns, 2013:347).

Hochdörffer *et al.* (2018:106) argue that in order for manufacturing firms to differentiate themselves from their competitors, they have to consider customer requirements at earlier stages of production planning, as well as during the order fulfilment process. He, Lai, Sun and Chen (2014:262) add that a close relationship between first tier customers and the manufacturer is a critical success factor for aiding the improvement and accuracy of demand information. This success factor yields benefits such as reducing the manufacturer's time to design the product, plan for production and eliminate existing inventory obsolescence, thus allowing it to be more responsive to customer needs (He *et al.*, 2014:262). This will enable the customer to consider the manufacturer to be reliable and trusted to deliver products with no defects.

2.3.3 SUPPLIER INTEGRATION

The third dimension of SCI: supplier integration is defined by Yang *et al.* (2017:1095), He *et al.* (2014:268) and Yang *et al.* (2017:1095) and base their interpretation of supplier integration on collaborating with suppliers through process synchronisation, where the focal manufacturing firm along with its suppliers, synchronise their inter-firm supply processes in order to gain equally beneficial yields. He *et al.* (2014:268) base their supplier integration

interpretation on the extent to which the focal firm along with its suppliers coordinate decisions pertaining to inventory management, collaborative planning, forecasting, replenishment, along with the physical flows of raw materials. Abdallah *et al.* (2017:697) argue that supplier integration is fundamentally characterised by a long-term relationship between a focal firm and its suppliers, especially those of suppliers of strategic commodities. These long-term relationships are considered to aid in enhancing operational and strategic capabilities of participating firms, thus enabling them to improve operational and financial firm performance (Abdallah *et al.*, 2017:697). In order to avoid further limitations in this study, all views postulated by the supply chain scholars will be adopted for the purposes of this research.

Supplier integration encompasses a myriad of variables such as, inter alia, coordinated schedules, integrated processes, shared information, shared technology, long-term contracts, reinforced quality improvements, improved supplier's overall capabilities, and shared risks and rewards (Abdallah *et al.*, 2017:697). Furthermore, studies have found that supplier integration can expose value-adding improvements pertaining to improved information sharing and decision-making, enhance product innovation, and lead to sustainable competitive advantage (Bengtsson & von Haartman, 2015:1306; Tsinopoulos & Mena, 2015:1440). Fruitful supplier integration efforts can yield a number of benefits such as cost cutting, optimised service levels, risk mitigation processes and procedures, and proactive response mechanisms to a changing environment with dynamic market needs (Abdallah *et al.*, 2017:697).

However, the literature also reveals that firms have had difficulties in attempting to attain high levels of supplier integration. Yang *et al.* (2017:1095) uncovered that relational obstacles such as the lack of trust, as well as operational issues such as the absence of performance data integration, hinder supply chain integration. Over and above the relational and operational issues, behavioural issues could also illuminate how managerial attitudes toward the firms' supplier integration ideal is formed. Ellström (2015:634-635) further adds that there are no one-size-fits-all approaches for how to integrate suppliers in the focal manufacturing firms' operations. The conditions for supplier integration differ according to the contextual setting of the manufacturing firm (Ellström, 2015:634-635).

2.4 CONTEMPORARY SUPPLY CHAIN MANAGEMENT CHALLENGES IN SOUTH AFRICA

Peristeris, Kilbourn and Walters (2015:2) posit that in order for manufacturing firms to overcome fundamental supply chain challenges in South Africa, practitioners should seek clarity about the scope of processes to include in their integration plans. This also includes identifying the adequate internal and external stakeholders to involve in these plans. These researchers further state that the agreed methodologies to follow as well as the key performance areas to focus on in the measurement of performance should also be clarified.

Recent studies across the FMCG and construction industries have highlighted challenges prevalent in the South African supply chain management domain (Mvubu & Naude, 2016:284; Nguegan Nguegan & Mafini, 2017:10-11; Pillay & Mafini, 2017:10). Pillay and Mafini (2017:10) highlight that the construction industry is awash with the numerous supply chain related challenges, including:

- Skills and qualifications: These challenges refer specifically to developing the competencies of employees through training of formal education.
- Procurement practices and systems: These challenges refer to those activities and processes that aid the sourcing, acquisition and purchase of goods from upstream suppliers.
- Supply chain integration: These challenges refer largely to the management and coordination of the end-to-end supply chain as one entity.
- Supply chain relationships: These challenges refer to the way in which stakeholder firms within the end-to-end supply chain, collaborate with each other.
- Structure of the construction industry: These challenges refer to the arrangement of the industry, with specific reference to the size composition of firms within the industry and how they compete with each other (Pillay & Mafini, 2017:6).

In a similar study, Nguegan Nguegan and Mafini (2017:10-11) found that the most prevalent supply chain challenges in the FMCG industry, specifically the food processing industry included skills shortages and a slow adoption of disruptive technologies. According to the

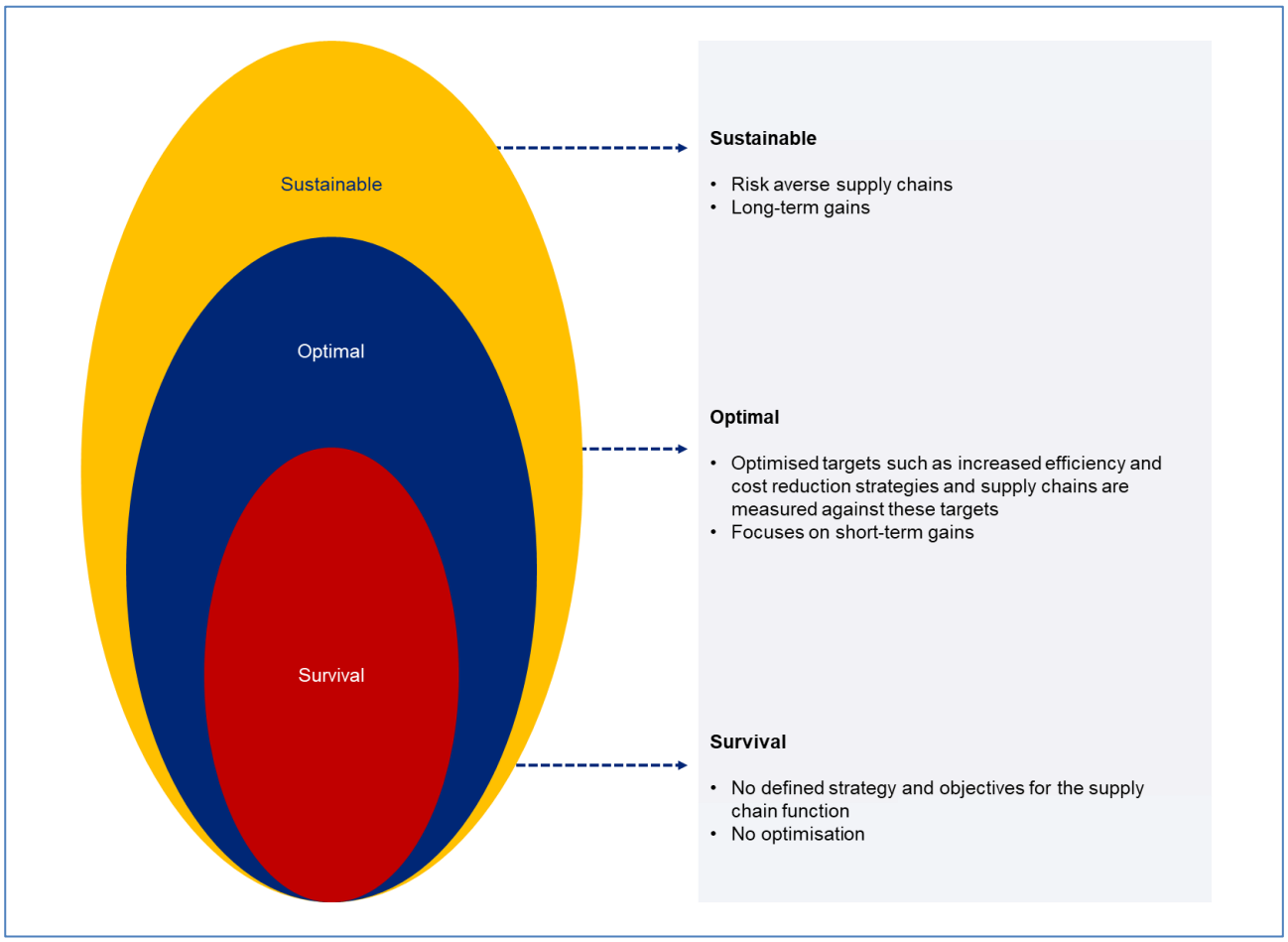
Department of Higher Education and Training, there is an increasing shortage of supply chain professionals in South Africa (Department of Higher Education and Training, 2016:16). It is essential for a myriad of manufacturing industries that knowledgeable and experienced supply chain professionals be recruited. Once they have been recruited, further and frequent training and development of these practitioners is important in order to keep their knowledge, skills and varying proficiencies relevant to industry practices and norms (Nguegan Nguegan & Mafini, 2017:10-11). From a technology adoption standpoint, the faster adoption of disruptive technologies, consistent maintenance of crucial technologies and integrating the benefits of these technologies into all firm functions to remain competitive, is required (Nguegan Nguegan & Mafini, 2017:10-11). Mvubu and Naude (2016:284) found that supply chain practitioners in the South African FMCG industry have, *inter alia*, identified the lack of partnering with local suppliers, poor communication as well as limited visibility of pertinent data as major supply chain challenges.

As a step towards curbing supply chain challenges, Pillay and Mafini (2017:10) suggest that the competency levels of practitioners in the industry should be addressed. Training and development of employees at all levels within the firm should be instituted. In particular, training should enable practitioners to embrace the use of best practices in supply chain management as tools for both decision-making and problem-solving (Pillay & Mafini, 2017:10). In addition, Nguegan Nguegan and Mafini (2017:11) encourage managers to improve the effectiveness of logistics and transport value-levers by considering, *inter alia*, the utilisation of secondary distribution planning as well as outsourcing transportation to third party logistics service providers when this is regarded as a non-core function.

2.5 THE IMPORTANCE OF SCI IN A MODERN SUPPLY CHAIN

Joubert *et al.* (2014:17-19) state that South African supply chains have moved beyond a survival level to an optimal level where, as shown in Figure 2.3, costs, inventories and lead times have been minimised within the focal firm's separate supply chain functions. Figure 2.3 also illustrates that South Africa's firms have progressed from having supply chain functions that just merely fulfil tasks with no strategic intent. In addition, a shift towards end-to-end integration will inherently mitigate supply chain risk and cultivate long-term gains for the focal firm, thus making it more sustainable (Joubert *et al.*, 2014:17-19).

Figure 2.3: Different levels of supply chain maturity



Source: Adapted from Joubert *et al.* (2014:18).

End-to-end integration of the focal firm's internal and external supply chain would then be the next major shift required in South Africa to make FMCG organisations more customer-centric and competitive (Joubert *et al.*, 2014:ii). Mathu and Phetla (2018:7) have found that the adoption of technology, among other practices, used in the supply chains of the FMCG manufacturing firms in South Africa enhanced the end-to-end integration in the supply chain, including responding faster to customer needs. Joubert *et al.* (2014:ii) further state that striving towards end-to-end SCI requires a significant change in how supply chain trading partners collaborate, and how information technology is leveraged to provide real-time visibility and joint decision making, ultimately unlocking value adding operational and financial efficiencies. Mathu and Phetla (2018:7) further found that SCI in South African FMCG manufacturing firms occurred as a result of supplier–buyer alignment, through a computer network that leveraged internet use along with the application of collaborative

planning, forecasting and replenishment (CPFR) and enterprise resource planning (ERP) systems.

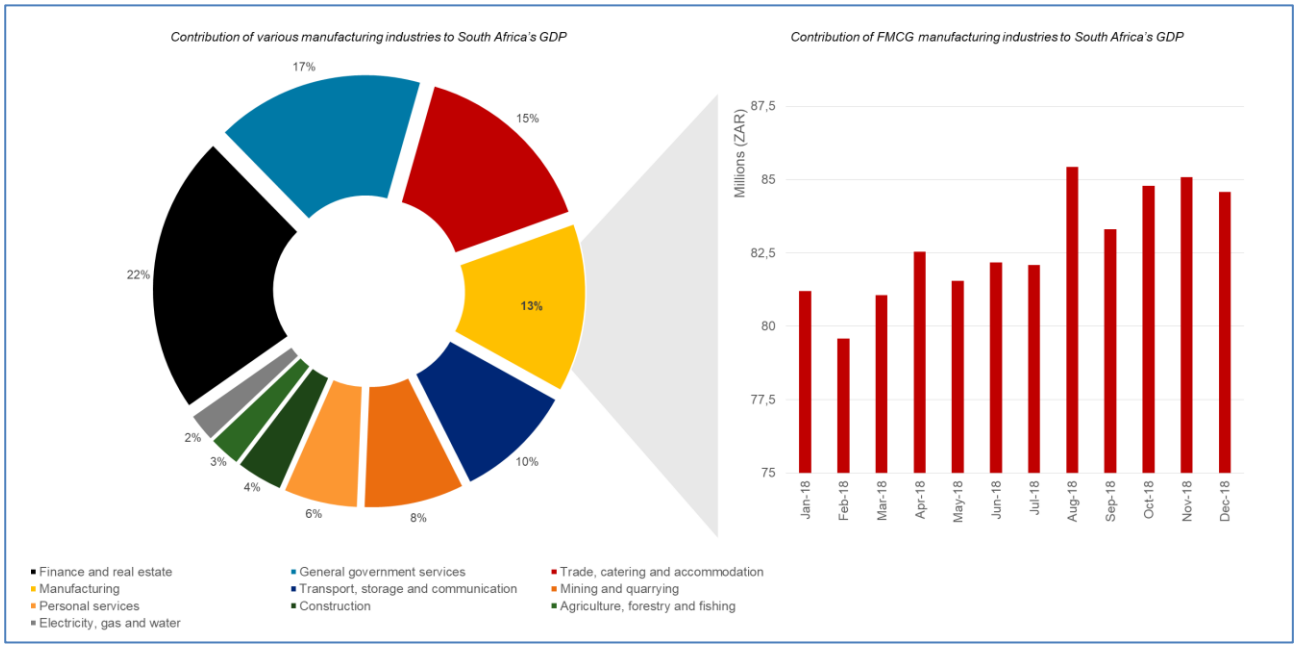
According to Beheshti, Hultman, Oghazi and Mostaghel (2014:21), an effective supply chain network requires FMCG manufacturing firms to form partnerships with their up- and downstream supply chain partners and the use of advanced technology to efficiently and effectively communicate important data with their internal and external stakeholders. However, Chang, Ellinger, Kim and Franke (2016:292-293) highlight the growing importance of internal integration, along with its important managerial implications, and found that by overly prioritising external integration with upstream and downstream trading partners, the focal firm could ultimately miss out on opportunities to achieve competitive advantages by not amply fostering internal integration between traditionally obstinate and sometimes antagonistic functional areas.

The ideal of SCI is, fundamentally, the streamlining of core business processes within and between manufacturing firms, thus yielding advantages over competitors through reduced costs and superior customer value creation that are both associated with superior firm performance (Mackelprang, Robinson, Ednilson & Webb, 2014:72).

2.6 AN OVERVIEW OF THE SOUTH AFRICAN FMCG MANUFACTURING INDUSTRY

As previously defined by Zeeuw van der Laan and Aurisicchio (2019:2) in Section 1.7 of this dissertation, FMCG goods refer to everyday products with a limited shelf-life of not more than nine months. These products include packaged foods, bottled ready-to-drink beverages, personal care, pet care, household care and packaging (Kuzmina, Prendeville, Walker & Charnley, 2019:74). In addition, as one of the largest sectors in the South African economy, the FMCG industry contributes substantially to the gross domestic product (GDP) of South Africa (Mvubu & Naude, 2016:274). Figure 2.4 illustrates that in 2018, 13% of South Africa's GDP contribution came from the manufacturing industry as a whole, of which the FMCG industry contributed a total of R993 million (Statistics South Africa, 2018).

Figure 2.4: Different industries' contribution to South Africa's GDP with a focus on the FMCG industry's monthly contributions



Source: Adapted from Statistics South Africa (2018).

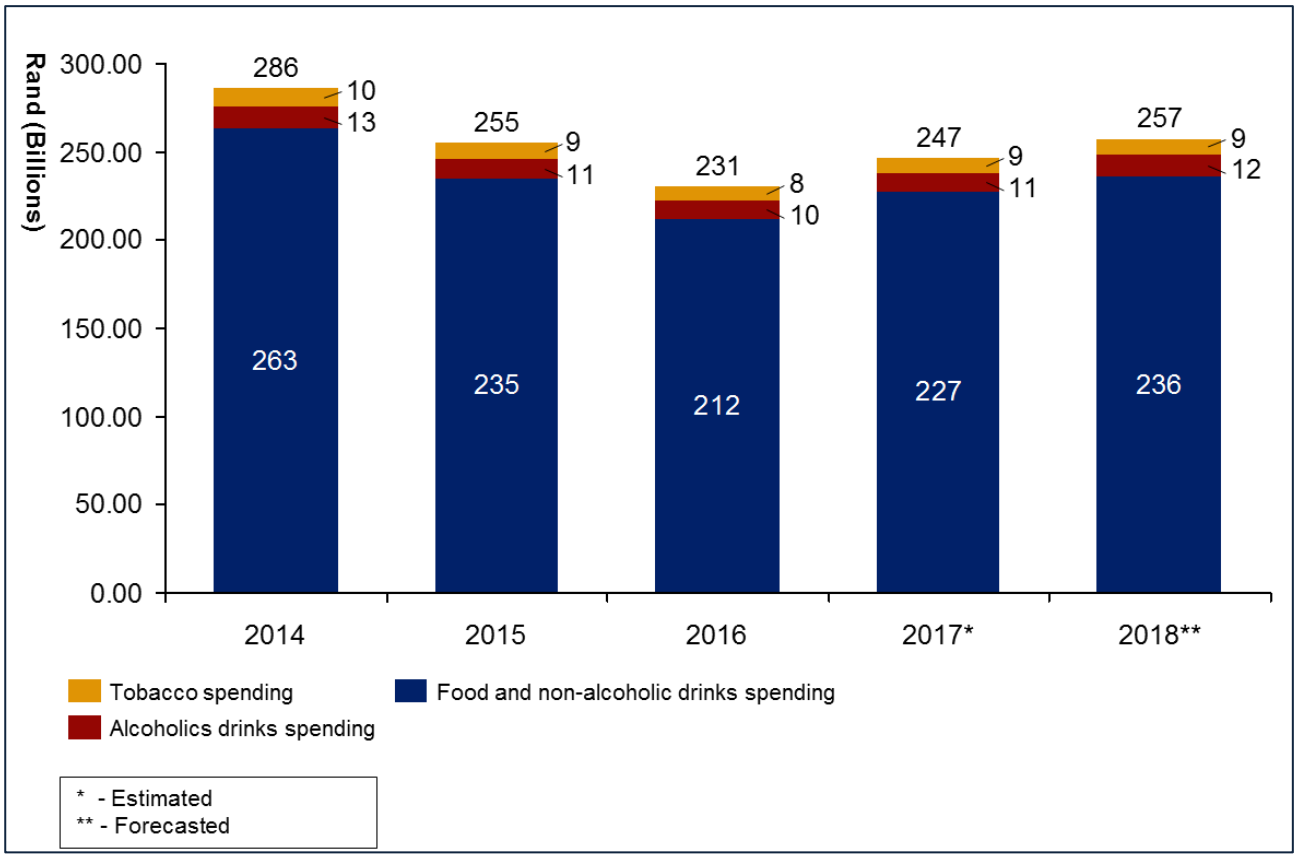
The Consumer Goods Council of South Africa (CGCSA) is the representative body of the South African FMCG industry (CGCSA, 2016). This body was established in 2002 and represents more than 12 000 FMCG manufacturing firms in South Africa across the spectrum and value chain of consumer goods. The CGCSA promotes the engagement amongst stakeholders in the FMCG industry and represents the interests of the FMCG industry to the government as well as other stakeholders. Notable manufacturers in this sector include Coca-Cola, Procter and Gamble, PepsiCo and Nestlé (CGCSA, 2016).

South Africa has traditionally had the largest consumer goods market in Africa, but has recently been eclipsed by Nigeria, which has also become the largest economy on the continent (Economist Intelligence Unit, 2017:2). In addition, the spending patterns of South African consumers have undoubtedly shifted upward in recent years, due to the rise of a black middle class, higher rates of urbanisation as well as the proliferation of store cards offering credit (Economist Intelligence Unit, 2017:2).

Spending on food and non-alcoholic drinks represents a significant area of consumer spending in South Africa. As shown in Figure 2.4, this spending amounted to R212 billion in 2016 and R236 billion in 2018 (BMI Research, 2017:11). Furthermore, expenditure on the

alcoholic drinks sub-sector will account for a forecasted R11 billion in 2017, while tobacco will account for an additional R9 billion.

Figure 2.5: Food, drink & tobacco spending (2014-2018)

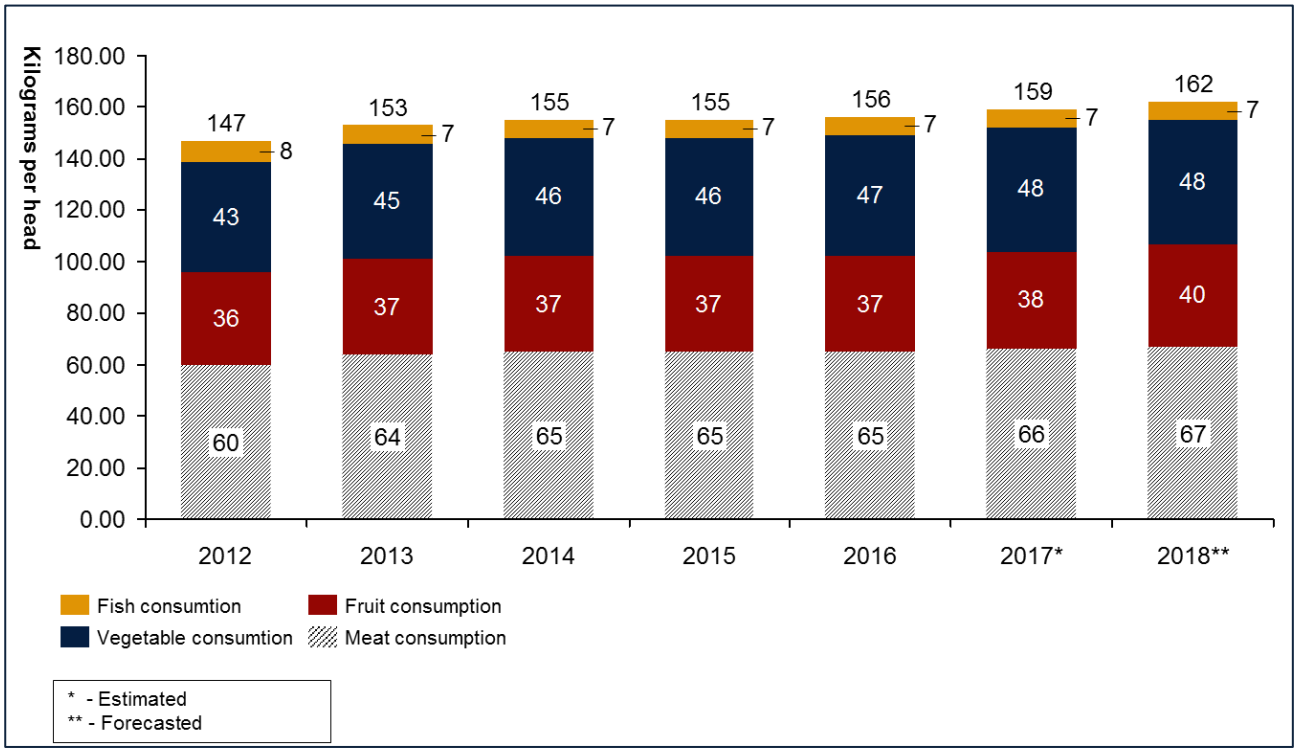


Source: Adapted from BMI Research (2017:11).

The South African FMCG market is experiencing a growing need for convenience products among consumers, which will ultimately benefit the local food industry on the back of increasing female labour participation. Leading food manufacturing firms will gradually expand into convenience foods across all consumer groups, with lower-income consumers changing their food consumption preferences for more easy-to-cook foods, while more affluent consumers increasingly opt for ready-made and pre-packaged meals (BMI Research, 2017:10). However, in the near future the financial pressure on households may encourage a shift back to domestically grown foods and cheaper products (Economist Intelligence Unit, 2017:8).

From a food consumption perspective, the South African consumer goods market is largely comprised of meat consumers and vegetable consumers, which includes maize and other starches (see Figure 2.6).

Figure 2.6: South Africa's food consumption by type (2012-2018)



Source: Adapted from Economist Intelligence Unit (2017:12).

The competitiveness among FMCG companies in South Africa is increasing. According to Euromonitor International (2015:1), South African consumers have moved towards internet shopping, with home shopping within the FMCG industry recording a growth of 7%, year-on-year since 2014. This further enables the industry to serve geographically dispersed consumers without the limitations of store-based channels (Euromonitor International, 2015:1).

With a number of local and international firms in the South African FMCG industry, The Economist Intelligence Unit (2017:6-12) briefly summarises the recent noteworthy FMCG activities, that have taken place within the country's FMCG industry across most categories as follows:

- With regards to processed foods, McCain Foods remains a key player, while Unilever dominates the food spreads market. The local FMCG manufacturer RCL Foods is another leading food producer, with particularly strong ties to Woolworths as it is their largest supplier of food.
- The beer sector in South Africa is led by SABMiller which merged with Anheuser-Busch InBev (AB InBev) in an acquisition completed in October 2016. SABMiller distributes the country's most popular beers, Carling Black Label and Castle Lager, and accounts for over 60% of the volume of premium beers sold, mainly Castle Light and Peroni.
- Tobacco sales are dominated by the South African subsidiary of British American Tobacco (BAT), which accounts for around 66% of domestic sales. Furthermore, BAT's Dunhill and Peter Stuyvesant are the leading domestic brands with Japan Tobacco International (which sells the Camel brand), Philip Morris (Marlboro) and Mastermind Tobacco of Kenya being the other major suppliers.
- The South African cosmetics and toiletries market is well developed and is the only part of the FMCG sector in which domestic production accounts for a large fraction of local consumption. Domestically, Adcock Ingram, Amka, Beige, Avroy Shlain and Reeva Foreman dominate the cosmetics and toiletries market, with multinationals, Unilever, L'Oréal, Revlon, Johnson & Johnson, Colgate Palmolive and Procter & Gamble being the international competitors in the market.

2.7 CHAPTER SUMMARY

Porter (1985:36) has articulated the importance of SCM in the value chain, along with how it is imperative to align the firms' supply chain strategy to firms' overall business strategy. In addition, the literature clearly identifies three dimensions of SCI: internal integration, customer integration as well as supplier integration. The supply chain challenges specific to South Africa's private sector point mainly towards the lack of a skilled labour force as well as inadequate systems used to execute daily and monthly operational transactions.

South Africa's supply chains have advanced from a survival level to an optimal level of maturity. FMCG manufacturing firms need to embrace the advent of technology to yield end-to-end SCI benefits, both from within the focal firm and externally with supply chain trading

partners. South Africa's manufacturing industry is one of the biggest contributors to the country's GDP, with the FMCG manufacturing industry contributing R993 million in 2018 (Statistics South Africa, 2018). The South African consumer goods market largely comprises of meat and vegetable consumers, with spend patterns shifting upwards primarily due to urbanisation as well as the rise of the middle class.

The subsequent chapter ensues with a discussion of the identified supply chain integrative practices that are prevalent within the FMCG industry at large. The chapter also discusses the manner in which SCI influences the financial and operational performance of the focal FMCG manufacturing firm.

CHAPTER 3: SCI PRACTICES AND SCI'S INFLUENCE OF FIRM PERFORMANCE

Chapter outline:

The purpose of this chapter is to:

- discuss the SCI practices documented in the literature;
- discuss commitment and trust as enablers towards the attainment of SCI;
- highlight SCI's influence on firm performance, from both an operational performance and financial performance standpoint;
- discuss the various perception gaps that exist, as documented in the literature.

3.1 INTRODUCTION

According to Chin, Hamid, Raslic and Heng (2014:258), an integrated supply chain environment is desirable in order for manufacturing firms to connect the complete network of trading partners together. This reduces stubborn supply chain challenges such as functional silos, poor transparency of knowledge and information as well as the poor and ineffective formation of suitable downstream customer and upstream supplier relationships (Chin *et al.*, 2014:258). Various scholars have identified many integrative practices, employed by a myriad of firms, to effectively integrate a manufacturing firm's supply and demand, subsequently improving the manner in which the supply chain is managed and coordinated (Singh & Teng, 2016:291; Wang, Childerhouse, Kang, Huo & Mathrani, 2016:845; Wong, Lai & Bernroider, 2015:3; Wong, Lai, Cheng & Lun, 2014:261; Zhu, Krikke, Caniëls, Pawar, Rogers & Ferrari, 2015:30).

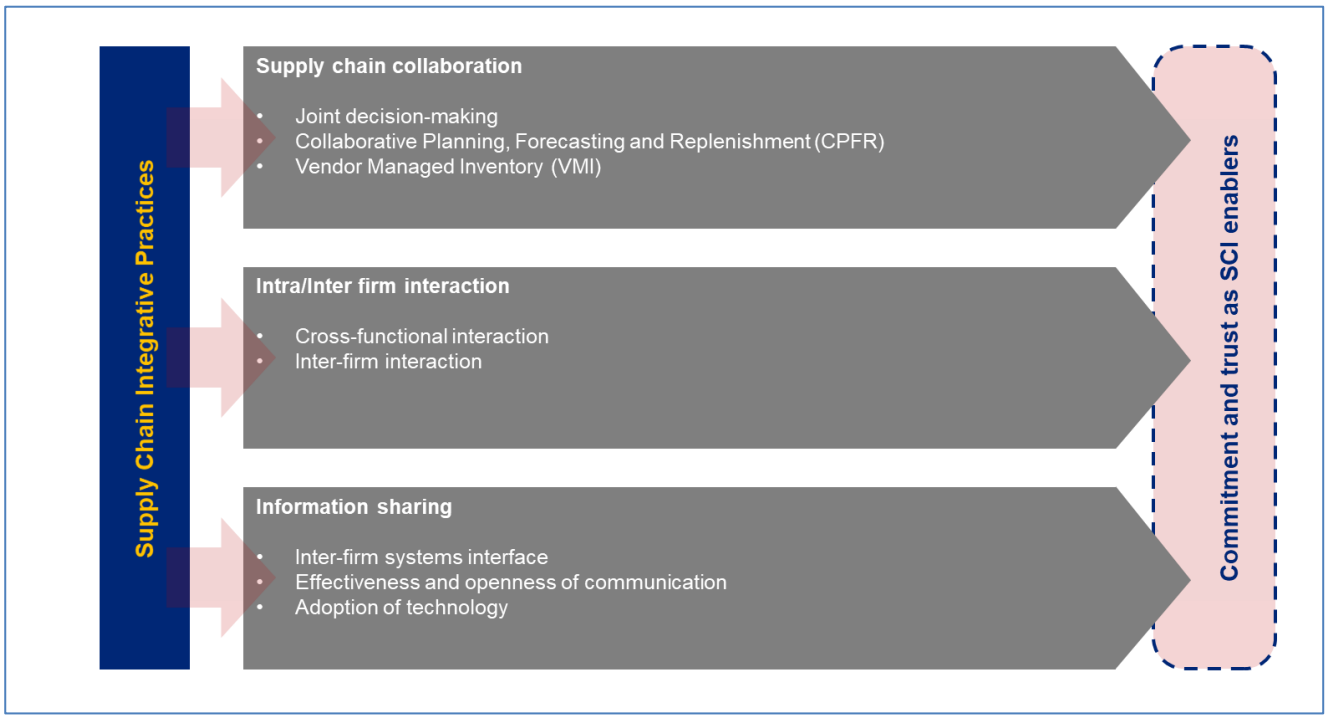
While the preceding chapter reviewed literature on the SCI construct along with its dimensions, this chapter will focus on the various supply chain integrative practices that are employed by manufacturing firms, as well as the extent to which SCI affects the operational and financial performance of the focal firm. This chapter will further review literature on the various perception gaps, relating to the SCI construct, that exist among supply chain practitioners within the focal firm's internal and external supply chain environment.

3.2 A REVIEW OF SUPPLY CHAIN INTEGRATION PRACTICES

Supply chain scholars suggest that SCI practices many have varying impacts on the operational as well as financial performance of the focal manufacturing firm (Govindan, Cheng, Mishra & Shukla, 2018:343-344; Liu, Zheng, Gong & Gui, 2017:2; Ramanathan, 2014:217; Wong *et al.*, 2015:1; Wong *et al.*, 2014:56). Govindan *et al.* (2018:343-344) postulated that integrating enterprise systems as well as leveraging big data and analytics will enables manufacturing firms to make pertinent data-driven supply chain decisions. Liu *et al.* (2017:2) presented a study focussed on the importance of joint-decision making to ensure product sustainability, in the advent of carbon tax regulations occurring worldwide. Wong *et al.* (2015:1) suggest that downstream systems interfaces have a positive impact on the overall movement of products from point of origin to the point of consumption.

Therefore, integrating internal and external firm processes requires supply chain practitioners to understand the direct and indirect impact that these SCI practices are likely to have on the focal firm's operational and financial performance. Sections 3.2.1 to 3.2.4 below provide an overview of the three SCI practice categories that are prominent in the FMCG industry, including the cross-cutting element of commitment and trust as SCI enablers. These categories have been identified by supply chain scholars as *supply chain collaboration*, *intra/interfirm interaction* and *information sharing* (Qi, Huo, Wang & Yeung, 2017:1449). Figure 3.1 depicts these categories as well as the practices that are associated with each of these categories.

Figure 3.1: SCI practices documented in the literature



Source: Adapted from Qi *et al.* (2017:1449)

3.2.1 SUPPLY CHAIN COLLABORATION

The concept of supply chain collaboration has become increasingly important because manufacturing firms, along with their external supply chain trading partners, have realised that the benefits derived from working collectively far exceed the associated risks (Raweewan & Ferrell, 2018:269). According to Ramanathan (2014:210), in today's competitive and unpredicted business world, cost reduction, strong supplier relations and good customer services are not the individual responsibilities of any single supply chain member and may be achievable through effective collaboration among supply chain trading partners. Hence, it is important to coordinate supply chain activities to streamline planning, production and replenishment. According to Shaban, Costantino, Di Gravio and Tronci (2019:54), the inadequate coordination and limited monitoring of supply chain activities by each supply chain node, without considering the subsequent impact on the other external and internal supply chain nodes, negatively affects the overall supply chain performance.

South African and international scholars have identified a number of mechanisms that can aid in attaining satisfactory supply chain collaboration (Kumar, Banerjee, Meena & Ganguly,

2017a:46-47; Mathu & Phetla, 2018:1; Shaban *et al.*, 2019:54). Mathu and Phetla (2018:1) have identified collaborative planning, forecasting and replenishment (CPFR) as a mechanism which positively influences supply chain collaboration. Shaban *et al.* (2019:54) have identified vendor managed inventory (VMI) as well as CPFR as information sharing-based supply chain collaboration mechanisms. Kumar *et al.* (2017a:46-47) have identified joint decision-making as a collaborative mechanism which emanates as a result of joint planning.

The subsequent sections focus on the three supply chain collaborative mechanisms, as mentioned above. These are:

- Joint decision making
- Collaborative planning, forecasting and replenishment (CPFR)
- Vendor managed inventory (VMI).

3.2.1.1 Joint decision-making

Shou, Li, Park and Kang (2017:1) posit that SCI must, *inter alia*, allow for effective information sharing and joint decision-making between the focal manufacturing firm and its supply chain trading partners, especially during the production phase. Similarly, Yu *et al.* (2013:347) state that SCI largely involves the provision of complete information as well as all internal and external stakeholders participating jointly in making short- to long-term supply chain decisions. A high level of a firm's SCI is characterised by joint decision-making occurring between internally within the focal firm as well as externally among supply chain trading partners, subsequently leading to better goal alignment and improved firm performance (Schoenherr & Swink, 2012:102). Zhao *et al.* (2015:163) further add that various stakeholders within the focal manufacturing firm's supply chain, require several interactions to, *inter alia*, reach a consensus on decisions spanning across both functional and firm boundaries.

Ramanathan and Gunasekaran (2014:258) postulate that collaborative decision-making lessens confusion and misalignment among supply chain trading partners, thus deeming it one of the more important factors which contribute towards successful supply chain

collaboration. Wong *et al.* (2014:56) state that inter-organisational information integration improves collaborative decision-making in a supply chain by facilitating uniform information exchange between external trading partners with adjacent information systems. Furthermore, the IT-enabled tools that aid decision-making in the SCM context encompass business activities in a firm's supply chain that require inputs from various internal and external supply chain stakeholders (Wong *et al.*, 2014:56). Therefore, with these joint efforts from all actors within the end-to-end supply chain, the likelihood of managing conflicting decisions is reduced, subsequently improving the operational efficiency of the supply chain (Wong *et al.*, 2014:56). Allaoui, Guo and Sarkis (2019:765-766) further support this statement by developing a supply chain decision support software. The system's main objective was to improve the firm's decision-making process by establishing a common systems platform which allows the various internal and external supply chain stakeholders to jointly make decisions pertaining to supply chain planning. The study found that the supply chain decision support software yielded strong supply chain collaboration efforts both internally within the focal firm and externally with supply chain trading partners (Allaoui *et al.*, 2019:773).

3.2.1.2 Collaborative planning, forecasting and replenishment (CPFR)

Collaborative planning, forecasting and replenishment (CPFR) is a supply chain technological tool which was registered as a trademark by the Voluntary Inter-industry Commerce Standards (VICS) in 1998 and is defined as:

> "… a collection of new business practices that relies on the internet as well as electronic data interchange (EDI) to achieve two goals: significant reduction in inventory, including the cost of goods sold (COGS) while improving customer service. CPFR integrates the intelligence of multiple upstream and downstream supply chain trading partners in the planning and fulfilment of customer demand and is acknowledged as a powerful collaboration technique." (VICS, 2004).

Numerous scholars have conducted studies on CPFR and the literature is indicative of the significant value added by the practice across several supply chains, but also conversely reveals the barriers and obstacles manufacturing firms face when implementing CPFR (Demiray, Akay, Tekin & Boran, 2017-1569; Fu, 2016:933; Lin & Ho, 2014:261; Panahifar,

Byrne & Heavey, 2015:1093-1099; Panahifar, Byrne & Heavey, 2014:5262). Fu (2016:933) employed an analytical hierarchy process approach to evaluate a myriad of factors which influence the adoption of CPFR by upstream and downstream supply chain trading partners. The study suggests that the adoption of CPFR is fundamentally a management issue with *senior management support*, *trusting relationships* and *careful selection of collaborative partners* as important factors that supply chain practitioners need to consider (Fu, 2016:941-942). Panahifar *et al.* (2015:1099) conducted research that reviewed and analysed key enablers towards a successful CPFR implementation. Implementing CPFR is originally deemed a resource intensive process, thus firms are required to exercise caution when planning for CPFR implementation (Panahifar *et al.*, 2015:1099). Panahifar *et al.* (2015:1093-1094) found that the top enablers for successfully implementing CPFR were non-technical and included *senior management support, commitment, clear communication and internal alignment.* Technical enablers included *technological capability, information visibility, information accuracy and EDI* (Panahifar *et al.*, 2015:1093-1094). In a different study, (Panahifar *et al.*, 2014:5262) also highlight the different barriers associated with CPFR implementations. The lack of shared targets along with shared key performance indicators (KPIs) is a barrier which limits the upstream and downstream trading partners' supply chain visibility (Panahifar *et al.*, 2014:5262). Other noteworthy barriers affecting a successful CPFR implementation include difficulties with real-time coordination of information exchange, lack of internal alignment as well as lack of technical expertise in the sub-domain of supply chain planning and order fulfilment (Panahifar *et al.*, 2014:5262).

Studies by Demiray *et al.* (2017:1568-1569) and Lin and Ho (2014:261) proposed frameworks which manufacturing firms can adopt to facilitate CPFR implementations. Demiray *et al.* (2017:1568-1569) proposed a comprehensive CPFR roadmap, which included a case study, for a manufacturer. The case study reveals that stakeholders from both the focal manufacturing firm as well as the downstream supply chain trading partner formed a team to monitor KPIs and to calculate the benefits derived from the collaboration. The order fill rate of the downstream trading partner was 72% before CPFR and 97% after six months of implementing CPFR (Demiray *et al.*, 2017:1581). Similarly, Lin and Ho (2014:261) developed a CPFR implementation model for integrating procurement, operations, and logistics for medical supply chains. The study reveals that CPFR can combat the common issues associated with traditional enterprise systems by improving the

response time, reducing error rate and increasing the availability of accurate and reliable data (Lin & Ho, 2014:269).

According to Hill *et al.* (2018:14), CPFR can improve a manufacturing firm's financial performance through the adoption of technologies which can further enhance the coordination of internal activities within functions, providing a more informed decision-making process. In addition, the end-to-end supply chain can derive benefits from direct material flows with reduced handling, improved forecasting accuracy, improved product availability, and better inventory management. This results in improved financial performance from an asset utilisation standpoint, which includes the reduction in total production costs (Hill *et al.*, 2018:14). Similarly, Kazemi and Zhang (2013:548-549) suggest that CPFR can achieve improved operational performance outcomes through improving information sharing, which subsequently improves data inputs to forecasts thus reducing the bullwhip effect within the end-to-end supply chain, allowing for adequate inventory management.

The benefits associated with successful CPFR implementation tend to increase incrementally over time, implying that there is a learning curve associated with employing and implementing the CPFR practice (Hill *et al.*, 2018:21). Although there are countless stumbling blocks when implementing CPFR, the literature reveals that the overall benefits outweigh the disadvantages (Demiray *et al.*, 2017:1581; Fu, 2016:933; Lin & Ho, 2014:269). This suggests that upstream and downstream supply chain trading partners invest significant amounts of effort towards better understanding and optimising of each other's supply chains (Hill *et al.*, 2018:21).

3.2.1.3 Vendor-managed inventory (VMI)

Lee and Cho (2014:158) posit that Vendor-managed inventory (VMI) is a well-known collaborative practice, where the upstream supply chain trading partner manages inventory for the focal manufacturing firm, which also entails the supplier deciding when, and how much, to replenish. Similarly, Sainathan and Groenevelt (2019:249) state that VMI is a collaborative practice in which the vendor decides the quantity to be stocked at the focal manufacturing firm's location. VMI was initiated as part of a pilot program in the retail industry

between Wal-Mart and Proctor & Gamble (P&G) in the 1980s and has been adopted by many supply chains such as Dell, Barilla, Costco, and Campbell's Soup (Lee & Cho, 2014:158; Sainathan & Groenevelt, 2019:249). VMI programs have brought about numerous benefits such as significant savings of inventory costs, but the benefits of VMI are as a result of sharing real-time information between supply chain trading partners, which subsequently allows for increased flexibility and agility supplier's production and delivery plans (Lee & Cho, 2014:158). However, Han, Lu and Zhang (2017:85) state that the primary challenge in employing VMI as a practice is that both the upstream supplier and the focal manufacturing firm are, most likely, both manufacturers who strive to achieve a small inventory holding. It therefore makes it challenging to manage the coordination of inventory among trading partners.

The existing literature pertaining to VMI indicates that supply chain practitioners are constantly seeking ways to best leverage the practice through contractual agreements (Lee & Cho, 2014:158; Mateen & Chatterjee, 2015:31). Mateen and Chatterjee (2015:31) explored the numerous ways in which the upstream supply chain trading partners can formulate optimal VMI replenishment policies best suited for the operational environments in which they operate. The following variables were considered when establishing parameters for the VMI agreement:

- Number of retailers replenished in each delivery cycle;
- Timing of replenishment (whether the stock is kept at the supplier’s site after production or is transferred to the focal manufacturing immediately);
- Size of the delivery sub-batch (uniform or increasing) (Mateen & Chatterjee, 2015:31).

Mateen and Chatterjee (2015:39) found that VMI can lead to significant reduction in operational costs, when compared to firms functioning independently. In addition, the researcher also observed that the benefits derived from employing VMI are dependent on the operating principles of the VMI arrangement.

Lee and Cho (2014:158) conducted a study which entailed the focal manufacturing firm formulating and implementing a VMI contract with an upstream supply chain trading partner, in which the contract stipulates a fixed penalty and a proportional penalty that the supplier

must pay in the event of stock-outs occurring. The contract also specifies that the although the supplier is liable for the inventory, the focal manufacturing firm will bear the physical storage costs. The study's findings suggest that VMI may result in substantial cost reduction for both the focal manufacturing firm and the supplier. The cost reduction for the supplier is due to the economies of scale in the production, handling as well as the delivery of the product, while the focal manufacturing firm's benefit is mainly as a result of sharing inventory-carrying costs and stock-out costs with the supplier. In addition, the study indicates that the value derived from sharing information regarding the focal manufacturing firm's inventory quantities, is likely to be significant when VMI contracting is employed (Lee & Cho, 2014:167).

Han *et al.* (2017:86) also suggest that another important variable to consider when structuring an effective and viable VMI agreement is to ensure optimal inventory planning, which entails optimal replenishment frequency as well as decision-making at the inventory level.

3.2.2 INTRA-/INTER-FIRM INTERACTION

Luzzini *et al.* (2015:57) suggest that intra-firm interaction relates to cross-functional interaction as an integrative practice involving various functions within the focal firm. These functions are typically involved in making decisions around internal and external firm activities which are likely to strongly influence the operational and financial performance of the manufacturing firm. Similarly, capabilities relating to inter-firm interaction consider the extent of synchronisation with both upstream and downstream supply chain trading partners (Luzzini *et al.*, 2015:57).

The subsequent sub-sections highlight cross-functional interaction as well as inter-firm interaction as supply chain integrative practices identified by various researchers (Alexander, 2014:3; Chen, Lin & Yen, 2014:571; Frankel & Mollenkopf, 2015:21; Majchrzak, Jarvenpaa & Bagherzadeh, 2015:1338; Piercy & Ellinger, 2015:51; Young-Hyman, 2017:182).

3.2.2.1 Cross-functional interaction

Cross-functional integration involves arranging and structuring firm practices, behaviours and procedures into synchronised processes, to effectively fulfil a business need rather than operating as functional silos (Piercy & Ellinger, 2015:51). Frankel and Mollenkopf (2015:21) further suggests that cross-functional interaction requires adequate firm infrastructure which will consider the manner in which information is shared and disseminated to the appropriate internal firm stakeholders so that decisions can be made jointly, and actions taken timeously (Frankel & Mollenkopf, 2015:21).

According to Young-Hyman (2017:182), cross-functional interaction is optimal when, firstly, the solution required is knowledge-intensive in nature and, secondly, diverse knowledge is required produce solutions to these unique problems. In addition, these teams are typified by a composition of workers coming from varying functional areas within the focal firm. Frankel and Mollenkopf (2015:21) further posit that the current belief regarding cross-functional interaction ignores the context within which the interaction occurs. Most firms seem to be functionally oriented, rather than process oriented although cross-functional interaction is less about functions integrating but rather about integrating around an arrangement of activities (Frankel & Mollenkopf, 2015:21). Although cross-functional interaction may be costly to the focal firm because it requires practitioners to step away from their daily tasks, it also enhances performance in knowledge-intensive work twofold:

- Increased cross-functional interaction creates a platform for team members to exchange information and coordinate tasks during team-based project work, and;
- Increased cross-functional interaction aids in streamlining differing interests and ideals anticipated from team members (Young-Hyman, 2017:182).

A study conducted by Piercy and Ellinger (2015:51) illuminates the activities carried out in the two areas of the manufacturing firm; the demand side (e.g. marketing and sales) as well as the supply side (e.g. operations and supply). Both these areas directly and jointly create value for the final customer, thus making them interdependent. Therefore, developing a co-operative relationship between the demand side and the supply side of the manufacturing

firm, through cross-functional interaction, is an appropriate precursor which will lead to effective firm performance (Piercy & Ellinger, 2015:51).

3.2.2.2 Inter-firm interaction

According to Majchrzak *et al.* (2015:1338), inter-firm interaction is defined as a cooperative, inter-firm relationship between the focal firm as well as the upstream or downstream supply chain trading partner. This is managed through a series of consistent and ongoing communication which is disseminated through informal and formal forums (Majchrzak *et al.*, 2015:1338). Similarly, Alexander (2014:3) defines inter-firm interaction as the process where two or more firms create, as well as use existing communication and decision-making platforms to collectively manage and coordinate the greater supply chain.

Chen *et al.* (2014:571) postulate that high levels of collaboration among supply chain trading partners is an important component required to shift supply chain management from transaction-oriented to a more relationship-oriented practice. Inter-firm interaction encourages the involved supply chain trading partners to develop a common vision, as well as to formulate integrated strategies which encompass the ideals of all the involved firms (Chen *et al.*, 2014:571). A study conducted by Capdevila (2014:24) concludes that inter-firm interaction among supply chain trading partners can yield three types of collaborative efforts, namely:

- *Cost-related collaboration,* where supply chain trading partners work jointly to reduce two types of costs: operational costs as well as transactional costs.
- *Resource-based collaboration*, where supply chain trading partners jointly interact to optimally integrate infrastructure and systems resources.
- *Relational collaboration*, where supply chain trading partners are driven largely by an intrinsic motivation, to jointly create and disseminate new knowledge among each other.

Although inter-firm interaction creates greater integration among supply chain trading partners, it is not always practiced consistently across the end-to-end supply chain. Hudnurkar *et al.* (2014:200) found in their study that there is a higher prevalence of inter-

firm interaction between the focal manufacturing firm and their upstream supply chain trading partners than with downstream supply chain trading partners.

3.2.3 INFORMATION SHARING

Information sharing is considered one of the fundamental elements that aid successful supply chain coordination and SCI (Ganesh, Raghunathan & Rajendran, 2014:79). Through consistent information sharing, the end-to-end supply chain can minimise the risk brought about by incomplete and unstructured data, reduce lead times, eliminate the bullwhip effect ultimately reducing the total cost to serve (Ganesh *et al.*, 2014:79).

Various supply chain scholars have postulated different aspects regarding ways in which firms can yield value from effectively sharing information (Kim & Chai, 2017:45; Qrunfleh & Tarafdar, 2014:340; Shang, Ha & Tong, 2015:245). Qrunfleh and Tarafdar (2014:340) posit that it is important for a manufacturing firm to adopt information systems that, firstly, are aligned to its supply chain and, secondly, interfaced to the systems of both upstream and downstream supply chain trading partners. Kim and Chai (2017:45) suggest that sustainable and open communication channels are the foundation of information sharing among supply chain trading partners. Shang *et al.* (2015:1) highlight the benefits derived from the adoption of technology in order to aid more effective information sharing. These benefits include, *inter alia*, the ability to acquire real-time information which allows for faster and more accurate decision-making.

Shang *et al.* (2015:245) also suggest that although information sharing can improve overall supply chain performance, firms do not always fully cooperate in sharing information with their supply chain trading partners due to the concern that these supply chain trading partners may use this information for their sole benefit. The following sub-sections address *systems interfaces*, *effective and open communication* as well as the *adoption of technology* as SCI practices which aid information sharing.

3.2.3.1 Systems interfaces

Prajogo *et al.* (2016:220) state that growing competition has led manufacturing firms to not only improve their internal operations, but also encouraged firms to integrated both their upstream and downstream supply chain trading partners into their universal value chain processes. Therefore, the performance of both the firms' inbound and outbound supply chain is an essential component to fulfilling the customer's needs (Prajogo *et al.*, 2016:220). Yan *et al.* (2014:1) posit that SCI relies heavily on real-time information sharing, increased speed in responding to critical internal or external supply chain problems, agility as well as flexibility in managing the overall supply chain. Systems integration through systems interfaces can aid SCI by:

- Ensuring accuracy of data;
- Ensuring visibility of real-time information, thus aiding agile manufacturing;
- Preventing data redundancies and unnecessary duplications (Marinagi, Trivellas & Sakas, 2014:587).

Over the last years, manufacturing firms have strived to integrate their information systems with supply chain trading partners to enhance the execution of key firm activities. In so doing, manufacturing firms have benefited immensely through, *inter alia*, faster decision-making as well as avoiding delays in the delivery of raw materials resources (Colin, Galindo & Hernández, 2015:834).

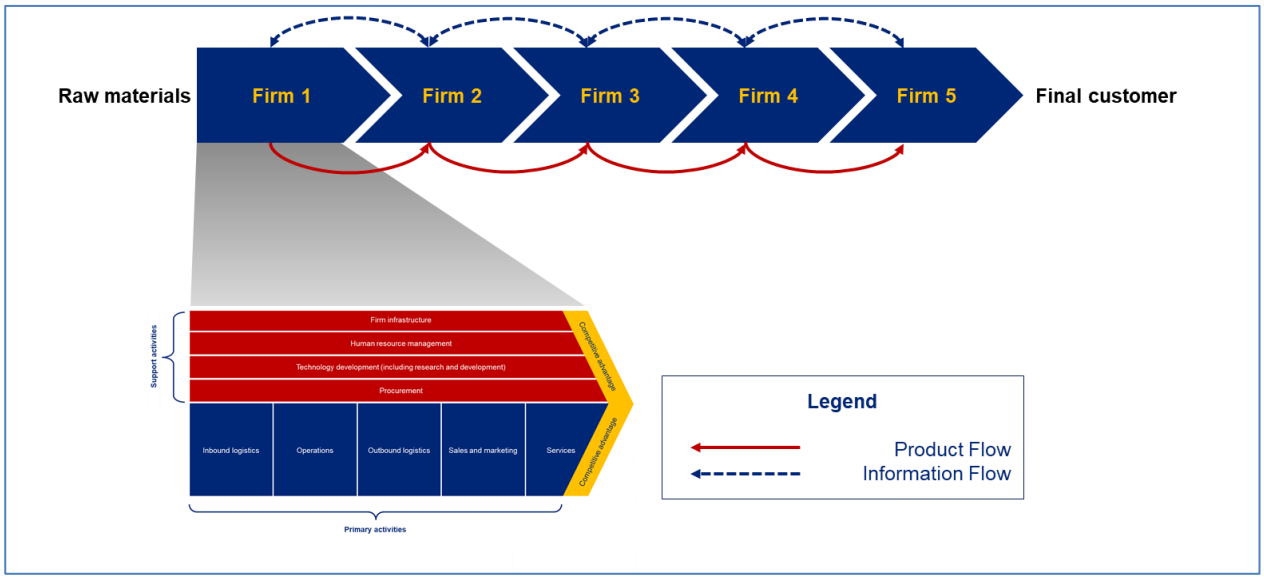
According to Korpela, Hallikas and Dahlberg (2017:4182), systems interfaces are becoming increasingly dynamic and require information such as customer demand data, tracking information pertaining to raw materials, components and finished product to be shared effectively in order to ensure optimal visibility in the end-to-end supply chain. Thus, Wong *et al.* (2015:1) state that inter-firm systems interfaces, such as electronic data interchange (EDI), support supply chain product flows by enabling information exchange among supply chain trading partners thus allowing for higher levels of SCI. However, Yan *et al.* (2014:1) argue that EDI, if deployed incorrectly, could lead to the focal manufacturing firm incurring higher supply chain costs coupled with minimal system flexibility and extensibility.

3.2.3.2 Effective and open communication

According to Borca and Baesu (2014:498), open and effective communication is regarded as a carefully planned process which provides data, contact and knowledge exchange between the internal functions of the focal firm, as well as among upstream and downstream supply chain trading partners. Chengalur-Smith, Duchessi and Gil-Garcia (2012:60) suggest that firms that prioritise the openness of communication, such as sharing manufacturing and replenishment schedules, can advance the coordination of supply chain activities, material requirements, and planning roles and responsibilities.

Fredendall and Hill (2016:4) posit that the end-to-end supply chain not only consists of the flow of materials but the flow of information. Figure 3.2 illustrates the differing movement of both materials and information within the end-to-end supply chain. Furthermore, while the flow of materials is uni-directional, the flow of information should ideally be bi-directional and consistent among chosen supply chain trading partners. For example, sharing critical supply chain information regarding inventory can reduce both the focal firm as well as the upstream supply chain trading partner's inventories. Thus, by sharing critical inventory data, firms across the entire supplier are able to reduce inventory carrying costs and reallocate those funds in value-adding activities (Chengalur-Smith *et al.*, 2012:60).

Figure 3.2: Product and information flows in within the end-to-end supply chain



Source: Adapted from Fredendall and Hill (2016:4).

Pikhart (2014:952) found that the efficiency of a manufacturing firm is deeply rooted in effective communication. In addition, the results of the study also indicate that communication is likely to be ineffective if modern technologies are not appropriately employed.

3.2.3.3 Adoption of technology

Technology continues to play a vital role in today's competitive business landscape as well as within the supply chain management domain (Khan, Artail, Malik & Niazi, 2014:1). Similarly, Asare *et al.* (2016:1) postulate that in order to both respond effectively to customer needs and remain relevant in the competitive business landscape, firms are beginning to rely on new technologies in order to spur increased collaboration and information sharing across the entire supply chain. Khan *et al.* (2014:1) suggest that it is recommended for manufacturing firms to adopt technologies that will advance their competitiveness in the external market. Singh and Teng (2016:291) have postulated that the depth and breadth of Information Technology (IT) integration between internal, external upstream and external downstream supply chain trading partners, includes largely computer facilitated communications which aid effective supply chain coordination and joint decision-making.

Tseng (2015:87) concludes that the adoption of information sharing technologies regularly facilitates the following benefits:

- Faster accessibility of pertinent information;
- Improved communication internally within the focal firm as well as externally with upstream and downstream supply chain trading partners;
- Reduced operational cost and increased service quality.

Similarly, Singh and Teng (2016:299) conclude their study by stating that the adoption of information sharing technologies is capable of optimising relationships with supply chain trading partners, reducing costs and positively influencing business models with supply chain trading partners.

The adoption of information sharing technologies have therefore made a noteworthy impact on fundamental supply chain principles (Khan *et al.*, 2014:1). These collaborative technologies have become increasingly important for sharing information and include Radio Frequency Identification (RFID), EDI, point of sale systems, VMI, CPFR as well as internet-based technologies (Asare *et al.*, 2016:1). The impact of technology adoption initially started with basic reduction of coordination costs, subsequently moving towards improvement in overall supply chain performance (Singh & Teng, 2016:296).

3.2.4 TRUST AND COMMITMENT AS SCI ENABLERS

According to Ding *et al.* (2014:93), mutual trust among supply chain trading partners as well as long-term commitment, are the fundamental characteristics of successful collaborative partnerships within the end-to-end supply chain. The researchers further postulate that it is evident that optimal SCI cannot be established in the absence of meaningful trust and commitment relationships among supply chain trading partners. Similarly, Halil, Mohammed, Mahbub and Shukur (2016:50) suggest that when it comes to establishing optimal SCI, trust and commitment are the most important elements considered by firms when forming collaborative supply chain partnerships.

Tsanos, Zografos and Harrison (2014:424) suggest that trust enables the supply chain trading partners who are well integrated to form a longer-term commitment relationship with each other. Thus, trust enables the collaborating firms to ideally focus on the long-term benefits of entering a mutually beneficial relationship (Tsanos *et al.*, 2014:424). Abdullah and Musa (2014:271) posit a similar view that trust, along with information sharing, have a positive influence on the commitment between supply chain trading partners. In addition, the researchers highlight that the influence of trust on commitment is significant, when gauged against the influence of information sharing on commitment (Abdullah & Musa, 2014:271). The subsequent sub-sections provide an overview of both trust and commitment as enablers of SCI.

3.2.4.1 Trust as an SCI enabler

According to Hudnurkar *et al.* (2014:192-193), trust is considered as a positive belief, expectation, or attitude which pertains to the actions and outcomes of a particular person or entity being satisfactory and meeting agreed expectations. These positive beliefs, expectations, or attitudes are typically exuded by one person or entity to another (Hudnurkar *et al.*, 2014:192-193). Singh and Teng (2016:296) suggest that trust is the strongest element to consider when collaborating with supply chain trading partners. In addition, trust has a positive effect on firm performance because it enables effective information and knowledge sharing, thus making it a pivotal enabler for advancing SCI objectives (Singh & Teng, 2016:296). Similarly, Chen *et al.* (2014:570) state that in the context of supply chain management, trust is fundamental to fostering strong, collaborative inter-firm relationships and promotes effective knowledge sharing among supply chain trading partners. Therefore, the presence of trust impacts the strategic alliance among supply chain trading partners, specifically with regards to knowledge integration and information sharing (Chen *et al.*, 2014:570).

Revilla (2015:1410) emphasises that trust is likely to deteriorate when supply chain trading partners have differing interests and engage in practices that are illicit, such as unscrupulously taking advantage of specific intellectual property gained within the confines of the relationship. Therefore, the presence of trust allows supply chain practitioners across the end-to-end supply chain to evaluate whether supply chain trading partners will consider the common interests of all involved firms, thus not jeopardising supply chain relationships with upstream and downstream supply chain trading partners (Revilla, 2015:1416).

Dubey, Altay and Blome (2017:173) posit that an inter-firm relationship that has a strong trust foundation is more likely to cultivate a more value-adding relationship which spans further than just a transactional business relationship. Therefore, an inter-firm relationship which is characterised high levels of trust invites supply chain trading partners to have an increased sense of productivity and creativity, timeous conflict resolution, effective decision-making, and open communication (Revilla, 2015:1416).

3.2.4.2 Commitment as an SCI enabler

Tsanos *et al.* (2014:424) define commitment as a belief, carried by a person or entity, that the ongoing business transaction and exchange is so important and valuable that it requires the utmost effort to maintain it. Commitment is as a result of supply chain trading partners experiencing high levels of satisfaction from the business transaction and exchange process, thus disqualifying other trading partners that can provide similar products or services (Tsanos *et al.*, 2014:424). Hudnurkar *et al.* (2014:192) consider commitment as the willingness of trading partners to endure the inter-firm relationship due to satisfactory business conduct and suggests future ongoing interactions in which supply chain trading partners with the intention to cultivate a long-lasting relationship that can be continued amid unforeseen difficulties.

Alfalla-Luque *et al.* (2015:254) concluded that the commitment of supply chain practitioners within the focal firm has a direct effect on the internal integration capability of the firm. Having committed supply chain practitioners helps to achieve adequate internal integration, it subsequently also indicates that the contribution of commitment to supplier integration and customer integration is due to the existence of the focal firm's internal measures pertaining to commitment (Alfalla-Luque *et al.*, 2015:254). Soosay and Hyland (2015:613) found that in order to achieve high levels of collaboration across the supply chain, a high level of commitment is required. Lee and Fernando (2015:148) postulate that commitment as well as the dependency on supply chain trading partners to establish long-term relationships are the dominating antecedents for cultivating successful trading partnerships.

The importance of commitment has been highlighted as a major determinant of optimal SCI (Lin, 2014:299). Furthermore, Lin (2014:299) provides evidence that the *information sharing* as well as the *effective and open communication* SCI practices act as a conduit which allows supply chain trading partners to establish, *inter alia*, commitment among each other.

3.3 SCI'S INFLUENCE ON FIRM PERFORMANCE

Lii and Kuo (2016:143) mention that SCI has a very positive and valuable impacts on overall firm performance from strategic, organisational, information, process and marketing

aspects. Kaliani Sundram *et al.* (2016:1448) describe firm performance as a process which, *inter alia*, entails gauging the effectiveness and efficiency of end-to-end supply chain operations. Therefore, consistently gauging firm performance also encourages greater collaboration and integrations among upstream and downstream supply chain trading partners (Kaliani Sundram *et al.*, 2016:1448).

Firm performance is a broad concept which includes various scopes pertaining to the strategic, operational and competitive excellence of a firm and its activities (Tseng, 2015:86). Besides financial performance, some operational performance indicators have been documented by scholars, in order to enhance the understanding of firm performance (Tseng, 2015:86). Furthermore, internal integration within a firm, coupled with external integration among supply chain trading partners have been shown to exert varying levels of impact on various firm performance dimensions (Ataseven & Nair, 2017:252-253).

Xu, Huo and Sun (2014:1186) suggest that in order to advance overall firm performance as well as endure in the competitive landscape, firms are required to strive towards collaboration and building closer relationships with both upstream and downstream supply chain trading partners. The sub-sections below provide an overview of SCI's influence on firm performance, both from an operational as well as a financial standpoint.

3.3.1 SCI'S INFLUENCE ON OPERATIONAL PERFORMANCE

Operational performance entails establishing a set of metrics used by supply chain practitioners to calculate the efficiencies gained, as well as the overall effectiveness achieved from existing supply chain processes and relationships which span beyond the boundaries of the focal manufacturing firm, thus enabling more controlled orchestration of the end-to-end supply chain (Shahbaz & Rasi, 2019:64). Chang, Ellinger, Kim and Franke (2016:283) note that operational performance within manufacturing industries has been recognised as a complex and multidimensional construct which mainly involves the improvement of supply chain related metrics within the focal firm. These metrics include, *inter alia*, inventory cost reduction, on-time delivery and cycle time reduction (Chang *et al.*, 2016:283).

Scholars have highlighted how the documented SCI practices can positively influence operational performance (Ataseven & Nair, 2017:254; Hill *et al.*, 2018:21; Qi *et al.*, 2017:162). Hill *et al.* (2018:21) conducted a study which found that manufacturing firms applying CPFR as a means of supply chain collaboration can expect a reduction in inventory, ultimately reducing overall inventory carrying costs. In addition, the researchers found that the extent of operational improvement achieved by firms which employ CPFR will depend on the level of collaboration between a focal manufacturing firm and its supply chain trading partners (Hill *et al.*, 2018:21). Qi *et al.* (2017:162) conducted a similar study in another technology industry and found that firms aim to improve operational performance both internally and externally. Internally, firms leverage off high levels of cross-functional interaction, resource and information sharing and consistent communication to increase operational efficiencies while eliminating unwanted costs. Externally, the researchers found that firms leverage of VMI to integrate more effectively with suppliers, thus reducing purchasing costs and increasing inventory availability (Qi *et al.*, 2017:162). Ataseven and Nair (2017:254) examined the link between SCI and the cost, quality, delivery, and flexibility dimensions of operational performance and found that SCI positively influences each of these dimensions separately.

3.3.2 SCI'S INFLUENCE ON FINANCIAL PERFORMANCE

Financial performance entails improving the firm's economic goals by accomplishing set financial objectives (Chang *et al.*, 2016:283-284). This further requires measuring the focal firm's financial results which are based on the implemented strategies and policies across the firm (Chang *et al.*, 2016:283-284). Beheshti *et al.* (2014:24) postulate that high levels levels of SCI, internally within the focal firm and externally among supply chain trading partners, has a direct correlation to improved financial performance. However, as firms integrate, both internally and externally, it is imperative to consider how decisions surrounding the implementation of SCI practices impact both the focal firm and its trading partner's business conduct and financial performance (Ralston, Blackhurst, Cantor & Crum, 2015:56).

Extant literature associates strong financial performance with high levels of customer, supplier and internal integration (Chang *et al.*, 2016:284; Ralston *et al.*, 2015:47-48). Chang *et al.* (2016:284) suggest that internal integration facilitates the effective sharing of market, customer and demand information among relevant departments, subsequently assisting the focal firm to closely meet and respond to customer demands. This promotes supply chain responsiveness and supply chain agility through harmonised actions among functions. The researchers further suggest that this greater perceived customer value increases customer satisfaction, loyalty and retention, which, in turn, improves the financial performance of the focal firm (Chang *et al.*, 2016:284). Ralston *et al.* (2015:56) found that customer integration and supplier integration both have a positive impact on how firms respond to customer demand, which has an influence on the focal firm's order cycle time. Firms that are responsive to customer demands experience shorter cycle times due to optimal inventory management, thus positively impacting the focal firm's working capital (Ralston *et al.*, 2015:56).

Contrary to what other studies on SCI and financial performance posit (Beheshti *et al.*, 2014:24; Chang *et al.*, 2016:284; Ralston *et al.*, 2015:56), Zhao *et al.* (2015:162) postulate that the financial value-add of SCI might begin to decay and the yield of benefits will slow down as inherent risks and costs of SCI increase. These researchers further postulate that the accumulation of SCI improves the financial performance of a firm to an extent. Thereafter, the increasing risks and costs will outweigh the benefits. Zhao *et al.* (2015:169) found that a manufacturing firm can integrate its suppliers and customers to establish a common and mutual understanding, reduce purchasing and production costs, and achieve efficiency and financial benefits. However, if executed excessively, the costs resulting from supplier and customer integration may outweigh these anticipated benefits.

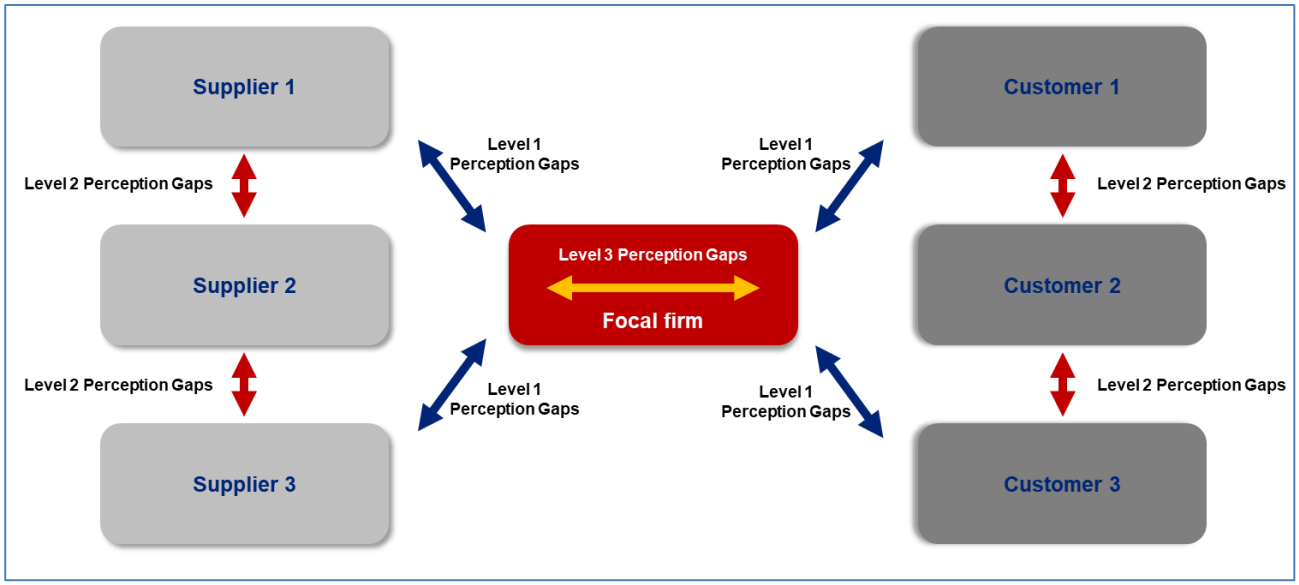
3.4 SUPPLY CHAIN PRACTITIONERS' PERCEPTIONS OF SCI

As previously articulated in Section 1.2 (pp. 3) of this dissertation, supply chain practitioners are unduly faced with a myriad of uncertainties within their respective supply chain environments, largely due to cross-functional and inter-firm inconsistencies regarding daily firm operations, coupled with the lack of information sharing across the end-to-end supply chain (Flynn *et al.*, 2016:4). This is largely due to the differences in the supply chain

practitioners' knowledge of SCI (Lu, Ertek & Betts, 2014:731; Oosterhuis, Molleman & Van Der Vaart, 2013:158-159). The existence of SCI perceptions, in today's business environment, is not a new concept and can directly and indirectly affect the performance of the supply chains, through the attitudes and actions that practitioners adopt based on their perceptions of the SCI construct. Thus, investigating existing perception gaps should be part of strategic information exchange, because better supply chain performance will occur when perception gaps are addressed (Lu *et al.*, 2014:732).

As illustrated in Figure 3.3, Lu *et al.* (2014:732) suggest that perception gaps in the supply chain can occur at three different levels.

Figure 3.3: Varying levels of SCI perception gaps



Source: Adapted from Lu *et al.* (2014:732).

The model illustrated in Figure 3.3 describes the three causes of perception gaps and associates them to their corresponding SCM problems:

- Level one gaps are linked to the buyer-supplier relationship;
- Level two gaps are linked to aligning and rationalising the supplier and customer base in order to achieve alignment among suppliers and customers alike
- Level three gaps are linked to the focal firm's internal coherence and communication effectiveness (Lu & Ertek, 2015:125).

The level one gaps signify differences in SCI perceptions between the focal firm and its respective upstream or downstream supply chain trading partners (Lu & Ertek, 2015:125). Level one perception gaps often imply the need for increased communication at firm level, openness in sharing information across firms, closer alliances in setting strategic goals, supplier development, and defining market positioning (Gan & Xu, 2013:1204; Lu *et al.*, 2014:732).

The level two gaps signify variations in the SCI perceptions held by upstream and downstream supply chain trading partners in the same tier. These variations reflect the unique business nature of specific trading partners and how the firms integrate into the operations of the focal firm (Lu *et al.*, 2014:734). Level two gaps often imply, *inter alia*, that there is a need to manage and coordinate with different types of suppliers in a customised way to achieve consistent performance across the supply base. Employing a *'one-size-fits-all'* approach to managing and coordinating different suppliers could be the cause of the level two SCI perception gaps (Lu *et al.*, 2014:734).

The level three gaps are the SCI perception gaps between the individual people or functions within the participating firm, which is mainly due to the different views of individual supply chain practitioners (Lu *et al.*, 2014:734). A high degree of variances in the SCI perceptions among the relevant internal stakeholders could be the result of a lack of internal communication or the lack of aligned processes (Aminoff & Tanskanen, 2013:165-166; Oosterhuis *et al.*, 2013:159). Furthermore, the lack of internal coherence and synergistic views within a firm is surely a critical but negative measure of capability. The cause thereof could emanate from the ways the employees are trained and may relate to the organisational culture. The level three gaps could be a source of motivation, or lack of it, for improving the firm's communications structure, employee training, systems configuration and internal collaboration (Lu *et al.*, 2014:734).

Given that knowledge is provided on the possible existence of perception gaps within the SCI context, the literature does not necessarily provide insights into the prevalence of these perception gaps. This proposed study, therefore, intends to further explore the prevalence of perception gaps among supply chain practitioners within a focal manufacturing firm. Therefore, for the purpose of this research, only level three perception gaps will be

investigated because the researcher intends to obtain viewpoints from supply chain practitioners within FMCG manufacturing firms. In addition, Lu *et al.* (2014:742) state that level three perception gaps largely impact the internal alignment, as well as communication effectiveness of all relevant functions and stakeholders within the focal firm. Thus, further investigation into these perception gaps is recommended, in order to further understand their influence on supply chain performance.

3.5 CHAPTER SUMMARY

The literature indicates that there are various practices which firms can employ, internally and externally, to achieve high levels of SCI across the end-to-end supply chain (Frankel & Mollenkopf, 2015:21; Mathu & Phetla, 2018:1; Qrunfleh & Tarafdar, 2014:340; Shaban *et al.*, 2019:54; Young-Hyman, 2017:182). These practices largely aid supply chain collaboration, intra-/inter-firm interaction as well as information sharing. The literature also emphasises how commitment and trust, internally within the focal firm and externally among supply chain trading partners, enable adequate execution of the identified SCI practices (Chen *et al.*, 2014:570; Hudnurkar *et al.*, 2014:192; Singh & Teng, 2016:296).

Scholars have illuminated the benefits derived, operationally and financially, through employing internal and external SCI practices. These benefits include shorter cycle times, optimised inventory management through VMI and CPFR as well as great customer satisfaction through effective sharing of market, customer and demand information among the relevant internal stakeholders (Hill *et al.*, 2018:21; Qi *et al.*, 2017:162; Ralston *et al.*, 2015:56). Lu *et al.* (2014:732) outline the various perception gaps that exist among supply chain trading partners, as well as among supply chain practitioners within a focal firm. The subsequent chapter provides an extensive account of this study's chosen research strategy, including the selected sampling, data collection and data analysis techniques employed.

CHAPTER 4:RESEARCH DESIGN AND METHODS

Chapter outline:

The purpose of this chapter is to:

- provide an overview of the research paradigm employed by the researcher;
- provide an overview of the chosen research design;
- articulate the employed research strategy;
- provide a rationale for selecting qualitative research;
- discuss the selected sampling approach along with the target population, unit of analysis and sample size;
- describe the data collection process;
- provide an overview of the chosen data analysis procedures;
- explain factors pertaining to the demonstration of research quality and rigour; and
- outline the research ethical considerations that guided this study.

4.1 INTRODUCTION

The purpose and objectives of the study informed its design. The aim of the study was to investigate the perceptions that supply chain practitioners within South African FMCG manufacturing firms have of the SCI construct. Qualitative research was found best suited for this study, given its aim. The fundamental philosophies that guide qualitative research are different from those that inform quantitative research. According to Flick (2014:32), the critical features of qualitative research are, *inter alia*, the recognition and analysis of different perspectives. In seeking to analyse data pertaining to different participants' perceptions of SCI, this study was, therefore, particularly suited to qualitative research methodology. Unlike quantitative research methods, qualitative methods also take the researcher's communication along with the participants' responses as a pertinent contributions to the knowledge base (Flick, 2014:34).

Four key methodological constructs are critical to understanding how this research was carried out; these are listed below, defined in Table 4.1, and thereafter discussed in detail.

1. The *research paradigm* on which this study is founded.
2. The *research design* of the study.
3. The *research strategy*.
4. The *research methodology* employed.

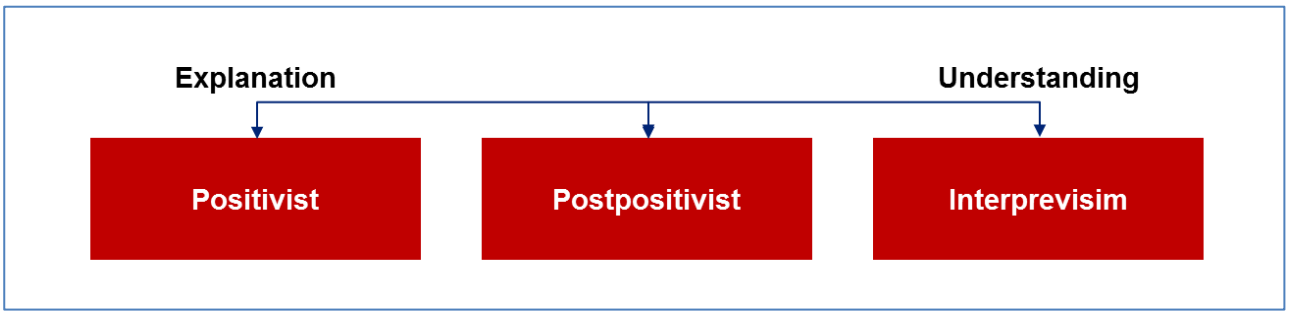
Table 4.1: Definitions for the key research terms

Construct	Definition
Research paradigm	A research paradigm is a general philosophical orientation about the world and the nature of research the researcher brings to a study (Creswell, 2013:6). Research paradigms arise from discipline orientations, researcher's advisor's/mentor's predispositions, and past research experiences. The beliefs held by individual researchers based on these factors will ultimately lead to their embracing a qualitative, quantitative, or mixed methods approach to their research (Creswell, 2013:6).
Research design	The research design is a *step-by-step* plan that gives direction to the researcher's thoughts, thus enabling the researcher to conduct research systematically (Dinnen, 2014).
Research strategy	A research strategy refers to the general approach the research adopted, which will reflect the researcher's methodological assumptions (Bell, Bryman & Harley, 2018:35).
Research methodology	Research methodology is the approach used to conduct research (Wilson, 2013:3). It is a way to systematically solve the research problem and may be understood as the way in which the researcher ensures that their investigation is conducted scientifically (Kothari, 2011:8).

4.2 RESEARCH PARADIGM

Grix (2010:77) identifies three comprehensive research paradigms that fall along a continuum, namely, positivism, post-positivism, and interpretivism at the other end of the continuum (see Figure 4.1).

Figure 4.1: The key research paradigms



Source: Grix (2010:79).

According to Grix (2010:81), positivism is based on a realist, foundationalist epistemology, which views the world as existing independently of our knowledge of it. Positivists therefore believe that there are patterns and regularities, along with causes and consequences, in the social world just as there are in the natural world. Interpretivism, in contrast to positivism, is based on an anti-foundationalist epistemology, subscribing to the view that the world does not exist independently of our knowledge of it (Grix, 2010:84). Furthermore, the interpretivist paradigm is based on *understanding* as opposed to *explanation*, as interpretivists do not rely on mere observation as a means to understanding social phenomena (Grix, 2010:84).

For the purposes of this study, a post-positivist paradigm was adopted. Post-positivist theory assumes that reality is multiple, subjective and mentally constructed by individuals; therefore, it is accepted that this reality is a creation of individuals involved in the research. Furthermore, post-positivism is built on the premise that the outcomes of research are fundamental to improvement of practice (Mokgwathi, Graham & Fraser, 2019:843). The tenets of this paradigm are therefore consonant with the purpose of this study, *viz*, to understand how supply chain practitioners, at various levels within the sampled FMCG manufacturing firms, perceive the construct of SCI.

4.3 RESEARCH DESIGN

This study employed empirical research. Empirical research involves researchers collecting and analysing (quantitative and/or qualitative) data to address the study's problem statement and research questions (Cooper & Schindler, 2011:71). In this study, data was analysed to

elicit understanding of the perceptions of the SCI construct held by supply chain practitioners in FMCG manufacturing firms.

A comprehensive outline of this study's research design follows, presented according to the *descriptors of research design* proposed by Cooper and Schindler (2011:140). These descriptors are listed in Table 4.2 below.

Table 4.2: Descriptors of research design

Category of research design	Options
The purpose of the study	• Reporting • Descriptive* • Causal
The degree to which the research question was crystallised	• Exploratory study • Formal study*
The study's application perspective	• Applied research • Pure research*
Nature of investigation	• Experimental • Ex post facto*
The participants' perceptions of the research activity	• Actual routine • Modified routine*
The method of data collection	• Monitoring • Interrogation/Communication*
The research environment	• Field setting* • Laboratory research • Simulation
The time dimension	• Cross-sectional* • Longitudinal

Source: Adapted from Cooper and Schindler (2011:140).

* *Descriptors applicable this research*

This study is descriptive in nature and it answers questions relating to how supply chain practitioners interpreted the construct of SCI and what they believed were the associated supply chain integrative practices. The core purpose of a descriptive study is to answer the questions: who, where, what, when, and how (Cooper & Schindler, 2011:141). According to Babbie (2011:96), many qualitative studies are primarily descriptive, and qualitative

researchers usually go on to examine why the observed patterns exist and what they imply. In addition, researchers conducting descriptive studies attempt to describe or define their findings on a particular subject or construct (Cooper & Schindler, 2011:18).

In most instances, a study may be considered exploratory or formal, with the essential differences between these two descriptors being the immediate objective and the structure of the study (Cooper & Schindler, 2011:140). The objective of exploratory research is to explore and gather further insight and ideas specific to a problem or opportunity (Shukla, 2014:17). According to Cooper and Schindler (2011:140), a formal study begins with hypotheses or research questions and involves detailed procedures and data source specifications. This study was designed to adequately answer well-crystallised research questions, indicating, therefore, that it is a formal study.

According to Kumar (2011:8), pure research is concerned with the development of new knowledge about a phenomenon, in order to establish general principles with which it can be explained. In being descriptive, this study can therefore be classified as pure research in its application. In contrast, applied research entails the use of scientific methods in order to produce outcomes and solutions that will solve problems in society (Salkind, 2010:35).

The investigative approach in this study was non-experimental (also known as *ex post facto* research) in nature because no experiments and observations were conducted during the data collection stages.

The participants' perceptions of the research activity in this study were deemed modified. When participants are aware that they are participating in a research study, they may change (i.e., modify) their normal behaviour or provide answers that they regard as socially acceptable (Cooper & Schindler, 2011:143). Although there may be no certainty on attempts by participants to please the researcher, the researcher needs to recognise that when participants believe that something out of the ordinary is happening, they tend to behave less naturally (Cooper & Schindler, 2011:143).

Data for the study was collected by interrogation, or communication, as it is better known. The researcher conducted semi-structured interviews to solicit the data from the participants

(Cooper & Schindler, 2011:141). This was deemed appropriate by the researcher because the quality of the data collected yielded substantive and comprehensive findings pertaining to the phenomenon being investigated.

This study made use of primary data collected from participants in a field setting. Salkind (2010:487-488) states that a field study is undertaken in the real world, where the confines of a laboratory setting are abandoned in favour of a natural setting. This form of research generally prohibits the direct manipulation of the environment by the researcher.

Lastly, the research was cross-sectional in its time dimension. According to Hall (2008:173), cross-sectional studies have been described as snapshots of the populations where data is gathered from. Thus, every participant in this study was interviewed once and the purpose of the study was not to track changes in the participants' perceptions over time.

The following section discusses the research strategy adopted for the study.

4.4 RESEARCH STRATEGY

The researcher reviewed five qualitative research strategies that could potentially be employed in this study, namely, case studies, grounded theory, ethnography, generic qualitative research, and phenomenology. Table 4.3 below provides an overview of these qualitative research strategies.

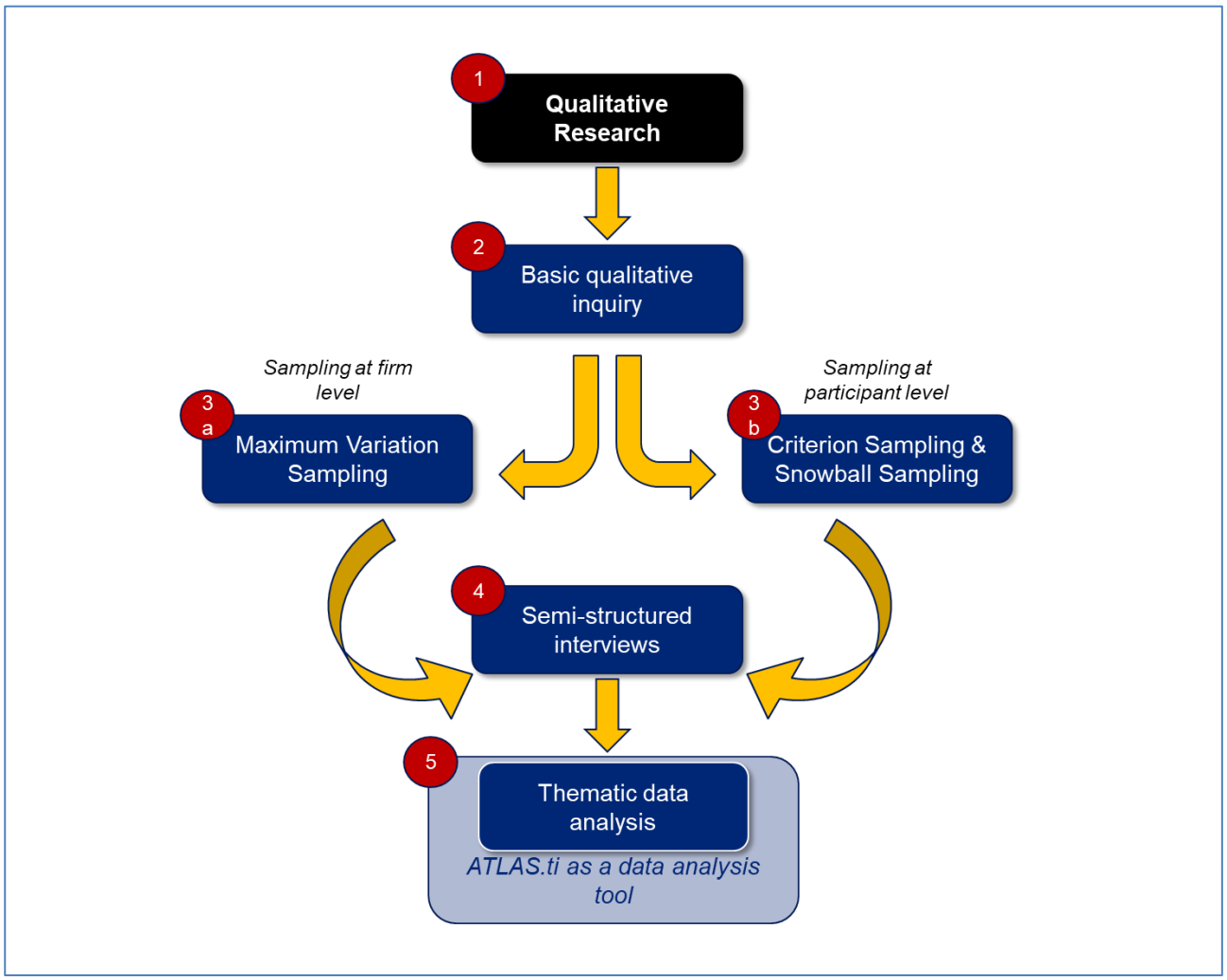
Table 4.3: An overview of five qualitative research strategies

Research strategy	Description
Case study	The case study method enables exploration of a phenomenon within its context, using a variety of data sources. This ensures that the phenomenon is not explored through one lens, but rather a variety of lenses which allow for multiple facets of the phenomenon to be revealed and understood (Baxter & Jack, 2008:544).
Grounded theory	Grounded theory research entails constructing a theory through the inductive method by first observing aspects of social life and then seeking to discover patterns that may point to relatively universal principles (Babbie, 2011:56). This research strategy allows for the identification of general concepts and the

Research strategy	Description
	development of theoretical explanations, through collecting data and then analysing it (Corbin & Strauss, 2014:15).
Basic/generic qualitative research	Basic or generic qualitative inquiry investigates people's reports of their subjective opinions, attitudes, beliefs, or reflections on their experiences of things in the outer world (Percy, Kostere & Kostere, 2015:78).
Ethnography	Ethnographic research aims to get a holistic understanding of how individuals in different cultures and subcultures make sense of their lived reality. Thus, ethnographers are typically individuals who enter the world of the inhabitants of their research setting and observe their ongoing lives in this particular setting (Hesse-Biber & Leavy, 2010:193).
Phenomenology	Phenomenology aims to study the nature of human events as they are immediately experienced within their real-world context. This strategy resists the use of prior concepts or categories that might distort the direct experiential basis for understanding the occurring events, and largely focuses on the perceptions of the participants (Yin, 2010:17).

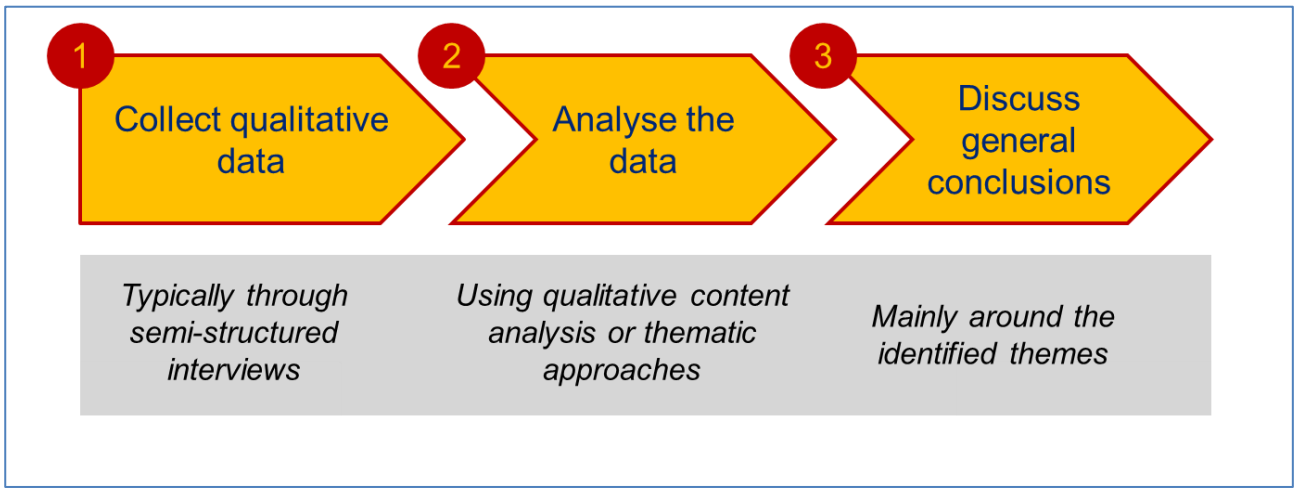
This study adopted the basic qualitative research strategy, as depicted in Figure 4.2, because it can be used in isolation of other strategies and in ways that meet the researchers needs (Merriam, 2014:23). As depicted in Figure 4.2, the research strategy entails sampling at a firm level (Maximum Variation Sampling) and at participant level (Criterion Sampling ans Snowball Sampling). It involves data collection through semi-structured interviews as well as thematic data analysis using ATLAS.ti which is a computer-aided qualitative data analysis software (CAQDAS) tool.

Figure 4.2: Schematic diagram of the adopted research strategy



According to Plano Clark and Creswell (2015:289), a specific topic represents the central phenomenon being studied in a basic qualitative study. SCI is, therefore, the phenomenon investigated in this study. Furthermore, the essential purpose of basic qualitative inquiry is to explore the opinions, perceptions, beliefs or experiences of several individuals on a specific topic under investigation (Plano Clark & Creswell, 2015:289). Figure 4.3 below depicts the key steps in conducting basic qualitative research.

Figure 4.3: The key procedures of basic qualitative research



Source: Plano Clark and Creswell (2015:289).

Ethnography, case study, grounded theory, and phenomenology were deemed inappropriate for this study because the kind of data elicited are not amenable to the data analytic procedures in basic qualitative research (Percy *et al.*, 2015:78). According to Merriam (2014:23), the primary goal of the basic qualitative research strategy is to uncover and interpret meanings, perceptions and ideas. Given that the researcher intended to investigate the manner in which supply chain practitioners experience, perceive and interpret SCI, the basic research inquiry was found best suited as a research design for this study.

4.5 RATIONALE FOR USING A QUALITATIVE RESEARCH APPROACH

According to Babbie (2012:270), qualitative research emphasises studying the actions of the participants in their natural setting and, through the eyes of the participants themselves. Furthermore, qualitative research prioritises obtaining detailed descriptions and understandings of a phenomenon within the appropriate context. This approach was deemed most suitable for this research as it allowed the researcher to gather and analyse data on the phenomenon under investigation in the most effective way, thereby responding to the research questions posed.

According to Trochim and Donnely (2008:179), qualitative research is characterised by:

- conducting the study in the participants' natural setting.

- the researcher using himself as an instrument, thus using his senses and sensibilities.
- interpretation of the data based on participants' given context.
- essential particulars that the study seeks to understand, such as, in this context, what participants consider as a practice that supports the attainment of SCI.

Figure 4.4 summarises these distinguishing features.

Figure 4.4: Characteristics of qualitative research

Source: Adapted from Trochim and Donnely (2008:179).

4.6 SAMPLING

This section outlines the sampling procedure used for the study. The section starts by identifying the study's target population, followed by a discussion on the study's unit of

analysis, the sampling method and ultimately, an overview of the participants who took part in the study. Selection of the sample was based primarily on accessibility. The researcher established contact with potential participants from respective FMCG firms telephonically, through email and through direct/face-to-face contact.

4.6.1 TARGET POPULATION

According to Cooper and Schindler (2011:88), a sample comprises a portion of the target population (i.e., those people, events or records which contain the information desired by the researcher). Saunders and Lewis (2012:132) define a sample as a sub-group of the target population and indicate that the sub-group need not only consist of people; it can also be a subset of firms or archival data. According to Robinson (2014a:26), the criteria used by qualitative researchers to describe suitable cases ('case' in this instance denoting 'sample') for a study can either be inclusion criteria, exclusion criteria or a combination of both. The set of inclusion criteria specify characteristics that cases (i.e., people or firms) must have in order to be considered for inclusion in the study, while exclusion criteria specify characteristics that disqualify cases from participating in a study (Robinson, 2014a:26).

The primary aim of this research was to understand how South African supply chain practitioners in FMCG manufacturing firms interpret and understand the phenomenon of SCI. This also includes what practitioners recognise as SCI practices. Considering these fundamental objectives, it was apt to set the following inclusion/exclusion criteria for identifying the target population from which the study sample would also be drawn:

- The participants of this study were limited to individuals that have an SCM career background, practicing in South Africa.
- To limit the study to FMCG manufacturing firms, only the supply chain practitioners who work in such firms in South Africa were interviewed.

The target population for this study therefore consisted of all South African supply chain practitioners working in South African FMCG manufacturing environments.

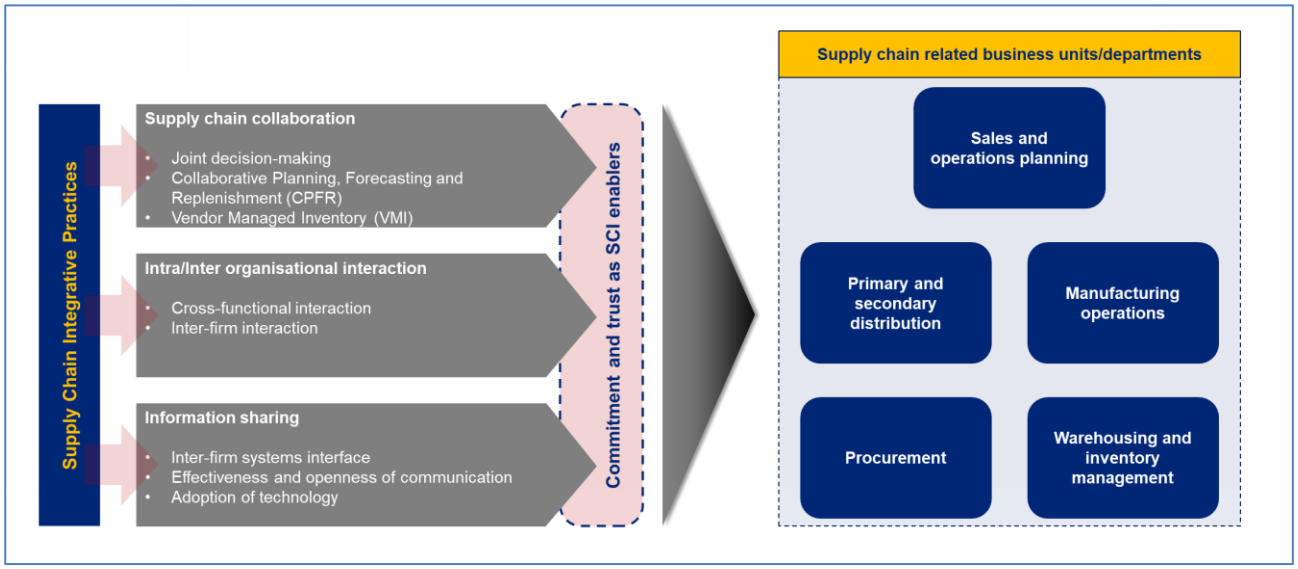
4.6.2 UNIT OF ANALYSIS

According to Babbie (2011:101), a unit of analysis is the what or whom being studied. In social science research, the most typical unit of analysis are individual people. In addition to individual people as units of analysis, if the researcher is interested in exploring, describing, or explaining the attributes of how different groups of individuals behave as individuals, the unit of analysis is the individual (Babbie, 2011:101). This study explored and described how supply chain practitioners perceived the construct of SCI. The various perceptions held by individual practitioners pertaining to the SCI construct, in this instance, are deemed to be the attributes of the supply chain practitioners being investigated. Therefore, this study's unit of analysis was the individual supply chain practitioner in a FMCG manufacturing firm. The individuals' ranks within their respective firms ranged from executive level right through to operational level.

4.6.3 RESEARCH SITES AND PARTICIPANTS

The study included manufacturing firms in the South African FMCG industry. The participants were selected from supply chain departments and working in managerial as well as non-managerial positions within their respective firms. Figure 4.5 below illustrates the SCI practices and how they link to the supply chain departments that the researcher drew the sample from.

Figure 4.5: Linkages between SCI practices and supply chain departments/business units



The participants were all able to give a view of their understanding of the SCI phenomenon, from a strategic, tactical as well as operational perspective, in relation to their experience and scope of duties. At a strategic level, the organisation provides the overall strategic direction of the manufacturing entity. At a tactical level, the direction which has been set out in the firm's strategic plan is followed and medium term operational decisions are optimised and implemented (Rönnqvist, D'Amours, Weintraub, Jofre, Gunn, Haight, Martell, Murray & Romero, 2015:18). At the operational level, short term (weekly, daily or even hourly) activities are executed (De Meyer, Cattrysse, Rasinmäki & Van Orshoven, 2014:665).

4.6.4 SAMPLING METHODS

According to Bell *et al.* (2018:188), a probability sample is selected using random selection so that each unit in the population has a chance of being selected, thus ensuring a representative sample. A non-probability sample is not selected using random selection therefore, some units in the population are more likely to get chosen than others to ensure the richness of the data collected. In this study, purposive sampling occurred at two levels - at the level of the firm and at the level of individual participants within selected firms. The following sub-sections discuss purposive sampling as a non-probability sampling technique, as well as the sampling methods used at both the firm and participant levels in this study.

4.6.4.1 Purposive sampling

Robinson (2014b:5243) states that purposive sampling involves an iterative process of selecting research subjects, as opposed to starting with a pre-planned sampling frame. With purposive sampling, the researcher decides what needs to be investigated and sets out to find the appropriate cases that can provide the required data purely by virtue of knowledge or experience (Etikan, Musa & Alkassim, 2016b:2). This involves identifying and selecting individuals or groups of individuals who are proficient and well-informed on the phenomenon of interest (Etikan *et al.*, 2016b:2). According to Robinson (2014a:32), the rationale for using a purposive sampling strategy is that the researcher assumes, based on their *a priori* theoretical understanding of the phenomenon being investigated, that certain cases (i.e., individuals, firms or events) may have unique, different or important perspectives on the phenomenon, thus their presence in the sample should be safeguarded.

Palinkas, Horwitz, Green, Wisdom, Duan and Hoagwood (2013:534) state in their research that there are numerous purposive sampling methods. Table 4.4 below identifies each of these methods as well as their intended objectives.

Table 4.4: Purposive sampling strategies in qualitative research

Purposive sampling method	Objective of the sampling method
Emphasis on similarity	
Criterion sampling	To identify and select all cases that meet, or do not meet, a predetermined criterion of importance. Criterion sampling can be based on an inclusion or exclusion rule.
Typical case sampling	To demonstrate or highlight what is typical, usual or average.
Homogenous sampling	To describe a particular subgroup in depth, to reduce variation, to simplify analysis and facilitate group interviewing.
Snowball sampling	To identify cases of interest from sampling people who know people that have similar characteristics who, in turn know people, also with similar characteristics.
Emphasis on variation	
Intensity sampling	To highlight both the unusual and the typical cases in a sample.

Purposive sampling method	Objective of the sampling method
Maximum variation sampling	This sampling method identifies cases with important shared patterns and that derive their significance from having emerged out of heterogeneity.
Critical case sampling	To permit logical generalization and maximum application of information because the rule of thumb is; if it is true in one case, it is likely to be true of all other cases.

Source: Adapted from Trochim and Donnely (2008:179).

From the above the researcher identified the appropriate purposive sampling methods that were implemented at the firm and participant levels respectively.

4.6.4.2 Sampling at firm level

Maximum variation sampling was the sampling method employed at the firm level. A maximum variation sample is constructed by identifying crucial dimensions of variations and then finding cases (i.e., FMCG manufacturing firms), that vary from each other as much as possible on these dimensions (Suri, 2011:67). Furthermore, this sampling method yields high-quality, detailed, descriptions of each case which are useful for documenting uniqueness (Suri, 2011:67). Therefore, to capture the maximum variation in variety, FMCG firms that manufacture alcoholic beverages, spices, dairy products, frozen foods, as well as grain products, were sampled. These firms were also sampled because of the availability of FMCG manufacturing firms in the Gauteng province, which is where study was conducted.

4.6.4.3 Sampling at participant level

The researcher employed two sampling methods at the participant level: inclusion criterion and the snowball sampling method. The objective of the inclusion criterion sampling method is to identify and select all participants that meet some predetermined criterion of importance (Palinkas *et al.*, 2013:536). The researcher, therefore, identified and selected participants who are supply chain practitioners at all organisational levels within the sampled FMCG manufacturing firms. These supply chain practitioners consisted of individuals who work in the following business units or departments in the participating firms:

- Procurement

- Supply chain planning
- Continuous improvement
- Primary and secondary distribution
- Manufacturing operations
- Warehouse and inventory management

According to Etikan, Alkassim and Abubakar (2016a:6), snowball sampling begins with a criterion sample of the initial participants in the research. These initial participants serve as *seeds* through which the first iteration of participants is recruited. These participants subsequently recruit the second iteration of participants, expanding the sample like a snowball growing as it rolls down a hill. Through email communication, the researcher sampled the initial participant within each sampled firm. The initial participant, who was a senior level employee, then recruited the remaining two participants within their respective firm. The sample therefore included senior, middle and junior management staff as well as non-managerial supply chain practitioners who operate in tactical and operational supply chain environments.

4.6.5 PROFILE OF THE PARTICIPANTS

The researcher explained to all the research participants that their identities would be kept confidential. To ensure confidentiality, the researcher assigned a code name to all participants and their respective firms. Table 4.5 below provides profiles of the participants and the participating firms. To ensure anonymity, the researcher allocated pseudonyms to participants as well as their respective firms. As shown in Table 4.5, a total of fifteen participants were interviewed in this study. Five of the participants were female and ten were male. Nine participants were White by racial group, five were Black, and one was Indian. The participants worked in four different supply chain environments. Six participants worked in the Procurement environment, five worked in the Distribution environment, while two participants each worked in Sales and Operations Planning and the Warehousing environments respectively.

4.6.6 SAMPLE SIZE

Five firms were recruited to participate in the proposed study. As outlined in Table 4.5, these firms manufactured products spanning across the alcoholic beverages, spices, dairy products, frozen foods, as well as grain products categories. The sampled firms included medium and large firms, with some non-listed and others listed on the Johannesburg Stock Exchange (JSE). Five firms were an ideal sample size because a large number FMCG manufacturing firms operate from the Gauteng province. The researcher resides in the same area, therefore, their access to FMCG manufacturing firms in Gauteng enabled them to reach the targeted sample.

From each firm, the researcher sampled a minimum of three participants. The first two participants consisted of supply chain practitioners working at tactical and operational levels within the firm, and the third participant was a senior level supply chain practitioner working at a strategic level within their respective firm. This enabled the researcher to obtain a strategic perspective on SCI from the senior level supply chain practitioner, as well as more tactical and operational perspectives from the remaining two participants. Furthermore, by involving practitioners from all three levels, the researcher could obtain more diverse perspectives, because the senior supply chain practitioners who formulate supply chain strategies are not likely to share the same perceptions of SCI as the other participants. In addition, since the supply chain practitioners operating in tactical and operational environments execute the supply chain integrative practices, it was deemed appropriate to engage with more of these practitioners.

The participants were selected from different departments/business units to ensure diversity in the sample. The researcher was willing to increase the minimum sample size until the data collected had reached saturation. Given (2008:195) defines saturation as the point in data collection when no new or relevant information emerges with respect to the phenomenon under investigation. Therefore, when the theory appears to be rigorous, with no unexplained gaps or phenomena, saturation has been reached.

Table 4.5: Participant profiles

Firm Code Name	Products manufactured	Participant Code Name	Job title	Level within the firm	Supply chain environment	Interview duration	Sex	Race
F1	Dairy products	P1	Manager: Primary Distribution	Operational	Distribution	0:24:13	Male	White
F1	Dairy products	P2	General Manager: Distribution	Strategic	Distribution	0:46:59	Male	White
F1	Dairy products	P3	Central Distribution Centre Manager	Operational	Distribution	0:40:33	Male	White
F2	Frozen foods	P4	Procurement Manager	Strategic	Procurement	0:56:33	Female	White
F2	Frozen foods	P5	Procurement Specialist: Capital Projects	Tactical	Procurement	0:30:58	Female	Indian
F2	Frozen foods	P6	Procurement Specialist: Direct Materials	Tactical	Procurement	0:46:59	Female	White
F3	Grain products	P7	Procurement Manager	Strategic	Procurement	0:37:56	Female	Black
F3	Grain products	P8	Sales and Operations Planning Manager	Tactical	Sales and Operations Planning	0:48:24	Male	White
F3	Grain products	P9	Procurement Buyer	Tactical	Procurement	0:43:34	Female	Black
F4	Spices and condiments	P10	National Procurement and Shipping Executive	Strategic	Procurement	1:07:15	Male	White
F4	Spices and condiments	P11	Transport Manager	Operational	Distribution	0:56:22	Male	Black
F4	Spices and condiments	P12	Site Controller	Operational	Warehousing	0:32:21	Male	White
F5	Alcoholic beverages	P13	Logistics Manager	Strategic	Distribution	0:44:54	Male	Black
F5	Alcoholic beverages	P14	Warehouse Supervisor	Operational	Warehousing	0:43:59	Male	Black

Firm Code Name	Products manufactured	Participant Code Name	Job title	Level within the firm	Supply chain environment	Interview duration	Sex	Race
F5	Alcoholic beverages	P15	Specialist: Demand Management	Tactical	Sales and Operations Planning	0:31:25	Male	White

4.7 DATA COLLECTION

The researcher conducted semi-structured interviews as a data collection method in this study. The sub-sections below elaborate on the researcher's rationale for employing this data collection method.

4.7.1 INTERVIEWS AS A DATA COLLECTION METHOD

Interview data was collected from supply chain practitioners at all levels within the participating firms. This method allowed the researcher to probe and ask follow-up questions. Furthermore, interviews are generally easier and more comfortable for participants, especially if the researcher is seeking impressions, opinions or perceptions (Trochim & Donnely, 2008:146).

4.7.1.1 Types of interviews

Berger (2018:215-217) identifies four kinds of interviews which can be employed as a data collection method:

- *Informal interviews*: These interviews have limited controls and are not organised or focused. Informal interviews are mainly used to introduce researchers to their participants, thus helping them to gain confidence in their participants (Berger, 2018:215).
- *Unstructured interviews*: These interviews help researchers gain more information on the participants' views on the phenomenon being investigated. The researcher in this instance exercises limited control over the responses of the participant (Berger, 2018:215).
- *Structured interviews*: These interviews require the use of an interview schedule which must include a specific set of instructions for the interviewer. For example, the instructions may indicate which probing questions to ask, should a question be answered in a certain way (Berger, 2018:216-217).

- *Semi-structured interviews*: Semi-structured interviews are used to collect qualitative data and are best suited for working with small samples of participants (Rowley, 2012:262). In these interviews, the researcher usually has a list of questions to ask the participant but maintains limited control over the participants' responses. Semi-structured interviews allow for a free-flowing conversation and enable the participants to diverge from the questions, thus allowing them to introduce an idea or a topic (Merriam & Grenier, 2019:320).

For the purpose of this study, semi-structured interviews were adopted as a means of collecting data. The researcher used the data obtained from the participants in non-managerial roles, to inform probing questions for the senior level participants in managerial roles. This also ensured triangulation of the data collected. According to Yeasmin and Ferdousour (2012:159), triangulation can also be achieved by using different research techniques. Thus, triangulated techniques are helpful for ensuring credibility and validation within the data.

4.7.1.2 Advantages of semi-structured interviews

Alshenqeeti (2014:40) states that semi-structured interviews allow for in-depth probing while also allowing the researcher to keep the interview within the parameters outlined by the fundamental objectives of the study. Similarly, Babbie (2012:255-256) suggests that semi-structured interviews are characterised by the following strengths:

- The presence of the researcher allows for questions that come across as intricate to be explained in a way that can be understood by the participant.
- There is more opportunity to ask probing questions, ensuring that views expressed by the participant are completely understood.

O'Keeffe, Buytaert, Mijic, Brozovic and Sinha (2014:1911) indicate that semi-structured interviews are usually planned around an interview guide, which helps facilitate the conversation in a standardised manner, while making room for other perspectives relating to the phenomenon under investigation, to emerge.

4.7.1.3 Limitations of semi-structured interviews

Research indicates that semi-structured interviews have several limitations (MSR, 2007; Trochim & Donnely, 2008:146). The following limitations identified by Doody and Noonan (2013:9-10) were taken into account in selecting semi-structured interviews as a data collection method in this study:

- They may seem intrusive to the participant.
- They are time-consuming, not only in terms of conducting them, but also in relation to arranging them, travelling to the venue, post-interview transcription and analysis of the data.
- They can be expensive compared to other methods.
- Interviews on a personal and/or intimate subject can evoke strong feelings and these feelings need to be handled with great sensitivity.
- They are susceptible to bias, which may include the participant's desire to please the researcher along with the desire to create a good impression, leading participants to answer dishonestly.

In addition, the researcher considered the fact that some participants were not as articulate as other participants and, in some instances, participants were not relaxed due to the researcher's presence. To ensure quality of the findings, the researcher followed guidelines for safeguarding the quality and rigour of research. As outlined in Section 4.9 (p. 83), these principles include, *inter alia*, employing well established methods for carrying out qualitative research as well as ensuring that frequent debriefs take place between the researcher and their supervisors, to test and scrutinise developing ideas.

4.7.2 PILOTING THE INTERVIEW GUIDE

According to Castillo-Montoya (2016:827), when piloting the interview guide to be used to collect data, the researcher is essentially simulating the genuine interview under as realistic conditions as possible. Any notes taken toward improving the interview guide are largely based on the researcher's experience of conducting the interview and not from an inquiry of

the participant's thought process (Castillo-Montoya, 2016:827). Through piloting, the researcher aims to get a realistic sense of how long the interview takes and whether participants indeed can answer the questions. During the piloting stage of an interview guide, the researcher needs to take note of what may possibly be improved, make final revisions to the interview guide, and prepare to launch the study (Maxwell, 2012:101).

For the purpose of this research, one supply chain practitioner working in an alcoholic beverage FMCG manufacturing firm was recruited to participate in a pilot interview. This interview also served to test the validity of the interview questions. After the pilot interview, the researcher amended the interview guide by changing the overall flow of the questions, to focus firstly on internal integration, then customer integration, concluding the discussion with supplier integration. The researcher also changed the wording of questions so that they could allow the participants' perceptions to be manifested. For example, changing the phrasing of the question below from:

- "How would you define Supply Chain Integration?" to;
- "What does the term Supply Chain Integration mean to you?"

The overall intention of these interviews was to solicit responses that could shed light on what the participant understood SCI to be. During the pilot interview, the researcher realised that the initial formulation of the afore-mentioned question prompted the participant to give an academic definition of the construct, making it challenging for the participant to subsequently provide examples of integrative practices prevalent in their firm. The researcher therefore altered the question to the latter formulation, thus enabling the participant to give a response based entirely on their perception of the construct.

4.7.3 DATA COLLECTION PROCEDURE USED IN THIS STUDY

To ensure that data was seamlessly collected, the researcher created a list of all FMCG manufacturing firms in the Johannesburg region and through accessing the LinkedIn professional networking platform, the researcher identified the sampled supply chain practitioners within each identified firm (LinkedIn, 2017). The researcher then contacted the various supply chain executives and managers within each firm telephonically, introduced

themselves, explained the purpose of the study, and enquired whether the executive or manager in question could offer assistance with the study. The executives and managers were specifically asked to participate in the study and to refer other potential participants to the researcher. A follow-up email was sent to those willing to participate, outlining:

- the background to the study;
- the researcher's request for permission to conduct interviews within the specific firm (see Appendix A); and
- the researcher's request to obtain a letter of permission that allowed them to conduct interviews with supply chain practitioners within the specific firm (see Appendix B).

The researcher then scheduled meetings, via email communication, with all the participants. All interviews were conducted in English and an interview guide was used to guide the conversation with the participants during the data collection process (See Appendix D). All interviews were recorded using a voice recorder and lasted between twenty-three minutes and an hour (see Appendix G). All interviews took place in a quiet environment with just the researcher and the participant in the room.

The interviews typically started with introductions, mainly from the participants, followed by the researcher elaborating on the background of the study and outlining critical ethical considerations, with the intention of putting the participant at ease. This was followed by questions on general supply chain management, before finally delving into the SCI construct. The researcher approached the SCI-related questions by categorising the questions into the three dimensions of the SCI construct; internal integration, customer integration and supplier integration. Questions first focussed on the participants' understanding of the specific SCI dimension, followed by more practical questions that allowed the participants to demonstrate their perceptions on the integrative practices they consider to be employed by their respective firms.

The researcher also exempted participants from answering questions outside their field of expertise and knowledge. For example, Procurement Specialists were exempted from answering any questions on Customer Integration because the bulk of their knowledge and

experiences would relate to the Supplier Integration aspects of the interview. Data collection was carried out between April and July 2017.

4.8 DATA ANALYSIS

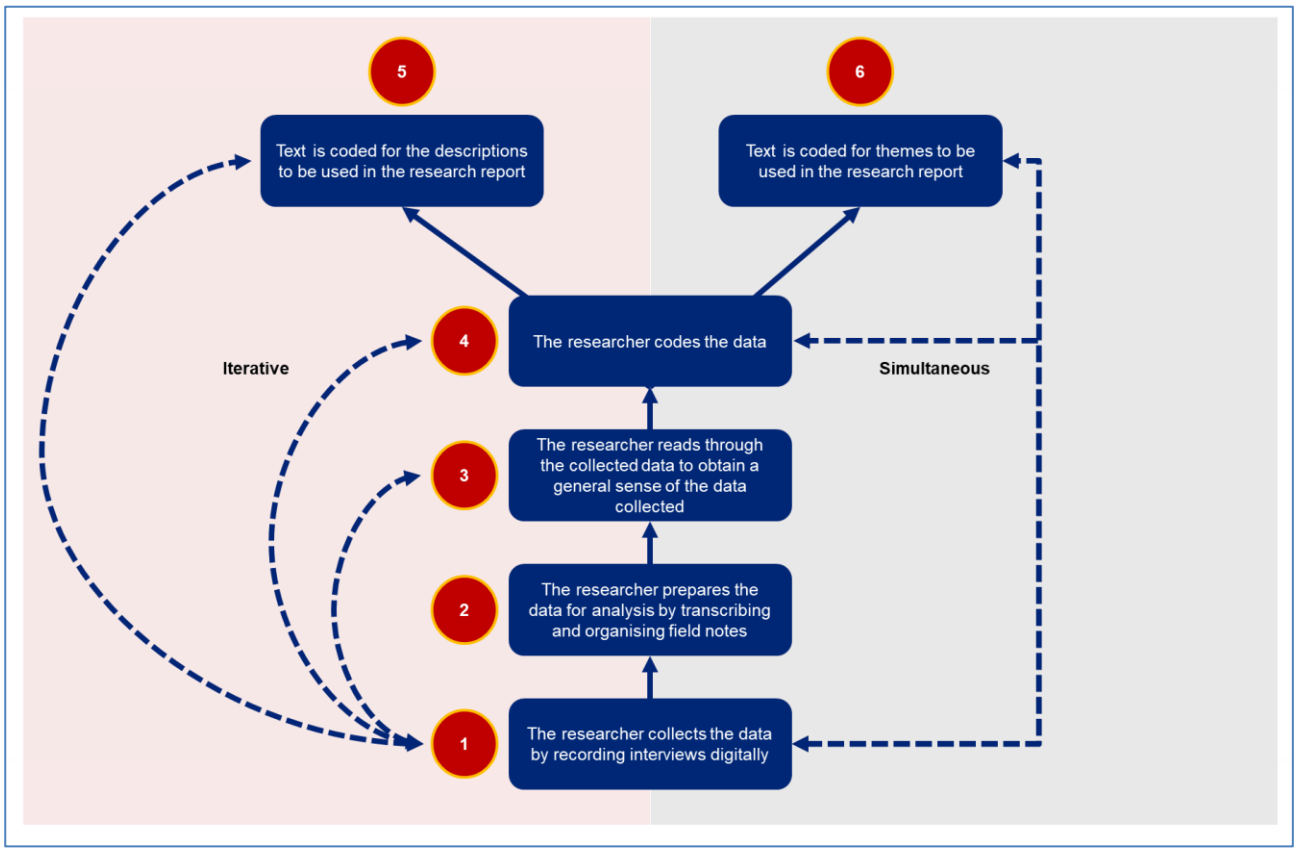
According to Creswell (2012:236), analysing qualitative data requires understanding how to make sense of text and images so that you can form answers to your research questions. The researcher used a CAQDAS tool, version 7.5 of the ATLAS.ti software, to code and identify themes in the data. Table 4.6 below defines some of the key terms and procedures relevant to the data analysis phase of this study.

Table 4.6: Key data analysis terms

Key terms	Definition
Coding	Coding is a process which entails the researcher classifying data collected from participants and assigning each classified item a label in the form of a name, number or a symbol (Berger, 2018:308).
Themes	A theme is an attribute, descriptor, element, or concept which aids the researcher in organising a group of repeating ideas, thus enabling the researcher to answer the research questions (Vaismoradi, Jones, Turunen & Snelgrove, 2016:101).
In vivo codes	In vivo coding allows for the participants' own words to be used as coding labels during the first few iterations of the analytical process. These codes help in determining the categories and themes related to the data collected (Merriam & Grenier, 2019:321).
Transcription	Transcription is a process that entails the researcher typing up the words from the audio- or video recording (Given, 2008).

Figure 4.6 shows the six steps for analysing qualitative data as identified by Creswell (2012:237), and followed by the researcher in this study. Data analysis began by digitally collecting relevant data that would require further analysis, and then preparing this data through means of verbatim data transcription. Prior to coding the data, the researcher read through it to get a general sense of the data that had been collected. The data was coded to establish labels and themes that were used to address the research questions in the final report.

Figure 4.6: The qualitative data analysis process



Source: adapted from Creswell (2012:237).

The following sections elaborate on data preparation and the data analysis procedures adopted during this study.

4.8.1 DATA PREPARATION PROCEDURES

McLellan, MacQueen and Neidig (2003:69) state that the first step to making the data analysis task manageable is to avoid approaching the preparation of each interview transcript as a separate unique document. McLellan *et al.* (2003:69) further state that when a researcher is collecting and analysing data, it is important to establish a common template so that each interview transcript has a consistent structure. This will minimise the amount of time spent locating standard text elements, such as specific questions or views, in the transcript.

The researcher recruited a transcriber to transcribe all the interview recordings after all the interviews had been conducted (see Appendix H). Once all interview recordings had been transcribed, the researcher checked the accuracy of the interview transcripts by randomly picking three transcripts and reading them while listening to their respective audio recordings. After ensuring accuracy in the transcripts, the researcher uploaded all the data to the ATLAS.ti data analysis tool. In addition, as outlined in Figure 4.6, the steps involved in qualitative data preparation and analysis also involve securely storing the collected data, preventing it from loss or unauthorised access. The data was therefore securely stored on a password protected electronic cloud storage platform.

4.8.2 DATA ANALYSIS PROCEDURES

The collected data was analysed using thematic analysis. According to Guest, MacQueen and Namey (2011:138), thematic analyses require insightful understanding of the participant's contextual setting, from the researcher. Thematic analyses thus move beyond counting clear and unambiguous words or phrases and focus more on identifying and describing both implicit and explicit ideas within the data. Qualitative data analysis is usually based on an interpretative philosophy, meaning that it tries to establish how participants make meaning of a specific phenomenon by the researcher analysing participants' perceptions, attitudes, understanding, knowledge, values, feelings and experiences in an attempt to approximate their construction of the phenomenon (Maree, 2007:99). This is best achieved through a process of inductive analysis of qualitative data where the main purpose is to allow research findings to emerge from the frequent, dominant or significant themes inherent in raw data, without the restraints imposed by a more structured theoretical orientation (Maree, 2007:99). Using a more deductive approach where the categories of information required from the data are formulated in advance (called *a priori* categories, distilled from the literature on the topic) may obscure or render key themes invisible (Maree, 2007:99). The researcher, therefore, adopted the inductive approach to data analysis.

As outlined in Figure 4.6, the researcher read through the transcripts several times to familiarise themselves with the data collected. This also allowed them to identify common patterns and trends pertaining to the way the participants expressed their views on SCI,

given their varying contextual settings. During the coding process, the researcher worked through the complete data set three times and identified text segments, subsequently assigning code labels to the text segments based on what the participants had articulated in that particular text segment (Creswell, 2012:261).

A total of 160 codes emerged from the coding process. The researcher then scrutinised all the codes to identify similar codes, ultimately ending up with 117 merged codes (see Appendix F). All the merged codes were further scrutinised to identify related codes, from which the thirteen sub-themes, and subsequently, the three major themes were derived (see Appendix E). From this analysis, the researcher was able to present the data in the findings through figures, tables and a detailed discussion of the identified themes (Creswell, 2012:261).

4.9 DEMONSTRATING THE QUALITY AND RIGOUR OF THE RESEARCH DESIGN

According to Noble and Smith (2015:34), evaluating the quality of research is crucial if findings and recommendations are to be used within the industry, and also incorporated into supply chain delivery. These researchers further state that when assessing the reliability of research findings researchers ought to make judgements about:

- The *soundness* of the research in relation to the application.
- The appropriateness of the research methods undertaken.
- The integrity of the final conclusions (Noble & Smith, 2015:34).

The following sections provide an overview of trustworthiness in qualitative research, as well as how trustworthiness was ensured in this study. This is followed by a discussion on how quality issues pertaining to the research were addressed.

4.9.1 TRUSTWORTHINESS IN QUALITATIVE RESEARCH

According to Noble and Smith (2015:34), tests used to confirm the validity and reliability of a quantitative study cannot be applied to qualitative research. It is debated whether terminology such as validity and reliability is appropriate, when evaluating the quality and rigour of qualitative research (Long & Johnson, 2000:33-34; Rolfe, 2006:306; Sandelowski, 1993:4). As a result, researchers have sought out criteria for evaluating research quality and rigour of qualitative studies (Ang, Embi & Yunus, 2016:1857), and a set of criteria first introduced by Lincoln and Guba (1985:218-219) have largely been adopted.

These criteria are made up of four fundamental elements: credibility, transferability, confirmability and dependability of a study. In addition, various researchers have also leveraged off these criteria to articulate approaches for demonstrating a qualitative study's quality and rigour (Anney, 2014:272-273; Babbie, 2012:776-778; Patton, 2014:652-653; Shenton, 2004:64-67). The ensuing sub-section discusses the four criteria.

4.9.1.1 Credibility

In qualitative research, credibility assures that the results from the participants are true (Trochim & Donnely, 2008:149). According to Patton (2014:653), the credibility of a qualitative inquiry depends on four interrelated inquiry elements:

- *Systematic in-depth fieldwork* that yields high-quality data;
- Systematic and conscientious analysis of data;
- *Credibility of the inquirer*, which depends on training and experience; and
- *The reader and users' philosophical belief* in the value of the qualitative inquiry, which is a fundamental appreciation of a naturalistic inquiry.

One barrier to credible qualitative findings stems from the suspicion that the analyst can shape findings according to their predisposition and biases (Patton, 2014:653).

Shenton (2004:64-69), however, proposes strategies that researchers may use to enhance the credibility of their studies. These strategies include:

- The adoption of well-established methods for the qualitative investigation of supply chain phenomena.
- The development of an early familiarity with the culture of participating organisations before data collection commences. This may be achieved via consultation of appropriate documents and preliminary visits to the organisations in question.
- Triangulation, which may involve the use of different methods, especially observation, focus groups and individual interviews, which form the major data collection strategies for much of qualitative research. Whilst focus groups and individual interviews suffer from some common methodological shortcomings since both are interviews of a kind, their distinct characteristics also result in individual strengths. One way in which triangulation can take place is through the involvement of a wide range of informants. This is one way of triangulating via data sources. Here, individual viewpoints and experiences can be verified against others and, ultimately, a rich picture of the attitudes, needs or behaviour of those under scrutiny may be constructed based on the contributions of a range of people.
- Tactics to help ensure honesty in informants when contributing data. Each person who is approached should be given the opportunity to refuse to participate in the project to ensure that the data collection sessions involve only those who are genuinely willing to take part, and are prepared to offer data freely. It should be made clear to participants that they have the right to withdraw from the study at any point, and should they decide to do so, they will not be required to explain their decision to the investigator.
- Frequent debriefing sessions between the researcher and their superiors, such as research supervisors. Through discussion, the vision of the investigator may be widened as others bring to bear their experiences and perceptions. The meetings also provide a sounding board for the investigator to test their developing ideas and interpretations, and enable probing by others which may help the researcher to recognise their own biases and preferences. This also includes peer-to-peer scrutiny of the research project, which should welcome critique and feedback from colleagues,

peers and academics. The fresh perspective that such individuals bring allows them to challenge the investigator's assumptions, as the latter's closeness to the project often inhibits their ability to view it with the necessary levels of detachment.

To increase the credibility of the research, the researcher engaged in frequent debriefing sessions with their supervisors to rigorously test and discuss any developing ideas and interpretations. The researcher also ensured that the participants were aware that they are at liberty to withdraw from the data collection process at any point in the process. Furthermore, they developed familiarity with the participants' organisations and culture by conducting a pilot interview with a participant that suited the sampling requirements, in an FMCG manufacturing firm.

4.9.1.2 Transferability

Transferability interrogates the degree to which research findings can be applied to other contexts (Trochim & Donnely, 2008:149). This is achieved when the researcher provides sufficient information about the self (the researcher as instrument) and the research context, processes, participants, and researcher–participant relationships to enable the reader to decide how the findings may transfer. Given the usually small sample sizes and absence of statistical analyses in qualitative studies, qualitative data cannot be said to be generalisable in the conventional sense; thus it is important in the presentation of the research not to imply that the findings can be generalised to other populations or settings (Morrow, 2005:252).

According to Anney (2014:278), there are two preconditions required to ensure successful transferability of one's study, namely, providing a comprehensive description of the phenomenon investigated, as well as employing purposive sampling as a sampling technique. Providing the reader with a comprehensive description of the phenomenon investigated involves the researcher clarifying the research strategy, which includes data collection methods, and the context of the study up to production of the final report. These detailed descriptions enable other researchers to replicate the study with similar conditions in other settings (Anney, 2014:278). Shenton (2004:70) further argues that without a comprehensive description, it is difficult for the reader to determine the extent to which the

overall findings ring true and can be adapted to other contexts. Purposive sampling on the other hand, enables the research to focus on key informants who are knowledgeable on issues related to the SCI phenomenon (Anney, 2014:278-279). A comprehensive description of the SCI phenomenon was provided, along with a thorough description detailing the contextual setting of the study, to enable vivid contextualisation of the SCI construct. The researcher also employed purposive sampling to ensure that the research focuses solely on supply chain practitioners.

4.9.1.3 Confirmability

According to Babbie (2012:276), confirmability refers to the degree to which the findings of the research demonstrate a degree of neutrality in that they are shaped by the participants' contributions, not the biases of the researcher. The concept of confirmability is concerned with the researcher's demonstrable concern for objectivity. Steps must be taken to ensure, as far as possible, that the study's findings are the result of the experiences and ideas of the informants, rather than the characteristics and preferences of the researcher (Shenton, 2004:70). Shenton (2004:72) further states that the role of triangulation must be emphasised in promoting confirmability, especially in contexts prone to potential successive biases from the researcher. A detailed methodological description that enables the reader to determine how far back the data emerges, may be accepted. Critical to this process is the 'audit trail', showing how the data which eventually led to the formation of recommendations was gathered and processed during the course of the study (Shenton, 2004:72). According to Bowen (2009:38) an 'audit trail' offers visible evidence, from process and product, that the researcher did not simply find what they set out to find.

The researcher was encouraged to keep a reflexive journal in order to enhance the confirmability of their study. Anney (2014:279) describes a reflexive journal as documents kept by the researcher to reflect and ponder on thoughts, plans and interpretations that require more time and thinking to be crystallised. The researcher kept a reflexive journal so that all thoughts, plans and interpretations could be reflected upon and effectively concretised.

4.9.1.4 Dependability

Dependability in qualitative research addresses the identical connections within responses from participants and respondents, should the same research be conducted in a similar context, with similar respondents (Babbie, 2012:278). To ensure dependability, procedures within the study should be reported in detail, thereby enabling a future researcher to repeat the work, not necessarily to gain the same results. Thus, the research design may be viewed as a prototype model (Shenton, 2004:71). To ensure the dependability of this research, the researcher provided detailed descriptions of the research design adopted in the study.

4.9.2 MITIGATING DATA QUALITY PROBLEMS

Table 4.7 below summarises the provisions made by the researcher to validate the trustworthiness of this study.

Table 4.7: Provisions made to ensure trustworthiness

Quality criterion	Provision made by researcher
Credibility	• Employed suitable research methods to collect primary data for this research. • Frequent debriefing sessions were held between the researcher and the study's supervisors to clarify thoughts, approaches and expectations. • Systematic and conscientious data analysis methods were implemented.
Transferability	• The researcher documented the study's background information to effectively establish the context of the study for the participants.
Dependability	• The researcher provided a detailed outline of the research methodology employed in this study to enable replication.
Confirmability	• The researcher recognized and brought to light the limitations in the study's research methods. • The researcher kept a reflexive journal where they documented all their thoughts, plans and other pertinent notes for reference during the course of the study.

The following section gives an account of the ethical considerations observed by the researcher while conducting this study.

4.10 ETHICAL CONSIDERATIONS

The way a researcher enters the research field, including how they address and select participants, raises important ethical issues. It should be taken into consideration whom the researcher informs about the research, its purposes and their expectations (Flick, 2014:41). Flick (2014:41) identifies the following as key ethical considerations in conducting research:

- Informed consent
- Employing ethical procedures
- Avoiding harm for participants in collecting data
- Doing justice to the participants in analysing the data

The following sub-sections elaborate on how the researcher took cognisance of these ethical considerations in conducting this study.

4.10.1 INFORMED CONSENT

To ensure adherence to the principle of informed consent as a requirement for participation, the researcher observed the following criteria:

- The consent should be given by someone capable of doing so.
- The person giving the consent should be adequately informed.
- The consent is given voluntarily (Flick, 2014:41).

The researcher liaised with all supply chain executives from the participating firms outlining the background of the study and what the study objectives were. The researcher also told the executives that an Informed Consent Form was available to all participants for their perusal and understanding. The Informed Consent Form addressed the critical aspects of anonymity and confidentiality as well as the way the collected data would be used (see Appendix C).

4.10.2 ETHICAL PROCEDURES

Formal approval of this study was granted by the Research Ethics Committee of the Faculty of Economic and Management Sciences, at the University of Pretoria, in November 2016. The researcher made it clear to each participant that they were not obliged to answer any question that they were not comfortable to answer. The researcher also mentioned to each participant that they had the liberty of terminating the interview at any stage, for any reason whatsoever. All the participants indicated that they understood what was being explained to them and they voiced their interest and willingness to participate in the study.

The researcher also obtained permission from the participating firms by, firstly, issuing a letter requesting permission to conduct research within the firm and, secondly, requesting a letter granting permission from the participating firms (see Appendix A and Appendix B). The letters granting the researcher permission to conduct research within the sampled participating firms were signed by the executive supply chain practitioners, on the respective firm's official letterhead.

4.10.3 AVOIDING HARM TO PARTICIPANTS IN COLLECTING DATA

During data collection, the researcher refrained from coercing participants for responses and the researcher ensured that the participants remained comfortable during the interview. The researcher's interview style was very conversational which was designed to help the participants feel at ease when sharing their respective perceptions and insights on the phenomenon under investigation.

4.10.4 DOING JUSTICE TO PARTICIPANTS IN ANALYSING THE DATA

The researcher explained to the participants how the data would be analysed after the data collection had taken place. Participants were told that the research would be made available to all who contributed to it. The researcher ensured that all interpretations from the interviews were grounded in the collected data (Flick, 2014:41).

In addition to the above-mentioned ethical considerations, confidentiality and anonymity were also ensured. When interviewing several people in the same firm, the need for confidentiality is not only in relation to publics outside this setting. Readers of the final report should not be able to recognise which firm or which persons, within any of the participating firms, took part in the research (Flick, 2014:42). The researcher assigned code names, instead of real names, for all participating firms as well as all participants, to preserve confidentiality and anonymity.

4.11 CHAPTER SUMMARY

A post-positivist research paradigm was adopted for this study, which assumes that the outcomes sought from the study are pivotal in improving the practice of supply chain management. This study is classified as a basic qualitative inquiry and its primary aim was to explore the various perceptions that exist among supply chain practitioners hence, a natural setting was best suited for this study. This strengthens the rationale for adoption of a qualitative approach to the study.

Sampling was carried out at two levels – at the firm level as well as at a participant level. The maximum variation sampling method was employed for sampling at firm level, while criterion sampling, along with snowball sampling, were the methods employed at a participant level. Data was collected through semi-structured interviews, transcribed and analysed using a CAQDAS tool named ATLAS.ti. The following chapter discusses the data analytic procedure and presents the findings from the research.

CHAPTER 5: DATA ANALYSIS AND PRESENTATION OF RESULTS

Chapter outline:

The purpose of this chapter is to:

- provide an overview of the background of this study's participants;
- illustrate the different themes that were derived from the data collected;
- present the main findings of the study in relation to each posed research question;
- report on differences in the supply chain practitioners' understanding of the SCI construct;
- report on the supply chain practitioners' understanding of what SCI practices are;
- reveal the current SCI practices that exist within the South African FMCG industry; and
- explain how SCI influences a firm's operational and financial performance.

5.1 INTRODUCTION

Chapter 4 gave an extensive overview of the research design employed in this study. This chapter discusses the background of the study participants, the data analysis phase and presents the findings of the study. A discussion of the participants' professional background is important for contextualising the findings. The chapter presents the different themes that were derived from the collected data and outlines the main findings of the study in relation to each research question. The main themes and sub-themes emerging from the study's findings are summarised in Figure 5.2 (p. 96) and Appendix E (p. 200), with the main themes being: *Supply chain practitioners' perceptions of SCI*, *Commitment and trust as SCI enablers*, and *SCI and firm performance*. The findings focus on the differences in the supply chain practitioners' understanding of the SCI construct, and supply chain practitioners' understanding of what SCI practices are. The findings also reveal SCI practices that currently exist within the South African FMCG industry and explain how SCI influences a

firm's operational and financial performance. The chapter concludes with an executive summary of the main findings.

5.2 BACKGROUND OF THE STUDY PARTICIPANTS

This study primarily focuses on how supply chain practitioners in the South African FMCG industry perceive the SCI construct. It is important to understand the background of the participants because it influences the manner in which they relate to and perceive the SCI construct, along with the respective practices documented in the literature. All the participants were employed by FMCG manufacturing firms at the time of research. Table 4.5 (p. 73) in the preceding chapter gives detailed profiles of the participants.

The study participants were all individuals with a professional background in supply chain management, practicing in South Africa. This meant that the participants had had formal education or on-the-job training in supply chain management with subsequent experience working in a supply chain environment. Several of the participants who were currently employed in FMCG manufacturing firms at the time of research had not always worked in this industry. The excerpts below clearly illustrate this:

> *"I started my career as a Procurement Sourcing Consultant at Telkom for about four years. Then I moved on to doing Public-Private Processes, Procedures and Systems for government, doing Gap Analysis on what the legislation says versus what they're actually executing in terms of procurement and supply chain. Then I went into Consulting for a total of seven years, which includes Industrial Engineering, which is practising Industrial Engineering; yes, about seven or eight years." (P5, Procurement Specialist: Capital Projects)*

> *"… then I ended up as a Category Manager for a Strategic Sourcing at Transnet and I'm here. So, I wanted to get into FMCG and I've only been sixteen months in FMCG." (P5, Procurement Specialist: Capital Projects)*

In addition, other participants, especially those functioning at an operational level within their respective firms, did not have formal education in the supply chain management field. They were deemed eligible to participate in this research because they had been working in a

supply chain environment for a significant number of years, and had undergone some sort of informal, on-the-job, training. A participant revealed this fact in the excerpt below:

> *"I've got twenty-six years [of experience] ... I'm seeing to it that the transport gets out on time and the goods loaded on the transport are equivalent to the tonnage on the trucks and the drivers that are going out, they are familiar with their…and I'll also be looking at the relationship between the workers and the management also, as a person who has done Human Resources Management." (P11, Transport Manager, Operational)*

5.3 EMERGING THEMES WITHIN THE STUDY

The data collected in this study was analysed using thematic analysis and the ATLAS.ti qualitative data analysis software was used to:

- create the codes;
- merge similar codes; and
- create sub-themes from which the main themes were ultimately derived.

The data analysis process outlined in Section 4.8 (p. 80) was followed in this study. Figure 5.1 further illustrates the coding and theming process adopted by the researcher. Before the coding and theming process commenced, the raw data was first transcribed. A total of 160 codes were created during the first coding stage.

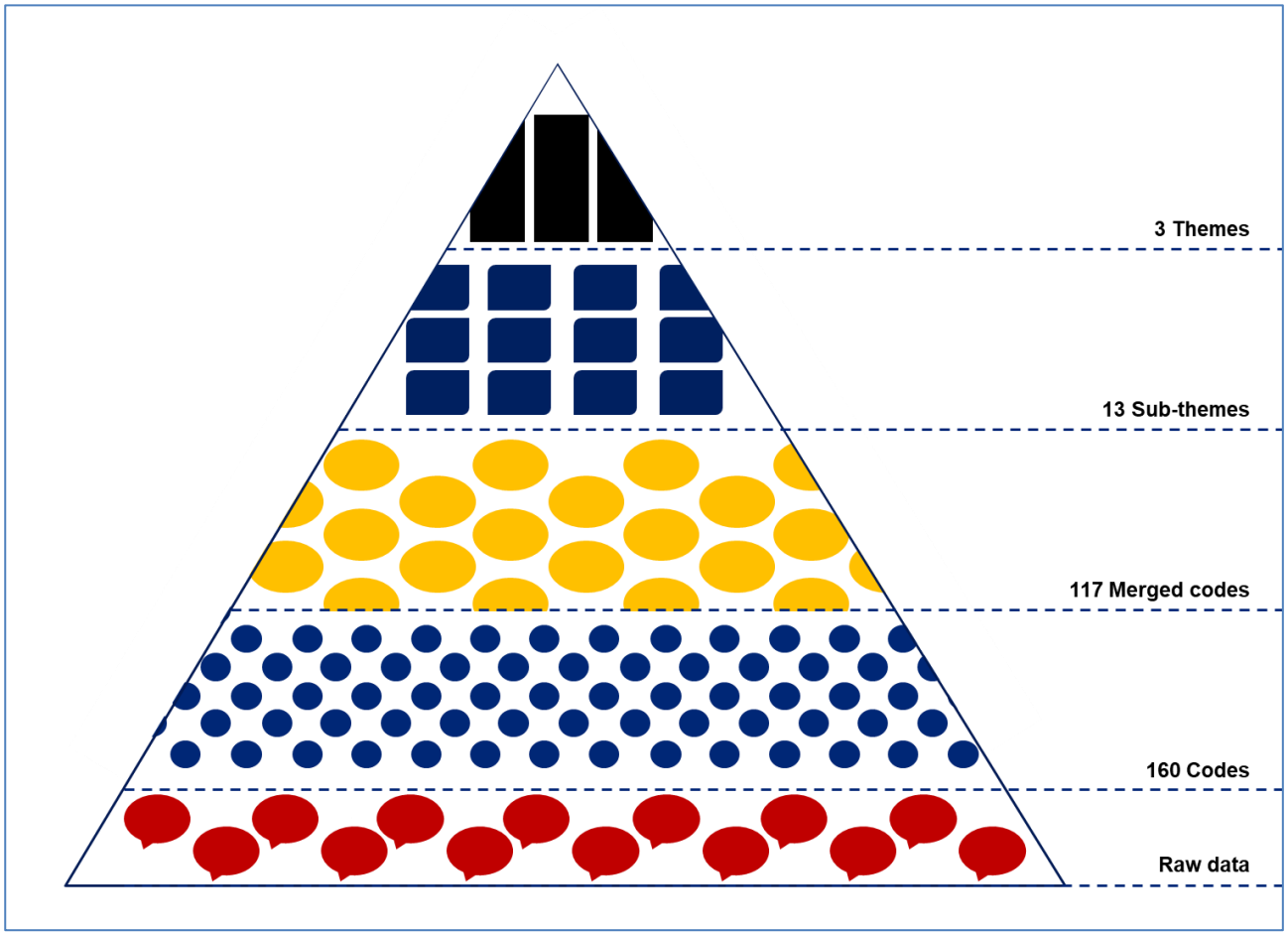
The researcher used the transcribed data as a guide for naming the chosen codes; an illustration of this procedure follows. The statement below was a response given by a participant:

> *"Supply chain integration would mean to me the integration of different sectors of the supply chain and integrating that and sharing each other's knowledge and concerns to streamline the supply chain, that's what supply chain integration would mean to me."*

In this case, the researcher coded this quote as "Definition of SCI".

This approach was adopted in coding all the data. After producing the first iteration of codes, the researcher scrutinised each code in order to identify similarities. This led to the merging of codes, which resulted in a list of 117 merged codes.

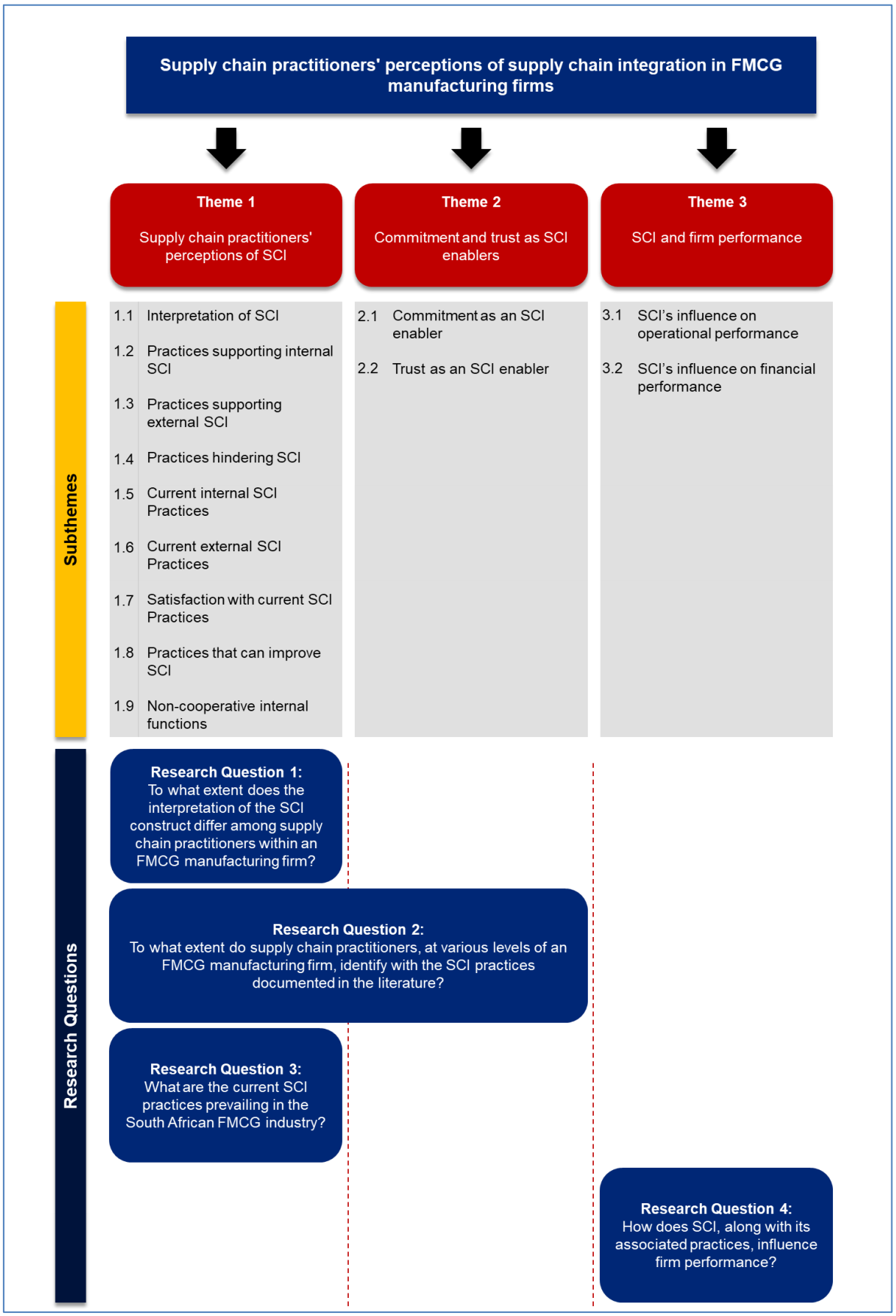
Figure 5.1: An illustration of the coding and theming process



To further synthesise the merged codes into meaningful themes, the researcher read through all the merged codes, identifying those codes with clear connections. As illustrated in Figure 5.2, thirteen sub-themes emerged, ultimately resulting in three main themes: *Supply chain practitioners' perceptions of SCI*, *Commitment and trust as SCI enablers*, and *SCI and firm performance*.

Figure 5.2 also illustrates how these themes link to the research questions outlined in Chapter 1. The aforementioned three main themes and their associated sub-themes are discussed in the following sub-sections.

Figure 5.2: A summary of the main themes and sub-themes identified in the study



5.4 SUPPLY CHAIN PRACTITIONERS' PERCEPTIONS OF SCI

This section describes how the study participants interpreted the SCI construct. Articulated in Section 1.2 (p. 3) perception gaps emanate as a result of supply chain practitioners not aligning on pertinent supply chain activities, internally and externally (Lu *et al.*, 2019:46). It was, therefore, important to gain insights on the participants' understanding of the SCI construct. This section also addresses the findings related to Theme 1, which relates the first three research questions as is illustrated in Figure 5.2 above.

Before investigating the participants' perceptions of the SCI construct, the researcher first sought to explore the participants' understanding of the SCM construct. This was necessary to gauge if the participants had a shared understanding of supply chain management. As stated in Section 2.2 (p. 12), the Council of Supply Chain Management Professionals (CSCMP) defines supply chain management as:

> "... the planning and management of all activities involved in sourcing and procurement, conversion, and all logistics management activities. Importantly, it also includes coordination and collaboration with channel partners, which can be suppliers, intermediaries, third party service providers, and customers. In essence, supply chain management integrates supply and demand management within and across companies." (CSCMP, 2014)

All fifteen participants presented a view of supply chain management that is similar to the definition of the CSCMP (2014). The following quotes illustrate the participants' understanding of the supply chain management construct:

> *"… supply chain is basically, we perceive it as moving the final product from factory to our customer and how we integrate with our customers ensuring that they achieve their daily demand or receive their daily demand and satisfy their customers in turn." (P2, General Manager: Distribution, Strategic)*

> *"It would essentially be an overview and a holistic approach to the entire supply chain from start to finish. You can't just look at one part of a supply chain. You've got to look at it and manage it from an entire perspective to understand what your total cost of ownership to the business is." (P6, Procurement Specialist: Direct Materials, Tactical)*

"That means all the goods that come from the outside suppliers to our customers, that's when we get our stock from our external customers and suppliers to our customers outside." (P11, Transport Manager, Operational)

Ten participants considered the integrative capability required within the supply chain environment while other participants overlooked integration within the supply chain domain. Three of those ten participants focused their SCI discussion on the aim to reduce the costs involved in managing the end-to-end supply chain. It also must be noted that the two participants who function at an operational level had a narrower view of the construct, as they only expressed the physical flow of goods when defining the supply chain management construct.

The following sub-sections discuss findings relating to the sub-themes under Theme 1 (see Figure 5.2, p. 96). Findings pertaining to the participants' varying interpretations of the SCI construct are discussed first, followed by findings relating to practices that support and hinder the attainment of SCI within FMCG manufacturing firms. The researcher also highlights their findings on current SCI practices prevalent within the sampled firms. This is followed by a discussion on findings relating to the participants' satisfaction with the SCI practices employed in their respective firms, as well as findings concerning non-cooperative internal supply chain functions. The section concludes with a comparison between the practices identified in the existing body of knowledge and those highlighted by the participants.

5.4.1 INTERPRETATION OF SCI

Section 2.3 (p. 18) outlines the SCI construct as interpreted by Huo *et al.* (2019:237) and Liu *et al.* (2016:14). Sub-theme 1.1 therefore aims to reveal supply chain practitioners' interpretation of the SCI construct.

Nine participants to this study interpreted the SCI construct in line with the definitions provided in the literature. These participants highlighted the manner in which the SCI

construct considers every node in the supply chain as well as how these nodes need to be connected. The following excerpts illustrate these interpretations of the SCI construct that are in line with the definitions provided in the literature:

> *"Supply chain integration basically means or it takes into account each leg of the supply chain or value chain and it shows how they all intertwine and link amongst each other." (P13, Logistics Manager, Strategic)*

> *"Supply chain integration would mean to me the integration of different sectors of the supply chain and integrating that and sharing each other's knowledge and concerns to sort out, I want to say, streamline the supply chain … that's what supply chain integration would mean to me." (P1, Manager: Primary Distribution, Operational)*

Three participants provided a different understanding of the SCI construct when held against the definitions in the literature. A participant provided an interpretation of the SCI construct that outlined decision-making as an important factor:

> *"Supply chain integration is that you cannot go at alone. So, integration is when you get everybody that's involved from end to end, involved to make the decisions." (P4, Procurement Manager, Strategic)*

One participant mentioned that SCI involves not focussing wholly on cost reduction. The excerpt below illustrates this finding:

> *"SCI means that supply chain activities shouldn't always be executed at the lowest cost." (P15, Specialist: Demand Management, Tactical)*

These views are inconsistent with those postulated by Huo *et al.* (2019:237) and Liu *et al.* (2016:14) in the sense that they do not address the synergy and collaboration required internally within the focal firm, and externally with supply chain trading partners. In addition, two of the fifteen participants did not give a view pertaining to their understanding of the SCI construct. These participants stated that the SCI construct was too academic to provide a view on and another participant stated that she did not know what SCI is. The excerpt below illustrates this fact:

> *"This is too academic. We need to pass that one. I'll come back to you." (P9, Procurement Buyer, Tactical)*

The literature also emphasises three critical dimensions of SCI, namely internal integration, external supplier integration and external customer integration (Abdallah *et al.*, 2017:697; Chavez *et al.*, 2015:83; Khalaf & El Mokadem, 2018:4; Szász *et al.*, 2016:760). All the participants were able to articulate a view on internal integration, but due to the nature of their work responsibilities, some could only provide views relating to supplier integration (6 participants), some participants could only provide views relating to customer integration (6 participants), while other participants were comfortable to provide views relating to both supplier integration and customer integration (3 participants).

The following sections provide an overview of the participants' perceptions on internal integration, supplier integration and customer integration, respectively.

5.4.1.1 Internal integration

As outlined in Chapter 2, internal integration mainly involves effective internal task coordination, including effective internal communication, among functions that play a critical role in the firm's supply chain (Khalaf & El Mokadem, 2018:4; Riley *et al.*, 2016:957). All participants in this study had a common understanding of internal integration. Participants mentioned that internal integration is characterised by aligned internal processes, integrated systems that promoted transparency and visibility, as well as cross-functional interaction. The following excerpts illustrate this finding:

> *"My understanding of internal supply chain integration is to have all the processes in the defined supply chains aligned to make sure that the systems are working with each other, there is visibility and transparency from manufacturing right through supply chain planning to you know, also through your, in our case the telesales and sales department, you know, back to distribution, doing the final distribution and ensuring that the sales takes place." (P3, Central Distribution Centre Manager, Operational)*

> *"Internal supply chain integration - that would be, I would imagine, inter-departmental interactions. So, I would say anything from creating understanding between departments within that specific internal supply chain within the firm itself." (P12, Site Controller, Operational)*

In addition, the researcher requested the participants to identify which business units formed their respective firm's internal supply chain. When answering this question, thirteen participants viewed internal business units as functions such as procurement and sales, while two participants viewed internal business units as the various business divisions that the organisation is made up of. This includes, for example, divisions such as the Milk Division, Cheese Division and Juice Division. The excerpts below are instructive to this end:

> *"It's going to be procurement, finance, logistics, demand planning, I will put in business development there, sales, marketing here and there because they communicate with sales, the factory production, the buyers on site, I call them operational buyers, warehousing, distribution centre so quality as well is involved." (P4, Procurement Manager, Strategic)*

> *"We are sitting with exports which is also sitting under me. I'm sitting with ingredient solutions, we are sitting with equipment division, we are sitting with casings division, we are sitting with ..." (P10, National Procurement and Shipping Executive, Strategic)*

5.4.1.2 Supplier integration

According to Yang *et al.* (2017:1095), supplier integration involves collaborating with upstream supply chain trading partners, as well as synchronising processes and systems in order to gain efficiencies and reduce costs. Six participants emphasised the importance of having a cooperative relationship with the supplier. The excerpts below align with the view posited by Yang *et al.* (2017:1095), and highlight the participants' interpretations of supplier integration as the second dimension that makes up the SCI construct:

> *"So, on the supplier side, we're dependent on vehicles, fuel mainly as well as labour. We use a lot of labour, we use a lot of contract labour. So, we need to make sure that we integrate with those various suppliers of contract labour to ensure we get the right skills. We also need to integrate with them to ensure that we get the right quantity of labour at a certain time of the year because our business does experience peaks and troughs and to ensure that this labour is readily available to assist us." (P2, General Manager: Distribution, Strategic)*

"So, to me it's about having good relationships with your suppliers just to make sure that you run smoothly, and then communicate your expectations up front like for instance in terms of integration, you need to know your lead times with your suppliers to build up the buffers or to build up your divide, knowing that if you run short you've got a second-tier supplier that you can always run to; that's how basically I work." (P7, Procurement Manager, Strategic)

Considering that this study took place in an environment where consumer products are manufactured, the expected participant interactions with suppliers of product raw materials were visible. There were however interesting dynamics regarding the other types of suppliers that the participants interacted with, as part of their duties. One participant who was working within a distribution environment focused his discussion on integrating with suppliers of contract labour and temporarily hired vehicles:

"We use a lot of labour, we use a lot of contract labour. So, we need to make sure that we integrate with those various suppliers of contract labour …" (P2, General Manager: Distribution, Strategic)

5.4.1.3 Customer integration

Customer integration involves collaboration through efficiently sharing information and interacting with downstream supply chain trading partners in order to proactively respond to customer needs (Chavez *et al.*, 2015:83). Five participants mentioned the need to track and measure the fulfilment of customer orders because that is the fundamental aim of SCI; to ensure customer satisfaction. The following excerpts provide a view of the participants' interpretation of this SCI dimension:

"On the customer's side, integration is a bit more advanced. We get all of our orders electronically, daily from our customers. These orders are then summarised, they are allocated to vehicles and we have about a twenty-four-hour turnaround to deliver these orders. So, the whole supply chain integration is dependent on these orders and then our ability to fulfil these orders from a distribution side and a production side which then goes right back to milk source, so ensuring that we have the adequate or the right quantity of milk available to produce these products to fulfil the orders of our customers." (P2, General Manager: Distribution, Strategic)

"The external supply chain integration for me is to make sure that all the orders that has been captured is to be delivered and the measuring of that. We've got a measure in place and that speaks to strike rate, but that means to watch all orders are being captured and shipped out of the warehouse, to what extent do we deliver that in the market as a percentage, but also the challenges that we have got there in terms of standing times, you know, orders that has been raised that has been rejected. Orders that are not delivered although the stock is picked, you know, and also the relationship with the customer at the back door." (P3, Central Distribution Centre Manager, Operational)

Participants' interpretation of the term customer integration corresponded with definitions provided in the literature. These participants outlined the importance of coordinating activities pertaining to fulling customer orders as well as ensuring adequate raw material and finished goods inventory levels.

5.4.2 PRACTICES SUPPORTING INTERNAL SCI

In order for SCI to be realised by FMCG manufacturing firms, certain practices have to be executed. As highlighted in Section 3.2 (p. 33), the literature reveals several practices that positively contribute to the realisation of a firm's SCI capability. The next two sections present findings related to the SCI practices that positively influence the focal firm's attainment of internal and external SCI, in line with sub-theme 1.2 (see Figure 5.2).

Table 5.1 lists the frequency with which an internal integration practice with a positive influence on the achievement of SCI in the sampled firms was mentioned in discussions with the participants. A total of seven internal SCI practices were identified from the data and are discussed in the sub-sections which follow.

Table 5.1: SCI practices that positively influence internal SCI in FMCG manufacturing firms

SCI practice	Frequency
Effective and open of communication	8
Cross-functional interaction	4
CPFR	3
Process alignment	3

SCI practice	Frequency
Data integrity	1
Information sharing	1
Joint decision-making	1

* Number of participants identifying a practice that can positively support the attainment of internal SCI, whether it is currently employed within their respective firm or not.

5.4.2.1 Effective and open of communication

Eight of the participants mentioned *effective and open communication* as a practice that has a major influence on the attainment of SCI internally within their respective firms. As is illustrated in the quotations below, participants at all organisational levels shared this sentiment:

> *"… it boils down to communication; the better they communicate between each other the more seamless the integration would be and understanding each other's roles and understanding each other's constraints. I think that's very important." (P1, Manager: Primary Distribution, Operational)*

> *"… to be able to work in that whole integration supply chain I'm saying communication is the key for us to have a successful business so we don't need to work inside and say I'm only focusing on demand planning, no, you need to understand from sales point of view what the demand is looking like outside in the market before you can do a demand plan for production to produce whatever you're looking for." (P7, Procurement Manager, Strategic)*

> *So, for us communication is a fundamental driver of success in our organisation." (P2, General Manager: Distribution, Strategic)*

Participants not only stressed the importance of *effective and open communication* in enabling seamless task execution among actors within the internal supply chain, but also mentioned that this practice plays an important role in enabling employees to understand the nature of activities in other parts of the internal supply chain. Effective and open communication also allows supply chain practitioners to have a firm grasp of the constraints faced by other parts of the internal supply chain, thus improving other capabilities such as planning, manufacturing and inventory management.

5.4.2.2 ***Cross-functional interaction***

Cross-functional interaction was a practice mentioned by four of the study's participants. One participant mentioned that the importance of this practice is ensuring that supply chain practitioners do not only interact across internal functions through meetings and forums, but also learn to fulfil roles and execute tasks in other internal supply chain functions. In contrast, another participant mentioned that *cross-functional interaction* should only span as far as supply chain practitioners understanding their roles and responsibilities as well as their interdependencies on each other, but not as far as learning how to execute tasks in other internal supply chain functions:

> *"… you're basically learning how to do each function as well as cross-functional work on the job." (P13, Logistics Manager, Strategic)*

> *"If everybody in the supply chain knows their role, the interdependency on each other and play in their own sandpits. Don't come and play in mine because I don't play in yours." (P4, Procurement Manager, Strategic)*

Although the supply chain practitioners stated the importance of knowing what happens in other supply chain functions within the firm, it is crucial that all actors in the firm's internal supply chain be able to also efficiently execute tasks lying outside of their assigned roles and responsibilities.

5.4.2.3 ***Collaborative Planning, Forecasting and Replenishment***

CPFR is a practice that was mentioned by three of the participants. One participant mentioned that the importance of *CPFR* lies in ensuring that the correct data relating to customer demand is retrieved from the Sales and Marketing functions. This also includes data on promotions and campaigns. Effective communication between Sales, Marketing and Supply Chain Planning was also highlighted as key to strong *CPFR* capability in the focal firm. Another participant also mentioned that although accurate forecasting was an area that their firm was currently struggling with, it could also result in significant operational improvement for the firm:

"I think for us the success of our business is proper planning. So, we spend a lot of time forecasting, ensure that we have the correct demand and then it's all about communication and ensuring that we communicate any promotions or deals; those are communicated to us from our sales departments and obviously marketing." (P2, General Manager: Distribution, Strategic)

"To me it would be something that is being a challenge for us, but accurate forecasting. If we could have accurate forecasting in fast moving consumer goods I think that would make the biggest impact or the biggest single improvement." (P3, Central Distribution Centre Manager, Tactical)

The researcher noted that only practitioners operating at a tactical or strategic level, especially those operating within the supply chain planning environment, understand the importance of *CPFR.*

*5.4.2.4 **Process alignment***

Three participants mentioned the importance of *process alignment* when striving for optimal internal SCI. One participant mentioned that processes should change as the external environment evolves. This will enable the firm to achieve its operational targets. Another participant mentioned that along with clear processes, there also needs to be clear standards and procedures governing the operation of the firm's internal supply chain. Above all, supply chain practitioners must strive to adhere to these processes:

"… We have got processes but I mean the world evolves and processes change, the organisation changes, and customer requirements change. We look to drive productivity and efficiency within our operation…" (P13, Logistics Manager, Strategic)

"I would say that clear standards, clear procedures, very good process flow and then obviously yes, communication between branches, that integration, that synergy between branches, between departments, I would say that would definitely go a long way." (P15, Specialist: Demand Management, Tactical)

As the preceding quotes indicate, clearly documented processes are important for clear guidance on what internal functions are supposed to do. This includes the manner in which these value-adding tasks need to be tracked and measured. The most important aspect of

this practice lies in ensuring that supply chain practitioners adhere to the documented processes. Thus, strong advocacy is required from management to enforce the desired behaviour and discipline in task execution.

5.4.2.5 Data integrity and the adoption of technology

One participant mentioned the importance of *data integrity* as an internal SCI practice. This practice also addresses concerns about inaccurate data being put into the firm's system. The participant further mentioned the serious knock-on effect on the overall supply chain performance when wrong data is used:

> *"… it's that data integrity that's very important so you can have a great system, a perfect system but if your data integrity is not right, your supply chain is going to fall over, now that data is important to demand and supply planning, because it helps me understand historically what we sold, how much space we needed, and it tells me the future what decisions we need to make in the mills and factories …" (P8, Sales and Operations Planning Manager, Tactical)*

The same participant also mentioned the significant value that can be derived from the *adoption of new technologies* that can enable a more seamless internal operation. In addition, the participant expressed the importance of having more integrated systems that are accessible by the relevant actors within the firm's internal supply chain:

> *"… For me personally, and definitely is information or IT. I believe that technology is a vital component to make it work from ERP systems point of view and all your data base management, because a supply chain is useless without information, so our challenge now as an organisation with all these different business units that maybe worked on different systems and now we have to integrate them all together to get our supply chain working effectively …"*

5.4.2.6 Information sharing

One participant mentioned the efficiency gains that the focal manufacturing firm is able to realise if information is disseminated timeously and accurately. The participant also mentioned how the leveraging off systems can further add to these efficiency gains:

"… if we share information better and as our systems are growing, I believe the supply chain can become more efficient because of that." (P8, Sales and Operations Planning Manager, Tactical)

The researcher noted how the participant associated *information sharing* with the *adoption of technology* and *systems integration*, which may suggest that the three practices may need to co-exist in order for the focal manufacturing firm to realise tangible benefits.

5.4.2.7 Joint decision-making

A participant expressed the importance of including all actors within the internal supply chain in all decisions that the focal firm needs to make:

"… when you get everybody that's involved from end to end, involved to make the decisions …" (P4, Procurement Manager, Strategic)

Four participants to this research also mentioned some elements of *joint decision-making* when they expressed the importance of *cross-functional interaction* as an internal SCI practice. It can therefore be concluded that *joint decision-making* is likely to happen more frequently within FMCG manufacturing firms if there is a high prevalence of *cross-functional interaction.*

5.4.3 PRACTICES SUPPORTING EXTERNAL SCI

Table 5.2 lists the frequency with which an external integration practice with a positive influence on the achievement of SCI in the sampled firms was mentioned in discussions with the participants. A total of four external SCI practices were identified from the data. These practices are discussed in the sub-sections below.

Table 5.2: Frequency of codes reflecting practices that positively influence SCI externally with supply chain trading partners

SCI Practice	Frequency
Relationship building	6

SCI Practice	Frequency
Data integrity	2
Effective and open communication	2
Inter-firm interaction	2

* Number of participants identifying a practice that can positively support the attainment of external SCI, whether it is currently employed within their respective firm or not.

5.4.3.1 Relationship building

Six participants stated that the *relationship building* is important when interacting with external supply chain trading partners. The practice therefore influences the attainment of external SCI with the focal firm's supply chain trading partners. One participant stated that it is also important to understand your suppliers' constraints because this affects planning. The following excerpts provide more detail in this regard:

> *"Look, the biggest thing with external supply chain integration is that you've got to have a good relationship with your suppliers" (P10, National Procurement and Shipping Executive, Strategic)*
>
> *"Okay. First of all, it's about relationship building." (P6, Procurement Specialist: Direct Materials, Tactical)*
>
> *"I think understanding your partners in the external supply chain and again understanding their constraints and their strengths and their weaknesses." (P1, Manager: Primary Distribution, Operational)*

The researcher noted that building good relationships externally was important to participants that mainly focused on the upstream supply chain. It can therefore be concluded that supply chain practitioners in FMCG manufacturing firms place more emphasis on building *good relationships* with suppliers.

5.4.3.2 Data integrity

Two of the participants highlighted *data integrity* as a practice that can positively influence external SCI. For the purpose of this research, *data integrity* refers to the accuracy, consistency and reliability of data, as captured by employees within the focal firm. A

participant expressed the effects of inaccurate data on customer satisfaction. The importance of regularly updating the data, in order to keep it relevant was also highlighted. The excerpts below illustrate these practices:

> *"Okay, so our business is, externally, highly dependent on master data. So, from a master data point of view we run our own master data at the depot, so we've got access to change if your customers address changes we change it from here. Contact details are changed from here, so we've got full control as to when the customer receives a stock how they receive the stock what mode of delivery as well as time windows." (P13, Logistics Manager, Strategic)*

In addition, it must be noted that although *data integrity* is regarded as an important external SCI practice, participants said they struggled to obtain the desired level of data integrity and quality information from external trading partners. Notable examples included instances where customers communicated wrong addresses to the focal firm and when suppliers communicated wrong lead times, which severely hampered production:

> *"… let's say you stay in Soshanguve Block H, but when the order gets there, you've got another branch in Ga-Rankuwa, then you say to my driver; 'Can you send this to Ga-Rankuwa Zone One?'. But then the guy says; 'No, my route starts from here to here, I cannot go'. If you don't want to take your order back to the warehouse, that's where now the driver will talk to us …" (P11, Transport Manager, Operational)*

5.4.3.3 Effective and open communication

Two of the participants highlighted *effective and open communication* as a practice that can positively influence external SCI:

> *"… from a customer point of view, and the delivery point of view, it's a constant interaction and a continuous communication…" (P15, Specialist: Demand Management, Tactical)*

Effective and open communication is important when interacting with customers awaiting deliveries. In addition, a practitioner working in an operational environment where customer deliveries are involved considered this practice critical because it has a direct influence on customer satisfaction as well as customer loyalty.

5.4.3.4 Inter-firm interaction

Inter-firm interaction was considered important when interacting with upstream suppliers. As discussed in Chapter 3, inter-firm interaction involves activities that transpire between the focal firm and its supply chain trading partners, in order to maintain a mature level of SCI (Wong, Wong & Boon-itt, 2013:570). Two participants mentioned the importance of understanding the supplier's environment and vice versa. This is how many problems are prevented:

> *"You've got to understand your suppliers' business and they've got to understand our business, which is why I like to get my suppliers to come in and come and visit our line, spend time on our lines. If there's a quality related issue, they've got to come to the plants. They discuss it with our technical, they look at the product if it's a quality issue, they go on the lines and they try and understand what is causing the problems. For me, I like to visit my suppliers. I like to understand how their plants run, how they operate, what are they doing in terms of efficiencies on their side, and quality management, to then ensure that a good quality product comes to us." (P6, Procurement Specialist: Direct Materials, Tactical)*

The data shows that two practices, *effective and open communication* and *data integrity,* are practices that the participants consider having a positive influence on both internal and external integration.

5.4.4 PRACTICES HINDERING INTERNAL SCI

While the practices mentioned in the previous section support the attainment of SCI, there are also practices that hinder the achievement of SCI. This section specifically focuses on those practices that hinder the attainment of internal SCI, as outlined under sub-theme 1.4 in Figure 5.2. Table 5.3 lists these practices that hinder the attainment of internal SCI capability as identified by the participants.

Table 5.3: Practices that hinder internal SCI in FMCG manufacturing firms

Practices that hinder internal SCI	Frequency*
Lack of effective and open communication	6
Lack of collaboration	5
Lack of cross-functional interaction	3
Lack of joint decision-making	2
Lack of data integrity	2
Capacity constraints	1

* Number of participants identifying a practice that can hinder internal SCI, whether it is currently employed within their respective firm or not.

5.4.4.1 Lack of effective and open of communication

The data indicates that six of the participants regard a *lack of effective and open communication* as a fundamental practice that will hinder a FMCG manufacturing firm's efforts to attain internal SCI. This view was shared by supply chain practitioners across all levels within a firm:

> *"And then internally, from a warehousing point of view, lack of communication has financial implications. So, if you look at it from a stock point of view, if stock is not properly received as well as rotated, that has financial implications in our business which it results in write-offs, so a lack of communication can cost you a lot of money." (P13, Logistics Manager, Strategic)*

> *"… we've got a very short lead time, we don't really feel it but in terms of the organisation's poor communication, if there's no communication from the sales guys or from the demand planning guys on promotions et cetera, then there's not enough packaging, and at the end of the day there's no stock." (P1, Manager: Primary Distribution, Operational)*

> *"Also, I think lack of communication. People working in their own sort of little cages, people working in their own little departments without communicating and also through having departments not interact with each other." (P12, Site Controller, Operational)*

It was found that *effective and open communication* is the most important influencer of the attainment of internal SCI, while the *lack of effective and open communication* is the most important factor that hinders the accomplishment of internal SCI.

5.4.4.2 Lack of collaboration

The data reveals that five participants view the *lack of collaboration* as a practice that hinders the attainment of SCI because it impedes the effective flow of information. It was also found that when there is a *lack of collaboration*, there is a big disconnect among internal functions, which negatively impacts the firm's bottom line:

> *"It's synergy. If there's no synergy, there's no flow of whether it's information or anything else. It's not going to come together." (P6, Procurement Specialist: Direct Materials, Tactical)*

> *"We didn't have the collaboration. Sales does their own thing when selling, for instance, they will go and put down a big campaign with Customer A and say; Peas on special! But actually, we are so low on peas because we had a crop failure and we need to import but they're selling it for less than we can import. If you have those disconnects in the company, where the one doesn't know what the other one is doing, then we really run into a lot of issues. Although sales volumes look great, our bottom line is getting a knock because we are importing those peas ..." (P4, Procurement Manager, Strategic)*

The data showed that there are still several internal functions that operate in silos. At times orders were not filled effectively due to the *lack of collaboration*, which at most times leads to unsatisfied and irate customers.

5.4.4.3 Lack of cross-functional interaction

Three participants mentioned the *lack of cross-functional interaction* as a practice that hinders SCI. Participants pointed to supply chain ineffectiveness and incorrect task execution which occur because of a *lack of cross-functional interaction*. The excerpts below are evidence of this fact:

> *"… no one knows what the other person is doing and at the end of the day, you're going to have a supply chain that is not effective." (P1, Manager: Primary Distribution, Operational)*

> *"Yes, so you might find, for example, let's say maybe let's say there is a new product that is coming; the Forklift Drivers just see the stock in the warehouse and they don't*

even know how to pick it because no meetings happened to brief them on this change…" (P14, Warehouse Supervisor, Operational)

It was found that all the participants that mentioned this hindering practice work in operational environments. The data further reveals that the supply chain impact caused by this practice arises from supply chain practitioners not being able to execute tasks outside of their expected daily duties.

5.4.4.4 Lack of joint decision-making

The data showed that *lack of joint decision-making* results from isolating supply chain functions, thus treating them as silos. It was also found that, similar to the *lack of collaboration, lack of joint decision-making* is also a result of functional silos that exist within FMCG manufacturing firms. The excerpts below illustrate this fact:

> *"… so, we've got different business units, so traditionally there's business units that will also make decisions sometimes separately, and they don't think about the bigger supply chain, so the company is trying to obviously change the culture of that, where when one of the units makes a decision. It's a collaborative decision based on the supply chain, but I think at the moment this is a decision that is still often being made in silos on their units, and that comes from a supply chain point of view …" (P8, Sales and Operations Planning Manager, Tactical)*

> *"So, you've got engineering silo, you've got your procurement silo, and you interact at specific points, right. So, the global procurement team interacts on global contracts for specific equipment that's required and make decisions at that level"*

Decisions regarding, for instance, the purchase of production machinery, are made at a global level in some FMCG manufacturing firms. Thus, South African supply chain practitioners who will be operating and monitoring the use of this machinery, are often not included in these strategic decisions.

5.4.4.5 Lack of data integrity

It was found that a *lack of data integrity* can negatively impact customer satisfaction. The data also showed that difficulty in accessing data is likely to cause data integrity issues in the firm:

> *"I think the key to having a seamless internal supply chain is good information. You need to share it on time, in full, and it has to be easily accessible. So, I often think the information is there, it's on time and it's in full, but it's not always easily accessible. So, to get a seamless supply chain, people often spend a lot of time looking for information and because of that, sometimes you just rely on any information so that you can just get the job done." (P8, Sales and Operations Planning Manager, Tactical)*

> *"… just an example. There was an order yesterday for eleven thousand that had to be credited back to the customer because they used the wrong address. The order went to Silver Lakes in Pretoria, when the customer was in Secunda. They used the wrong account number…" (P14, Warehouse Supervisor, Operational)*

As revealed in the excerpts above, it is important to note that data integrity issues are also triggered by the manner in which information is disseminated. Participant P8 expressed that the information is available in full, the issue however is the difficulty in accessing the information: a clear indication that information is not disseminated effectively.

5.4.4.6 Capacity constraints

One of the fifteen participants mentioned *capacity constraints* as a practice hindering SCI. A participant in the distribution environment commented on the disadvantages of having limited assets and human resources. The below excerpt illustrates this finding:

> *"So, our capacity is sometimes a challenge and this is dependent on those demand peaks we have to achieve … So, what is detrimental is the under capacity or demand we cannot fulfil. That demand we cannot fulfil due to our lack of capacity in some cases." (P13, Logistics Manager, Strategic)*

Aside from *capacity constraints*, the data collected on the practices hindering SCI as discussed above inversely correlate to the practices that support internal SCI. This means

that the opposite of these practices had been mentioned by participants as supporting the attainment of internal SCI. The next section discusses practices that hinder the attainment of external SCI in FMCG manufacturing firms.

5.4.5 PRACTICES HINDERING EXTERNAL SCI

This section focuses on those practices that hinder the attainment of SCI externally, between the focal firm and its supply chain trading partners, as outlined under sub-theme 1.4 in Figure 5.2. Table 5.4 lists the practices that hinder the attainment of external SCI capability as identified by the participants.

Table 5.4: Practices that hinder external SCI in FMCG manufacturing firms

Practices that hinder external SCI	Frequency*
Bad relationships	2
Lack of data integrity	2
Inaccurate information	1
Incomplete information	1
Lack of supplier development	1

* Number of participants identifying a practice that can hinder external SCI, whether it is currently employed within their respective firm or not.

5.4.5.1 Bad relationships

From an external integration standpoint, two participants mentioned *bad relationships* as a practice that hinders the attainment of SCI:

> *"… if it's not a partnership and you work in isolation, and if you don't have the understanding or the regards for the other party's constraints and the way they function, then it's not going to work." (P1, Manager: Primary Distribution, Operational)*

As revealed in the excerpt above, bad relationships among supply chain partners are caused by a combination of factors. Working in silos and disregarding the customer's or supplier's resource constraints are some of the factors that contribute to this particular hindrance.

5.4.5.2 Lack of data integrity

Two participants mentioned *lack of data integrity* as a practice that hinders the attainment of external SCI:

> *"… what I often see with the supplier and us both ways are, we get frustrated with each other because I believe the integrity of information … sometimes it is not dishonest information it's just the integrity. They are on different systems to us, so we do things a different way and we understand things a different way …" (P8, Sales and Operations Planning Manager, Tactical)*

The data indicates that there are similarities in the data integrity issues experienced internally within FMCG manufacturing firms as well as externally with supply chain trading partners. The integrity of the data is compromised due to differences in systems, therefore, the way the data is disseminated ultimately yields no value for the receiving party. Furthermore, similar to practices that hinder the attainment of internal SCI, it was found that these hindering external SCI practices also inversely correlate to two specific practices that support external SCI: good relationships and data integrity.

5.4.5.3 Inaccurate and incomplete information

One participant mentioned *inaccurate information* as a practice that impacts daily delivery schedules that need to be operationally executed:

> *"You find that the order, just an example there was an order yesterday for eleven thousand that has been credited because they use the wrong address. The order went to Silver Lake in Pretoria when the customer is in Secunda." (P14, Warehouse Supervisor, Operational)*

The same participant also articulated his frustrations regarding *incomplete information* when receiving deliveries:

> *"… this is so difficult because when they come deliver here, sometimes they don't give us this information. We need to phone their company and say, 'We are looking for the certificates which hasn't been supplied during your deliveries.'" (P14, Warehouse Supervisor, Operational)*

As revealed in the excerpts above, *inaccurate and incomplete information* impacts daily operational activities which could possibly result in delivery delays and backlogs.

5.4.5.4 Lack of supplier development

One participant highlighted the downfalls of not having the local manufacturing capability to manufacture the focal manufacturing firm's strategic commodities. A *lack of supplier development* in this aspect leads to stockouts of strategic commodities:

> *"**Interviewee**: Yes, because even our prices and our costs are high because we have to look at the inflation the fluctuation sometimes it's seasonal stock. Like now we are looking for cocoa flavour and they will tell you it's only based on seasons. When you check South Africa there is no manufacture for cocoa and no one is willing to.*
>
> ***Interviewer**: Yes and it can actually be localised.*
>
> ***Interviewee**: It can actually be localised so that we can build our own economy." (P9, Procurement Buyer, Operational)*

The participant also suggested that having a local manufacturing capability for commodities such as cocoa will improve the financial performance of the focal manufacturing firm, and also contribute to the South African economy.

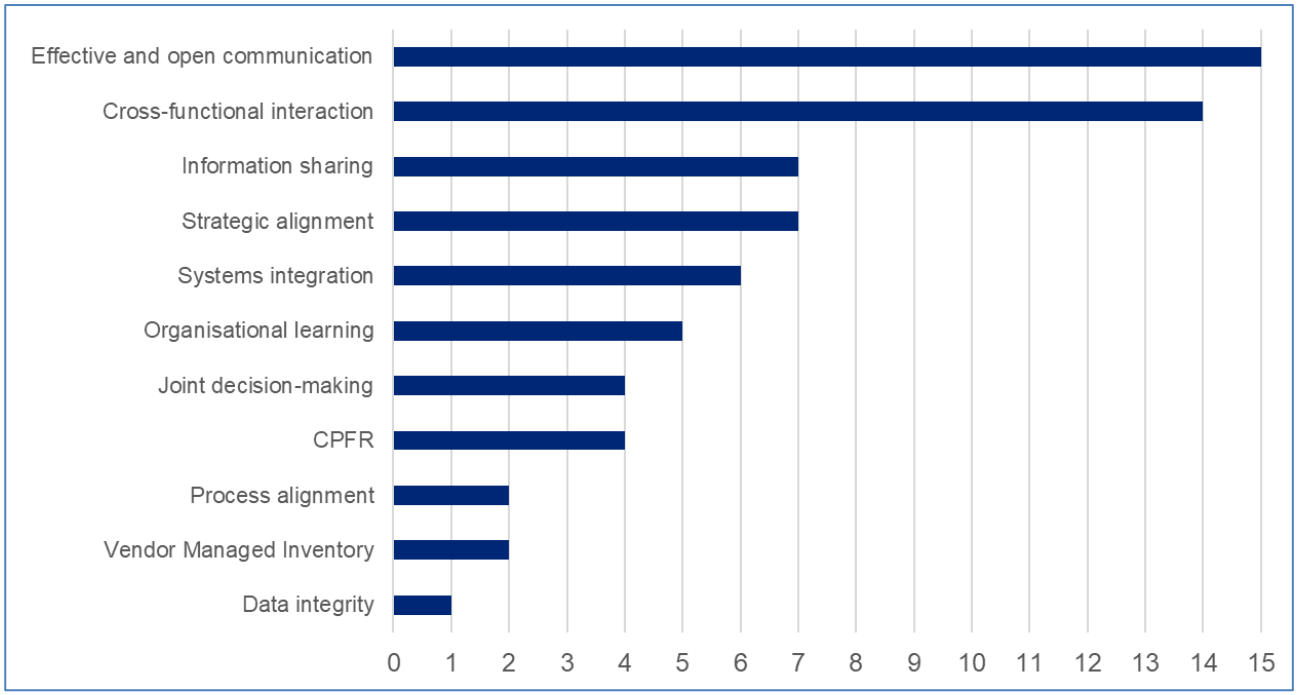
The next section focuses on the internal SCI practices that participants identified in their respective firms.

5.4.6 CURRENT INTERNAL SCI PRACTICES

After investigating what the participants perceive SCI practices to be, the researcher then sought to uncover the current internal SCI practices within the sampled firms, i.e. sub-theme 1.5 in Figure 5.2.

Figure 5.3 illustrates the current internal SCI practices within the sampled FMCG manufacturing firms. A total of eleven internal integrative practices were identified from the data.

Figure 5.3: Current internal SCI practices



The 11 internal SCI practices listed Figure 5.3 are discussed below.

5.4.6.1 Effective and open communication

Effective and open communication exists in all sampled firms and it is a practice that resonated with all fifteen participants. The participants also outlined the manner in which communication was carried out. They identified monthly planning forums and daily operational meetings as the most effective ways in which communication took place. In some instances, participants also stated that real-time communication of issues was an effective way for ensuring effective and open communication. Some organisations also leveraged off their internal systems to ensure effective communication by retrieving reports and sharing the relevant ones with the organisation's internal functions. The excerpts below provide additional insights related to this finding:

> *"So, the communication we have various forums, monthly forums where we discuss the plan, we discuss what has happened in the past but, more importantly, what's the plan for the next month. So, we have these high-level management meetings, it's actually called supply chain council, where all the supply chain practitioners and all different department heads get together, and we have a monthly meeting. This goes through what are the objectives for the next month as far as our service levels and cost management*

are, and what actions were put in place, and what projects we've got going, and then we have a daily forum where we discuss over email if there are any challenges, and then every morning I need to give an update to our executive team of what it is that happened in the distribution business." (P2, General Manager: Distribution, Strategic)

"There is a BI department and they send out quite a few daily reports which is free information, anyone can access it, as well as there is a mailing list where they send it out, and that's from the BI department, and their goal is to just do these reports. They check the quality of data, they check the reports, and they update the daily dashboards and all of that information." (P8, Sales and Operations Planning Manager, Tactical)

"I would say on the basis from within my experience, there are generally meetings where we are in the form of operations meetings. The warehouse manager will have his meeting with his staff, and same with dispatch, and we've got your email correspondence between the internal sales ladies and our external sales reps and the warehouse departments. You've got telephone calls, and you've got your call logging systems, so your CRM systems which so, for example, telesales don't need to communicate with the technical department because they've got a call logging system or a system where they can log a call, everything is on that call and that person would be the person that acted on that call. So that's that communication tool that separates them from having to pick up a phone or email. So, I would say it's your general email, cell phone, phone, verbally discussing. I would say it's likely in most cases it's verbal because not a lot of people like to type a long email, so it's verbal or it's through telephone." (P12, Site Controller, Operational)

The experts above illustrate how some practices are interdependent. For example, these experts indicate that *effective and open communication*, *information sharing* as well as *cross-functional interaction* are dependent on each other. This means that you cannot achieve the one practice without the presence of either of the others.

5.4.6.2 Cross-functional interaction

Fourteen of the participants mentioned that *cross-functional interaction* is a practice that currently exists within their respective firms. Participants emphasised the importance of knowing the various impacts that roles and responsibilities of other supply chain practitioners have on their overall deliverables. In addition, participants also linked effective

communication to *cross-functional interaction*, in the sense that they are not mutually exclusive practices:

> *"… communication is the key for us to have a successful business, so we don't need to work in silos and say I'm only focusing on, for example, demand planning. You need to understand from sales point of view, what the demand is looking like outside in the market before you can do a demand plan for production to produce. We have a meeting arrangement on Mondays where we look at demand for the whole week and we plan accordingly. We also understand sales and promotions, so if they don't communicate anything to us then there might be raw material shortages or packaging shortages. So, when they come up front with those volumes, we put plans in place in order for us for us to be able to deliver the service that they require." (P7, Procurement Manager, Strategic)*

> *"… we've got a capital meeting today for instance. We will have all the role players in that meeting to decide, what capital equipment is coming and what not. So, the engineers will be there. Finance will be there. Procurement will be there. Agriculture will be there. Then we discuss which ones we need to leave, which ones is best for the business ..." (P4, Procurement Manager, Strategic)*

Participants also made mention of the value derived from leveraging off *cross-functional interaction* to test ideas among internal functions, before making long-term financial commitments. The excerpt below illuminates this fact:

> *"You have to vet ideas from all points of view and, everybody's an expert in their own field. Therefore, I can't for one second think that I can vet if don't know finance and what the cash flow required for a certain product is. However, from a procurement point of view, I'll be able to say that there's a supply base for this, I can do this, I can do that, I can negotiate taking, go international, I can put a local guy in place …" (P5, Procurement Specialist: Capital Projects, Tactical)*

The data indicates that *cross-functional interaction* is an ideal practice that is supported by most supply chain practitioners in FMCG manufacturing firms. Cross-functional interaction is also valuable when it occurs daily or weekly.

5.4.6.3 Strategic alignment

Seven of the participants mentioned *strategic alignment* as an existing practice within their respective firms. One participant stressed the importance of effective governance and control measures, such as internal audits, as a means for enforcing *strategic alignment* within the firm:

> *"We've got a depot process optimization department that purely focusses on internal processes at depots … and we get audited based on that."*
>
> *"So, in the greater scheme of things, these audits are ensuring that, you know, we drive company strategy, a business strategy which we need to be more productive and look at cheaper ways of doing things, and then it also looks at processes." (P13, Logistics Manager, Strategic)*

Another participant mentioned that it is important to ensure that everything that is executed in the firm is driven by customer demand. This should be embedded in the overall strategy of the firm:

> *"So, we drive a strong vision and mission from our executives. There should be no silos in the organisation. We are fully integrated, we manage the business holistically, and we drive it purely from a demand side. In other words, we make sure that we satisfy the demand of our customers, therefore, service delivery is not negotiable. (P2, General Manager: Distribution, Strategic)*

The data also indicates that this practice is largely important to supply chain practitioners operating at a strategic level within their respective firms.

5.4.6.4 Information sharing

Seven participants mentioned *information sharing* as an existing practice within their respective firms. In most firms, standard reporting is considered as a means of sharing information:

> *"Daily reports. We get daily service level reports, daily sales reports, and any report that we want to." (P12, Site Controller, Operational)*

One of the sampled firms is starting to leverage off free, reliable, software technologies in order to share information in an efficient manner:

> *"Here we use a software tool called Dropbox that we share information with." (P9, Procurement Buyer, Operational)*

It also has to be noted that three of the sampled firms are taking active measures to ensure seamless information sharing in an integrated manner. The excerpt below sheds more light on this finding:

> *"We are fully integrated with the sales reps. The sales reps place orders and we've got an App where sales reps will place an order. The Distribution Planner is also on that App, the Customer Service Rep is also on that App, and the Logistics department is on that App. Customer places the order, the planner receives orders and communicates back to the customer that the order is planned and it will be delivered. You know, we've got technology that can ensure that that happens in the same day." (P13, Logistics Manager, Strategic)*

The data indicates that FMCG manufacturing firms are seeking more effective ways to communicate and share information to ensure customer satisfaction.

5.4.6.5 Systems interfaces

Six of the participants stated that there was some form of *system interface* that facilitates *information sharing* within their respective firms. This practice also enhances communication among internal functions within the firm, thereby enhancing the productivity of the focal firm. The following excerpt illustrates this fact:

> *"… there's some applications that's been developed where one can see what this one is doing and, where guys can actually put their information in and, where other guys can then just draw out and work on it without having to meet the whole time, but the meetings still do take place." (P1, Manager: Primary Distribution, Operational)*
>
> *"… there's some apps that have been developed where one can see what an employee is doing and where guys can actually input their critical information and where other guys*

can then just draw out and work on the data ..." (P1, Manager: Primary Distribution, Operational)

From the excerpts above, it can be concluded that *system interfaces* ensure increased visibility of pertinent data concerning the operation at large. Supply chain practitioners are therefore able to share and extract important data efficiently.

5.4.6.6 Organisational learning

Five of this study's participants mentioned *organisational learning* as a current integrative practice. Participants noted that as new systems are introduced in firms, *organisational learning* becomes a vital component to be considered. The requirement for training on the use of new systems and technologies arose from this step change in the sampled firms. The following excepts provide more insight in this regard:

"… so, we're also running a warehouse management system called WS, run by data scope that is running the background of our day-to-day system that we are running on. So, in terms of that also, the people in the warehouse, you must make sure that the people are educated because we are running on a scanner system, and it entails that there is a Tracking ID you generated as soon as the stock has been received. Tracking ID is generated and then that stock will go into a bin." (P10, National Procurement and Shipping Executive, Strategic)

"I'm going to talk about F3, even if it's been a month. What they do is provide us with training, so we are in touch with the new systems and what's happening now. Let's say in procurement or in contracts management they offer us training every month. There is training for something that is new in the market, so I think they are helping us." (P9, Procurement Buyer, Operational)

A participant also mentioned that with *organisational learning*, practitioners are given the opportunity to upskill themselves so that they can feel proficient in the work that they do, because they understand it better. The excerpt below illustrates this fact:

"And then it makes be great because, if you have that environment where you can upskill yourself in a way that you're comfortable, then it makes your job to be okay." (P11, Transport Manager, Operational)

The data revealed that *organisational learning* is a practice that supply chain practitioners deem critical to their ability to add value to their respective firms.

5.4.6.7 Collaborative Planning, Forecasting and Replenishment

Four participants identified *CPFR* as a practice currently employed in their respective firms. From a *CPFR* standpoint, the data showed that some of the sampled firms are still in their implementation phases, and the focus is still largely on getting the forecasting and demand planning elements right, before making further enhancements. The following excerpts provide more detail regarding this finding:

> *"We recently put in a demand planning system … FMCG companies are already doing it. We have been to other companies and we're going for a similar approach …" (P8, Sales and Operations Planning Manager, Tactical)*

> *"… we are looking to an integrated forward view approach which includes demand planning, and then doing long term capacity planning … at the moment we have implemented a demand planning and forecasting tool, so we are quite new in the demand planning process and forecasting." (P8, Sales and Operations Planning Manager, Tactical)*

Two of the sampled firms are also implementing Integrated Business Planning (IBP) in their firms, which is an extension of the sales and operations planning process (S&OP):

> *"… I believe that the IBP project, that should be live in the next month or two, should also contribute a lot in terms of more accurate forecasting." (P3, Central Distribution Centre Manager, Tactical)*

The data indicated that from a CPFR standpoint, FMCG manufacturing firms pay close attention to their forecasting accuracy. It can also be concluded that, while some firms are trying to get the fundamentals correct with regards to CPFR, other firms have taken active steps to further enhance their current CPFR capability.

5.4.6.8 Joint decision-making

Four participants identified *joint decision-making* as a current integrative practice. A participant mentioned that forums where decisions are made jointly within their respective firms are effective for establishing new ideas that can be used by the focal firm. The below excerpt illustrates this fact:

> *"… let's say, for instance, I want to establish how we're going to make the tyre costs lesser. I will get the people around and say; 'Come up with ideas and tell me what you will do to reduce the spend of tyres in the company.' Then together we can decide on the best idea. And I will also make it a type of incentive ..." (P10, National Procurement and Shipping Executive, Strategic)*

The data further reveals that other FMCG manufacturing firms also make use of tools in order to integrate their decision-making processes in their daily, weekly and monthly internal meetings:

> *"We've got a planning tool and we've got different ranking methods for opportunities … so it could be something that's done in a day or in a month … we will discuss the opportunity and say this is the opportunity we are pursuing and this is how long we think it will take us as a team. Then we will put a priority level to it and if it's high priority people will get on board quickly. With high priority opportunities, execs are in these consensus sessions, so it will be a high priority signed off by an exec." (P8, Sales and Operations Planning Manager, Tactical)*

From the excerpts above, the data reveals that decisions that are critical to the firm are more likely to have the support and full buy-in of executives within their respective firms.

5.4.6.9 Vendor Managed Inventory

Two of the fifteen participants identified *Vendor Managed Inventory (VMI)* as a current internal integrative practice in their firms. VMI is a practice actively employed in the physical distribution functions, mainly for activities regarding maintenance and repair:

> *"We've got Company X that work within there, so far for our tarpaulins as well as our trailers." (P13, Logistics Manager, Strategic)*

5.4.6.10 Process alignment

One participant mentioned *process alignment* as a current integrative practice. The importance of *process alignment* in this regard was largely to enable supply chain practitioners to execute their tasks as planned, and according to a set procedure. The participant also highlighted that there are consequences from not executing tasks as planned:

> *"… the business is so big, and there are so many different aspects to it. You've got to adopt and enforce a standard operating procedure (SOP), otherwise people are going to do their own thing, and they're going to go into a direction that is completely wrong, and you are going to suffer the consequences of it." (P10, National Procurement and Shipping Executive, Strategic)*

5.4.6.11 Data integrity

One participant mentioned *data integrity* as an existing internal practice. This participant further highlighted the negative ripple effect caused in the supply chain, as a result of utilising erroneous data. The excerpt below provides more insight regarding this current practice:

> *"There's been a big focus on credibility of information because if your numbers aren't correct we, further down the supply chain, react to the numbers that are in the system. By them continually working on improving how to ensure that the validity of the information is correct in the system, and in the demand data, we can then ensure that the correct materials and whatever's required gets supplied on time." (P6, Procurement Specialist: Direct Materials, Tactical)*

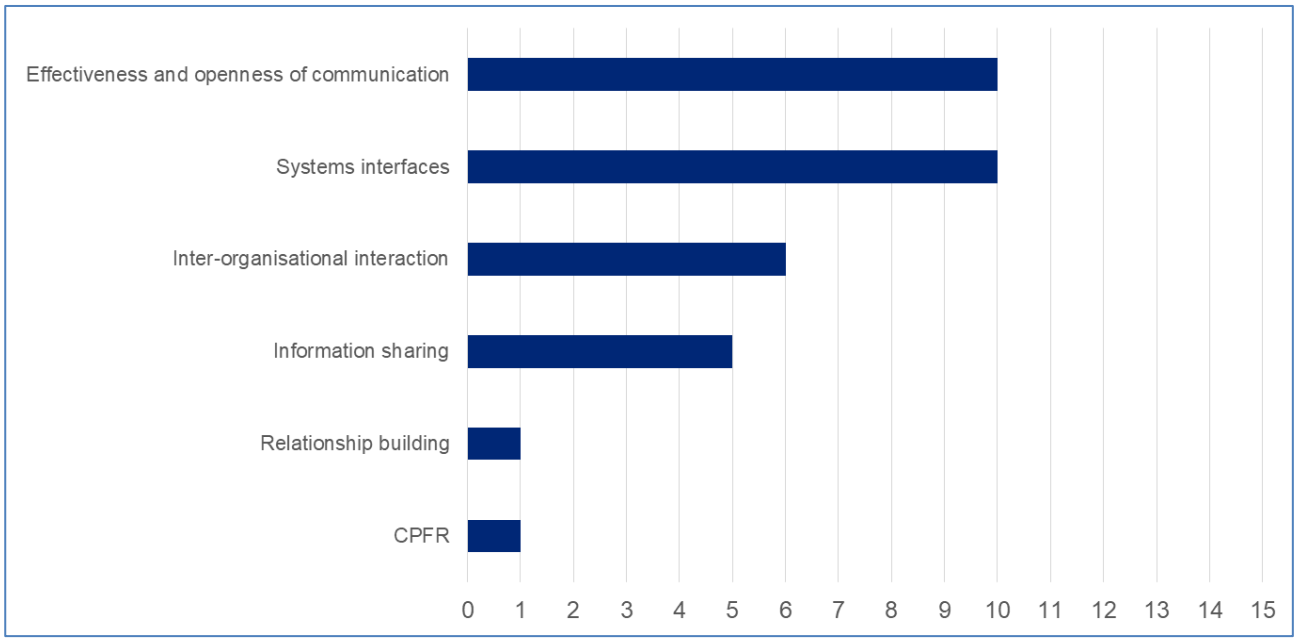
The participant further elaborated on how non-credible data caused issues such as overstocked raw materials warehouses, stock outs of fast-moving items, and flawed production targets.

The next section discusses the current external integration practices in FMCG manufacturing firms, as outlined by participants in the study.

5.4.7 CURRENT EXTERNAL SCI PRACTICES

An approach similar to the one used in the preceding section was used to investigate the existing external integration practices (sub-theme 1.6, see Figure 5.2 (p. 96)). Figure 5.4 below shows the external SCI practices that exist between the focal firms and their upstream and downstream supply chain trading partners. The participants identified a total of six external SCI practices.

Figure 5.4: Current external SCI practices



The six external SCI practices listed in Figure 5.4 are discussed in the subsequent sub-sections.

5.4.7.1 Effective and open communication

Ten of the participants mentioned *effective and open communication* as an existing external integration practice. Some participants mentioned that communication with customers is

best done through electronic data interchange (EDI) platforms, while others were comfortable using traditional methods such as email and telephone. It was also noted that some firms had policies on departments that are designated to communicate with customers. From a supplier perspective, communication is best facilitated on a face-to-face basis, which is indicative of the focal firms' pursuit of building relationships with their suppliers. The following excerpts best illustrate these findings:

> *"… there is an EDI platform where they place orders, but that's just orders coming through, they don't see our stock levels or anything like that, so they just place their order and it comes through an EDI and captures on our ERP system, and the order goes out but, there's also a call centre point which most of the FMCGs have; that EDI and the call centre." (P8, Sales and Operations Planning Manager, Tactical)*

> *"So, for a Customer Class A we'll deal with the email, Customer Class B email, and that would be from a call centre level, all the way to the customer … the customer can communicate any credit issues, sales related issues or distribution related issues via email, telephone and SMS." (P13, Logistics Manager, Strategic)*

> *"From a dispatch point of view, the warehouse doesn't deal with the customers. We've got a policy where it's telesales or it's a sales rep, because they've been trained to deal with people." (P12, Site Controller, Operational)*

> *"So, on a constant basis, we share our strategy with our suppliers. We have summits where forums would happen, we share with them what's happening in our business and we do business reviews with them on what is, where we are with the business, what's happening with the business, where we are going, and then obviously we have lots of socials with them as well, where we interact with them. So, they become part and parcel of the F1 family." (P2, General Manager: Distribution, Strategic)*

The data indicates that *effective and open communication* between the focal firm and its downstream trading partners focuses primarily on availability and on-time delivery of stock. *Effective and open communication* between the focal firm and its upstream trading partners focuses primarily on building sustainable relationships, especially with suppliers of strategic commodities.

5.4.7.2 Systems interfaces

System interfaces was a practice mentioned by ten of the fifteen participants. Participants understood *systems interfaces* as platforms which allow two or more systems in different environments to communicate, thus allowing information to flow between them. The data indicates that *systems interface* is a practice employed between the focal firms and both their upstream and downstream supply chain trading partners. The data also showed that some *system interfaces* are not well integrated with the focal firms' supply chain trading partners, and there is no value derived from having the system in place. The following excerpts illustrate these findings:

> *"On the customers' side, integration is a bit more advanced. We get all of our orders electronically, daily from our customers. These orders are then summarised, they are allocated to vehicles, and we have about a twenty-four-hour turnaround to deliver these orders. So, the whole supply chain integration is dependent on these orders, and then our ability to fulfil these orders from a distribution side and a production side, which then goes right back to milk source; so ensuring that we have the adequate or the right quantity of milk available to produce these products to fulfil the orders of our customers." (P2, General Manager: Distribution, Strategic)*

> *"… so, suppliers have access to our system and we have access to their system that they use for stock, so sometimes we get so busy that we don't realise that we are out of stock on a certain product; maybe that's on wheat and they can see, and they will call you and say we can see you're running out of stock on this product …" (P9, Procurement Buyer, Operational)*

> *"Sometimes our system is not even integrated with the supplier's system but we send them emails. So, on our system, we put an email address to say send this report to this particular supplier to whatever the supply is about." (P7, Procurement Manager, Strategic)*

It can be concluded that, within the FMCG industry, *systems interfaces* are more advanced between the focal firms and their customers. EDI platforms, *inter alia*, are leveraged by a number of FMCG manufacturing firms to facilitate customer orders.

5.4.7.3 Inter-organisational interaction

Six of the fifteen participants responded in ways that were indicative of the occurrence of *inter-organisational interaction* between their firms and their supply chain trading partners. This is a critical practice from a supplier perspective because it enables the focal firm to source strategic commodities pertinent to its success optimally. The following excerpts provide more detail on this finding:

> *"… once a year I will go to India, to go and visit the suppliers there, and go and source material, go and look at availability of material, go look at the quality of the material, the new products coming in." (P10, National Procurement and Shipping Executive, Strategic)*

> *"to integrate with my supplier, I do supplier visits. So, what I do is visit my supplier with my questionnaires, and I have to check their environment, I have to check human rights. Usually I don't even call my suppliers, I will just pitch and look if you practise, for example, any child labour, or if your environment is work friendly, can people work here, is it friendly for the organisation, as well as in the location that you're in …" (P9, Procurement Buyer, Operational)*

The excerpts above also reveal that this particular practice is leveraged by supply chain practitioners that interact with their respective upstream supply chain trading partners. In addition, it can be concluded that this practice allows for both *relationship building* and ensuring that suppliers deliver according to their commitments, as documented in relevant service level agreements (SLAs).

5.4.7.4 Information sharing

Five of the fifteen participants made statements indicative of a strong prevalence of *information sharing* in their respective firms. The data reveals that information regarding inventory levels, including lead times and re-order points is the most important information needing to be shared timeously and accurately. The excerpts below provide more insight into this finding:

> *"At the moment we work on a whole buffer management system and we share those buffers with our suppliers, as well as ask them to supply us with their safety stock so we*

can see why they have so much stock of X, why do they have so little of Y. If they have too much or too little, we can then make decisions in demand planning meetings or in sales meetings regarding products that need attention because of a potential problem in the supply chain. We can already, 3 months ahead of time, start planning for events like that." (P8, Sales and Operations Planning Manager, Tactical)

"For us we share stock data with them and they can see our warehouse, we can see their warehouse from a system." (P9, Procurement Buyer, Operational)

From the excerpts above, it can be concluded that *information sharing* in the FMCG industry mostly addresses matters concerning inventory availability from both the raw materials and finished goods perspectives.

5.4.7.5 Relationship building

One participant mentioned that it is also important to build relationships when striving to integrate with suppliers. The participant highlighted that it is important to take added measures in order to establish a good relationship with suppliers:

"But it helps to build the relationship. And you know what anyone can send an e-mail … but to pick up the phone and say 'hi, how are you doing?' … I invite them around regularly for a cup of coffee. It just puts the extra effort in it as well. So, it's important." (P6, Procurement Specialist: Direct Materials, Tactical)

5.4.7.6 Collaborative Planning, Forecasting and Replenishment

One participant made statements indicative of a presence *CPFR* as an external integration practice. In addition, the data suggests that *systems interfaces* are also closely related to the focal firms' achievement of *CPFR* with their external downstream customers. Especially where forecasting and demand management is concerned:

"… there's a lot more we can do on system integration, but for us, what works at the moment, is that at least we receive the orders electronically, daily from our customers. So, we know what their demand is, and obviously we would like to take it a step further, not just have today's demand, but next week's demand, the week thereafter, but for now our integration is successful in the fact that we're able to integrate to their ordering

system. So, we know what their demand is at any particular time." (P2, General Manager: Distribution, Strategic)

Subsequent to investigating existing internal and external integrative practices within the sampled firms, the researcher concluded this phase of data collection by seeking the participants' views on (a) their satisfaction with the current SCI practices employed by their respective firms, and (b) the practices that are likely to improve internal SCI within their firms as well as external SCI with supply chain trading partners. The next two sections report the findings related to these two aspects.

5.4.8 SATISFACTION WITH CURRENT SCI PRACTICES

Sub-theme 1.7 in Figure 5.2 (p. 96) relates to supply chain practitioners' satisfaction with the current internal and external SCI practices employed in their respective firms. The data showed that the participants are generally satisfied with the practices currently employed within their firms. However, participants mentioned that there are issues in certain areas within their organisations. These issues include the rate at which technology is adopted, as well as the effectiveness of current communication methods. A participant mentioned that the process of ensuring optimal SCI has been continuously improved and enhanced over time. The excerpts below illustrate these findings:

"Out of 10, I would say 7, there's still quite a number of things that we need to do in order to improve on like the system; it's of the upmost importance…" (P7, Procurement Manager, Strategic)

"Well the process has evolved over many years and if they didn't work then F1 wouldn't have been successful as long as it has been and obviously it would have failed." (P2, General Manager: Distribution, Strategic)

In addition, from an external SCI perspective, it was mentioned that firms are starting to take customers and suppliers more seriously, by establishing more effective and interactive channels and platforms. The excerpt below gives more detail in this regard:

"It is changing, so like I said earlier about new platforms and new integration. So, it is changing and for the better …" (P3, Central Distribution Centre Manager, Operational)

5.4.9 PRACTICES THAT CAN IMPROVE SCI

Sub-theme 1.8 in Figure 5.2 (p. 96) reflects additional practices that the supply chain practitioners deem necessary for the improvement of SCI in their respective firms. The data collected indicates that *organisational learning* is an internal SCI practice that needs more attention within FMCG manufacturing firms. Four of the eight participants mentioned the importance of *organisational learning*. Participants who were at a more strategic level within their respective firms viewed adequate training as practical training that would enable employees to execute their tasks better, while participants at an operational level viewed adequate training in the form of a formal qualification from a recognised tertiary institution. The following excerpts illustrate this finding:

> *"… developing our people quickly enough so that they can understand the processes is very important." (P13, Logistics Manager, Strategic)*

> *"… can you register a three-year course with somebody with let's say the University of Pretoria and let's see if you qualify because, in-house training is a summary of a book and if you're going to work for this organisation, you can't learn something in two days and say I know." (P9, Procurement Buyer, Operational)*

Three of the 15 participants mentioned that *process optimisation* was a practice that could improve the focal firm's SCI capability. It also has to be noted that the practitioners' adherence to processes is equally as important when addressing the issue of *process optimisation.* The below excerpt provides evidence of this finding:

> *"Well we have to develop the internal competence. We have to put the processes in place, and we have to have the discipline of following the processes." (P5, Procurement Specialist: Capital Projects, Tactical)*

Two participants pointed out that the *adoption of technology* can improve internal SCI. It was also mentioned that there was slow uptake of new technologies in the operational environments. The excerpt below illustrates this finding:

> *"So, I would say there is a slight lack in the warehouse of exploration because a lot of our technology is developed by our I.T. department. So, they do the scanning, they do*

the sort of research, and they sort of, with a bit of operations, decide what is going to happen." (P12, Site Controller, Operational)

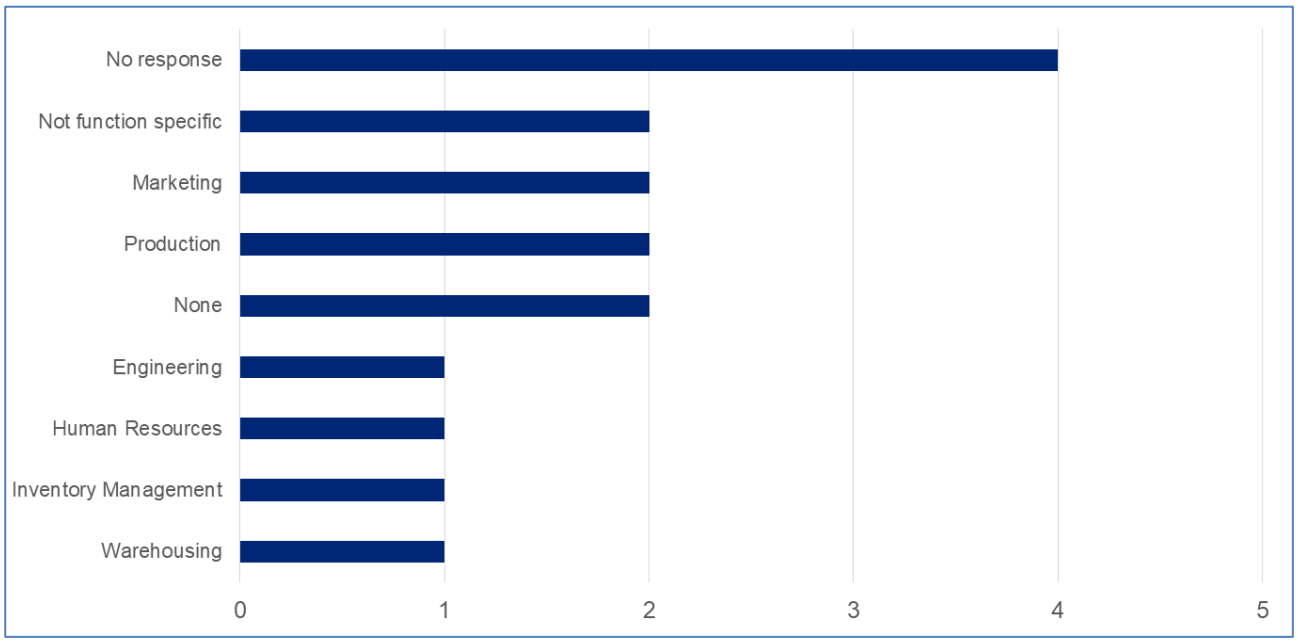
5.4.10 NON-COOPERATIVE INTERNAL FUNCTIONS

In addition to identifying practices that hinder the attainment of SCI, both internally and externally, the researcher also sought to understand which internal functions were not co-operative when it came to integrating the focal firm's internal supply chain. Sub-theme 1.9 in Figure 5.2 (p. 7) reflects these findings. Figure 5.5 indicates the number of times participants viewed an internal function as non-cooperative. Four participants did not respond to this question because they were not comfortable answering it, while two participants stated that none of the internal functions were non-cooperative. Production and Marketing are functions that were each mentioned twice by participants as being non-cooperative functions internal functions. Warehousing, Inventory Management, Human Resources as well as Engineering were each mentioned once. Reasons for non-cooperative behaviour were mainly non-adherence to documented processes and policies, as well as clashing priorities, especially by the Marketing and the Engineering functions. The following excerpts illuminate this finding:

"It's engineering. Oh, my goodness, I'm in major fights the last two weeks with Engineering on this capital equipment stuff because they didn't follow processes … they want to push everything through now at the last minute. And then they went off and did their own things but there's policy." (P4, Procurement Manager, Strategic)

"I always find a challenge there with the Marketing team. If they set their mind to one thing, they don't want to change it. They want it as it is." (P7, Procurement Manager, Strategic)

Figure 5.5: Non-cooperative internal functions



Two participants mentioned non-cooperative individuals, as opposed to non-cooperative internal functions. The main issue with these individuals is that they executed tasks that were outside of their job descriptions:

> *"The only problem here is that everybody is a buyer, everybody is procurement, everybody thinks they can be procurement or supply chain, because even packaging can go to the supplier and give them the spec without running through supply chain or procurement." (P9, Procurement Buyer, Operational)*

5.4.11 SCI PRACTICES MENTIONED IN THE LITERATURE COMPARED TO THOSE IDENTIFIED BY THE PARTICIPANTS

This section compares the SCI practices reviewed in Section 3.2 (p. 33) with the SCI practices identified by the study's participants. This comparison highlights the extent to which supply chain practitioners identify with the SCI practices indicated in the literature. Table 5.5 (p. 137) represents these comparisons in greater detail. The SCI practices that the study's participants identify with are essentially those they consider having a positive influence on SCI, as well as the SCI practices that are currently employed in their respective firms. The practices that the participants regard to positively influence SCI can either be

existing practices within the participants' respective firms or not. These practices, which fall into two distinct but related categories, are compared to those SCI practices documented in the literature. The researcher has also noted new practices that were identified by the study's participants but did not emerge in the scrutinised literature. The following sub-sections discuss these comparisons.

Table 5.5: A comparison of the SCI practices documented in the literature and the practices identified by the participants

Integrative practice categories	Integrative practices (from the literature)	Authors	Type of integration	Frequency* (Current SCI practices)	Frequency** (Practices influencing SCI)
Supply chain collaboration	Joint decision-making	Ramanathan and Gunasekaran (2014:258); Shou *et al.* (2017:1); Zhao *et al.* (2015:163)	Internal	4	1
			External	-	-
	Collaborative Planning, Forecasting and Replenishment (CPFR)	Hill *et al.* (2018:14); Kazemi and Zhang (2013:548-549); Demiray et al. (2017:1568-1569)	Internal	4	3
			External	1	-
	Vendor Managed Inventory (VMI)	Mateen and Chatterjee (2015:31); Sainathan and Groenevelt (2019:249); Lee and Cho (2014:158)	Internal	-	-
			External	2	-
Intra-/Inter-organisational interaction	Cross-functional interaction	Frankel and Mollenkopf (2015:21); Young-Hyman (2017:182)	Internal	-	-
			External	6	2
	Inter-firm interaction	Chen *et al.* (2014:571); Hudnurkar *et al.* (2014:200)	Internal	14	4
			External	-	-
Information sharing	Systems interfaces	Korpela *et al.* (2017:4182); Yan *et al.* (2014:1); Qrunfleh and Tarafdar (2014:340); Wong *et al.* (2015:3)	Internal	6	-
			External	10	-
	Effective and open communication	Fredendall and Hill (2016:4); Pikhart (2014:952); Chengalur-Smith *et al.* (2012:60)	Internal	15	8
			External	10	2
			Internal	-	-

Integrative practice categories	Integrative practices (from the literature)	Authors	Type of integration	Frequency* (Current SCI practices)	Frequency** (Practices influencing SCI)
	Adoption of technology	Asare *et al.* (2016:1); Khan *et al.* (2014:1); Tseng (2015:87); Singh and Teng (2016:296)	External	-	-

Note: ***** Number of participants identifying an integrative practice as an existing practice in their firm. ****** Number of participants identifying an integrative practice as a practice that can positively influence SCI, whether it is currently employed within their respective firm or not.

5.4.11.1 Joint decision-making

According to Ramanathan and Gunasekaran (2014:258), joint decision-making eliminates confusion among supply chain trading partners. Similarly, Shou *et al.* (2017:1) posit that SCI must have a strong focus on, *inter alia*, joint decision-making between the focal firm and its supply chain trading partners.

The data reveals that participants identify with *joint decision-making* as an SCI practice. Four of the participants mentioned that the practice is currently employed in their respective firms, while one participant stated that *joint decision-making* can positively influence the attainment of SCI. In addition, the data showed that supply chain practitioners only identify with *joint decision-making* as an internal integration practice. Participant *P4* stated that it is important, when making critical business and supply chain decisions, to get the right stakeholders involved:

> *"… when you get everybody that's involved from end to end, involved to make the decisions …" (P4, Procurement Manager, Strategic)*

5.4.11.2 Collaborative Planning, Forecasting and Replenishment

The data reveals that participants identify with *CPFR* as an SCI practice. Five participants mentioned *CPFR* as a current SCI practice employed in their respective firms, while three participants stated that *CPFR* can positively influence the attainment of SCI. According to Hill *et al.* (2018:14), CPFR can improve the focal firm's performance, through reducing handling and improving forecasting which yield better inventory management. Participant

P2 stated that the success of their firm's supply chain lies in adequate and precise demand planning, as well as in ensuring that all inputs to the demand data are regularly collected from the downstream customer. Participant *P3* stated that accurate forecasting will have the single biggest improvement on their focal firm's operational performance:

> *"To me it would be something that is being a challenge for us, but accurate forecasting. If we could have accurate forecasting in fast moving consumer goods, I think that would make the biggest impact or the biggest single improvement." (P3, Central Distribution Centre Manager, Tactical)*

Demiray *et al.* (2017:1568-1569) have stated that the common features of CPFR involve improving supply chain performance in terms of both quality and service. The researcher also noted that a lot of emphasis was placed on data integrity when participants reinforced the importance of *CPFR*.

5.4.11.3 Vendor Managed Inventory

Two participants identified with *VMI* as a practice, and both perceive *VMI* as an internal SCI practice, although the literature suggests otherwise. In their research, Lee and Cho (2014:158) state that VMI is a widely used supply chain integrative practice between a supplier and the focal firm, in which the supplier manages the inventory at the focal firm and decides when and how much to replenish. In addition, a VMI contract between the focal firm and the supplier is aimed primarily at minimising supply chain costs for both parties. The data also showed that this practice prevails in operational environments such as depots that largely facilitate secondary distribution activities, as well as in manufacturing operations. Participant *P13* stated that they have a supplier in their depot, which is responsible for all vehicle repairs and maintenance tasks. Among other tasks, the supplier is responsible for managing and replenishing all vehicle maintenance and repair inventory, including items such as tyres and tarpaulins.

5.4.11.4 Cross-functional interaction

The data showed that supply chain practitioners strongly identify with *cross-functional interaction* as a practice. As articulated by Young-Hyman (2017:182), cross-functional interaction is effective when the solutions required need diverse knowledge to develop them.

Fourteen participants stated that cross-functional integration is currently employed in their respective firms. The data also reveals that, at an operational level, *cross-functional interaction* includes supply chain practitioners being enabled to perform tasks in other supply chain functions. However, supply chain practitioners at a tactical level consider *cross-functional interaction* important for making joint decisions. Participant *P13* stated that it is important for employees to have the ability to execute tasks in other supply chain functions. The researcher also noted that some participants regard cross-functional interaction as part of effective and open communication. Participant *P12*, for example, mentioned that communication takes places in the form of meetings, comprised of supply chain practitioners from different parts of his firm's operations.

5.4.11.5 Inter-firm interaction

According to Chen *et al.* (2014:571), inter-firm interaction encourages the establishment of a common vision among supply chain trading partners. In addition, Wong *et al.* (2013:571) found that a manufacturing firm's interaction with its external supply chain trading partners is one of the fundamental practices that remains paramount to the success of a firm's external SCI efforts.

In this research, *inter-organisational interaction* was considered an important SCI practice by supply chain practitioners who typically have an upstream focus rather than a downstream focus. Six participants stated that this practice is currently employed in their firms, while two participants stated that the practice can positively influence the attainment of SCI. In addition, the data reveals that this practice is essential for building good relationships with suppliers, especially over the long term. Participant *P6* mentioned that it was very important for their firm to have suppliers who understand the firm and *vice versa*.

The participant further stated that they ensure that regular site visits take place for both parties so that, *inter alia*, technical challenges, plant efficiencies and quality management issues can be clearly articulated and understood by both stakeholders.

5.4.11.6 Systems interfaces

According to Wong *et al.* (2015:3), integrating system interfaces internally within the firm, and with external supply chain trading partners, is a boundary-spanning practice which facilitates the generation, dissemination, and responsiveness to information in the end-to-end supply chain. Thus, the scope for integrating supply chain system interfaces, internally and externally, spans from product development to delivery scheduling, and is largely characterised by inter-organisational systems (IOS) and electronic data integration (EDI). Qrunfleh and Tarafdar (2014:340) further indicate that a critical aspect of successfully managing and integrating the supply chain lies in measuring and monitoring information about its key operational and performance parameters (e.g., inventory, delivery schedules and lead times).

The data showed that supply chain practitioners strongly identify with *systems interfaces* as a practice. Six participants stated that *systems interfaces* are currently being leveraged within their internal supply chains, while ten participants stated that *systems interfaces* are currently being leveraged with external supply chain trading partners. The data also indicates that *systems interfaces* is a practice more prevalent in the downstream supply chain as opposed to the upstream, which positively influences the attainment of SCI by ensuring visibility of customer requests.

5.4.11.7 Effective and open communication

Fredendall and Hill (2016:4) suggest that in a value chain, the flow of materials is always uni-directional while the flow of information should ideally be bi-directional. In addition, Chengalur-Smith *et al.* (2012:60) argue that manufacturing firms that effectively and openly share critical data such as forecasts and inventory schedules with external trading partners allow for better supply chain visibility.

The data indicates that the supply chain practitioners sampled in this study strongly identify with *effective and open communication* as an SCI practice. All fifteen of the participants identified with this practice and stated that *effective and open communication* is currently employed in their firms. The data reveals that the faster the communication, the better. Furthermore, the data showed that this practice influences customers' loyalty.

5.4.11.8 Adoption of technology

According to Singh and Teng (2016:296), the impact of technology in SCI initially started with basic reduction of coordination costs, subsequently moving towards improvement in performance. Firms therefore seek to adopt technologies that will enhance overall supply chain performance from an operational and financial perspective.

None of the participants identified with this practice. However, two participants mentioned that the *adoption of technology* is a practice that can improve SCI in their firm. The data therefore indicates that supply chain practitioners in South African FMCG manufacturing firms have little consideration for current or future technology that can lead to the attainment of high SCI levels.

Overall, the data revealed that supply chain practitioners in South African FMCG manufacturing firms identify with the SCI practices documented in the literature to a significant extent. In addition, the supply chain practitioners identify with documented SCI practices from both an internal and external SCI perspective.

This preceding section sought to compare the SCI practices documented in the literature with the SCI practices that the study's participants identified most with. The most prominent finding pertains to all the study's participants identifying with *effective and open communication* as a current practice within their respective firms. Another noticeable finding involves participants not identifying with the *adoption of technology* as either an existing practice within their respective firms or a practice that can positively influence SCI.

Participants did, however, mention the *adoption of technology* as a practice that can further improve SCI within their respective firms.

The next section focuses on commitment and trust as enablers for SCI. In line with Figure 5.2 (p. 96), the next section, therefore, addresses the findings related to Theme 2.

5.5 COMMITMENT AND TRUST AS SCI ENABLERS

This section presents the findings relating to sub-themes 2.1 and 2.2 under Theme 2 as outlined in Figure 5.2 (p. 96), namely c*ommitment and trust as SCI enablers.* The literature alludes to the fact that commitment and trust are crucial elements that must be ingrained in all stakeholder engagements when forming partnerships and relationships both internally within the firm and externally with supply chain trading partners (Halil *et al.*, 2016:50).

5.5.1 COMMITMENT AS AN SCI ENABLER

Regarding the role of commitment in enabling SCI, participants mentioned that commitment was enforced through contractual clauses and SLAs, which tied the supplier or the customer down to what they initially promised:

> *"… at the end of the day it comes down to what the contract says, so it comes down on an exchange of goods for money and, I think adhering to contracts as well as adhering to promises creates an element of trust. But deliver what you need or what you said you were going to deliver it and, you don't have to be the nicest person, or you don't have to be the most fun person to work with, but to do what you said you're going to do and do what we pay you for." (P15, Specialist: Demand Management, Tactical)*

> *"So lately I contract them on their promises. You have promised you're going to save me ten million or whatever, you're going to save me this amount of money et cetera …" (P10, National Procurement and Shipping Executive, Strategic)*

From an external customer viewpoint, a participant stated that customer loyalty and commitment are compromised when there is an absence of communication to the customer.

The following excerpt infers that commitment from the customer's side is also as a result of effective communication:

> *"So, if we don't communicate to our customers and make sure that they're happy they can leave very quickly." (P13, Logistics Manager, Strategic)*

Another participant stated that in the absence of customer commitment, the focal firm is highly likely to bear costs that were not initially provisioned for. The following excerpt illustrates this perspective:

> *"The lack of commitment adds cost and it adds frustration. You get to a certain stage where you actually just don't want to do it anymore, when you do not have that commitment from a customer. If I have a delivery vehicle standing at a customer and they do not have the commitment to offload my vehicle, then I'm not going to send them a vehicle because at the end of the day it's starting to cost me money …" (P2, General Manager: Primary Distribution, Operational*)

The findings also indicate that the focal FMCG manufacturing firms, along with their supply chain trading partners, have to mutually strive towards building a good relationship with each other in order to strengthen their commitment to each other over the long term:

> *"… seventy percent of F1's business is dependent on three major retailers in South Africa and, we're the top brand in many of those customers' businesses'. If we don't give them the commitment or if we don't get the commitment from them, obviously our business will not grow and our brands will not grow, and we'll be dead in the water. So, we have no choice but to be committed to them, and obviously try and get as much commitment from them to our business. So, it's more of driving a good relationship and driving the relationship from our side." (P2, General Manager: Distribution, Strategic*)

The data showed that commitment drives effective communication, good relationships and accountability. This finding is aligned to what Alfalla-Luque *et al.* (2015:246) posited in their research. However, in certain instances arising from the data, commitment was enforced contractually, through, *inter alia*, SLAs. This view is inconsistent with what was found in the literature (Alfalla-Luque *et al.*, 2015:246; Kuo, 2013:4).

In addition, commitment from both the focal firm and the downstream customer has been found to be threatened in the absence of effective communication. It was also found in the data that *commitment* improves operational and financial performance. This finding is aligned to views expressed by Kuo (2013:42). The next section delves into trust as an SCI enabler.

5.5.2 TRUST AS AN SCI ENABLER

As postulated by Singh and Teng (2016:296), trust is a crucial element that needs to be considered when deciding to partner with other functions within the firm or with external trading partners. This is because a high level of trust, among other factors, fosters effective supply chain governance and controls. A participant based in a warehouse environment stated that in order for one to have certainty that fellow employees will be able to execute their tasks seamlessly, one has to trust those they are working alongside:

> *"… first of all, you've got to trust that the next link in your chain, is going to do their job. You've got to trust that the departments you work alongside have done their job properly, so that your job can be easier. (P12, Site Controller, Operational)*

The participant further expressed that when colleagues trust each other, they fulfil their tasks, thus, building stronger commitment:

> *"I would say that draws on their commitment to do their job properly. Your commitment to make sure that your job is done correctly, or your function within the chain is done correctly, then rolls over correctly onto the next chain. So that department trusts that you are going to do it properly." (P12, Site Controller, Operational)*

Another participant mentioned that a relationship of trust between a focal firm and its upstream supply chain trading partner is built by mutual effort and should be cultivated by both parties:

> *"Supplier 1 is our problem child at F2. But also, the problem's been on our side. I will be honest. We've got a lead time with our suppliers, and if the supplier doesn't deliver within that lead time, then I step in, I get involved. But if our people don't order according to*

lead time, they then can't come around and say to me your supplier's let us down and they're a rubbish supplier and you must get rid of them … That's probably one of my few suppliers where I can say that my trust levels are not high, and I do watch them closely." (P6, Procurement Specialist: Direct Materials, Tactical)

Trust does not only apply to supply chain practitioners, but also to the data the practitioners handle. A participant mentioned frustrations between the focal firm and the upstream supplier as a result of problems with data integrity. They stated that sometimes it is the accuracy of the data that is the issue, as well as how the data is structured, primarily due to misaligned systems:

"… what I often see with the supplier is that we get frustrated with each other because the integrity of information is, most of the time, dishonest information … They are on different systems to us, so we do things a different way and we understand things a different way. Ultimately, the quality of information is not in the right way, and I think that fosters a lot of distrust between us and them, and I think often they think we don't know what we are doing because they are always getting the whirlwind effect and vice versa." (P8, Sales and Operations Planning Manager, Tactical)

The data indicates that a relationship of trust is crucial for the realisation of both internal and external integration. Moreover, trust has been found to not only be necessary between supply chain practitioners, but also in relation to data communicated to internal and external actors within the broader supply chain. Trust enables the reduction of transaction costs and enhances the adherence to supply chain business rules in firms. These findings are therefore consistent with those views expressed by Singh and Teng (2016:296)

The constructs of commitment and trust were found to enhance seamless internal and external supply chain operations. However, the data revealed that commitment plays a more important role in sustaining relationships between the focal firm and its downstream customer.

The next section discusses the influence of SCI on both the operational and financial performance of FMCG manufacturing firms.

5.6 SCI AND FIRM PERFORMANCE

Ataseven and Nair (2017:254) state that internal and external integration have a positive impact on a firm's operational performance, while Beheshti *et al.* (2014:28) state that a seamless move from internal integration toward external integration is very likely to optimise the focal firm's financial performance.

Data on the participants' views about the influence of SCI on firm performance was collected. The following two sub-sections present the findings on this aspect of the research from both an operational performance and a financial performance perspective. This discussion addresses sub-themes 3.1 and 3.2 under Theme 3 (see Figure 5.2).

5.6.1 SCI'S INFLUENCE ON THE FOCAL FIRM'S OPERATIONAL PERFORMANCE

Participants commented on ways in which SCI influences their respective firms' operational performance, both positively and negatively. The data indicates that the *adoption of new technology* plays a key role in improving the focal firm's operational performance. One of the participants emphasised that SCI improves customer satisfaction, as well as drives efficiencies for their firm:

> *"So, it drives good customer service and obviously it also drives efficiency from our side. If we can effectively get stock out smoothly, every single day, it saves us money and also makes the customer happy." (P13, Logistics Manager, Strategic)*

Another participant stated that time is wasted when technology and systems are not used correctly, which ultimately impacts on the operational performance of the firm:

> *"I can speak on my behalf, that if it's not running smoothly, there have been cases where we are not running smoothly, you have to humanly intervene in a lot of normal systematic processes that would normally on occasion run by themselves. So, it takes a lot of your time to try and fix or, to try and intervene. So, I would say not having those systems working together within the chain creates a lot of manual human intervention which takes up a lot of time. So, it's a lot of time wasting." (P12, Site Controller, Operational)*

Participant *P12* also stated that there is a lot of value to be gained from adequate training and development, from an operational performance perspective. They added that adequate training and development not only allows the focal firm to create knowledgeable employees in their respective fields, but also allows the focal firm to improve efficiencies and overall productivity:

> *"You can learn how to do something better and you can learn to become more professional or efficient in that, knowing what you are doing rather than guessing or doing things like a parrot. So, the value for me is, you are growing an individual and you are encouraging a learning company, in other words you can grow your individuals from the ground to your managers, so that they are doing environmental scanning and they are doing all kinds of things that take them out of their comfort zones and just overall improve the level of efficiency and productivity because people know how to do things differently or better." (P12, Site Controller, Operational)*

Inter-firm interaction was also viewed as an important contributor to the focal firm's operational performance because it is imperative to understand what one is procuring from a supply chain trading partner, as well as how that raw material or product affects the production environment:

> *"… I need to be a procurement specialist who understands their business. So, when I know that I'm buying a product from them, I understand the impact of the formulation change or variation in their production process, the impact that it could have on our production line. So, I've got to have that technical background and the only way I'm going to get it is if I spend more time with my suppliers." (P6, Procurement Specialist: Direct Materials, Tactical)*

It can be concluded that SCI has a positive influence on an FMCG manufacturing firm's operational performance. It can also be concluded that the SCI practices that predominantly influence operational performance positively are the *adoption of new technology,* adequate *organisational learning* and increased *inter-firm interaction*. This finding is inconsistent with views posited by Ataseven and Nair (2017:254), who postulated that SCI can improve a firm's operational performance by examining the link between SCI and the cost, quality, delivery, and flexibility dimensions of operational performance.

5.6.2 SCI'S INFLUENCE ON THE FOCAL FIRM'S FINANCIAL PERFORMANCE

The data pertaining to this section revealed that *organisational learning*, especially at an operational level, has an impact on the efficiency of the operation. This is because it is important for practitioners at that level to have the capability to execute tasks additional to their usual tasks. The data also indicates that a lack of communication, especially internally within the firm, bears financial implications for the focal firm:

> *"… internally from a warehousing point of view, lack of communication has financial implications. So, if you look at it from a stock point of view, if stock is not properly received as well as rotated, that has financial implications in our business which results in write-offs, so a lack of communication can cost you a lot of money." (P13, Logistics Manager, Strategic)*

Another participant stated that capturing inaccurate data also has financial implications for the firm and creates customer retention challenges:

> *"… they will change their supplier because now if I don't give them the right stock they are ordering, and I keep on giving them wrong prices or wrong addresses, they will say 'No, these people are not serious about the business, so let me rather take my business to Company X, or Company Y or wherever'. And now what's going to happen; our people here are going to be out of jobs because they need to retrench because there's no more enough customers to supply or they will have shorter hours …" (P11, Transport Manager, Operational)*

Adequate *organisational learning* was also identified as a practice that can aid the focal firm's profit maximisation. One participant stated that educating employees to be more efficient in an operational environment allows for reduced working hour thus, reducing overtime, as well as other associated overheads:

> *"So, when you are looking at maximising profits, then you look at your, let's say for example, let's say something like picking. If you are able to help a picker understand his process or her process a bit better, to do things a bit better by streamlining their process. So, if you are streamlining their process and you get them to pick quicker, you reduce your overtime, you reduce overheads and so that helps with overall profitability. If you are looking at your managers, you are looking at schooling your managers, making sure*

they understand the nature and the sort of effect that time has on your materials and equipment and whether they are doing better than maintenance are. That kind of thing, if someone is educated or if someone is trained to look for those things, you start saving money and then it reduces your overheads." (P12, Site Controller, Operational)

It can therefore be concluded that adequate *organisational learning, effective and open communication* as well as *data integrity* are the SCI practices that enhance SCI and positively influence financial performance. This finding is consistent with what was expressed by Chang *et al.* (2016:284) in their research.

SCI can positively influence the focal firm's operational and financial performance if practitioners are trained to be systems-oriented generalists. Practitioners should have extensive knowledge on navigating their firm's systems and other associated technologies, so as to mitigate issues such as time wastage, unnecessary costs and resource wastage. The following section provides a summary of the research findings discussed in this chapter.

5.7 CHAPTER SUMMARY

The data analysis process started with the coding of the 15 interview transcripts which resulted in a total of 160 codes. These codes were then merged into 117 codes, ultimately resulting in thirteen sub-themes. As is shown in Figure 5.2 (p. 96), the three main themes derived from the data analysis process were *supply chain practitioners' perceptions of SCI*, *commitment and trust as SCI enablers*, as well as *SCI and firm performance*.

SCI is a phenomenon that supply chain practitioners at all levels within FMCG manufacturing firms are still to fully grasp. The data indicates that there is discord in the manner and extent to which this construct is interpreted by supply chain practitioners sampled in this study. The participants' perceptions resonated with the integrative practices documented in the literature, with *effective and open communication* being the practice that is perceived by participants as the most value-adding. In addition, all study participants mentioned that *effective and open communication* is a practice that is currently employed in their respective firms.

Participants were happy with the current practices employed in their respective firms. However, the rate at which technology is adopted was an area where the sampled firms were keen to improve on. Furthermore, participants mentioned that the Marketing and Production functions were the most non-cooperative within their firms' internal supply chains. The Engineering, Warehousing, Inventory Management as well as Human Resources functions were also identified by the practitioners as non-cooperative internal functions.

The data suggests that commitment from suppliers is largely enforced contractually by participants in strategic roles within their respective firms. Adherence to contractual obligations is what cultivates a culture of trust between supply chain trading partners. The data proves that SCI has an impact on both the participating firms' operational and financial performance. In addition, operational performance is further optimised by the *adoption of new technology*, adequate *organisational learning* and *inter-firm interaction*.

The next chapter discusses the study's findings in relation to the research questions outlined in the first chapter. The chapter will also describe the current study's contributions to both theory and practice, acknowledge its limitations, and offer recommendations for future research.

CHAPTER 6:DISCUSSION OF FINDINGS, RECOMMENDATIONS AND CONCLUSIONS

Chapter outline:

The purpose of this chapter is to:

- reiterate the study's research questions;
- summarise the main findings of the study in relation to each research question;
- discuss the managerial implications of the study's findings and provide practical recommendations for supply chain practitioners within FMCG manufacturing firms;
- articulate the study's contribution to the existing body of knowledge;
- acknowledge the limitations of the current study; and
- offer recommendations for future research.

6.1 INTRODUCTION

The previous chapter introduced the findings that were derived from analysis of the data collected. This chapter interprets the findings articulated in Chapter 5 and identifies their implications for theory and practice for supply chain practitioners in FMCG manufacturing firms.

The chapter begins by reiterating the intended purpose of the study and revisiting the initial research questions postulated in Chapter 1 of this dissertation. The chapter proceeds to summarise the main findings of the study in relation to each research question; specifically, on the participants' interpretations of the SCI construct and the extent to which participants identified with the supply chain integrative practices documented in the literature. An account of current supply chain integrative practices prevalent in South African FMCG manufacturing firms is subsequently given, followed by a discussion on SCI's relation to the firm's financial and operational performance. The managerial implications of the study's findings are discussed and practical recommendations for supply chain practitioners within FMCG manufacturing firms given.

The chapter concludes with a discussion of the implications of this study's findings for theory and its contribution to the existing body of knowledge. The study's limitations, for both researchers and supply chain practitioners in FMCG manufacturing firms, are acknowledged and recommendations for future research offered.

6.2 SUMMARY OF FINDINGS

To situate the current study's findings, it is important to revisit the study's purpose as well as the research questions which guided the investigation. The study sought to explore what supply chain practitioners working in FMCG manufacturing firms understand SCI, along with its associated practices, to be. Chapter 1 introduced the SCI phenomenon and articulated the need to investigate the manner in which the construct is perceived by supply chain practitioners in the South African FMCG industry. To guide the investigation, the following research questions were outlined:

- To what extent does the interpretation of the SCI construct differ among supply chain practitioners within an FMCG manufacturing firm?
- To what extent do supply chain practitioners, at various levels of an FMCG manufacturing firm, identify with the SCI practices documented in the literature?
- What are the current SCI practices prevailing in the South African FMCG industry?
- How does SCI, along with its associated practices, influence firm performance?

In response to these questions, the study found that supply chain practitioners in South African FMCG manufacturing firms do not have fully aligned interpretations of the SCI construct. The findings also revealed that supply chain practitioners identify with all the SCI practices documented by scholars, albeit to varying extents. The following sub-sections provide a summary of these findings, along with findings on the current state of SCI, and SCI's influence on firm performance in the sampled South African FMCG manufacturing firms.

6.2.1 SUPPLY CHAIN PRACTITIONERS' INTERPRETATION OF THE SCI CONSTRUCT

The first research question sought to understand how supply chain practitioners in FMCG manufacturing firms interpret the SCI construct. The study found that these interpretations differ among the study's participants. As postulated by Huo *et al.* (2019:237) and Liu *et al.* (2016:14), SCI is a construct that seeks to establish synergy internally, within the focal firm, and externally among upstream and downstream supply chain trading partners. These synergies are established through the efficient and effective sharing of information and resources. Furthermore, the literature also suggests that SCI has three dimensions: internal integration, supplier integration and customer integration (Abdallah *et al.*, 2017:697; Chavez *et al.*, 2015:83; Khalaf & El Mokadem, 2018:4; Szász *et al.*, 2016:760).

The study found that supply chain practitioners, both within and across the sampled firms, interpret the SCI construct differently. On the one hand, there are participants that interpret the SCI construct as a collection of processes that firms use to create effective synergies, internally within the firm, and externally with supply chain trading partners, as posited by Huo *et al.* (2019:237) and Liu *et al.* (2016:14) in their studies. On the other hand, one participant interpreted SCI as a cost reduction activity, while another participant stated that SCI entails getting all internal and external stakeholders involved in decision making. It is also noteworthy that some participants chose not to provide their view of SCI because the construct was too academic to interpret. It was evident from the data collected that the differences in practitioners' interpretation of SCI are brought about by two factors, namely their educational background and the nature of the participants' jobs within their respective supply chain environments. Participants with a strong supply chain educational background interpreted the phenomenon in line with its definitions in the literature. There were differences in interpretations from participants working within the upstream supply chain and participants working within the downstream supply chain. When articulating their understanding of SCI, participants working in the upstream supply chain placed more emphasis on *inter-firm interaction,* through site visits and regular meetings. However, participants working in the downstream supply chain placed a greater emphasis on *systems interfaces*. This is because participants working in the upstream supply chain conduct

regular meetings with suppliers, and participants working in the downstream supply chain interact more with supply chain trading partners through systems such as EDI.

Supply chain practitioners in the sampled firms did, however, have consistent interpretations and views relating to the three distinct dimensions of SCI. Practitioners considered internal integration to comprise of aligned internal processes, integrated systems that enable transparency and increased visibility, and improved cross-functional interaction. These views are consistent with those of Riley *et al.* (2016:957). From an external integration perspective, supply chain practitioners consider a strong cooperative relationship fundamental to supplier integration, as similarly suggested by Abdallah *et al.* (2017:697). From a customer integration perspective, supply chain practitioners view adequate demand forecasting, effective inventory management and order tracking as key customer integration practices. This confirms the perspectives posited by He *et al.* (2014:262).

The next section elaborates on the extent to which the participants identified with the integrative practices documented in the literature.

6.2.2 THE EXTENT TO WHICH SUPPLY CHAIN PRACTITIONERS IDENTIFY WITH THE SCI PRACTICES DOCUMENTED IN THE LITERATURE

The study's second research question focused on understanding the extent to which supply chain practitioners, at various tiers within FMCG manufacturing firms, identify with the SCI practices documented in the literature. As outlined in Chapter 3, scholars have identified many SCI practices that need to be effectively executed by manufacturing firms in order to realise optimal SCI internally and externally (Figure 3.1, p. 34). Supply chain practitioners in this study exhibited an awareness of SCI practices documented in the literature in two ways: by highlighting practices that have a positive influence on the attainment of internal and external SCI, and by citing practices that currently foster internal and external SCI within their respective FMCG manufacturing firms. Participants also mentioned new practices that they identified with.

The sub-sections below summarise the study's findings in relation to each of the integrative practices mentioned by the participants. The extent to which the participants identified with each practice is also classified; and categorised as being to a minor, moderate or large extent (see Table 6.1). If a practice was mentioned by 1-5 participants, it was classified as a practice with which participants identified to a minor extent. If a practice was cited by 6-10 participants, it was classified as a practice with which participants identified to a moderate extent. Finally, if a practice was mentioned by 11-15 participants, it was classified as a practice with which participants identified to a large extent.

Table 6.1: Classification of the extent to which the participants identified with the integrative practices documented in the literature

Frequency of responses	Extent
1-5	Minor
6-10	Moderate
11-15	Large

6.2.2.1 Joint decision-making

Supply chain practitioners in the sampled FMCG manufacturing firms identified to a minor extent with *joint decision-making* as an SCI practice. Participants who identified with this practice were mainly within tactical and strategic organisational levels in their respective firms. These participants share views similar to those of Shou *et al.* (2017:1) who posited that supply chain practitioners should promote *joint decision-making* in order to ensure integration. It is noteworthy that the data reveals that participants only identified with this practice from an internal integration perspective.

6.2.2.2 Collaborative Planning, Forecasting and Replenishment

The study participants identified moderately with *CPFR* as an integrative practice. The data indicates that supply chain practitioners who identified with this practice were mostly those operating in a tactical supply chain planning environment or a customer-focused downstream supply chain environment (i.e., secondary distribution). These practitioners are cognisant of the importance of adequate planning and accurate forecasting. In addition, these supply chain practitioners understand the negative consequences of erroneous data,

especially pertaining to both raw materials and finished goods inventory. *CPFR* is a practice that supply chain practitioners identified with from both an internal and external integration perspective. Furthermore, these findings are consistent with the view that effective *CPFR* can create accurate internal and external supply chain visibility from both a demand forecasting and inventory management standpoint, as posited by Hill *et al.* (2018:14) as well as Kazemi and Zhang (2013:548-549).

6.2.2.3 Vendor Managed Inventory

The participants identified with *VMI* as an integrative practice, to a minor extent. The data reveals that only supply chain practitioners that operate in operational environments identified with this practice. This is mainly because inventory managed and coordinated by the supplier typically consists of spares, fuel, pallets, tarpaulins and other items that are critical in fulfilling customer demand. The data also reveals that this practice resonated with supply chain practitioners that interact largely with suppliers of fleet management solutions or plant maintenance solutions. These supply chain practitioners consider this practice important when engaging with upstream supply chain trading partners because it helps minimise inventory carry costs and enhances effective replenishment of inventory; the latter being critical to efficient fulfilment of customer orders. This finding is consistent with the views expressed by Lee and Cho (2014:158), that the primary purpose of a VMI agreement between the focal firm and the supplier is to minimise supply chain costs.

6.2.2.4 Cross-functional interaction

The study's participants identify with *cross-functional interaction* as an integrative practice, to a large extent. Young-Hyman (2017:182) suggests that *cross-functional interaction* is a critical component of internal integration and it aids in aligning the differing interests of internal firm stakeholders. The data showed that most participants consider *cross-functional interaction* a fundamental practice from an internal integration standpoint. Supply chain practitioners that operate in tactical planning environments considered *cross-functional interaction* a necessary practice for joint decision-making on various demand, supply and production plans. Participants in strategic roles considered *cross-functional interaction* to

include the ability of a practitioner in an operational role to execute tasks in other operational functions. It is noteworthy that participants in strategic roles did not mention their involvement in the firm's overall *cross-functional interaction* efforts.

6.2.2.5 Inter-firm interaction

Participants in the sampled firms identified moderately with *inter-firm interaction* as an integrative practice. The data indicates that this practice is deemed pertinent by participants within tactical sourcing/purchasing roles as they engage largely with upstream supply chain trading partners. These engagements take place through regular site visits and meetings with suppliers of strategic commodities and other materials and services.

Chen *et al.* (2014:571) suggest that inter-firm interaction is highly relationship-oriented practice and encourages supply chain trading partners to establish a common long-term vision. The data further indicates that this practice is essential for building long-term relationships, especially with suppliers of strategic commodities and raw materials that are considered important during the production phase. Such commodities and raw materials are typically characterised by long lead times, and seasonal production and availability. Thus, building good long-term relationships with suppliers ensures favourable lead times and availability for the focal firm.

6.2.2.6 Systems interfaces

Supply chain practitioners in sampled firms identified to a large extent with *systems interfaces* as an integrative practice. The data indicates that the study's participants currently leverage off *systems interfaces,* internally within their respective firms, and externally with supply chain trading partners. This is done to ensure more effective communication and visibility of pertinent data. In addition, Wong *et al.* (2015:3) stated that integrating system interfaces, internally and externally, is a value-adding practice which facilitates seamless end-to-end supply chain visibility.

The data also showed that, from an external integration perspective, *systems interfaces* are prevalent among downstream supply chain trading partners. Notable uses of *systems interfaces* in this regard include EDI which ensures more consistency and accuracy, without compromising speed in executing tasks that contribute significantly to overall customer service delivery. Qrunfleh and Tarafdar (2014:340) share the same views, especially as relates to being able to manage and monitor the speed at which information is disseminated and correctly consumed.

6.2.2.7 Effective and open communication

The study's participants identify to a large extent with *effective and open communication* as an integrative practice. From an internal supply chain integration perspective, the data indicates that this practice resonated with all supply chain practitioners, at all levels, within FMCG manufacturing firms. In addition, most of the participants are aware of the importance of *effective and open communication* for the attainment of SCI among upstream and downstream supply chain trading partners. The data also indicates that the speed at which communication is executed adds significant value towards customer loyalty and satisfaction. Communication between supply chain practitioners at strategic and tactical levels is executed mainly through meetings, emails and daily reports, while operational level employees communicate at a more frequent and rapid rate through phone calls, emails and brief check-in meetings. The participants in the sampled firms were also of the view that challenges that occur along the end-to-end supply chain are mostly due to the absence of accurate and timely communication. Similarly, Chengalur-Smith *et al.* (2012:60) noted that when manufacturing firms openly and efficiently share critical data, internally within the firm, and externally with trading partners, greater supply chain visibility is created.

6.2.2.8 Adoption of technology

Supply chain practitioners in the sampled FMCG manufacturing firms identified to a minor extent with the *adoption of technology* as an integrative practice. The data reveals that supply chain practitioners neither considered *adoption of technology* as an integrative practice currently employed within their respective firms, nor as a practice that could

influence the attainment of internal and external SCI positively. This is mainly due to incumbent systems and technologies within their current supply chain environments. This finding is inconsistent with views expressed by Singh and Teng (2016:296) because the participants in this study did not constantly seek to adopt technologies that would reduce overall supply chain costs and improve performance.

The data also reveals that only a few supply chain practitioners considered the *adoption of technology* as a practice which could improve the current state of internal and external SCI within South African FMCG manufacturing firms, mainly because of the manual nature of current task execution. These supply chain practitioners were mainly systems-oriented practitioners, who operate primarily in tactical and operational supply chain planning environments. Supply chain practitioners who engage with downstream supply chain trading partners noted the importance of technology adoption in order to ensure more responsive customer service.

While the data infers that participants in this study identified with all the practices documented in the literature, it is noteworthy that the participants also positively identified with other new practices which did not emerge in the scrutinised literature. These new practices are discussed in Sections 6.2.2.9 to 6.2.2.13 below.

*6.2.2.9 **Strategic alignment***

Study participants identified moderately with *strategic alignment* as an integrative practice. The data suggests that participants in strategic or executive roles within their respective firms considered this an important practice, mainly because their primary responsibility entails executing organisational and supply chain strategies. Participants only identified with this practice as an internal SCI practice. In addition, these participants exhibited and understanding of the importance of breaking down silos within their firms so that customer demand could be fulfilled efficiently and effectively. The data also shows how these participants strive towards ensuring that all internal functions are aligned through annual internal audits, to ensure that the supply chain mission and vision of their firms is executed as planned. These views are consistent with those of Street, Gallupe and Baker (2018:60),

who postulate that *strategic alignment* is the degree of fit, integration, or consistency among the FMCG manufacturing firm's overall strategy, I.T. strategy, and the firm infrastructure and processes, which include the firm's I.T. infrastructure and processes.

6.2.2.10 Process alignment

Supply chain practitioners in the sampled firms identified with *process alignment* as an integrative practice, to a minor extent. Clearly documented processes and procedures were considered important by these participants, because all actors within their firms' internal supply chain know what is required of them and, more importantly, how to track and monitor tasks within a given process. According to Romero, Dijkman, Grefen, van Weele and de Jong (2015:32), *process alignment* refers to the activity of aligning different components of a family of processes, by assessing and recording their commonalities and variabilities in a consolidated and efficient manner, without attempting to make each unique process identical to the other. In addition, *process alignment* considers that different internal and external stakeholders in a firm have different, possibly conflicting, requirements of a process, depending on their context. The findings from this study are aligned to the views expressed by Romero *et al.* (2015:32). However, this study's participants only identified with *process alignment* as an internal SCI practice.

6.2.2.11 Relationship building

Supply chain practitioners in the sampled firms identified moderately with *relationship building* as an integrative practice. This practice was recognised by study participants as an external SCI practice. It is important to note that this practice resonated only with those participants that interact regularly with upstream supply chain trading partners. Participants that identified with this practice articulated the importance of understanding supplier constraints as well as their strengths. In their research, Park and Lee (2018:478) state that *relationship building* is an inter-firm interaction, characterised by mutual orientation and commitment over time, where the trading partners involved are co-dependent in the development of a cooperative business relationship. Furthermore, building relationships in a business-to-business (B2B) market may differ from doing so in a business-to-consumer

(B2C) market, as the supply chain of a B2B market consists of complex business relationships. These views are consistent with those expressed by this study's participants. The participants in this study also stated the mutual high level of involvement required from both parties.

6.2.2.12 Organisational learning

Supply chain practitioners in the sampled firms identified to a minor extent with *organisational learning* as an integrative practice. Participants that resonated with this practice deemed it important to contextualise and understand the environment in which they work. In addition, the data reveals that as new technologies are adopted and processes are enhanced, it is important to complement those changes with the creation and impartation of new knowledge to supply chain practitioners. Yu *et al.* (2013:347) define *organisational learning* as information gained and contextualised from having sensed a change in the supply chain environment, and the creation of new knowledge which is imparted to employees for the overall benefit of the firm. This view is aligned to those of the participants in this study. It is also important to note that this practice was cited as an existing practice by all participants that identified with it.

6.2.2.13 Data integrity

This study's participants identified to a minor extent with *data integrity* as an integrative practice. Participants at all levels within their respective firms identified with this practice and considered the speed at which information is communicated, along with the accuracy of the information, as important factors when striving for optimal SCI. Kumar and Poornima (2018:1) state that *data integrity* refers to assuring the accuracy and consistency of data during its life time, thus ensuring that the current data is the same as the original recorded data. The findings in this study are aligned to the views postulated by Kumar and Poornima (2018:1).

Participants considered, to a large extent, commitment and trust as SCI enablers. In their research, Halil *et al.* (2016:50) and Singh and Teng (2016:296) highlight the need for

commitment and trust in the relationship between supply chain trading partners. The findings in this research are consistent with the views posited by these scholars. The following sub-sections account for findings on commitment and trust as SCI enablers.

6.2.2.14 Findings on commitment as an SCI enabler

The data reveals that the participants in executive roles within their respective firms, ensure that commitment is realised through stipulations enforced contractually and through SLAs. From an operational level, some participants reported issues with customers accepting deliveries as planned and communicated. Failure to commit to these offloading times impacts the trust relationship between the focal firm and the customer. Participants working within the supply chain planning environments articulated their need for internal functions' commitment to consistent sharing of accurate data.

6.2.2.15 Findings on trust as an SCI enabler

The data indicates that, from an internal integration perspective, participants consider satisfactory execution of tasks a major contributor towards achieving high levels trust. The participants therefore consider commitment to effective task execution as key to cultivating a culture of trust. However, from an external integration viewpoint, some participants were of the view that the absence of timely communication with downstream supply chain trading partners impedes a relationship of trust between the focal firm and the customer.

The following section elaborates on the current stance of SCI in South African FMCG manufacturing firms, with a focus on the current external and internal integrative practices prevalent within the South African FMCG industry, supply chain practitioners' satisfaction with current SCI practices employed in their respective firms, and integrative practices that can improve the current state of SCI in South African FMCG manufacturing firms.

6.2.3 CURRENT STATE OF SCI IN SOUTH AFRICAN FMCG MANUFACTURING FIRMS

The third research question in this study sought to explore the current state of SCI within the South African FMCG industry. As outlined by Joubert *et al.* (2014:18) and cited in Section 2.6, South African supply chains have moved from a *survival* level of maturity, where there are no defined goals and objectives for the supply chain, to an *optimal* level of maturity, where optimised targets, such as increased efficiency and cost reduction, are implemented in order to yield maximum short-term gains. In addition, supply chains in the South African FMCG industry are far more mature and customer centric than supply chains in other industries (Joubert *et al.*, 2014:18). Beheshti *et al.* (2014:21) state that effective supply chains require firms to rapidly adopt the use of current technologies, and to form meaningful partnerships with their upstream and downstream supply chain trading partners. This study found that there are eleven internal and six external integration practices that exist within the sampled firms, as illustrated in Figures 5.3 and 5.4 in the preceding chapter. Furthermore, the study also found that *effective and open communication* is a practice that resonates with all participants from an internal integration standpoint, and with most of the participants from an external integration standpoint.

The data reveals that the study's participants were generally satisfied with the internal and external SCI practices instituted in their respective firms. However, it was also found that cultivating a systems-oriented supply chain workforce is where there is room for growth. The participants considered adequate *organisational learning*, the *adoption of technology* and *process optimisation* as integrative practices that could improve the current state of SCI in their respective firms. These findings are consistent with views expressed by (Joubert *et al.*, 2014:18-20) in their report on the state of logistics in South Africa.

The following section discusses findings on how SCI influences firm performance from the financial and operational perspectives.

6.2.4 SCI'S INFLUENCE ON FIRM PERFORMANCE

The study's fourth research question sought to understand how SCI influences firm performance from both an operational as well as a financial perspective. Although it was found that the participants consider SCI to have a positive influence on their respective firm's operational performance, the way the influence was understood to occur differs from what was found in the literature. Ataseven and Nair (2017:254) note that the link between SCI and the dimensions of cost, quality, delivery, and flexibility are what impact operational performance.

In contrast, study participants operating in an operational environment considered *adequate organisational learning* as an internal integrative practice that can positively influence the focal firm's operational performance. Participants working in an operational environment better articulated their need for increased learning in order to perform their duties more efficiently and effectively, compared to participants working in tactical and strategic environments. The *adoption of technology* is another practice that participants considered as having a positive influence on their firms' operational performance. It is, however, important to mention that the incorrect use of technology is likely to have an adverse influence on the focal firm's operational performance. From an external integration perspective, *inter-firm interaction* was also considered to have a positive influence on operational performance. It is important that upstream supply chain trading partners understand the focal firm's production requirements, from both the capacity and quality perspectives.

The findings also show that the participants consider SCI to have a positive influence on their firm's financial performance. Chang *et al.* (2016:284) posit that internal integration facilitates thorough communication and information sharing, thus enabling the focal firm to meet customer requirements consistently. It was found in this study that *effective and open communication* influences the focal firm's financial performance, especially at an operational level. Ineffective communication is likely to result in the wrong stock being delivered to the customer, which ultimately has financial implications on the firm. *Data integrity* and the way master data is revised also influences the focal firm's financial performance. Capturing

wrong customer addresses and wrong product prices can lead to lost customers. Finally, *organisational learning* was considered a practice that can influence the focal firm's financial performance. Creating knowledge within the firm which enables employees to perform more efficiently, thus reducing costs, such as overtime pay, will reduce overall overhead costs for the firm. These findings are therefore consistent with views expressed by Chang *et al.* (2016:284).

6.3 IMPLICATIONS OF FINDINGS

The study's findings have valuable implications for theory and practice. The study's theoretical implications are discussed first followed by its managerial implications.

6.3.1 THEORETICAL IMPLICATIONS

This study has shown that participants have contrasting interpretations of the SCI construct. The data shows that some participants' interpretations of the SCI construct are aligned to the articulations of Huo *et al.* (2019:237) and Liu *et al.* (2016:14), while there are also those participants who expressed contrasting views to what is established in the existing body of knowledge. This study recognises three distinct dimensions of SCI: internal integration, customer integration and supplier integration. Participants in this study had similar interpretations of these three distinct dimensions, in line with what has been outlined by scholars (Abdallah *et al.*, 2017:697; Chavez *et al.*, 2015:83; Khalaf & El Mokadem, 2018:4; Szász *et al.*, 2016:760).

The findings also indicate that the participants identify with all the existing SCI practices postulated by supply chain scholars. It is noteworthy that participants identified with *cross-functional interaction, systems interfaces* as well as *effective and open communication* to a large extent as outlined by scholars (Fredendall & Hill, 2016:4; Wong *et al.*, 2015:1; Young-Hyman, 2017:182). The findings also position *commitment* and *trust* as SCI enablers within the South African FMCG industry, in line with discussions by Alfalla-Luque *et al.* (2015:254) as well as Singh and Teng (2016:296). Furthermore, participants also identified new practices with a positive influence on the attainment of SCI. These practices are *strategic*

alignment, process alignment, data integrity and organisational learning from an internal integration standpoint, and *relationship building* with suppliers, from an external integration standpoint. These practices require further exploration to expound on the extent to which they have a positive influence on the attainment of both internal and external SCI in the South African FMCG context.

SCI in the sampled firms is moving towards an *optimal* state of integration, with firms embracing and adopting new technologies to reduce overall supply chain costs. Participants in this study appreciated that the *adoption of technology* is a crucial factor in improving the state of SCI in their respective firms. These views are consistent with those of Joubert *et al.* (2014:18-20) and Beheshti *et al.* (2014:21). It is, however, important to explore other practices that can accelerate improvement of SCI within the South African FMCG industry.

6.3.2 MANAGERIAL IMPLICATIONS

The researcher recognises that participants to this study operate in various supply chain areas within FMCG manufacturing firms, where some participants focus on upstream supply chain activities and others on downstream supply chain activities. This is a crucial factor that played a role in the participants' inconsistent interpretations of the SCI phenomenon. Supply chain managers/executives in FMCG manufacturing firms should strive to create awareness on their firm's end-to-end supply chain activities, as well as on how these activities are interrelated, and have an impact on each other. This will enable practitioners to have a common understanding of the SCI construct.

This study uncovers the importance and relevance of supply chain practitioners' understanding of the primary aim of internal and external SCI, and subsequently the impact of employing and executing the appropriate SCI practices, from both the internal and external integration viewpoints. The findings therefore indicate that supply chain practitioners within FMCG manufacturing firms should:

- Build a culture of regular *inter-firm interaction* as well as *joint-decision making* with upstream and downstream supply chain trading partners to, firstly, clearly understand

pertinent issues affecting the external supply chain and, secondly, reach consensus on matters that are likely to affect the operational and financial performance of both the focal firm and the supply chain trading partner. This can be executed by instituting forums where issues are discussed, and decisions are made jointly with the relevant stakeholders.

- Drive effective *Collaborative Planning, Forecasting and Replenishment* with external supply chain trading partners to optimally plan and execute inventory replenishment with both upstream (raw materials) and downstream (finished goods) supply chain trading partners. This can be done by integrating the focal firm's system to that of the external supply chain trading partner, thus ensuring accessibility and visibility of real-time data. The data shows that most of the participating firms have already integrated their systems with those of downstream supply chain trading partners, while integration with upstream supply chain trading partners is still few and far between.
- Optimise the *Vendor Managed Inventory* model to effectively manage and coordinate inventory that is critical for continuation of daily operations, especially for items such as spares used in manufacturing and distribution operations. This can be done by ensuring that the focal firm effectively communicates inventory data to the supplier, thus structuring VMI contracts that capitalise on the replenishment of stock while ensuring that no overstocked items are present in the focal firm's operation. This will enable realisation of cost savings.
- Embrace and *adopt new technologies* so that *effective and open communication*, *systems interfaces* and *data integrity* can be further enhanced, rendering information more accessible, reliable and accurate.
- Implement relevant *organisational learning* initiatives that are tailored to the needs of employees at each level within the firm, so that task execution is performed effectively, thus adding value to the overall strategic intent of the firm. This can include web-based learning that aligns new supply chain knowledge to the FMCG firm's overall business objectives, as well as formal supply chain training for those practitioners without a formal supply chain background.

6.4 LIMITATIONS OF THE STUDY AND RECOMMENDATIONS FOR FUTURE RESEARCH

This study employed a total sample size of fifteen participants, from five sampled FMCG manufacturing firms within the Gauteng province. This limits the transferability of the study's findings to firms in other industries and regions. Furthermore, this research employed semi-structured interviews as a data collection method. Consequently, all the limitations related to semi-structured interviews apply to this study (see Section 4.7.1.3). Future research may employ other qualitative data collection methods such as focus groups, which will allow for a larger sample size, thus including more supply chain practitioners in other parts of South Africa, across multiple industries. Future research may also employ quantitative data collection methods such as surveys, thus enabling the researcher to empirically test the generalisability of the respondents' SCI perceptions. Due to the fact that this research was only limited to a small number of FMCG manufacturing firms, in future the study can be expanded to a wider sample, comprising more industries prevalent within the South African context.

As articulated in Chapter 2, there are three levels of perception gaps that exist. *Level 1* perception gaps identify the differences in SCI perceptions between supply chain practitioners within the participating firms and practitioners within the upstream and downstream supply chain trading partner firms. *Level 2* perception gaps identify the differences in SCI perceptions between upstream and downstream supply chain trading partners in the same tier. This research only explored *Level 3* perception gaps pertaining to the phenomenon investigated, which involves only SCI perceptions held by supply chain practitioners in the focal FMCG manufacturing firm. Future research should therefore seek to explore *Level 1* and *Level 2* SCI perception gaps, thus developing theory on how SCI perceptions vary among supply chain practitioners in FMCG manufacturing firms and supply chain practitioners in the respective upstream and downstream firms.

Although the interviews were executed smoothly, the researcher encountered participants whose first language was not English. This limited further probing during the interviews in

certain instances because the participants could not clearly comprehend the essence of the probing questions.

Effective and open communication was an integrative practice that resonated with all fifteen participants. Future research should further explore this SCI practice by investigating the impact thereof on the management and coordination of the end-to-end supply chain in South African FMCG manufacturing firms. According to Joubert *et al.* (2014:17), supply chains in the South African FMCG industry are far more mature and integrated than those in industries dealing with semi-durable products, durable products, industrial products and feedstock. Future research should also focus on investigating what supply chain practitioners in other industries perceive the SCI construct to be.

6.5 CONCLUSION

This study revealed that the SCI phenomenon was not completely understood by all the study's participants. The three dimensions of SCI, namely internal integration, customer integration and supplier integration, were, however, interpreted in line with what scholars have posited in their studies. In addition, the study showed that the participants identify with all the practices documented in the literature, albeit to varying extents. However, new practices were also identified by practitioners, and these require further investigation on their applicability to the South African context at large. In conclusion, the current state of SCI in the South African FMCG industry is characterised by well-established processes, procedures and adequate systems. That being the case, the adoption of new technologies, among other practices, will leapfrog it to the next level.

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APPENDIX A

- Letter requesting permission to conduct research -

UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA
Faculty of Economic and Management Sciences

Business Management

2017-06-27

The Group Procurement and Shipping Executive
Crown National Foods

For attention: Mr. Johan de Beer

Re: Request for permission to conduct research among staff members of Crown National Foods

Dear Mr. de Beer

I am an MCom student specialising in Supply Chain Management, within the Department of Business Management at the University of Pretoria. As part of my studies, I have to conduct research on how supply chain practitioners perceive the construct of Supply Chain Integration (SCI) within FMCG manufacturing firms. The purpose thereof is to investigate the manner in which supply chain practitioners, working at various tiers within an FMCG manufacturing firm, grasp the phenomenon of SCI along with its associated supply chain integrative practices.

I hereby request permission to conduct structured interviews with 1 senior/executive supply chain practitioners as well as 2 specialist/analyst supply chain practitioners in your organization, on a date and time to be arranged with each manager or individual. Each interview will last approximately 60 minutes.

The study will be guided by the following principles:

- Once I have received permission from you, the study will be submitted to the University of Pretoria's Research Ethical Committee for final approval. The study already complies with all the ethical requirements of this committee.
- Participants will participate in the interviews on an anonymous and voluntary basis and will not receive any incentives to encourage their participation.
- I will schedule appointments with each of the participants at a time convenient to them.
- The name of your organization and the names of the interviewees will not be mentioned in the research report.
- I will provide you with a copy of the final research report on request.

EMS Building / EBW Gebou 3-66
University of Pretoria / Universiteit van Pretoria
PRETORIA, 0002
Republic of South Africa / Republiek van Suid-Afrika

Tel No: 012 420-4844

Email address / EPosadres:
theuns.kotze@up.ac.za

Please feel free to contact me if you need additional information about the study. You are also welcome to contact my study leaders, Mr W. Niemann (tel. 012 420 4635, e-mail: wesley.niemann@up.ac.za) or Mr. T. Kotzé (tel. 012 420 4844, e-mail: theuns.kotze@up.ac.za) to confirm that this is a legitimate research project.

Your kind co-operation is highly appreciated.

Sincerely,

Mr. Phenyo Shabangu
Cell: 072 738 0690
E-mail: phenyoshabangu@gmail.com

Supervisors:

Mr. W Niemann

Mr. T Kotzé (Co Supervisor)

Letters requesting permission to conduct research were sent to all sampled firms. Please refer to Appendix A on the CD for all the letters sent to the sampled firms.

APPENDIX B

- Letter granting permission to conduct research -

Central Office
The South African Breweries (Pty) Ltd
65 Park Lane, Sandown, Sandton, 2196
Tel (011) 881-8111 Fax (086) 881-8136
PO Box 782178 Sandton 2146 South Africa

For attention: Mr. Phenyo Shabangu

Re: Request for permission to conduct research among staff members of SAB Limited

Dear Mr. Shabangu

This letter hereby serves to grant you permission to conduct research within SAB Limited for your Masters studies. The organization will provide you with the necessary individuals that you require to successfully collect the data you need for your studies. We look forward to meeting with you and making your research endeavour a seamless one.

Best regards,

Neo Mankge
Customer Service Manager: SAB Limited

Letters granting permission to conduct research were received from all sampled firms. Please refer to Appendix B on the CD for all the letters received from the sampled firms.

APPENDIX C

- Informed consent form -

UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA

Consent for participation in an academic research study

Dept. of Business Management

Supply chain practitioners' perceptions of supply chain integration in fast-moving consumer goods (FMCG) manufacturing firms

Research conducted by:
Mr. P. Shabangu (27179355)
Cell: 072 7380 690

Dear participant

You are invited to participate in an academic research study conducted by Phenyo Shabangu, a Master's student from the Department of Business Management at the University of Pretoria.

The purpose of this qualitative study is to investigate the manner in which supply chain practitioners, working at various tiers within an FMCG manufacturing firm, grasp the phenomenon of SCI along with its associated supply chain integrative practices.

Please note the following:

- This study involves a structured personal interview. Your name nor your organisation's name will not appear in the final research report and the answers you give during the interview will be treated as strictly confidential. You cannot be identified in person based on the answers you give.
- Your participation in this study is very important to me. You may, however, choose not to participate and you may also stop participating at any time without any negative consequences.
- The interview will take about 1 hour of your time.
- The results of the study will be used for academic purposes only and may be published in an academic journal. I will provide you with a summary of the findings on request.
- Please contact my study leaders, Mr W. Niemann (tel. 012 420 4635, e-mail: wesley.niemann@up.ac.za) or Mr. T. Kotze (tel. 012 420 4844, e-mail: theuns.kotze@up.ac.za), if you have any questions or comments regarding the study.

Please sign the form to indicate that:

- You have read and understand the information provided above.
- You give your consent to participate in the study on a voluntary basis.

Participant's signature

20 / 06 / 2017
Date

APPENDIX D

- Interview guide -

Interview Discussion Guide

Supply chain practitioners' perceptions of supply chain integration in FMCG manufacturing firms

Dear Participant,

My name is Phenyo Shabangu and I am currently a MCom Supply Chain Management student at the University of Pretoria. First and foremost, I would like to take this opportunity to thank you for taking time out of your schedule to meet with me and contribute to my study. The research I am conducting is focused on Supply Chain Integration (SCI), more specifically how South African supply chain practitioners perceive SCI in its entirety. My study seeks to solicit valuable qualitative insights from practitioners whose organisations have manufacturing plants within the Gauteng region.

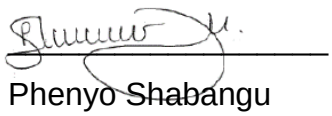
The results of this research will advantage industry practitioners by underpinning the importance of establishing a common understanding of Supply Chain Integration with their suppliers and customers, as well as also providing insights into the current state of SCI in the South African FMCG industry.

Your participation in this study is completely voluntary and you are free to withdraw from the interview at any time you feel uncomfortable. You are also free to not participate in answering any question that seems inappropriate to you. The sole intended use of the data collected is for research purposes only and all your responses as the participant will be treated with the utmost confidentiality and anonymity. Furthermore, the name of the organisation that you work for will not be mentioned in the final research report. I would like our interview to be a very open and frank discussion surrounding the research theme, bearing in mind that my goal is to gain insights from you; therefore, no answer could be regarded as right or wrong.

With assurance of your confidentiality and anonymity, I would like to ask for your permission to audio-record the interview as this will aid me in analysing your responses more accurately whilst also allowing me to keep the conversation flowing. As a participant,

I would like to remind you that your participation is voluntary, and you may end the interview at any time and decline answering any specific question. I request that you sign the prescribed informed consent form that will serve as protection of your confidentiality and anonymity.

Kind regards,



Phenyo Shabangu

Interview Questions

1. Could you please tell me more about your role within the organisation and what your responsibilities include?
   - *1.1. Probe question: What is your current job title?*
   - *1.2. Probe question: How long have you been involved with the organisation?*
   - *1.3. Probe question: How long have you been involved with the industry?*
   - *1.4. Probe question: What is your role within the broader supply chain function at xyz?*
2. What does the term “Supply Chain Management” mean to you?
3. What does the term “Supply Chain Integration” mean to you?
4. What is your understanding of internal supply chain integration?
   - *4.1. Probe question: Which functions do you think your organisation’s internal supply chain comprises of?*
   - *4.2. Probe question: What, in your opinion, will contribute to the seamless and effective operation of your organisation’s internal supply chain?*
   - *4.3. Probe question: What, in your opinion, is detrimental to the success of your organisation’s internal supply chain?*
5. What is your understanding of external supply chain integration?
   - *5.1. Probe question: What, in your opinion, will contribute to the seamless and effective operation of your organisation’s external supply chain?*
   - *5.2. Probe question: What are your thoughts regarding trust, integrity as well as cooperation and the success of your organisation’s external supply chain integration efforts?*
   - *5.3. Probe question: What, in your opinion, is detrimental to the success of your organisation’s internal supply chain?*

6. What, in your opinion, is your organisation currently doing to foster internal integration?
   - *6.1. Probe question: How would you describe the impact that these efforts have on the firm's operational performance?*
     - *6.1.1. Probe question: Are you able to provide examples of these impacts?*
   - *6.2. Probe question: In your opinion, which departments/business units within your organisation is the least cooperative within your organisation's internal supply chain?*
   - *6.3. Probe question: Why do you say that?*
   - *6.4. Probe question: To what extent, do you as a supply chain practitioner, agree that these practices are effective?*
7. Can you please elaborate the extent to which you, as a supply chain practitioner, are satisfied with internal integration efforts fostered by your organisation?
   - *7.1. Probe question: Please could tell me more about what your organisation, in your opinion, is doing better than your competitors to improve the organisation's internal supply chain?*
8. Can you please explain to me how your organisation exchanges information pertaining to supply chain activities internally?
   - *8.1. Probe question: Can you provide me with an example of what kind of information is exchanged internally?*
   - *8.2. Probe question: What, in your opinion, are the main issues regarding access to information within your organisation?*
9. What, in your opinion, is your organisation currently doing to foster integration with its suppliers?
   - *9.1. Probe question: Are you able to provide examples of these initiatives?*
   - *9.2. Probe question: How would you describe the impact that these efforts have on the firm's operational performance?*
     - *9.2.1. Probe question: Are you able to provide examples of these impacts?*
   - *9.3. Probe question: Probe question: To what extent, do you as a supply chain practitioner, agree that these practices are effective?*

10. Can you please elaborate the extent to which you, as a supply chain practitioner, are satisfied with integration efforts between your organisation and its suppliers?
    10.1. Probe question: Please could tell me more about what your organisation, in your opinion, is doing better than your competitors to improve integration efforts with suppliers?
11. Can you please explain to me how your organisation exchanges information pertaining to supply chain activities with its suppliers?
    11.1. Probe question: Can you provide me with an example of what kind of information is exchanged with your suppliers?
12. In your view, how important is trust when interacting and sharing information with suppliers?
    12.1. Probe question: Can you please explain and provide examples why you think your organisation's relationships with suppliers are based on trust (or not)?
13. What, in your opinion, is your organisation currently doing to foster integration with its customers?
    13.1. Probe question: Are you able to provide examples of these initiatives?
    13.2. Probe question: How would you describe the impact that these efforts have on the firm's operational performance?
        13.2.1. Probe question: Are you able to provide examples of these impacts?
    13.3. Probe question: To what extent, do you as a supply chain practitioner, agree that these practices are effective?
14. Can you please elaborate the extent to which you, as a supply chain practitioner, are satisfied with integration efforts between your organisation and its customers?
    14.1. Probe question: Please could tell me more about what your organisation, in your opinion, is doing better than your competitors to improve integration efforts with customers?
15. Can you please explain to me how your organisation exchanges information pertaining to supply chain activities with customers?
    15.1. Probe question: Can you provide me with an example of what kind of information is exchanged with your customers?

16. In your view, how important is trust when interacting and sharing information with customers?
    16.1. Probe question: Can you please explain and provide examples why you think your organisation's relationships with customers are based on trust (or not)?

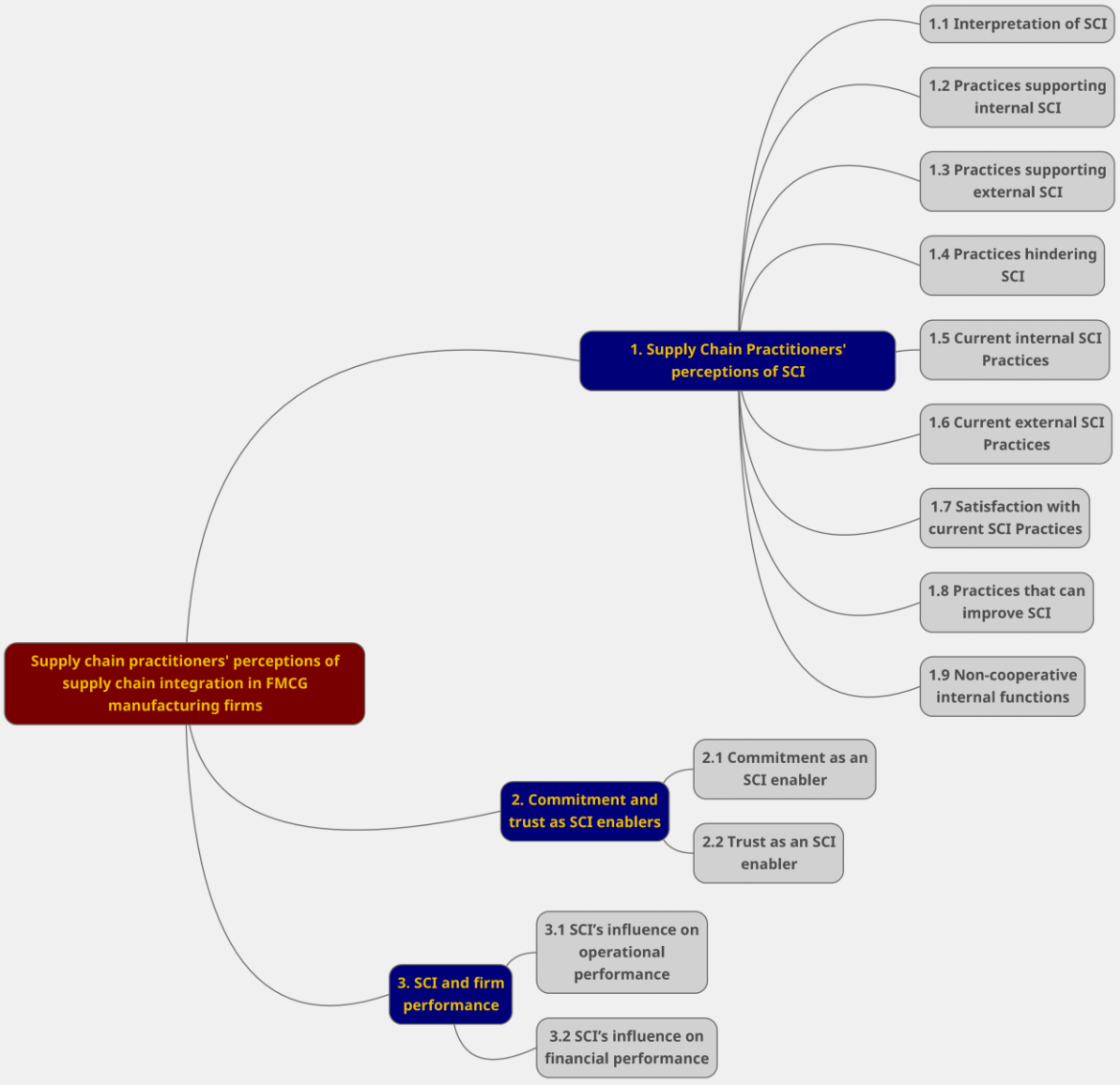
17. Can you please explain how commitment in your opinion, plays a role in Supply Chain Integration efforts internally?
18. Can you please explain how commitment in your opinion, plays a role in Supply Chain Integration efforts with your suppliers/customers?
19. ***Clean up question***: This is basically everything I wanted to ask you. Do you have anything else you'd like to say or any kind of final thoughts on what we have been discussing?

Thank you very much for your time and for participating in this study. Please contact me if you need any more information or are uncertain of aspects of this interview.

APPENDIX E

- Themes and sub-themes emerging from the analysed data -

Themes and sub-themes emerging from the analysed data



APPENDIX F

- Merged and sorted clusters of codes -

Nr.	Theme	Sub-theme	List of merged codes	Link to research question
1	Supply Chain Practitioners' perceptions of SCI	Interpretation of SCI	Definition of SCI	RQ1
2	Supply Chain Practitioners' perceptions of SCI	Interpretation of SCI	Definition of SCM	RQ1
3	Supply Chain Practitioners' perceptions of SCI	Interpretation of SCI	Does not understand the SCI construct	RQ1
4	Supply Chain Practitioners' perceptions of SCI	Interpretation of SCI	Understanding of external supply chain integration	RQ1
5	Supply Chain Practitioners' perceptions of SCI	Interpretation of SCI	Understanding of external supply chain integration_Customer	RQ1
6	Supply Chain Practitioners' perceptions of SCI	Interpretation of SCI	Understanding of external supply chain integration_Supplier	RQ1
7	Supply Chain Practitioners' perceptions of SCI	Interpretation of SCI	Understanding of internal supply chain integration	RQ1
8	Supply Chain Practitioners' perceptions of SCI	Interpretation of SCI	Understanding of what the organisation's internal supply chain comprises of	RQ1
9	Supply Chain Practitioners' perceptions of SCI	Practices supporting internal SCI	Practices supporting seamless and effective internal supply chains_Adequate policies	RQ2
10	Supply Chain Practitioners' perceptions of SCI	Practices supporting internal SCI	Practices supporting seamless and effective internal supply chains_Adoption of technology	RQ2
11	Supply Chain Practitioners' perceptions of SCI	Practices supporting internal SCI	Practices supporting seamless and effective internal supply chains_Collaboration	RQ2
12	Supply Chain Practitioners' perceptions of SCI	Practices supporting internal SCI	Practices supporting seamless and effective internal supply chains_Cross-functional interaction	RQ2
13	Supply Chain Practitioners' perceptions of SCI	Practices supporting internal SCI	Practices supporting seamless and effective internal supply chains_Data integrity	RQ2
14	Supply Chain Practitioners' perceptions of SCI	Practices supporting internal SCI	Practices supporting seamless and effective internal supply chains_Determination	RQ2

Nr.	Theme	Sub-theme	List of merged codes	Link to research question
15	Supply Chain Practitioners' perceptions of SCI	Practices supporting internal SCI	Practices supporting seamless and effective internal supply chains_Effective communication	RQ2
16	Supply Chain Practitioners' perceptions of SCI	Practices supporting internal SCI	Practices supporting seamless and effective internal supply chains_Information sharing	RQ2
17	Supply Chain Practitioners' perceptions of SCI	Practices supporting internal SCI	Practices supporting seamless and effective internal supply chains_Joint decision-making	RQ2
18	Supply Chain Practitioners' perceptions of SCI	Practices supporting internal SCI	Practices supporting seamless and effective internal supply chains_Organisational learning	RQ2
19	Supply Chain Practitioners' perceptions of SCI	Practices supporting internal SCI	Practices supporting seamless and effective internal supply chains_Process alignment	RQ2
20	Supply Chain Practitioners' perceptions of SCI	Practices supporting internal SCI	Practices supporting seamless and effective internal supply chains_CPFR	RQ2
21	Supply Chain Practitioners' perceptions of SCI	Practices supporting internal SCI	Practices supporting seamless and effective internal supply chains_Strategic alignment	RQ2
22	Supply Chain Practitioners' perceptions of SCI	Practices supporting external SCI	Practices supporting seamless and effective external supply chain integration_Data integrity	RQ2
23	Supply Chain Practitioners' perceptions of SCI	Practices supporting external SCI	Practices supporting seamless and effective external supply chain integration_Effective communication	RQ2
24	Supply Chain Practitioners' perceptions of SCI	Practices supporting external SCI	Practices supporting seamless and effective external supply chain integration_Good relationship	RQ2
25	Supply Chain Practitioners' perceptions of SCI	Practices supporting external SCI	Practices supporting seamless and effective external supply chain integration_Inter-organisational interaction	RQ2
26	Supply Chain Practitioners' perceptions of SCI	Practices hindering internal SCI	Practices hindering the success of a firm's internal supply chain_Accessibility of data	RQ2
27	Supply Chain Practitioners' perceptions of SCI	Practices hindering internal SCI	Practices hindering the success of a firm's internal supply chain_Capacity constraints	RQ2

Nr.	Theme	Sub-theme	List of merged codes	Link to research question
28	Supply Chain Practitioners' perceptions of SCI	Practices hindering internal SCI	Practices hindering the success of a firm's internal supply chain_Inaccurate information	RQ2
29	Supply Chain Practitioners' perceptions of SCI	Practices hindering internal SCI	Practices hindering the success of a firm's internal supply chain_Lack of collaboration	RQ2
30	Supply Chain Practitioners' perceptions of SCI	Practices hindering internal SCI	Practices hindering the success of a firm's internal supply chain_Lack of communication	RQ2
31	Supply Chain Practitioners' perceptions of SCI	Practices hindering internal SCI	Practices hindering the success of a firm's internal supply chain_Lack of cross-functional interaction	RQ2
32	Supply Chain Practitioners' perceptions of SCI	Practices hindering internal SCI	Practices hindering the success of a firm's internal supply chain_Lack of joint decision-making	RQ2
33	Supply Chain Practitioners' perceptions of SCI	Practices hindering external SCI	Practices hindering the success of a firm's external supply chain integration_Bad relationships	RQ2
34	Supply Chain Practitioners' perceptions of SCI	Practices hindering external SCI	Practices hindering the success of a firm's external supply chain integration_Inaccurate information	RQ2
35	Supply Chain Practitioners' perceptions of SCI	Practices hindering external SCI	Practices hindering the success of a firm's external supply chain integration_Incomplete information	RQ2
36	Supply Chain Practitioners' perceptions of SCI	Practices hindering external SCI	Practices hindering the success of a firm's external supply chain integration_Lack of data integrity	RQ2
37	Supply Chain Practitioners' perceptions of SCI	Practices hindering external SCI	Practices hindering the success of a firm's external supply chain integration_Lack supplier development	RQ2
38	Supply Chain Practitioners' perceptions of SCI	Current internal SCI practices	Current internal integration practices_Communication	RQ3
39	Supply Chain Practitioners' perceptions of SCI	Current internal SCI practices	Current internal integration practices_Cross-functional interaction	RQ3
40	Supply Chain Practitioners' perceptions of SCI	Current internal SCI practices	Current internal integration practices_Data integrity	RQ3

Nr.	Theme	Sub-theme	List of merged codes	Link to research question
41	Supply Chain Practitioners' perceptions of SCI	Current internal SCI practices	Current internal integration practices_Information sharing	RQ3
42	Supply Chain Practitioners' perceptions of SCI	Current internal SCI practices	Current internal integration practices_Joint decision-making	RQ3
43	Supply Chain Practitioners' perceptions of SCI	Current internal SCI practices	Current internal integration practices_Organisational learning	RQ3
44	Supply Chain Practitioners' perceptions of SCI	Current internal SCI practices	Current internal integration practices_Process alignment	RQ3
45	Supply Chain Practitioners' perceptions of SCI	Current internal SCI practices	Current internal integration practices_CPFR	RQ3
46	Supply Chain Practitioners' perceptions of SCI	Current internal SCI practices	Current internal integration practices_Strategic alignment	RQ3
47	Supply Chain Practitioners' perceptions of SCI	Current internal SCI practices	Current internal integration practices_System interfaces	RQ3
48	Supply Chain Practitioners' perceptions of SCI	Current internal SCI practices	Current internal integration practices_Vendor Managed Inventory	RQ3
49	Supply Chain Practitioners' perceptions of SCI	Current external SCI practices	Current external integration practices_Effective communication	RQ3
50	Supply Chain Practitioners' perceptions of SCI	Current external SCI practices	Current external integration practices_Information sharing	RQ3
51	Supply Chain Practitioners' perceptions of SCI	Current external SCI practices	Current external integration practices_Inter-organisational interaction	RQ3
52	Supply Chain Practitioners' perceptions of SCI	Current external SCI practices	Current external integration practices_Relationship building	RQ3
53	Supply Chain Practitioners' perceptions of SCI	Current external SCI practices	Current external integration practices_CPFR	RQ3
54	Supply Chain Practitioners' perceptions of SCI	Current external SCI practices	Current external integration practices_System interfaces	RQ3
55	Supply Chain Practitioners' perceptions of SCI	Satisfaction with current SCI Practices	Satisfaction with current internal integration efforts	RQ3
56	Supply Chain Practitioners' perceptions of SCI	Satisfaction with current SCI Practices	Satisfaction with current external integration efforts_Customer	RQ3

Nr.	Theme	Sub-theme	List of merged codes	Link to research question
57	Supply Chain Practitioners' perceptions of SCI	Satisfaction with current SCI Practices	Satisfaction with current external integration efforts_Supplier	RQ3
58	Supply Chain Practitioners' perceptions of SCI	Satisfaction with current SCI Practices	Final remarks	RQ3
59	Supply Chain Practitioners' perceptions of SCI	Practices that can improve SCI	Practices that can improve external integration_Customer	RQ3
60	Supply Chain Practitioners' perceptions of SCI	Practices that can improve SCI	Practices that can improve external integration_Supplier	RQ3
61	Supply Chain Practitioners' perceptions of SCI	Practices that can improve SCI	Practices that can improve internal integration	RQ3
62	Supply Chain Practitioners' perceptions of SCI	Practices that can improve SCI	Practices that can improve internal integration_Adequate operational planning	RQ3
63	Supply Chain Practitioners' perceptions of SCI	Practices that can improve SCI	Practices that can improve internal integration_Adequate training and development	RQ3
64	Supply Chain Practitioners' perceptions of SCI	Practices that can improve SCI	Practices that can improve internal integration_Adoption of technology	RQ3
65	Supply Chain Practitioners' perceptions of SCI	Practices that can improve SCI	Practices that can improve internal integration_Capability improvements	RQ3
66	Supply Chain Practitioners' perceptions of SCI	Practices that can improve SCI	Practices that can improve internal integration_Capacity improvements	RQ3
67	Supply Chain Practitioners' perceptions of SCI	Practices that can improve SCI	Practices that can improve internal integration_Collaboration	RQ3
68	Supply Chain Practitioners' perceptions of SCI	Practices that can improve SCI	Practices that can improve internal integration_Organisational learning	RQ3
69	Supply Chain Practitioners' perceptions of SCI	Practices that can improve SCI	Practices that can improve internal integration_Process optimisation	RQ3
70	Supply Chain Practitioners' perceptions of SCI	Non co-operative internal functions	Non co-operative internal supply chain function	RQ3
71	Supply Chain Practitioners' perceptions of SCI	Non co-operative internal functions	Non co-operative internal supply chain function_Engineering	RQ3

Nr.	Theme	Sub-theme	List of merged codes	Link to research question
72	Supply Chain Practitioners' perceptions of SCI	Non co-operative internal functions	Non co-operative internal supply chain function_Human Resources	RQ3
73	Supply Chain Practitioners' perceptions of SCI	Non co-operative internal functions	Non co-operative internal supply chain function_Inventory management	RQ3
74	Supply Chain Practitioners' perceptions of SCI	Non co-operative internal functions	Non co-operative internal supply chain function_Marketing	RQ3
75	Supply Chain Practitioners' perceptions of SCI	Non co-operative internal functions	Non co-operative internal supply chain function_None	RQ3
76	Supply Chain Practitioners' perceptions of SCI	Non co-operative internal functions	Non co-operative internal supply chain function_Production	RQ3
77	Supply Chain Practitioners' perceptions of SCI	Non co-operative internal functions	Non co-operative internal supply chain function_Warehousing	RQ3
78	Commitment and trust as SCI enablers	Commitment as an SCI enabler	Bad commitment relationship_Internal	RQ3
79	Commitment and trust as SCI enablers	Commitment as an SCI enabler	Bad commitment relationship_Supplier	RQ3
80	Commitment and trust as SCI enablers	Commitment as an SCI enabler	Commitment_Customer	RQ3
81	Commitment and trust as SCI enablers	Commitment as an SCI enabler	Commitment_Supplier	RQ3
82	Commitment and trust as SCI enablers	Commitment as an SCI enabler	Good commitment relationship_Customer	RQ3
83	Commitment and trust as SCI enablers	Commitment as an SCI enabler	Good commitment relationship_Supplier	RQ3
84	Commitment and trust as SCI enablers	Commitment as an SCI enabler	Impact of a bad communication on the commitment relationship_Customer	RQ3
85	Commitment and trust as SCI enablers	Commitment as an SCI enabler	Impact of protests on a good commitment relationship_Customer	RQ3
86	Commitment and trust as SCI enablers	Commitment as an SCI enabler	Commitment and trust	RQ3
87	Commitment and trust as SCI enablers	Commitment as an SCI enabler	Commitment and trust_Internal functions	RQ3

Nr.	Theme	Sub-theme	List of merged codes	Link to research question
88	Commitment and trust as SCI enablers	Trust as an SCI enabler	Bad trust relationship_Supplier	RQ3
89	Commitment and trust as SCI enablers	Trust as an SCI enabler	Good trust relationship_Customer	RQ3
90	Commitment and trust as SCI enablers	Trust as an SCI enabler	Good trust relationship_External	RQ3
91	Commitment and trust as SCI enablers	Trust as an SCI enabler	Good trust relationship_Supplier	RQ3
92	Commitment and trust as SCI enablers	Trust as an SCI enabler	Impact of a new process/new employee the trust relationship_Internal	RQ3
93	Commitment and trust as SCI enablers	Trust as an SCI enabler	Impact of accountability on the trust relationship_Internal	RQ3
94	Commitment and trust as SCI enablers	Trust as an SCI enabler	Impact of communication on trust_Customer	RQ3
95	Commitment and trust as SCI enablers	Trust as an SCI enabler	Impact of stock-outs on trust	RQ3
96	Commitment and trust as SCI enablers	Trust as an SCI enabler	Lack of integrity_Internal	RQ3
97	Commitment and trust as SCI enablers	Trust as an SCI enabler	Lack of integrity_Supplier	RQ3
98	Commitment and trust as SCI enablers	Trust as an SCI enabler	Lack of trust_Supplier	RQ3
99	SCI and firm performance	SCI's influence on operational performance	Impact of adequate training and development on operational performance	RQ4
100	SCI and firm performance	SCI's influence on operational performance	Impact of bad communication on operational performance	RQ4
101	SCI and firm performance	SCI's influence on operational performance	Impact of bad trust relationship on operational performance	RQ4
102	SCI and firm performance	SCI's influence on operational performance	Impact of good communication on operational performance	RQ4
103	SCI and firm performance	SCI's influence on operational performance	Impact of inadequate processes on operational performance	RQ4

Nr.	Theme	Sub-theme	List of merged codes	Link to research question
104	SCI and firm performance	SCI's influence on operational performance	Impact of information sharing on operational performance	RQ4
105	SCI and firm performance	SCI's influence on operational performance	Impact of inter-organisational interaction on operational performance	RQ4
106	SCI and firm performance	SCI's influence on operational performance	Impact of process misalignment on operational performance	RQ4
107	SCI and firm performance	SCI's influence on operational performance	Impact of technology adoption on operational performance	RQ4
108	SCI and firm performance	SCI's influence on operational performance	Impact of the lack of data integrity on operational performance	RQ4
109	SCI and firm performance	SCI's influence on operational performance	Impact of the lack of integrity on operational performance	RQ4
110	SCI and firm performance	SCI's influence on operational performance	Impact of the lack of integrity on operational performance_Internal functions	RQ4
111	SCI and firm performance	SCI's influence on financial performance	Impact of bad communication on financial performance	RQ4
112	SCI and firm performance	SCI's influence on financial performance	Impact of inaccurate data on financial performance	RQ4
113	SCI and firm performance	SCI's influence on financial performance	Impact of organisational learning on financial performance	RQ4
114	SCI and firm performance	SCI's influence on financial performance	Impact of process misalignment on financial performance	RQ4
115	SCI and firm performance	SCI's influence on financial performance	Impact of SCI on financial performance	RQ4
116	SCI and firm performance	SCI's influence on financial performance	Impact of the lack of communication on financial performance	RQ4
117	SCI and firm performance	SCI's influence on financial performance	Impact of the lack of data integrity on financial performance	RQ4

APPENDIX G

- Interview recordings (CD) -

APPENDIX H

- Interview transcripts (CD) -