SUPPLY CHAIN STRATEGY, FLEXIBILITY AND PERFORMANCE IN THE GAUTENG FAST-MOVING CONSUMER GOODS (FMCG) INDUSTRY

VAAL UNIVERSITY OF TECHNOLOGY

Inspiring thought. Shaping talent.

by

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DEDICATION

I dedicate this dissertation to the Lord God Almighty, for granting me the strength and wisdom to write this book. As the scriptures proclaimed, "*I can do all things through Christ for He strengthens me"-**NKJV-Phillipians 4:13.***

DECLARATION

This work has not previously been accepted in substance for any degree and is not being concurrently submitted in candidature for any degree.

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STATEMENT 1

This dissertation is being submitted in fulfillment of the requirements for the Magister Technologiae (M. Tech): in Business, measuring with supply chain management.

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STATEMENT 2

This thesis is the result of my own independent investigation, except where otherwise stated. Other sources are acknowledged by giving explicit references. A list of references is appended.

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I hereby give consent for my thesis, if accepted, to be available for photocopying and for interlibrary loan, and for the title and summary to be made available to outside organisations.

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ABSTRACT

The successful implementation of supply chain strategy has received significant attention among literature and practitioners, due to its importance in contributing to company success. The success of the FMCG industry in South Africa has also been attributed to the effectiveness of its supply chain strategies. However, the industry faces numerous challenges such as miscellaneous risks that include the potential loss of key suppliers, innovation, and risk, planning and forecasting, power outages in manufacturing plants and the fact that only a limited amount of safety stock can be held to offset uncertainty. It also faces difficulties in improving supply and demand, which further extends to transforming supplier relationships into effective collaboration. Thus, this study applies supply chain strategy to the FMCG industry in South Africa, and seeks to establish the connection between supply chain strategies, flexibility (SCF) and performance (SCP) in the sector.

The methodological procedure in this study was guided by the positivist paradigm which is embedded in quantitative and causal designs. A sample of 228 respondents purposively drawn from the FMCG industry in Gauteng province participated in the survey. The collected data were tested using descriptive and inferential statistics. The specific statistical techniques applied included the analysis of frequency distributions, percentages, mean scores, exploratory factor analysis (EFA), confirmatory factor analysis (CFA) and hypotheses tests using partial least squares-based structural equation modelling.

The empirical results showed that two supply chain strategies, namely, organisational learning and supplier integration contribute significantly to SCF. In turn, SCF contributes positively to financial and non-financial performance. Supply chain strategies such as innovation, risk management and customer orientation were statistically insignificant in predicting SCP. The study is significant because it identifies that supply chain strategies are important in developing flexible FMCG supply chains in South Africa. It also confirms the importance of SCF in improving the performance of FMCG supply chains. The study may therefore be used as a reference source for information on the improvement of SCP in FMCG supply chains.

Keywords: Supply chain strategy; supply chain flexibility; supply chain performance; FMCG industry; Gauteng province

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LIST OF ABBREVIATIONS

ABBREVIATION	FULL ANNOTATION
ABI	Amalgamated Beverages Industries
APICS	American Production and Inventory Control Society
AVE	Average Variance Extracted
B2B	Business to Business
BAT	British American Tobacco
BEE	Black Economic Empowerment
BBBEE	Broad Based Black Economic Empowerment
BM	Business Model
BWE	Bullwhip Effect
CFA	Confirmatory Factor Analysis
CGCSA	Consumer Goods Council of South Africa
CII	Confederation of Indian Industry
CO	Customer Orientation
COVID-19	Corona Virus disease of 2019.
CPG	Consumer Packaged Goods
CRM	Customer Relationship Management
CSI	Corporate Social Investment
DBMS	Dimension-Based Measurement Systems
DRC	Democratic Republic of the Congo
EBMS	Efficiency-Based Measurement System
ECR	Efficient Consumer Response
EFA	Exploratory Factor Analysis
ESI	Early Supplier Involvement
EU	European Union
EVA	Economic Value Added

ABBREVIATION	FULL ANNOTATION
FBMS	Function-Based Measurement System
FMCG	Fast Moving Consumer Goods
FP	Financial performance
FPM	Financial Performance Measurement
GDP	Gross Domestic Product
GPMS	Generic Performance Measurement Systems
HBMS	Hierarchical-Based Measurement Systems
HOQ	House of Quality
HR	Human Resource
IBM	International Business Machines
INV	Supply Chain Innovation
IT	Information Technology
KBV	Knowledge Based View
KPMG	Klynveld Peak Marwick Goerdeler
LSP	Logistics Service Provider
Ltd	Limited liability
n	Sample size
MoU	Memorandum of Understanding
NDP	National Development Plan
NFI	Normed Fit Index
NFP	Non-Financial Performance
NFPMS	Non-Financial Performance Measurements
NP	National Planning Commission
NPD	New Product Development
OL	Organisational learning
OLS	Organisational Learning Strategy

ABBREVIATION	FULL ANNOTATION
PMS	Performance Measurement System
PWC	Price Waterhouse Coopers
QFD	Quality Function Deployment
R&D	Research and Development
RBV	Resource Based View
RFID	Radio Frequency Identification
RSA	Republic of South Africa
SAB	South African Breweries
SABS	South African Bureau Standards
SADC	South African Development Community
SA	Supplier Association
SCBC	Supply Chain Balance Scorecard
SC	Supply Chain
SCI	Supply Chain Integration
SCM	Supply Chain Management
SCP	Supply chain Performance
SCOR	Supply Chain Operations
SCRM	Supply Chain Risk Management
SEM	Structural Equation Modelling
SI	Supplier Integration
TTM	Time to Market
US	United States
USD	United States Dollars

CHAPTER 1
ORIENTATION OF THE STUDY

1.1 INTRODUCTION TO THE STUDY

Over the past decade, competition in global markets has been increasingly shifting from enterprises to supply chains (Narasimhan, Kim & Tan 2008:5232; Danese 2013:1029; Wu, Chuang & Hsu 2014:122; Spina, Di Serio, Brito & Duarte 2015:55; Wegner & Mozzato 2019:172; Duoming & Chin 2022:716). Furthermore, Muntaka, Haruna and Mensah (2016:130) postulate that the nature of the business environment today is requiring organisations to seek alternative approaches of achieving efficiency and competitiveness in their day-to-day operations. Among these approaches is the proper management of supply chain (Muntaka *et al*. 2017:130). This realisation has prompted the invention of new supply chain strategies that would enable firms to attain competitive advantage and maximise the performance of their supply chains. Hines (2013:7) proposes that competitive forces are at work both in the private and public sector organisations around the world and that differently instituted supply chain strategies are essential within the same organisation and across organisational boundaries. Many firms today intend to become efficient and flexible but have not achieved that goal, in part, because they have not been able to formulate the best supply chain strategies (Ambe 2012:126).

Similar to the term supply chain, supply chain management (SCM) has also been defined by numerous scholars. A supply chain is defined by Lysons and Farrington (2012:89) as the network of business entities that are involved, through upstream and downstream linkages, in the various processes and activities that provide value in the form of products (goods) and services in the hands of the end customer. Additionally, a supply chain includes the sourcing of raw materials and parts from the suppliers, the conversion of raw materials into semi-finished products and assembling them into final products by producers, the storage of goods in warehouses, order entry and tracking, distribution and delivery to the final customer by the distributors as well as retailers (Mwilu 2013:11; Sanders 2013:3). Supply chains should be designed in a way that they allow an entity to be efficient and effective in eliminating redundancy throughout the network (Abdulrahman & Yuvaraj 2022:1) thus, which endeavour would enable organisations in the Gauteng FMCG industry to address and manage supply chain disruptions cases such as COVID-19 pandemic and global instability (i. e., Russia-Ukraine War) efficiently and effectively.

Akdogan and Demirtas (2014:1021) define SCM as a series of approaches that integrate suppliers, manufacturers and warehouses in the most efficient way and while doing this, it minimises system

costs and at the same time provides an acceptable service to the final customer. The primary objective of SCM is to maximise the SCP (Lysons & Farrignton 2012:92; Akdogan & Demirtas 2014:1021). Seo, Dinwoodie and Kwak (2014:733) add that SCM is a significant element for attaining a sustainable competitive advantage which when overlooked could lead to potential operational and financial losses. It is, however, important to highlight that organisations are involved in different supply chains, as noted in literature. The FMCG industry, for example, operates in complex and dynamic supply chains that involve a number of different suppliers in different geographical locations (Kumar & Agarwal 2018:570).

Strategy and flexibility are regarded as important features in improving the performance of a supply chain (Martinsen & Bjorklund 2012:562; Tipu & Fantazy 2014:399). A supply chain strategy is considered an essential component of a broader corporate strategy that enables an organisation to achieve its desired results in terms of competitive advantage and performance (Badenhorst-Weiss & Nel 2011:299; Hartmann & Grahl 2012:526; Martinsen & Bjorklund 2012:562). Furthermore, a supply chain strategy specifies how an organisation will achieve its competitive advantages through its supply chain capabilities, such as cost efficiency, response speed and flexibility (Ismail & Sharifi 2006: 436). For instance, the COVID-19 pandemic has now unleashed a global phenomenon on an organisation's supply chain across the world (Rajesh 2021:903), stemming from the absence of understanding and the flexibility of the manifold layers of integrated supply chains and a lack of expansion in their sourcing strategies (Baker & Mckenzie International 2020:9).Thus, organisations with successfully implemented and strongly aligned supply chain strategies are more likely to counteract the threats posed by the pandemic through flexible supply chains.

SCF is conceptualised by Muntaka *et al*. (2017:132) as the ability to respond to change or react to environmental changes with little penalty in time, cost or performance. SCF is essential in today's business environment, which is characterised by complexity, continuous change and uncertainty (Manders, Caniels & Ghijsen 2016:181). As such, organisations must be flexible to cope with globalisation, technological change and innovation, as well as changing customer needs and expectations (Pujawan 2004:86; Tachizawa & Thomsen 2007:1115; Marley 2014:149). More so, supply chains should not only be made flexible to mitigate aspects such as complexity, continuous change and uncertainty, but must be designed and engineered to enhance SCP.

Despite the abundance of research on SCP, there is still a lot to be explored and understood about this concept. SCP has been defined by Ambe and Badenhurst-Weiss (2012:11006) as a monitoring process, undertaking a demonstrative analysis of whether the right processes have been followed

and the intended results have been attained. SCP is progressively recognised as an essential element in achieving a firm's competitive advantage (Sezen 2008:233; Boston Consulting Group 2010:1). As such, organisations in today's business world are continuously looking for new ways to enhance the performance of their supply chains (Sezen 2008:233; Muntaka *et al*. 2017:130). Last but not least, assessing supply chain performance helps organisations identify the loopholes in the supply chain network and quantifies performance against the outlined objectives organisations wants to achieve (Sharma, Raut, Hajiaghaei-Keshteli, Narkhede, Gokhale & Priyadarshinee 2022:2).

This study is undertaken to investigate the relationship between supply chain strategy, SCF and SCP of the companies within the FMCG industry in Gauteng province. The Confederation of Indian Industry (CII) identified the FMCG industry as the largest industry in the world. It comprises consumer non-durable goods and caters to the everyday needs of consumers (Bala & Kumar 2011:24). The characteristics of its products are unique to the industry as they are non-durable, branded, packed and consumed every month directly by the ultimate customer. The FMCG industry handles a wide range of product segments, including personal care, packaged food, spirits and tobacco, household care, groceries, and dairy products (Mohammed 2015:31). Moreover, the industry is a quick, agile one with a wide range of products (Bala & Kumar 2011:3). This is confirmed by Unilever (2007:5), a leading organisation in the FMCG industry, which quantified that in 150 million times a day, in 150 countries, people use their products at key moments of their day. In South Africa, the FMCG industry is dominated by firms such as Pick 'n Pay, Shoprite Checkers, Woolworths, OK Stores, SPAR, Kraft, Unilever, Procter, Colgate-Palmolive, SABMiller, NESTLE, Johnson & Johnson, Danone, Kellogg's, British American Tobacco, and many others.

This industry faces challenges such as miscellaneous risks that include the potential loss of key suppliers, innovation and risk, planning and forecasting, power outages in manufacturing plants and the fact that only a limited amount of safety stock can be held to offset uncertainty (Kärkkäinen 2003:50; Barloworld 2010:8; Barloworld 2010:7; Glendon & Bird 2013:4: KPMG 2022:3). The other top challenges all reflect the difficulty of improving supply and demand of customers (Price Waterhouse Coopers 2020:3: Delloite 2021:13: Meyer, Niemann, Uys & Beetge 2019:3), which further extends to transforming supplier relationships into effective collaboration (Supply Chain Foresight Report 2008:7; Poranki, Perwej & Akhtar 2015:88). The industry has to overcome these challenges if it is to succeed and continue as an important contributor to the South African economy. Agigi, Nieman and Kotze (2016:4) proposed that supply chain design strategies should focus mainly on strategic inventory, forming a flexible suppliers and flexible delivery. This study

proposes that resolving these challenges requires the effective implementation of supply chain strategies, which can lead to an increase innovation, flexibility and performance of the supply chain. The next section presents the problem statement that triggered the need to investigate on supply chain strategies, flexibility and perfomance in the Gauteng FMCG industry.

1.2 PROBLEM STATEMENT

The Supply Chain Foresight Report (2008:5) notes that the most prosperous firms in the FMCG industry, relative to their competitors, remain those who master both capability and complexity. Lin, Chiu and Tseng (2006:354) revealed that the competition faced by companies today are increasingly affected by ground-breaking technologies, volatile environments, and the changes in customer tastes and preferences. Price Waterhouse Coopers (2017:7) on the other hand, reported that 54% of companies around the world, including the FMCG industry, struggle to bridge the gap between innovation strategy and corporate strategy. More so, global supply chains are contemporary crippled by numerous challenges (Mvubu & Naude 2018:4; Gurtu & Johny 2021:1). Whatever challenges are faced by the FMCG industry are a reflection on both the endeavour to keep abreast with the increase in demand, as well as the attempt to bring into line a solid supply chain strategy (Supply Chain Foresight Report 2008:07: Wheelen & Hunger 2012:27; Ogunlela 2018:215; Ben-Ahmed, Al Altheeb & Abbas 2020:3).

As pointed out by Butner (2010:22), supply chain executives find it increasingly difficult to overcome these challenges, especially with traditional supply chain strategies and designs. This is due to misalignment between the disruptions, supply chain strategies that causes further disturbances to the entire supply chain network (Magagula, Meyer & Nieman 2020:65). Moreover, a noticeable difference from the FMCG lies in the objective of redefining supply chain strategies, which drop to 9 per cent from 46 per cent in the industry (Supply Chain Foresight Report 2008:07; Danese 2013:1029). This further confirms that the current implemented strategies in the industry are not aligned with the vision, mission and strategies outlined by its companies, which further implicates its supply chain flexibility and perfomance.

Notwithstanding the innovative ideas generated by the South African FMCG industry to remain competitive (Ramadhan & Setyowati 2021:675), industry supply chains are still faced with unique challenges and issues (Kavitha 2012:26; Nkonde 2012:6; Chinna 2016:2). Some of the problems, such as the bullwhip effect (relatively small variability in end-customer demand expands to successively high variability up the supply chain) and higher returns and transit losses are widely evident in these supply chains (Bala & Kumar 2011:23; Simba, Niemann, Kotzé & Agigi 2017:14; Stüttgen, Boatwright & Kadane 2017:1; Nieuwenhuyzen & Nieman 2018:2; Mckinsey &

Company 2020:2; Baker & Mckenzie International 2020:15). Most recently, the COVID-19 pandemic has fuelled more challenges on the FMCG industry (Price Waterhouse Coopers 2020:7) and the Russia-Ukraine War even activated a significant additional challenge in the global food supply chains after the COVID-19 effects (Jagtap, Trollman, Trollman, Garcia-Garcia, Parra-López, Duong, Martindale, Munekata, Lorenzo, Hdaifeh, Hassoun, Salonitis & Afy-shararah 2022:1; Nguyen,Dinh, Nguyen, Phuoc, Nguyen,Le,Nguyen, Nguyen, Luu, Vu & Le 2022:633). Furthermore, supply chains in the FMCG industry are comprised of many different entities that own various production plants, including co-manufacturers and co-packers, which increase complexities in the supply chain (Bala, Prakash & Kumar 2010:28; Bala & Kumar 2011:26: Kumar & Agarwal 2018:570).

Most firms in the FMCG industry never or rarely collaborate with their supply chain partners, while 46 per cent of South African firms are partially managing to successfully collaborate and fully exploit aligned incentives within their supply chains (Imperial Logistics 2013:15; Price Waterhouse Coopers 2013:11). However, South African FMCG firms are attempting to design and manage their supply chains to be customer focused, but there is a large variation in the implementation and success thereof (Imperial Logistics 2013:15). The other prescribed solution to the ever-occurring problems is having fully integrated, agile and flexible supply chains (Sherehiy, KarwowskI & Layer 2007: 445; Govender, Niemann, Meyer. & Kotze 2018:1766; Delloite 2021:23; Muller, Hoberg & Fransoo 2022:2). Thus, this endeavour would allow FMCG companies to measure the successful implememtation of the supply chain strategies in their respective organisations. This clearly shows that SCM implementation in the FMCG industry with regards to supply chain strategy and SCF still lags behind. Hence, this study is intended to provide information for resolving such challenges and assisting the FMCG industry in South Africa to improve the performance of its supply chain.

Over the years, many authors have noted that SCM has advanced and stretched to include a variety of practices and elements such as competitive advantages, supplier relationships, supply chain network structure and collaboration (Lejeune & Yakova 2005:81; Sandberg 2007:274; Narasimhan, Kim & Tan 2008:5231; Du Toit & Vlok 2014:27; Boyce, Mano & Kent 2016:1; Maat, Syamsu, Armayah & Musram 2020:2). Although some research projects have explored the drivers of SCP, much still needs to be investigated and understood about this subject. Most studies on SCP have been conducted in developed countries with a few being germane to African countries. With the exclusion of some developing countries such as Turkey and Bangladesh, one infrequently comes across studies on SCP that are based on developing countries (Sezen 2008:57;

Rashed, Azeem & Halim 2010:87). It is apparent, therefore, that there is a need for more research on SCP within the scope of African business organisations, in this case the FMCG industry.

It has been observed by some researchers (Roll 2010:5; Tipu & Fantazy 2014:401) that there are very few studies on SCF and even fewer studies emphasising the relationship between SCF and performance. However, Fantanzy, Kumar and Kumar (2009:177) examined the relationships between strategy, SCF and SCP. In addition, Roll (2010:8) researched supply chain relationships strategy, flexibility and SCP. However, there is scant evidence that any such studies have been narrowed down to specific linkages of innovation, organisational learning, risk management, customer orientation, and supplier-integration strategy and linked to SCF and SCP.

Moreover, Tipu and Fantazy (2014:399) examined supply chain strategies, flexibility and SCP and delineated only three supply chain strategies, namely, innovation, customer-oriented and supplier-integration strategy. Still, one can rarely find studies that investigated the relationships between supply chain strategy, SCF and SCP, directing attention to organisational learning strategy, risk management strategy and supplier-integration strategy within the FMCG industry. The absence of such literature makes this study more significant in addressing such a research gap. The subsequent section outlines the objectives of the study.

1.3 OBJECTIVES OF THE STUDY

The following objectives have been formulated for the study:

1.3.1 Primary objective

The purpose of this study is to investigate the relationship between supply chain strategy, supply chain flexibility (SCF) and supply chain performance (SCP) in the FMCG industry in Gauteng province.

1.3.2 Theoretical objectives

In order to achieve the primary objective, the following theoretical objectives were formulated:

1) To conduct a literature review on the FMCG industry;
2) To analyse the literature on supply chain strategy and its sub-components such as organisational learning, risk management, customer-oriented strategy and supplier-integration strategy;
3) To conduct a literature review on supply chain flexibility (SCF); and

4) To conduct a literature review on supply chain performance (SCP).

1.3.3 Empirical objectives

The following empirical objectives were formulated in support of the primary and theoretical objectives:

1) To determine the implementation of supply chain strategies, namely innovation, organisational learning, risk management, customer orientation and supplier integration in the FMCG industry in Gauteng Province.
2) To determine the level of flexibility of the FMCG supply chain in Gauteng Province
3) To establish the performance of the FMCG industry in Gauteng Province using subjective financial and non-financial indicators.
4) To examine the relationship between supply chain strategy and supply chain flexibility (SCF) in the FMCG industry in Gauteng province.
5) To determine the linkage between supply chain flexibility (SCF) and supply chain performance (SCP) in the FMCG industry in Gauteng province.

The next section presents the conceptual framework:

1.4 CONCEPTUAL FRAMEWORK

Figure 1.1 outlines the conceptual framework for the study, which comprises supply chain strategy(s), innovation strategy, organisational learning strategy, risk management strategy, customer-oriented strategy and supplier-integration strategy, SCF and SCP. Both non-financial performamnce (NFP) and financial performance (FP) measures were included to differentiate between the two types of performance measures.

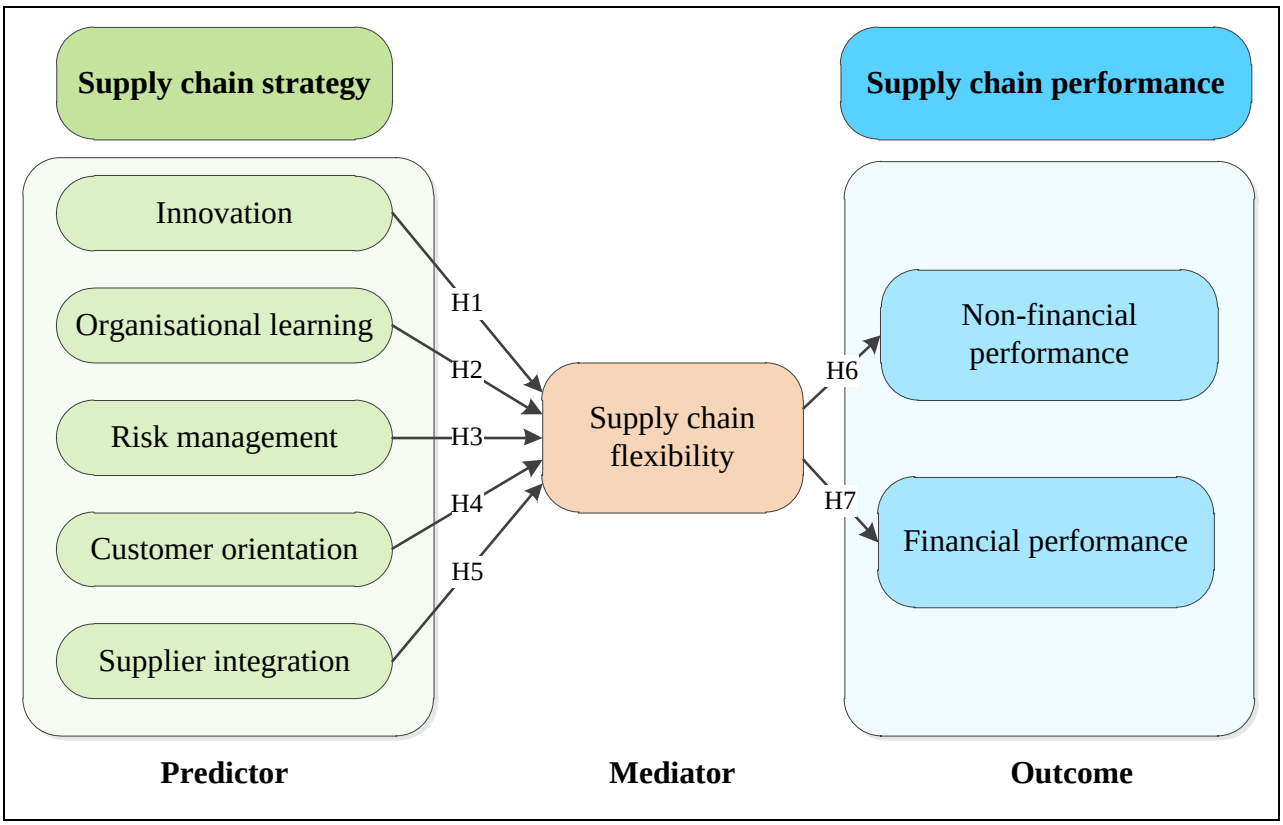

Figure 1.1: A detailed conceptual framework

Source: Compiled by author

The next section highlights the research hypotheses of the current study.

1.5 RESEARCH HYPOTHESES

The following are the research hypotheses for this study:

H1: Innovation strategy has a significant positive influence on supply chain flexibility (SCF).

H2: Organisational learning has a significant positive influence on supply chain flexibility (SCF).

H3: Risk management strategy has a significant positive influence on supply chain flexibility (SCF).

H4: Customer-oriented strategy has a significant positive influence on supply chain flexibility (SCF).

H5: Supplier integration has a significant positive influence on supply chain flexibility (SCF).

H6: Supply chain flexibility (SCF) has a significant positive influence on non-financial performance (NFP)

H7: Supply chain flexibility (SCF) has a significant positive influence on financial performance (FP).

The next section outlines and explains the theoretical framework underpinning the study.

1.6 THEORETICAL FRAMEWORK AND LITERATURE REVIEW

1.6.1 Research theory

In the past, there were burning arguments on whether resource-advantage (R-A) theory or resource-based view (RBV) is an appropriate grounding theory for SCM (Hunt & Davis 2008:11 2012:14; Barney 2012:5; Priem & Swink 2012:07). However, to obtain an adequate background and structure for this study, the RBV will be employed as it can be used as a basis for the development of the supply chain strategy taxonomy (McKone-Sweet & Lee 2009:04; Thoo, Sulaiman & Zakuan 2017:3). It is worthy to note that the RBV theory of the firm has been one of the pillars of management studies for the past 3 decades and it assumes effective management of business critical resources is one of the key features to create a company's sustainable competitive advantage (Barney 1991:5; Wernerfelt 1984:171). The RBV theory further presupposes that the heterogeneity of a firm's resources mainly accounts for its superior returns (firm performance) (Kraaijenbrink, Spender & Groen 2010:351).

It further advocates that a firm's competitive advantage is a result of the mixed resources (Battisti, Nirino, leanidou & Thrassou 2022:1058) and capabilities owned and controlled by that individual firm (Kraaijenbrink *et al*. 2010:350). As indicated by Barney and Hesterly (2015:86), resources can be the assets, processes, information and knowledge that aid a firm to develop and deploy different strategies to upsurge efficiency and effectiveness of an organisation. Recent studies that adopted and quoted the RBV theory have been largely supportive of its predictive power on overall performance (Nason & Wiklund 2018:35). Hence, it is quoted in the current study and applied to predict the influence of the adopted supply chain strategies on flexibility and subsequently supply chain perfomamnce. Additionally, innovation , risk management, organisational learning, customer-orientation and supplier-integration are some of the key elements of organisational culture and are, therefore, considered to be resources as they contribute to a firm's competitive advantage (Terziovski 2010:895; Cheng, Yang & Sheu 2014:83; Wang 2014:392; Wang, Huo, Qi & Zhao 2016:416).

1.6.2 Supply chain strategies

A supply chain strategy is part of the overall corporate strategy intended around a well-defined basis of competition such as innovation, low cost, service and quality (Hugo, Badenhorst-Weiss & Van Biljon 2011: 22; Chinna 2016:2; Jajja, Kannan, Brah & Hassan 2016:1658). It is entirely

integrated with marketing strategy, customers' needs and product strategy, and influences the position of the firm (Hines 2013: 33; Klemencic Fry, & Hooper 2006: 571; Hugo *et al*. 2011: 22; Tipu & Fantazy 2014:401). Supply chain strategies are a critical backbone to the success of most contemporary organisations and play an important role in achieving a sustainable advantage (Hines 2013: 32; Chinna 2016:2). In this study, five supply chain strategies, namely, innovation, organisational learning, risk management, customer orientation and supplier integration are considered.

1.6.2.1 Innovation

Innovation is defined by Szutser and Szymczak (2016:26) as a strategic change in the firm that is characterised by the following elements: relative advantage, compatibility, complexity and observability. Authors such as Day (2011:186) and Bayene, Shi and Wu (2016:127) agree with the notion that firms that are relentlessly pursuing the innovation strategy usually allocate adequate research and development resources, acquire new technology and accumulate better human resource competence. Such capabilities and competences are very difficult for competitors to imitate and have a significant long-term influence on innovation performance of a firm (Bayene *et al*. 2016:127; Zhang 2022:2). This is theoretically supported by the assertions of the RBV theory. Therefore, innovation remains important in the FMCG industry as it can be utilised as a resource that can be very difficult for rivals to duplicate and could contribute to an enterprise's competitive advantage, flexibility and SCP.

1.6.2.2 Organisational learning

Organisational learning is defined by Ojha, Acharya and Cooper (2018:219) as a process of learning new procedures and techniques to accomplish various tasks to enhance the performance of the supply chain. Learning across organisations, or inter-organisational learning (IOL), leads to new insights and understandings that jointly emerge through the collaborative sharing of information and knowledge between multiple entities in a supply chain (Flint, Larsson, Gammelgaard & Mentzer 2005:118; Janezic, Dimovski & Hodoscek 2018:57; Rehman, Bhatti & Chaudhry 2019:6). Furthermore, organisational learning strategy enables supply chain executives to learn conjointly how to syndicate capabilities and processes to achieve a competitive advantage by continually creating value for the final consumer (Manuj, Omar & Pohlen 2014:103; Gomes, Seman & Carmona 2022:3). Academics, scholars and practitioners have long agreed that organisational learning contributes to organisational competitiveness (Yang, Secchi & Homberg 2018:155). Moreover, organisational learning often leads to strategic information sharing within

the supply chain network, which helps in terms of anticipating changes and uncertainties, which in turn, offers greater levels of flexibility in the supply chain network.

1.6.2.3 Risk management

Risk management in the field of SCM is defined as the difference in the distribution of possible supply chain consequences, their likelihoods, and their distinctive values (Colicchia, Dallari & Melacini 2010:68; Diehl & Spinler 2013:313). These risks are unforeseen occasions caused by human or natural factors, which minimise the performance of the supply chain (Yi, Meng, Zhang & Li 2013:75). The Risk Management Institute of Australia (2016:3) highlighted that one of the risks faced by firms with respect to effectively managing their supply chain is failure to undertake satisfactory due diligence on firms before appointing them as a supplier. It was reported that, on average, the percentage of companies around the world reporting a loss of income due to a supply chain risk increased from 28 per cent in 2011 to 42 per cent in 2013 (Saenz & Revilla 2014:22). This clearly shows that supply chain risk management should be viewed as a corporate-level concern with strategic importance.

1.6.2.4 Customer orientation

Customer orientation is defined by Smirnova, Rabianzina and Frosen (2018:457) as a set of beliefs that establishes customers' requirements and satisfaction as the main priority for an enterprise. Since the customer is the ultimate judge of SCP, effective and timely responses to ever-changing consumer tastes and preferences have become crucial mechanisms for successful business performance (Jeong & Hong 2007:578; Priem & Swink 2012:07). A customer-oriented enterprise, therefore, is considered an enterprise that highly depends on its present and future customer needs (Wang & Chung 2013: 2432) and has advanced its abilities to sense events and trends in their customer base (i. e., customer sensing) and to respond to that information (i. e., customer responsiveness) (Ziggers & Henseler 2016:19; Wang, Zhao & Voss 2016: 228; Sun, X & Zhang 2021: 744). The ultimate rationale of having customer orientation as a strategic weapon is that it allows the organisation to emphasise seeking supply chain opportunities and constraints from the perspective of customers in order to create value for potential customers (Satgunalingam, Abeysekera & Fernando 2017:29).

1.6.2.5 Supplier-integration

Supplier integration is defined by Wang *et al.* (2016:420) as the extent to which a firm collaborates with its key suppliers to meet the requirements of its customers by modelling inter-organisational structures, strategies and practices into collaborative and synchronised processes. It is generally

well acknowledged that supplier integration can produce knowledge and assets difficult to gain otherwise, and is thus vital for achieving competitive advantage (Danese 2013:1029). Supplier-integration facilitates the sharing of corresponding resources and information within the supply chain network, as well as essential tacit knowledge produced by collaborative relationships and joint improvement efforts (*ibid*). A collaborative advantage is important, given the fact that organisations form part of a larger network or relationship that, to a large extent, determines the scope of activities and competitive advantage (Ogunlela & Lekhanya 2016:162; Afshan & Motwani 2021:139) and greater levels of SCF (Danese 2013:1033).

1.6.2.6 Supply chain flexibility

Flexibility is the firm's ability to change or react to environmental uncertainties and exceed the growing variety of consumer expectations without excessive budgets, time and performance losses (Manders 2009:20; Moon, Yi & Ngai 2012:191; Tachizawa & Gimenez 2012:214). Furthermore, SCF is broadly concerned with the ability to discover significant supply chain resources speedily in an endeavour to sustain competitive advantage. A supply chain is said to be flexible if it can ensure the smooth and undisrupted flow of the products from suppliers to the end customer under all risks and uncertainties in the environments, with the least variation in the difference between the demand and supply at every demand-supply node and without much penalty or impact on the supply chain resources and the costs incurred (Tiwari, Tiwari, Samuel & Bhardwaj 2013a:212). Vickery, Calantone and Droge (1999:16) assert that a key dimension of SCP is flexibility. Flexibility has become increasingly important over the past few years in the FMCG industry because retailers and wholesalers have downsized their inventory positions, and therefore their firms must be flexible to cope with rapid changes in their environments (Manders et al., 2016:186).

1.6.2.7 Supply chain performannce

SCP is defined as the ability of the supply chain to deliver quality products and services in the right quantities and at the right time and finally to minimise total cost of the products and services to its customers of the supply chain (Green, Inman, Brown & Willis 2005:276; Ambe & Badenhurst-Weiss 2012:11006). There is an ongoing general consensus in the literature that organisations no longer compete amongst themselves but contend through their supply chains (Wu *et al*. 2014:122; Yusuf, Gunasekaran, Musa, Dauda, El-berishy & Cang 2014:531; Spina *et al*., 2015:55). SCP is increasingly acknowledged as an integral aspect in achieving an organisation's competitive advantage (Sezen 2008:233; Boston Consulting Group 2010:1).

The process of achieving a sustainable competitive advantage requires firms to integrate processes towards satisfying the requirements of the final consumer through displaying superior performance (Ramanathan 2014:210). For the purpose of this study, both the subjective financial performance measurement and subjective non-financial performance measurement are considered (Tipu & Fantazy 2014:403). Supply chain financial performance measures include net profit performance and sales growth performance. Profitability and sales growth are the two most popular types of performance indicators used in the FMCG industry (Fantazy, Kumar & Kumar 2009:183).

Furthermore, operational indicators such as reduced operational and labour costs are also considered when quantifying the financial performance of a firm. On the other hand, non-financial performance indicators include customer satisfaction performance, and lead-time performance (Fantazy *et al*. 2009:183). Moreover, service systems and service systems are also one of the variables that are used to measure non-financial performance of a supply chain. The subsequent section discusses the methodological procedure followed in the study.

1.7 RESEARCH METHODOLOGY

At present, there are three different, well-known and recognised methods to research, namely, the qualitative, quantitative and mixed methods. However, this study followed a quantitative method of data collection and analysis because it is the type of methodology that suited the type of questionnaire structure designed to collect its data (Kumar 2014:178). A survey design was used because it allowed for the systematic and structured collection of information from respondents in a direct and open manner through the use of a questionnaire.

1.7.1 Literature review

In order to achieve the aim of this study, a literature study on the research constructs, namely, supply chain strategy, SCF and SCP was undertaken. Du Plooy-Cilliers, Davis and Bezuidenhout (2014:101) presuppose that it is crucial to conduct a review of the related literature, as this reinforces the procedure to be followed, restrict data collection to what is really of material value to the current study and help with data verification. Various sources of the literature related to the study were reviewed and other sources such as books, journals, completed theses and online information were studied to have a clear understanding of the study's concepts and their influence on each other.

1.7.2 Empirical study

An empirical investigation was conducted in order to examine and obtain an understanding of the linkages between supply chain strategy, SCF and SCP. This involved the sampling design, data collection procedures, data analysis and ethical considerations.

1.7.2.1 Sampling design

Sampling design is defined as a process of selecting a sample from a bigger group as the basis for estimating or predicting the prevalence of an unknown piece of information, situation or outcome regarding a bigger group (Kumar 2014:229; Robson & McCartan 2011:276; Cash, Isaksson, Maier & Summers 2022:3). In this study, the sampling design included the target population, sampling frame, sampling method and sampling size.

1.7.2.2 Target population

A population is the collection of elements (people or objects) about which the researcher wants to make inferences and the total group of potential respondents who could be asked to partake in the research study (Robson & McCartan 2011:276; Berndt & Petzer 2013:347). In this study, the target population consisted of supply chain professionals in the FMCG industry in Gauteng province.

1.7.2.3 Sample frame

A sample frame is a representation of the objects or people within the target population (Malhotra 2010:373; West 2016:1). Gut (2008:76) argues that a sample frame comprises a numerical identifier for each individual and other identifying information about features of the participants to help in analysis and consent for division into further frames for more in-depth analysis. No single sampling frame was used in this study since there is no single database of FMCG retailers in the Gauteng province.

1.7.2.4 Sampling method

Sampling, as defined by Berndt and Petzer (2011:349), is the process of obtaining a sample by selecting some of the elements of the population so that the researcher can draw certain assumptions about the universe. Sampling methods are divided into probability and non-probability sampling (Hair, Bush & Ortinau 2000:20; Guba 2010:73; Kumar 2014: 234). This study employed a non-probability sampling technique, since a fixed sample frame was not available. Thus, two non-probability sampling techniques, namely, convenience and purposive sampling were employed. Convenience sampling was used to identify companies in the Gauteng

FMCG industry, while purposive sampling was used to select the respondents. The non-probability techniques enabled the researcher to select cases that best enabled the respondents to answer to research questions and meet research objectives (Kumar 2014:244).

1.7.2.5 Sample size

A sample size is the actual number or size of the sample (Merkle, Layne & Zhang 2009:127; McDaniel & Gates 2013:284). There are no fixed rules in determining the size of a sample needed. In general, larger samples result in more precise and robust statistical findings, while smaller samples result in less precise and unreliable results (Terre-Blanche, Durrheim & Painter 2006:236). A sample size of 350 and more was deemed to provide an adequate representation of the companies in the FMCG industry in the major cities of Gauteng. This sample is in line with the suggestion by Hair, Babin, Anderson and Tatham (2010:50) that where multivariate data analysis techniques such as structural equation modelling (SME) are being used, a large sample of more than 100 cases will be sufficient to obtain reliable results. Therefore, 350 questionnaires were distributed among supply chain professionals in the FMCG industry although only 228 of the 350 self-administered structured questionnaires were used in the study.

1.7.3 Method of data collection

A quantitative research approach explains the phenomena by collecting numerical data that is analysed using mathematically based methods (Muijs 2011:1). Therefore, a survey method was used to determine appropriate data through distributing questionnaires among respondents. Structured questionnaires were distributed to respective firms within the FMCG industry after making appointments with the different practitioners or managers. The questionnaire was divided into five sections. Its items were measured on a five-point Likert-type scale, anchored by one (1) denoting strongly disagree to five (5) denoting strongly agree, which denotes the degree of agreement or disagreement to statements. The number one (1) denotes much lower than the industry average while five (5) is much higher than the industry average.

The measurement scales represented the eight constructs, namely, innovation strategy, organisational learning strategy, risk management strategy, customer-oriented strategy, supplier integration, SCF, supply chain financial performance and supply chain non-financial performance. The study also incorporated questions on employee profiles such as gender, age and marital status of respondents (Jung & Yoon 2012:377). For the list of the measurement scales and the sources of the questionnaire items, refer to chapter 4(Section 4.9.3).

1.7.4 Statistical analysis

In order to achieve the objectives of this study, the collected questionnaires were submitted to a statistician for statistical analysis. The Statistical Package for Social Sciences (SPSS), version 27.0 for Windows as well as the SMART-PLS 3.3.5 was used to analyse the data. Descriptive statistics were used to analyse the respondents' demographic information as well as their perceptions towards the questions. Furthermore, SEM was used to test the relationship between the constructs after performing exploratory factor analysis (EFA) and confirmatory factor analysis (CFA) to test for the accuracy of the measurement scales. Section 1.8 discusses reliability and validity measures used in the current study.

1.8 RELIABILITY AND VALIDITY

Reliability is the degree to which a test or an instrument produces the same results under constant conditions (Bryman & Bell 2007:98). Cronbach alpha and composite reliability was used to test for reliability. The required threshold should be greater than 0.7 (Hair, Anderson, Babin, Tatham & Black 2006:134). Validity is the degree to which an instrument measures what it is supposed to measure (Bryman & Bell 2007:98). Discriminant validity was tested using inter-construct correlations, which should less than 1.0. Convergent validity was established through factor loadings and the average variance extracted (AVE). All factor loadings must be more than 0.5 and the minimum AVE must be 0.4 to show acceptable convergent validity. Model fit was established using the chi square test, d_ULS (unweighted least squares), d_G(geodesic distance), the normed fit index (NFI), and the standardised root mean square residual (SRMR). The model fit assessment is discussed into greater details in Chapter 4, Section 4.11.4.4. The next section presents the ethical conduct governing the study.

1.9 ETHICAL ISSUES

Ethics refers to a set of moral principles or guidelines that clarify the conditions under which the research is conducted (Oates, Kwiatkowski & Coulthard 2010:04). The following ethical issues relevant for a study were adhered to:

- Participation in the study was voluntary. Respondents were not be forced to participate in the study.
- Personal data of participants were administered fairly and lawfully and used only for the purpose of the study.

- Personal responses from individuals were not disclosed to any individual. All data were computed in aggregate and were not disclosed to any respondent.
- The questionnaire did not contain sensitive questions such as the names of respondents; anonymity of respondents was preserved throughout the study.
- Professional competence in the data collection and analysis was retained.
- Independent objectivity in the interpretation of the research results was upheld.

The following section provides a classification of the chapters discussed in the study.

1.10 CHAPTER CLASSIFICATION

Chapter 1: Introduction and background to the study

This chapter provides an overview and background as well as the objectives and hypotheses of the study. An abbreviated literature review is also provided. The research methodology is briefly discussed.

Chapter 2: Literature review: FMCG industry

This chapter provides a detailed overview of the FMCG industry, which comprises its background, characteristics, product categories within the industry and, lastly, its contribution to the South African economy and the challenges it faces.

Chapter 3: Literature review: theoretical perspectives and research variables

This chapter focuses on the theories used to explain the relationships between the research variables adopted for this study. Research variables, namely, supply chain strategy, SCF and SCP are explained. The conceptual framework as well as the development of hypotheses are discussed.

Chapter 4: Research methodology

The design and method of research utilised in the study is emphasised. Sampling methods, methods of data collection, data collection and ethical considerations are also elaborated in greater detail.

Chapter 5: Analysis of the research findings

In this chapter, the results of the research are presented, interpreted and analysed.

Chapter 6: Conclusion and recommendations

This chapter presents some concluding remarks of the study and offers some recommendations for the FMCG industry. The limitations and implications for further study are discussed.

1.11 CHAPTER SUMMARY

This chapter is the blueprint of the entire research project as it sets the tone of all the chapters. It provided a detailed background of the study. The problem statement that triggered the need for this research was outlined and presented. Furthermore, the methodological procedures followed was also explained. Moreover, the ethical issues that governed this research project were outlined.

CHAPTER 2
THE FAST-MOVING CONSUMER GOODS INDUSTRY IN SOUTH AFRICA

2.1 INTRODUCTION

The previous chapter gave a detailed background of the study. Main concepts such as supply chain strategy, flexibility and performance were presented and explained. Furthermore, an overview was provided on the research methodology and design. This chapter is on the South African FMCG industry. Primarily, it explores the fast-moving consumer goods industry to gain an in-depth understanding of the industry. It outlines its historic background as well as its composition and discusses the contributions of the industry to the economy of South Africa and the constraints it faces. It discusses previous research on supply chain management, focusing on the FMCG industry. The subsequent section reviews literature on the industry.

2.2 UNDERSTANDING THE FMCG INDUSTRY

The fast-moving consumer goods (FMCG) industry, also called the consumer-packaged goods (CPG) sector, is pronounced as the largest industry worldwide, being rapid and responsive and handles a wide range of product segments, including personal care, packaged food, spirits and tobacco, household care, groceries, and dairy products (Bala & Kumar 2011:23; Kärkkäinen 2003:529; KPMG 2014:4; Mohammed 2015:31; Mehra 2017:575). The concept "fast-moving" originates from the fact that FMCG products customarily have a short shelf life and are non-durable (KPMG 2016:1; Saqib 2017:438). Additionally, the characteristics of its products were unique to the industry as there are non-durable, branded, packed and consumed every month directly and ultimately by the customer (Beneke & Carter 2014:2; Srinivasu 2014:4; KPMG 2016:1). This is encapsulated by Unilever (2007:5), a leading organisation in the FMCG industry, which quantified that "150 million times a day, in 150 countries, people use our products at key moments of their day". Moreover, universally, the FMCG industry has been successful in selling its products to the lower and middle-income individuals (Kavitha 2012:23).

The FMCG sector is one of the most volatile industries to operate in, with an over-abundance of contestants fighting for survival (Flowers, Parker, Arenz, Gaffley, Greighton, Fredricks, Rasdien, Matthews, Pietersen, & Smit 2012: 2120). Examples of companies operating in the FMCG industry are presented in Figure 2.1.

Figure 2.1: Leading Fast Moving Consumer Goods Multinationals

Source: Kumar. Sharma and Bhat (2014:31)

As shown in Figure 2.1, some of the renowned companies within the FMCG industry are Nestlé, Unilever, Procter & Gamble, Coca-Cola, SABMiller, Kellogg's, Checkers, Danone, British American Tobacco, Kraft, and Johnson & Johnson (KPMG 2016:1). From a retailing standpoint, the FMCG industry is habitually quoted as a low margin – high volume industry (KPMG 2014:1; KPMG 2016:1). Another significant characteristic of the industry is that it mostly does well in an economic downturn, with customers rather cutting back on luxury products (KPMG 2014:1).

The FMCG industry has grown from US$31.6 billion in 2011 to US$ 49 billion in 2016 and is further expected to grow at a Compound Annual Growth Rate (CAGR) of 20.6 per cent to reach US$ 103.7 billion by 2020 (Jayanthi 2017:91). In Africa, however, the FMCG industry has the potential to expand with food and other necessities dominating consumer budgets (KPMG 2014:1). Furthermore, the Consumer Packaged Goods (CPG) sector has become a major industry that the African countries have turned to as an expanse of focus for its economic growth (NPI Governance Consulting 2017:3). Section 2.3 reviews literature in the key growth drivers in the FMCG industry.

2.3 KEY GROWTH DRIVERS IN THE FAST-MOVING CONSUMER GOODS INDUSTRY

This section discusses the key growth drivers in the FMCG industry. These drivers include buying habits, economic policies and legislation, technology, infrastructure and demographic changes.

2.3.1 Buying Habits

Since companies in the FMCG usually have similar product categories, retailers have to compete on the basis of price and attempt convince shoppers to purchase their products rather than that of a competitor to sustain market share without necessarily having to offer products at lower prices (KPMG 2014:5). Fortunately, products in the FMCG industry frequently enter the consumer market at very low rates and as a result, spending power has to be fairly low for the majority of product categories to be pronounced as being unaffordable. This being the case, income levels will influence the frequency of household purchases as well as the purchasing decisions relative to the trade-off between cost and quality (KPMG 2016:3). Therefore, competition in this sector can be neutralised by increasing brand awareness and by reducing cost through sharing resources such as distribution networks (Patil 2016:173; FMO 2018:9).

2.3.2 Economic Policies and Legislation

A country's economic policies, quality of institutions and prevailing legislation possesses momentous implications for the FMCG industry in general (KPMG 2016:4). Multiplicity trading permits and licenses for a number of countries, prevailing outdated labour laws, and cumbersome and lengthy export procedures are major restrictions in the industry (Patil 2016:172). In South Africa, however, there are some hindrances, including unyielding labour policies that weaken growth prospects to an unexceptional level (Price Waterhouse Coopers 2016:73; Price Waterhouse Coopers 2018:67). With that being said, economic policies and regulations play a pivotal role in the fast-moving consumer goods sector as they determine the way in which they are going to conduct their business and profitability. For instance, the Indian government recently passed policies aimed at achieving international competitiveness through the increase of quantitative restrictions and reducing excise duties, which will improve the Indian industry's economy as it is estimated that the sector would gain USD15 billion a year by implementing the Goods and Services Tax (Saqib 2017:448).

2.3.3 Technology

The harnessing power of technology has increased demand for consumer goods, particularly in rural areas (FMO 2012:6). Furthermore, e-commerce will improve the FMCG industry's sales in the near future and more than 150 million consumers would be influenced by digital by 2020 and they would spend more than $45 billion on FMCG categories (Patil 2016:172). In addition, it was projected that 40 per cent of all purchases in India would be conducted electronically by 2020, thereby making it a US$ 5-6 billion business opportunity (India Brand Equity Foundation

2018:29). Furthermore, Economic Times (2018:2), reported that global online grocery purchasing was up 15 per cent in the previous two years, leading to an estimated USD 70 bn of additional sales in online FMCG segment. Moreover, e-commerce's contribution to the total FMCG sales is expected to upswing to 11 per cent by 2030, from currently projected at 1.3 per cent after having grown from 0.4 per cent to FMCG sales in 2016 (Nielsen 2014:8).

2.3.4 Infrastructure

The quality of a country's economic development is underpinned by a vast infrastructure of roads, power supply, and other assets (Wall 2007:27; Price Waterhouse Coopers 2018:27). However,, poor roads and untrustworthy transport systems have an adversarial impact on costs and uncertainties. For instance, non-availability of effective infrastructure may impact certain product categories in the cold chain significantly, even if provisions are made for it in terms of infrastructure, with ineffective power supply still contributing to its uncertainty (Chinna 2016:4). Improving a country's infrastructure should be one of the government's top priorities as it plays a pivotal role in making sure that there is an efficient and effective flow in the FMCGs supply chain, both domestically and globally.

2.3.5 Demographic changes

Demographic transition has been a key growth driver of the FMCG sector globally, with the increase in income and a young population likely to instigate consumption and economic growth in the coming decades (Saqib 2016:442; Price Waterhouse Coopers 2018:7). According to the World Bank (2018:1), Africa's median age was 19.7 years in the year 2012, and it is likely to increase to 25.4 years in 2050, making Africa the continent with the youngest population in the world. More so, when the labour force grows more swiftly than the population, resources become available for further investment in economic development and personal consumption, which offers an opportunity for rapid economic growth (Price Waterhouse Coopers 2018:7). Conversely, fluctuations in income levels are, however, still important in order to determine the types of products the FMCG industry can offer to a specific market. Last but not least, over time, enterprises in the FMCG industry would want to benefit from transferences in consumer spending arrays as their income increases, so a high growth market is still preferable (KPMG 2016:4). The next section reviews literature on the historic background of the South African FMCG industry.

2.4 HISTORICAL BACKGROUND OF THE FAST-MOVING CONSUMER GOODS INDUSTRY IN SOUTH AFRICA

Fast-moving consumer goods are one of the largest sectors in the economy, which contributes substantially to the gross domestic product (GDP) of the Republic of South Africa (RSA) (Mvubu & Naude 2016: 274). This sector was established in 2002 and embodies more than 12 000 multinationals in South Africa across the value chain of consumer goods and is governed by the Consumer Goods Council of South Africa (CGCSA) (Consumer Goods Council of South Africa 2015:1). Furthermore, the South African consumer packaged goods (CPG) sector is extremely volatile and is characterised by many competitors that are rivalling for market share, profitability and long-term survival (Mafini & Loury-Okoumba 2015:1).

Moreover, the South African FMCG industry is an important and fast-growing sector, which accounts for over 1,080,000 firms operating within the sector (KPMG 2015:2). This being the case, it is anticipated that over 20 000 new FMCG establishments would have entered this enormous and ferocious sector of the economy by 2020 (Price Waterhouse Coopers 2016: 4). In South Africa, the FMCG industry is dominated by firms such as Pick' n Pay, Shoprite Checkers, Woolworths, OK Stores, SPAR, Kraft, Unilever, Procter, Colgate-Palmolive, SABMiller, NESTLE, Johnson & Johnson, Danone, Kellogg's, British American Tobacco and many others.

In terms of role players, the South African FMCG food and grocery space is conquered by the four major chains: Woolworths, Spar, Pick n Pay, and Shoprite (NPI Governance Consulting 2017:7; Mathu & Phetla 2018:4). The South African FMCG and most of the leading retail entities that have a network of stores across the country, operate in complex, turbulent and highly competitive supply chains (Bala & Kumar 2011:23; Fastmoving Newsletter 2017:1). Last but not least, the South African FMCG industry remains the "entryway" to Africa with its well-developed agriculture, food, beverages and retail markets, although the instability of the rand has engineered an increased in prices of a number of goods and placed the FMCG sector in a position where it must configure the balance between maintaining profit margins while still making foodstuffs affordable to financially hampered customers (NPI Governance Consulting 2016:6). The following section outlines and describe the different segments of the South African FMCG industry.

2.5 COMPOSITION OF THE FAST-MOVING CONSUMER GOODS INDUSTRY IN SOUTH AFRICA

This section discusses the composition of the FMCG industry. It concentrates on clusters such as food and beverages, personal and homecare, dairy, alcohol and tobacco. The following sections will explain the different clusters of the fast-moving consumer goods into greater detail:

2.5.1 Food and beverages cluster

This segment comprises the food processing industry, health beverage industry, bread, biscuits, chocolates and confectionery, mineral water and ice creams (Mehra 2017:576). The three largest consumed categories of packaged foods are packed tea, biscuits and soft drinks. The South African food processing industry is subjugated by a few very large, diversified, national and multinational food manufacturers, although there are over 1800 food production companies (Statistics South Africa 2017:5). South Africa's key players in the food processing sector include national and multinational enterprises such as Tiger Brands, AVI, Premier Foods, Pioneer Foods, FoodCorp, First SA Foods, Nestle, Clover SA, Parmalat SA, Rainbow, Kellogg's SA, and South African Breweries (SAB) (Flanders Investment and Trade Market Survey 2015:10; Adams 2016:20).

The food processing industry is composed of enterprises devoted to the transformation of raw materials and semi-finished products emerging from primary activities such as agriculture, zoo technics, forestry and fishing into finished products (Cousins & Scoones 2014:25). The largest production sectors in the food processing industry include milling, brewing, confectionery, animal, baking, soft drinks, vegetable oils, fish, dairy products, sugar, fruits and vegetables, liquor production, wineries and the bottling of natural spring and mineral water and meat-processing (Cassim 2010:184; Steyn & Labadarios 2011:463). The food processing industry accounts for 18% of manufacturing sales (food = 13.2%, beverages = 4.9%), 17 per cent of gross value added in the manufacturing sector and employs approximately 14.5 per cent of the total labour force (Statistics South Africa 2017:6).

The South African retail food sector is sophisticated and developed, compared to other markets on the African continent, with five major locally owned companies dominating the sector, operating warehouses, wholesale outlets, hypermarkets, supermarkets, and convenient stores nationwide (Global Agricultural Information Network Report 2017:6). The food sector accounts for the largest fragment of the South African manufacturing industry. More so, partnerships and associations with other international entities have seen trends in the food industry, aiding it to gain

access to new state-of-the-art technology and expertise, while allowing foreign companies to gain access into the South African market.

The South African beverage industry, on the other hand, supports 32 autonomous micro-breweries, but continues to be dominated by South African Breweries (SAB) with a market share of nearly 90 per cent through its South African Breweries unit, with competition coming from Heineken and Diageo, while the soft drink industry is conquered by Coca-Cola, that operates through Amalgamated Beverages Industries (ABI) (WESGRO 2018:2). Soft drinks are projected to be the largest sales category in South African beverage sector, reaching ZAR16.6bn in 2020, followed by alcoholic beverages at ZAR16.4bn (Business Monitor International 2016:1). The soft drinks industry is conquered by carbonates, with Coca-Cola leading the way. In addition, SABMiller-owned Amalgamated Beverage Industries (ABI) accounts for around 60 per cent of Coca-Cola's sales in South Africa (WESGRO 2017: 6).

However, outmoded carbonates remain the most popular and affordable drinks among South Africa's low-income mainstream, which inclination is set to be challenged by the growth of health consciousness and rise of the non-carbonates sector, specifically fresh juices, bottled waters and energy drinks (Euromonitor International 2016:1).Furthermore, fruit juices and bottled water are anticipated to perform stalwartly through to 2016 with 18.5 per cent and 15.7 per cent value growth, boosted by increases in health-consciousness and investment into marketing (WESGRO 2017:8). Although carbonates continue to play a fundamental role in driving growth in the wider soft drinks industry, fruit juices and bottled water are anticipated to achieve a very strong performance as the wider soft drinks industry continues to segment (Euromonitor International 2016:1).

The beverage industry is not limited to carbonates but extends to hot drinks. The hot drinks sector is dominated by local affiliates of multinationals such as Nestlé, with the Nescafe range, and Unilever (with Joko, Glen and Lipton tea) (WESGRO 2016:7). Furthermore, the hot drinks sector in South Africa is the most developed on a regional basis and recent economic crisis has compelled the industry to prioritise more economically priced brands, even though volume growth has continued to be auspicious (SAWIS 2016:2). The hot drinks industry total exports in the year 2016 was black tea (fermented) and other partly fermented tea and its total value was approximately ZAR2m (WESGRO 2016:14).

2.5.2 Home and personal care cluster

The South African Personal Care industry comprises products that the population purchases to use generally on a daily basis, such as body lotions, soap, toothpaste, perfumes, skin care products, shampoos, essential oils and other ingredients that make up beauty products (Starkey 2017:5; KPMG 2016:8). Moreover, beauty and wellness products are predominantly non-durable goods purchased by consumers for immediate or almost immediate consumption and have a life span ranging from minutes to three years (WESGRO 2015:3). In South Africa, the personal care sector is conquered by companies such as Avon, Unilever, Garnier, L'Oreal, Nivea, Oil of Olay and Ponds (Mashavha 2016:14; Starkey 2017:5). Multinationals in the personal care sector typically sell their products to mass merchants, grocery stores, membership club stores, high-frequency stores, distributers, and e-commerce merchants. In addition, companies in this sector compete heavily on brand awareness, product quality, performance, pricing, and packaging.

South Africa is home to a number of multinationals in the personal care and wellness sector, with a strong push by local key players to establish competitive house brand products offering prominent price competition to the global key players (WESGRO 2015:3). Beauty and personal care products play a prominent role daily in health and hygiene, which also aids consumers simply to look good and feel more confident (Cosmetics Europe 2017:4). In addition, personal care, professional cleaning and hygiene products are an essential part of the lives of every individual although their public benefits are, however, easily overlooked (Huggard Consulting Group 2016:4).

More than nearly any other FMCG sector, the beauty and personal care sector is steered by trends and over the last few years, numerous trends have materialised with the promise that they will redefine the future of beauty (Nielsen 2018:2). Furthermore, the personal care sector is rapidly changing, based on a number of megatrends, which have an adverse impact on both the manufacturers and the chemical enterprises that supply ingredients (KPMG 2016:10). The megatrends include but are not limited to deflationary economics, better informed consumers, regional demographics, more products and shorter product cycles (KPMG 2016:10)

Notwithstanding a plausible downturn in disposable income following a cumulative 0.5 percentage point increase in the key repo rate to 6.25 per cent in the year 2015, the value of cosmetics and personal care sales equalled ZAR 45,058m in 2013, up from ZAR 40,593.9m in 2014 (Eouromonitor International 2016:1). Furthermore, in spite of economic headwinds, the South Africa's personal care and wellness sector remains vigorous (WESGRO 2015:4). The South African beauty and wellness sector has been one of the largest contributing sectors in the South

African economy and it was reported that it contributed US$3.9 billion globally in 2011 (KPMG 2016:8).

On the other hand, the home care industry consists of any tangible commodity purchased by individual consumers to satisfy their wants and needs on a daily basis (WESGRO 2015:3; Huggard Consulting Group 2016:6; Sustainability Accounting Standard Board 2015:1; Mehra 2017:576). Consumer goods in this segment may be durable or non-durable and include commodities such as dishwasher, bleach, air fresheners, floor polish, candles, Artificial and prepared waxes, cleaning and laundry detergents. Moreover, the South African home care sector is dominated by companies such as Unilever, Colgate-Palmolive, Procter & Gamble and Reckitt Benckiser. In the South African laundry care segment, Unilever is the clear market leader, with the enterprise accounting for around 50 per cent of all sales in terms of value and a market share of 51 per cent (KPMG 2016:13; Bosiu, Phiri & Chinanga 2017:10). Unilever is followed by Colgate-Palmolive (Pty) Ltd, Procter & Gamble and Bliss Chemicals (Pty) Ltd and other multinational with shares of 13 per cent, 8 per cent, and 28 per cent respectively. The market shares are represented in Table 2.1

Table 2.1 Laundry care market shares in South Africa

Laundry care	**2015**
Unilever South Africa (Pty) Ltd	50.6%
Colgate-Palmolive (Pty) Ltd	13%
Procter & Gamble (Pty) Ltd	8%
Others	28.4%
Total	100 %

Source: Bosiu, Phiri and Chinanga (2017:11).

In the toilet care segment, Reckitt Benckiser is the clear market dictator, thanks to its widely held Harpic brand (KPMG 2016:13). According to research conducted by Euromonitor International (2015:2), strong growth is expected for the personal care industry on the back of augmented innovation and brand diversification, as well as the constant switch from bar format cleaning products to liquid forms. In terms of spending, South African low-income households spend approximately 4 per cent of income on household consumables and 3 per cent on personal care (WESGRO 2015:6). The South African home care industry has stronger production and export capabilities, as evidenced by its export transaction in southern Africa compared to southern countries (Bosiu, Phiri & Chinanga 2017:9).

2.5.3 Dairy cluster

South Africa is the fifth largest producer of milk in the world while on the continent it is rated as the third largest producer of fresh cow milk after Sudan and Kenya (Department of Agriculture, Forestry & Fisheries 2012:5; Milk South Africa 2014:13). The South African dairy industry produces a wide range of product segments, including pasteurised and ultra-pasteurised milk, long-life milk, condensed and evaporated milk, pasteurised and UHT cream, yoghurt, ice-cream, buttermilk and butter powder, maas and fermented milk, whey and whey powder, cheese, butter and milk powder (WESGRO 2014:3). Major players in the South African dairy industry include Clover, Woodlands, Parmalat, Douglasdale dairy, Nestle, Danone, Dewfresh, farm gate dairy and many others.

The South African dairy industry comprises two subsectors, the commercial producers and large processors with commercial producers that generally sell milk to large processors to produce dairy products for distribution to retailers or for exports (Creative Consulting & Development Works 2016:11). According to Standard Dairy Agency (2014:1), the South African dairy industry has more than 37 milk processors and dairy product manufacturers are responsible for more than 85 % of dairy products in the retail market. More so, the South African dairy sector produces and sell its products to a number of retail stores across the country. The retail entities that the dairy sector sell its produces to are presented in Figure 2.2.

Figure 2.2: Top six retail firms in South Africa

Source: WESGRO (2016: 11)

As depicted in Figure 2.2, top six retail stores that the dairy industry supplies with its products are SPAR, Pick'n Pay, Shoprite, FoodCo, Game stores, Woolworths and Fruit & Veg city. The Pick n Pay Group is South Africa's second biggest supermarket retail merchant and has over 9 per cent of the retail market share with over 1,125 retail outlets in the South African food retail sector

(Global Agricultural Information Network Report 2017:8). The Pick n Pay group also has outlets across multiple retail formats and six southern African countries (Botswana, Lesotho, Namibia, Swaziland, Zimbabwe, Zambia & Ghana) (WESGRO 2015:15). In addition, 52 stores, three of which trade under the Pick n Pay brand, are operated in Zimbabwe by the group's associate, TM Supermarkets (Global Agricultural Information Network Report 2017:7). Although pick n Pay is capable of producing dairy products, it is still one of the clients of dairy enterprises.

The Shoprite group has 280 corporate and almost 40 franchise stores outside of South Africa (Shoprite 2018:3). It also has retail outlets in the following countries: Angola, Botswana, Ghana, Lesotho, Madagascar, Malawi, Mauritius, Mozambique, Namibia, Nigeria, Swaziland, Uganda, Zambia, and the Democratic Republic of the Congo (DRC) (WESGRO 2015:16). The Shoprite group is also one of the largest customers of the companies in the dairy industry and always has dairy products in their shelves, week in, week out.

Woolworths Holdings Ltd South Africa is a South African-based retail group chain that operates locally and worldwide through two subsidiaries, namely, Woolworths Proprietary Limited and Country Road (Global Agricultural Information Network 2018:10). Woolworths gratifies to the wealthiest South African customers with a resilient organic food focus and is currently growing long-life and grocery sections to attain higher basket sizes, focusing on quality and a high degree of contract farming to supply fresh products and prepared convenience foods (Euromonitor 2017:1). The company has established a strong and unique relationship with the Rhodes Food Group, where fresh milk, cream and cheese are manufactured exclusively for the enterprise (WESGRO 2014:12).

Fruit & Veg City is South Africa's largest specialist retailer and supplier of fruits, and vegetables fresh produce (Euromonitor 2016:1). The Food Lover's Market chain food retail stores are part of the Fruit & Veg City, which caters for its discerning customer and offers a wide range of fresh and gourmet foods; it has over 129 Food Lover' market stores across South Africa, throughout Southern Africa in Botswana, Lesotho, Mauritius, Namibia, Reunion, Zambia, and Zimbabwe, and even in Australia. It also has over 200 FreshStop forecourt stores at Caltex filling stations and its retail stores are serviced by a number of dairy companies with dairy products.

Spar Group Ltd is a wholesaler and distributor of grocery and non-grocery items to independent stores that operate under Spar brand (Global Agricultural Information Network 2018:8). The Spar Group Limited operates six distribution centres that supply goods and services to over 800 Spar outlets across the country, and to other SADC (South African Development Community) countries, such as Botswana, Mozambique, Namibia, and Swaziland. The Spar Group Retail

formats and brands comprise Super Spar (hypermarkets), Spar and Kwik Spar (supermarkets), and TOPS (Spar liquor stores) (SPAR 2018:1). The Spar group also relies on companies such as Clover, Parmalat, Douglasdale, Nestle, Danone, Dewfresh, Farm Gate dairy and many more companies of dairy products.

South Africa's contribution to milk production internationally remains relatively small compared to other countries because of the system of subsidies (Trade & Industrial Policy Strategies 2017:13). In regions and countries such as the European Union (EU) and New Zealand, milk is produced at lower rates to producers because of government subsidies (Department of Agriculture, Forestry & Fisheries 2012:5). Notwithstanding the higher production costs, South Africa remained a net exporter of dairy products from 2012 to 2014, with the value of exports of dairy products, mostly to France and New Zealand, amounting to R38 million in 2011 (Department of Agriculture Forestry & Fisheries 2012:5; Milk Production Organisation 2017: 27).

2.5.4 Alcohol and tobacco cluster

The South African liquor industry comprises beer, wine and spirit segments, and is characterised by high echelons of concentration where the entire market is served by a sheer handful of companies (WESGRO 2016:4). The liquor industry is subjugated by companies such as SABMiller, Distell, Origin Wines, Lourensford Wines, Heineken and Diageo and Bright World. Furthermore, the industry is subjugated by the wine and beer segments, with these sectors estimated to achieve the highest value of growth of 11.2 per cent and 8.8 per cent respectively in the year 2016 (Eouromonitor 2016:1).

The SABMiller dictates the beer industry with a market share of nearly 90 per cent through its South African Breweries division, with intense competition emerging from Heineken and Diageo. The wine industry, on the other hand, is dominated by Distell. Distell Group currently has around a 40 per cent share of South Africa's premium and super-premium wine markets. It has an annual production capacity of around 180 million litres (SAWIS 2016:3). South Africa's wine industry, based almost exclusively in the Western Cape, has a global reputation for output and quality, and all top five high-priced brands of wine all come from the Distell Group.

On the other hand, in the spirits segment only a few firms are responsible for most of the fabrication, marketing and distribution of liquor. While South Africa brags a significant number of home-made brands, for example, Amarula Cream Liqueur, or Cape to Rio cane spirit, many spirits are produced locally under international license (Distell 2017:4). According to SAWIS (2016:1), South Africans consumed a combined 4 billion litres of alcohol in the year 2015,

equalling R96.5 billion worth of alcohol, which is up from about 3.5 billion litres in 2006, worth R46.9 billion. More so, South Africa remains a beer drinking nation, with beer trades equalling R52.7 billion in 2015, with 3.1 billion litres consumed. Furthermore, 77.7 per cent of all alcohol expended in 2015 was beer, which accounts for 54.6 per cent of the market share in terms of value.

The South African beverage trade has been regarded as having a positive trade balance in the past decade, aided by a strong export performance (WESGRO 2016:11). Furthermore, in 2015 exports exceeded the ZAR 20bn that was anticipated with a trade surplus of ZAR11bn and in the very same year exports in terms of dollars declined by 10%, even though in nominal rand values the export growth proved to be positive (Quantec Research 2016:1). Despite it being the largest exporter of alcoholic beverages worldwide and producing some of the most globally recognised brands, local consumption of alcohol remains relatively low, and the eminence of the informal sector continues to be a major concern for the South African alcoholic industry.

The South African tobacco industry, on the other hand, has contributed roughly R17.2 billion in excise duties and VAT to the government in the 2015/16 financial year (Department of Agriculture, Forestry & Fisheries 2017:3). Major tobacco growing areas in South Africa are the Limpopo province, North West province, Mpumalanga, Eastern Cape and the Western Cape (Department of Agriculture, Forestry & Fisheries 2016:4). Multinationals in this industry include Limpopo Tobacco Processors, Mokopane Tobacco, Japanese Tobacco International South Africa, Mastermind Tobacco SA (Pty) Ltd, Gallaher SA, Philip Morris South Africa, British American Tobacco (BAT) and many more. However, South African tobacco industry is dictated by the British American tobacco multinational based in Cape Town. British American Tobacco South Africa is the largest cigarette producer and merchant in South Africa with its portfolio comprising the country's top six cigarette brands, such as Peter Stuyvesant, Dunhill, Rothmans, Benson & Hedges, Pall Mall and Kent (British American Tobacco 2016:1).

Furthermore, the total production of tobacco in South Africa is estimated at 15 000 tons comprising 4 tons of flue-cured tobacco and 13.4 tons of air-cured tobacco during 2015/16. In addition, the total production of tobacco has increased by 1 000 tons in 2015/16, compared to the previous financial season (Department of Agriculture, Forestry & Fisheries 2017:4). According to the Department of Agriculture, Forestry & Fisheries (2012:46) there is a good relationship between the cultivators and the producers and/or the leaf dealers in the tobacco industry, with the potential to grow crop size and room for improvement as far as quality is concerned. Furthermore, countries such as China, the world's largest customer of cigarette tobacco, continues to show interest in the South African tobacco industry. This clearly shows that the industry has the potential

to grow and even serve the entire universe in the near future. The subsequent section reviews literature on the socio-economic contributions in the FMCG industry.

2.6 SOCIO-ECONOMIC CONTRIBUTIONS OF THE FAST-MOVING CONSUMER GOODS INDUSTRY IN SOUTH AFRICA

The FMCG industry is one of the largest sectors in Africa and it has been turned into a mainstay as African countries are looking to revive their economies (KPMG 2016:3). This being the case, the fast-moving consumer goods play a prominent role in the economy of the country, both socially and economically. Furthermore, plethora of multinationals in the industry strive to further socio-economic development through social investment initiatives and by supporting the state in addressing socio-economic challenges (Distell 2016:13). Moreover, corporate social responsibility in the FMCG industry is aimed towards particularly addressing the socio-economic development challenges of the country (Sewell, Mason & Venter 2016:4). The following sections clearly delineate and expound the different contributions made by companies in the FMCG industry. Figure 2.3 demonstrates the different socio-economic contributions exhibited by the South African FMCG industry.

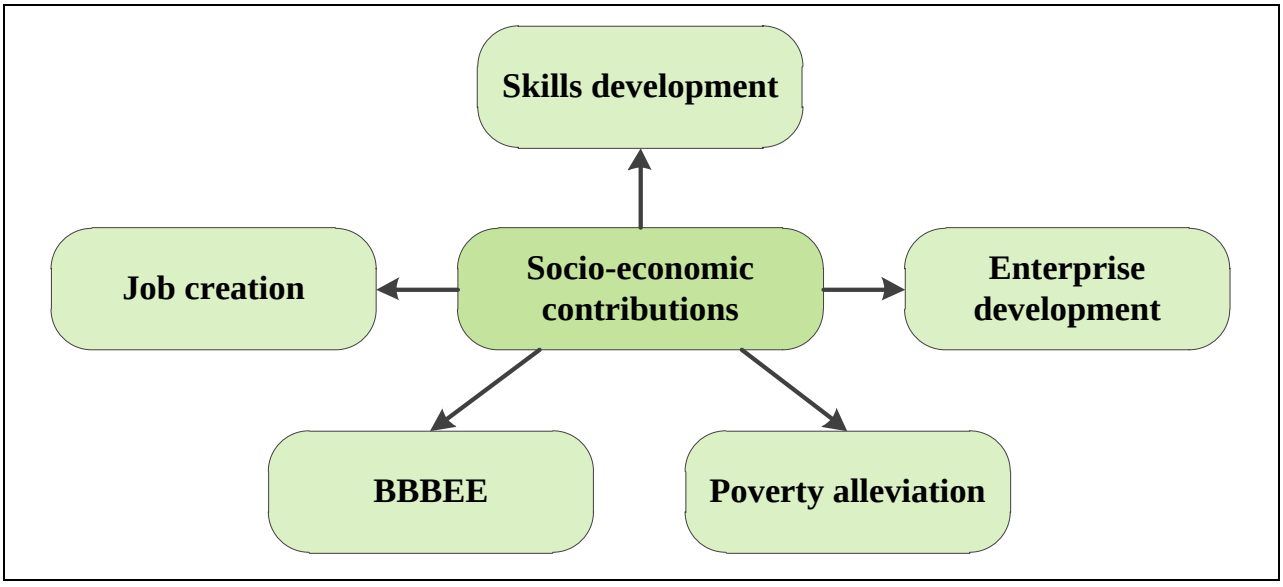

Figure 2.3: Socio-economic contributions made by the Fast-Moving Consumer Goods industry

Source: Compiled by author

As shown in Figure 2.3, the socio-economic contributions of the FMCG industry includes job creation, poverty alleviation, skills development, enterprise development and broad based black

economic empowerment and transformation. The following section discusses the socio-economic contributions in greater detail.

2.6.1 Job creation

The FMCG sector is a significant constituent of the South African economy and a major employer, and has the 30 000 tax-registered retail enterprises employing about 20% of the economically active workforce of the country (Sewell et al., 2016:4). These figures attest to the significant contribution of the fast-moving consumer goods to the South African economic landscape. Furthermore, the National Development Plan's fundamental priority is "raising employment through faster economic growth and it is targeting the FMCG industry to achieve its vision as it is a major employer in the country" (Sewell *et al*. 2016:4). A plethora of companies in the industry have taken initiatives aimed at growing employment in the country through learnership, apprentice and internships and contributing to full, productive employment and decent work for all women and men, including for young people and persons with disabilities, and equal pay for work of equal value (Distell 2018:24).

2.6.2 Skills development

Skills development form part of the **t**hree core developmental priorities and stand out in the quest of rebuilding an inclusive, equitable South African society (National Planning Commission 2019:17). Furthermore, the FMCG industry participates in skills development programmes through bursaries and internships using e-learning and bursary facilities (Sewell *et al*. 2016:4). As part of skills development, the Shoprite group has a retail varsity, our registered private further education and training institution that offers 22 accredited learning programmes and more than 1 500 retail-related courses. In addition, the multinational also has more than 2 000 e-learning kiosks across the continent to provide access to learning curricula and facilitate remote e-learning (Shoprite 2018:3). Moreover, work-based training such as apprenticeships, learnerships and internships are being provided by a number of companies within the FMCG industry (Pick n Pay 2017:29; Distell 2018:24). This clearly shows that companies in the FMCG industry play a prominent role in the development of the country and assist in achieving the objectives outlined in the National Development Plan.

2.6.3 Enterprise development

Enterprise development in the FMCG sector is in the form of investment, mentorship and education, with each of these mechanisms rendering meaningful change in the industry and

preparing the ground for an industry that not only benefits the sector but South Africa as a whole (NPI Governance Consulting 2018:8). The consumer packaged goods sector also promotes entrepreneurship in a bid to promote sustainable business growth, socio-economic inclusivity and job creation (African Economic Outlook 2015:196). According to NPI Governance Consulting (2018:9), a Memorandum of Understanding (MOU) was signed between Nestlé South Africa and the Department of Small Business Development, which stressed the sourcing and developing micro-distributors geographically positioned in townships and rural areas in the country.

2.6.4 Broad based black economic empowerment (BBBEE) and transformation

The FMCG industry together with the Department of Trade and Industry initiated the Broad-Based Black Economic Empowerment Sector Code for Agriculture (AgriBEE) programme to meet the challenges of constrained global competitiveness and low profitability, twisted participation, low investor confidence, insufficient support and delivery systems, and poor and unsustainable management of natural resources (Department of Trade and Industry 2012:4). This initiative is not only aimed at improving the FMCG industry's economy but also the society of the country. Furthermore, in recognition of the BEE, companies in the industry are complying with the BEE codes (Distell 2016:35; Pioneer Foods 2018:16; Shoprite 2017:23; Clover 2018:77). For instance, the Shoprite group have formed a B-BBEE Committee that aims to improve on and entrench the group's transformational objectives (Shoprite 2017:23). In addition, it has invested comprehensively in employment equity, skills development, enterprise and supplier development, and socio-economic development.

2.6.5 Poverty alleviation

The Spar group, one of the role players in the FMCG industry initiated a programme called operation hunger that is aimed at combating malnutrition in South Africa (SPAR 2017:2). Over the past years, the number of communities supported, or which continued to be supported, rose from last year's 22 to 41 and more than 20,000 families of approximately 120000 people of all age groups are benefiting from this programme (SPAR 2017:2). In addition, Tiger brands also initiated a feeding scheme programme in the Eastern Cape, which caters for more than 25 schools (Tiger brands 2016:1). Moreover, as part of corporate social investment (CSI), Tiger brands has formed a three-year partnership with the Department of Basic Education and the Nelson Mandela Centre of Memory, focusing on addressing food security challenges in underprivileged communities in the country. Section 2.7 highlights the partnership established by the South African FMCG industry with the government.

2.7 SOUTH AFRICAN FAST-MOVING CONSUMER GOODS IN SUPPORT OF THE NATIONAL DEVELOPMENT PLAN 2030

The ultimate aim of the National Development Plan 2030 is to eradicate poverty and reduce the gap between the privileged and the underprivileged by 2030, which can be achieved by drawing on the energies of its people, developing an inclusive economy, building capabilities, improving the capacity of the government and promoting leadership and partnerships across the country (National Planning Commission 2019:14). Figure 2.4 shows how the different sectors can work together in ensuring development in the country.

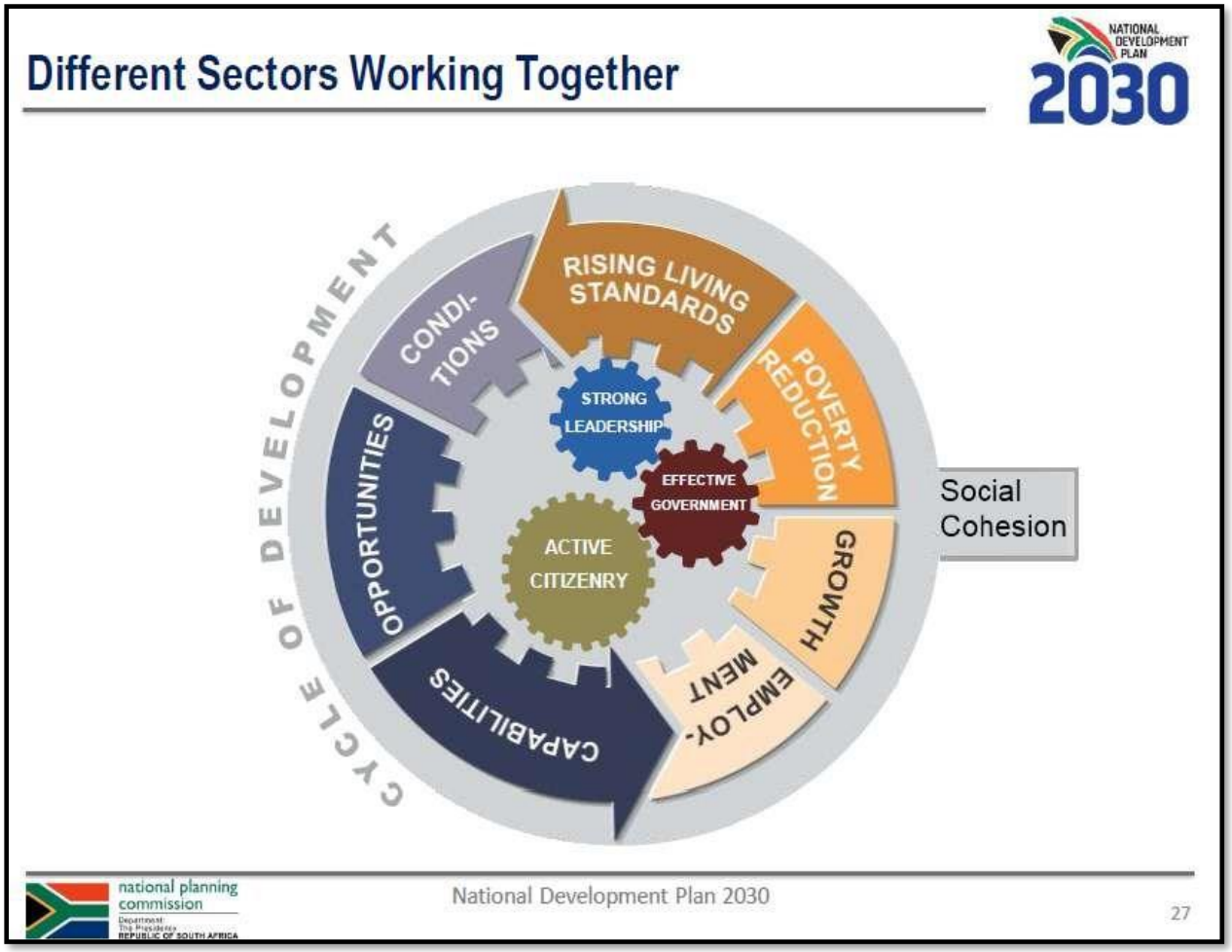

Figure 2.4: National Development Plan 2030

Source: National Planning Commission (2012:16)

The graphic above exhibits the close links between capabilities, opportunities and employment on social and living conditions (National Planning Commission 2012:16). Moreover, it depicts how leadership, an active population and effective government can support drive development in a socially cohesive environment (National Planning Commission 2012:16).The National

Development Plan emphasised the three fundamental developmental priorities that are fundamental towards building an inclusive, equitable in the country, namely:

- reducing unemployment through faster economic growth;
- improving the quality of education, skills development and innovation; and
- building the capability of the state to play a developmental, transformative role in the country.

In addressing these particularities, the functional links in the FMCG's supply chain have a significant socio-economic added value, with job creation and cause-related marketing implications within the diversity of South African society (National Business Initiative 2016:29; Bureau of Market Research 2015:1; Business Monitor International 2015:21).This being stated, the industry is one of the sectors that contributes significantly to the gross domestic product (GDP) of South Africa and has employed about 20% of the country's economically active workforce (Consumer Goods Council of South Africa 2012:1; Sewell, Mason & Venter 2016:4). In addition, the FMCG sector can play a prominent role in helping the government realise its objectives highlighted in the National Development Plan 2030. The next section outlines and explains the challenges facing the South African FMCG industry.

2.8 CHALLENGES FACING THE FAST-MOVING CONSUMER GOODS INDUSTRY IN SOUTH AFRICA

Notwithstanding the innovative ideas generated, the South African FMCG industry supply chains are still faced with unique challenges and issues (Kavitha 2012:26; Chinna 2016:2; NPI Governance Consulting 2017:5). Some of the problems, such as the bullwhip effect, miscellaneous risks include the potential loss of key suppliers, innovation and risk, planning and forecasting, power outages in manufacturing plants and the fact that only a limited amount of safety stock can be held to offset uncertainty (Kärkkäinen 2003:50; Barloworld 2010:8; Supply Chain Foresight Report 2011:7; Bala & Kumar 2011:23; Glendon & Bird 2013:4). Nevertheless, the top-ranked challenges for Fast-Moving Consumer Goods are as follows (Supply Chain foresight Report (2010:7; Supply Chain Foresight Report 2011: 11) :

- Lack of collaboration with key suppliers.
- Potential failure of key suppliers.
- Infrastructure.
- Bullwhip effect.
- Complex supply chain.

- Competition.
- Changes in labour legislation.
- Unforseen events.

2.8.1 Lack of collaboration with key suppliers

The necessity for companies to come together through integration is boosted by global competition and demand for effective and efficient customer service as companies cannot function separately or in isolation, but rather operate through a coordinated and collaborated manner to improve performance in the supply chain network (Lambert 2008:338; Fantazy, Kumar & Kumar 2010:687). In the South African FMCG industry, however, most firms never or rarely collaborated with their supply chain partners, while 46% of South African firms are partially managing to successfully collaborate and fully exploit aligned incentives within their supply chains (Imperial Logistics 2013:15). The importance of an integrated supply chain network has no doubt aided so many organisations in the FMCG industry to devise amicable techniques that guarantee skilled management of its changing nature, obstacles, and coverage (Ogunlela & Lekhanya 2016:162).

2.8.2 Potential failure of key suppliers

Supply chain disturbances are inevitable, which are likely to occur at any time in the supply chain network (Diabat, Kannan & Panikar 2011:3045; Diehl & Spinler 2013:316; Glendon & Bird (2013:4). Pettit, Croxton and Fiksel (2013:57) highlight that the average effect of disturbances in supply chains in the United States is at 107% decline in operating income and a 7% decline in sales growth. In South Africa, however, local key suppliers do not have enough capacity to produce key raw materials for such big firms, which disrupts the supply chain in the FMCG manufacturing industry (Agigi et al., 2016:8). Consequently, FMCG manufacturers are vulnerable to longer lead times, affecting not only product availability on the retailers' shelves but also the incapability to pass any consequential price increases onto customers (Price Waterhouse Coopers 2012:31; Fast Moving Newsletter 2014:1).

2.8.3 Infrastructure

Infrastructure has been and is still one the major challenges resulting in escalating costs and embattled service levels (Supply chain Foresight Report 2010:17). Although South Africa's is rated the best in the continent, South Africa's transport infrastructure, in particular, faces challenges and it is no longer the only gateway to Africa because of increasing infrastructure bottlenecks impeding growth, investments which have begun to bypass South Africa (Price

Waterhouse Coopers 2016:70). Furthermore, recent electricity generation problems in many countries, particularly South Africa and Ghana, means that companies have to rely on generators during periods of electricity load-shedding, which has proved to be expensive and added to the cost of doing business, which has seen some companies in the FMCG having to lay off staff (Price Waterhouse Coopers 2018:6).

2.8.4 Changes in labour legislation

Changes in labour policies have a direct impact on the growth of enterprises in the FMCG and has been one of the key growth drivers (KPMG 2016:4). Furthermore, changes in labour legislation appear to be one of the major challenges in the South African fast-moving consumer goods and relate to potential changes in labour broking legislation, which hinders the appointment of the large amount of casual and contractual labour employed in the sector (Supply Chain Foresight Report 2011:7). Moreover, local South African manufacturers are struggling to remain competitive against international rivals, partly because of labour unrest, high local wages and volatile labour policies and regulations (Price Waterhouse Coopers 2012:31). Changes in labour legislation have affected the FMCG industry negatively in the past years, for instance, Shoprite employees, not so long ago, had to boycott work and go on strike because they needed an increase in salaries and wages.

2.8.5 Bullwhip effect

The bullwhip effect (BWE) is defined as a phenomenon in which the variability in the demand of orders placed by downstream players in the supply chain network increases as these orders move upstream in the supply chain (Dai, Li & Peng 2017:1; Udeni, Eleni, Fransoo & Nico 2017:980). In particular, anticipation for demand become less reliable as they move up to the supply chain from consumers or wholesalers, retailers, to producers and suppliers (Lysons & Farrington 2012:328). Furthermore, the bullwhip effect (a relatively small variability in end-customer demand expands to successively high variability up the supply chain) and higher returns and transit losses, are widely evident in the FMCG industry supply chains (Bala & Kumar, 2011:23). In addition, the concept of the bullwhip effect was formally given by Procter and Gamble – an FMCG multinational, to describe the fluctuations of orders in the supply chain of their product Pampers, as it perceived that the consumption rate of pampers by customers is very constant but the orders placed by wholesalers and retailers vary from time to time (Supply Chain Foresight Report 2011:2).

2.8.6 Intense competition

The South African consumer packaged goods (CPG) sector is extremely volatile and is branded by many competitors that are contesting for market share, profitability and long-term survival (Woods 2014:19; Mafini & Loury-Okoumba 2015:1; Das-Nair 2018:316). Furthermore, the FMCG industry has more than 1,080,000 entities vying for market share, and the emergence of Walmart has affected the industry in the way in which its sub-sector does business with retailers. The American retail giant is well-known for its no-nonsense trade with its suppliers; its in-stock policy is unparalleled, as they are the supply chain management experts across the board (Supply Chain Foresight Report 2011:2). The multinational also offers its suppliers incentives to take their brands globally if they partner with them but with the provision that delivery, at levels of efficiency and cost, is not common in the South African market and is non-negotiable (Supply Chain Foresight Report 2011:2). Thus, price fixing and subsidies are required to neutralise competition in the FMCG industry as competitors are competing on prices.

2.8.7 Complex supply chain

The South African FMCG and most of the leading retail entities that have a network of stores across the country, operate in complex, turbulent and highly competitive supply chains (Fastmoving Newsletter 2017:1). Its supply chains represent a structure of unpretentious manufacturing processes but have complex distribution networks (Bala & Kumar 2011:25). Its companies also source globally, which make their supply chains even more complicated, which complexities have caused many disruptions within their supply chain networks. Additionally, FMCG industry supply chains own various production plants, including co-manufacturers and co-packers, which increase complexities in the supply chain (Kumar & Bala 2009:102; Bala, Prakash & Kumar 2010:31).

2.8.8 Unforseen occurrences

Global supply chains have experienced a number of threats, such as natural disasters emanating from climate change and man-made events (in terms of terrorism and wars) (Farooq, Hussain, Masood & Habib 2021:1), COVID-19 (UNAIDS 2021:1; Meyer, Walter & Seuring 2021:1), blackouts (loadshedding) and many others. In recent years, the occurrence and severity of these events have become worse due to several reasons (Farooq *et al*. 2021:2; Nguyen 2022:633). Globally, the COVID-19 pandemic has created pandemonium (Rajesh 2021:903; Xu, Elomri, Kerbache & Omri 2020:154) and even the invasion of Ukraine by Russia has fuelled the challenges currently faced by the FMCG industry (Boston Consulting Group 2022:3; Jagtap *et al*. 2022:1).

In particular, FMCG corporations are forced to halt their operations during loadshedding, due to the reported incompetency of Eskom. Moreover, the shortage of sunflower has made things worse as FMCG companies are forced to hike their prices, which in turn has an adverse impact of FP.

From the above argument, it is apparent that unforeseen events have negatively impacted global supply chains and consequently the Gauteng FMCG industry. These have also crippled the FMCG supply chains (in terms of flexibility and performance), although the current study has outlined and explained the various arsenals available for firms operating within the industry to employ when they encounter such adversities. The methods are delineated and explained in the subsequent chapter (Section 3.3.3). The next section outlines and briefly highlights the findings from previous supply chain management research studies that focused on the South African FMCG industry.

2.9 PREVIOUS SUPPLY CHAIN MANAGEMENT RESEARCH FOCUSING ON THE FAST-MOVING CONSUMER GOODS INDUSTRY IN SOUTH AFRICA

The topic of supply chain management (SCM) has received more attention and interest from a number of scholars, as well as practitioners within and beyond the field of supply chain management (Naslund & Williamsson 2010:11; Li 2013:1897). Furthermore, the field of supply chain management has been researched and explored by a number of scholars in different disciplines, including but not limited to marketing, logistics, information management, operations management and systems dynamics (Du Toit & Vlok 2014:26). In South Africa, however, particularly the FMCG industry, abundant and extensive research has been conducted by a number of researchers.

Bala and Kumar (2011) conducted a study on SCP attributes that are applicable to the FMCG industry. Furthermore, FMCG supply chains were analysed from the process perspective, constituents and typology. Among the facets discovered, supply chain adaptability and the bullwhip effect were one of the aspects that were subjugating. Mafini and Loury-Okoumba (2015) investigated buyer-supplier commitment, trust and cooperation as influencing factors to business performance in the South African fast-moving consumer goods industry. It was found that buyer-supplier commitment, trust and cooperation positively influence business performance in the fast-moving consumer goods in terms of improving the supply chain network, meeting customer needs and profitability.

Agigi, Niemann and Kotzé (2016) conducted a qualitative study on supply chain design approaches for supply chain resilience directed to the South African fast-moving consumer goods grocery manufacturers. The study investigated the supply chain risks faced by grocery

manufacturers in the South African industry and explored supply chain design approaches that enable supply chain resilience. It found that labour unrest is the most common risk faced. Strategic stock and supply chain mapping are of the most valuable design approaches to improve supply chain resilience. Moreover, the study provides managers with new insights in guiding supply chain design decisions for agile supply chains through the identification of risks and amicable solutions linked to the various risks, and allows managers an array of alternatives to cherry-pick from when enforcing a resilient supply chain.

Mvubu and Naude (2016) conducted a study on green supply chain management constraints in the South African fast-moving consumer goods industry. Its aim was to identify the green supply chain management problems that an FMCG's factory in Durban faces, and to report on the amicable remedies that it has in place to overcome these challenges. More so, amicable techniques that the firm has in place to overcome these limitations include the alignment of green supply chain objectives with its business objectives, and the focus on lean supply chain management. The above study shows that more research has been conducted into supply chain management directed at the South African FMCG industry. The table below (Table 2.2) depicts supply chain management studies that have been conducted in South Africa, specifically in the FMCG industry.

Nguegan, Nguegan and Mafini (2017) aim in their study was to investigate supply chain management problems in the food processing industry and their influence on business performance. The study was motivated by the need to use supply chain management practices as a tool to improve business performance in the food processing industry. As part of the findings, supply chain management problems were identified in seven areas, namely, human resource management, technology, facilities, supplier relationship management, customer relationship management, regulatory factors and logistics and transportation. Apart from the regulatory factors, all supply chain management problems negatively predicted business performance. Table 2.2 provides a summary of the supply chain management studies that have been conducted in South Africa, specifically in the FMCG industry.

Table 2.2: Previous supply chain management studies in the South African fast-moving consumer goods industry

Author	Findings
Bala and Kumar (2011)	Issues identified in FMCG include supply chain adaptability and the bullwhip effect. SCP attributes-reliability, responsiveness, agility.
Mafini & Loury-Okoumba (2015)	Buyer-supplier commitment, trust and cooperation positively influence business performance in the fast-moving consumer goods in terms of improving the supply chain network, meeting customer needs and profitability
Agigi, Niemann and Kotzé (2016)	The study found that labour unrest is the most common risk faced by the South African fast moving consumer goods industry.
Mvubu and Naude (2016)	The parent firm had to align green supply chain objectives with its business objectives, and focusing on lean supply chain management
Nguegan, Nguegan and Mafini (2017)	All supply chain management problems negatively predicted business performance.

Source: Compiled by author

2.10 CHAPTER SUMMARY

The purpose of this chapter was to review literature on the South African FMCG industry. It is worthy to note that the FMCG industry is one of the largest industries globally and has emerged as an economic growth mainstay for a number of countries. The characteristics of its products are unique to the industry as they are non-durable, branded, packed and consumed every month directly by the ultimate customer. Furthermore, the industry's success is embedded on its growth drivers as they play a significant role in determining the industry's growth and triumph. Moreover, its key growth drivers include but are not limited to consumer buying habits, demographic changes, technology, infrastructure and changes in labour legislation. In Africa, the South African FMCG industry remains a gateway to a number of African countries, due to its capacity and flexibility to service all its clients across the continent.

In a South African local context, it is one of the sectors that contributes significantly to the GDP of the country. The FMCG sector has contributed significantly in the country in terms of employment, enterprise development, skills development, BBBEE and transformation and poverty alleviation. Notwithstanding its challenges, it has been one of the consistent industries that grows rapidly and is capable of servicing its consumers nationwide. The essential subject in this chapter was to explore the industry and discuss it into greater detail. The next chapter reviews literature on the latent variables and examines the relationship supply chain strategies, flexibility and SCP.

CHAPTER 3
THEORETICAL FRAMEWORK

3.1 INTRODUCTION

In the previous chapter, the background of the FMCG industry was discussed. The current chapter presents the theoretical review with the intent to cultivate an in-depth understanding of the theory underpinning the study and considers the Resource-Based View. It presents the literature on supply chain strategies, which is the predictor variable, which include innovation strategy, organisational learning strategy, risk management strategy, customer-oriented strategy, and supplier integration. It further presents the literature on the mediating variable, which is SCF, followed by SCP, the outcome variable. Two dimensions, namely, FP and NFP are considered. It then outlines the research hypotheses that are formulated from the literature.

The resource-based view theory of the firm receives attention in the next section.

3.2 THE RESOURCE-BASED VIEW THEORY

The RBV theory was popularised in 1984 by Wernerfelt after the ground-breaking works of Penrose in 1959 (Nagano 2019:1). Wernefelt (1984:171) proposed that a firm's resources and products are similar and cannot be separated. This is because they complement one another and are indispensable because of the relationship they exert towards one another. To further explain the relationship between firms' resources and products, Wenerfelt (1984) used Porter's five competitive forces framework (Porter 1980:4; Porter 1991:101). Porter's model was utilised because it separates the firm in a competitive setting that omits the chance of reconnoitring prospective linkages with the firm and the resources in its competitive environment (Salazar & Armando 2017:28).

As noted in literature, Jay Barney further fueled the popularity of the RBV theory when he wrote two papers in 1986. The first paper (1986a) was about the usage of strategic factor markets and the second (1986b) about culture as a source of competitive advantage (Salazar & Armando 2017:29). The reviewed literature revealed that a firm that wants to achieve sustainable advantage should pay special attention to the RBV theory. This is because the RBV theory of a firm centres its attention on its internal resources and capabilities to ascertain the elements of its competitive advantage and performance (Ramon-Jeronimo, Florez-Lopez & Araujo-Pinzon 2019:3). The RBV

of management, abridged by Barney (1991), has developed into one of the most powerful and quoted philosophies in the history of management (Cuthbertson & Furseth 2022:168).

The RBV will be quoted and utilised as a foundational philosophy for the development of the supply chain strategy taxonomy (McKone-Sweet & Lee 2009:04; Thoo, Sulaiman & Zakuan 2017:3) and is perhaps the most influential framework for understanding strategic management (Barney, Wright & Ketchen 2001:625). The theory presupposes that the heterogeneity of a firm's resources mainly account for its superior returns (firm performance) (Kraaijenbrink, Spender & Groen 2010:351). It further advocates that a firm's competitive advantage is a result of the mixed resources and capabilities owned and controlled by that individual firm (Kraaijenbrink *et al*. 2010:350).

The RBV theory maintains that firms belonging to a certain group or industry might be heterogeneous since they have resources they control, which are considered to be imperfectly mobile and idiosyncratic in nature and pinpoint a chain of empirical pointers that identify resources capable of providing such a competitive advantage (Peteraf 2011:1; Kraaijenbrink *et al*. 2010:351; Jensen, Cobbs & Turner 2016:163). Furthermore, it perceives a firm to be an arena of resources and capabilities, which perspective has proven to be a significant theoretical framework for understanding how sustainable competitive advantage and financial performance is achieved (Almari & Gardiner 2014:438).

More so, the RBV argument is embedded on two key assumptions (Kull, Mena & Korschun 2016:5554). Foremost, firms within an industry are heterogeneous with regard to the resources that they own and control (Savino & Shafiq 2018:745). A second assumption is that of imperfect resource mobility, which makes it very difficult for competitors to obtain similar resources in the market place (Helfat & Peteraf 2003:997). This shows that a firm's sustainable competitive advantage can only be achieved through its rare, valuable, imperfect imitability and sustainable in-house resources that a firm possesses and controls in the marketplace.

Firm resources have been mostly well-defined as anything that could be a stronghold or disadvantage of a given firm, more specifically, assets (for example, brand name) and capabilities such as innovation that can enable and facilitate the improvement of core competencies (Wernerfelt 1984:172; Savino & Shafiq 2018:746). Authors such as Barney (1991:102), Peteraf (1993:180) and Busby (2019:300) all agree that the central emphasis of the RBV of the firm is largely on competition, and the heterogeneity of persistent resources that confer competitive advantage due to their valuable, rare, imperfectly imitable and non-substitutable characteristics.

Competitive advantage is defined as the direct relation between customers' expected values and the values offered by the firm, and those offered by the rivals (Hosseini, Soltan & Mehdizadeh 2018:3). A firm is said to have a sustainable competitive when its offerings meet the expectations of the customers and are different to those offered by competitors. Thus, the RBV theory is applicable in analysing a firm's competitive advantage (Jensen *et al*. 2016:163; Bromiley & Rau 2018:98), and most research studies conducted on the sources of a firm's sustainable competitive advantage have extended their attention to using a firm as the main element of analysing and explaining business performance (Dyer & Singh 1998:660). For example, Amis, Pant and Slack (1997) examined each of Barney's (1991) indicators of resources capable of providing a sustained competitive advantage and performance.

Furthermore, Yu, Chavez, Jacobs and Feng (2018) conducted a study on data-driven supply chain capabilities and performance, analysing a firm's competitive advantage using supply chain capabilities as resources to achieve sustainable competitive advantage and business performance, and the RBV theory underpinned their study. Also, Sambolayuk, Yusuo and Sudirman (2019) conducted a study on innovation strategy, and used the RBV theory of competitive advantage. The theory therefore is an important one in the field of management, supported by the number of studies conducted, particularly in supply chain management.

It is worth noting that even the current study has quoted and adopted the RBV theory as its assertions fuse well with the supply chain strategies employed. The supply chain strategies include, among others, innovation, risk management, organisational learning, customer orientation and supplier integration, which are considered to be critical resources in this study as they contribute to a firm's competitive advantage (Terziovski 2010:895; Cheng, Yang & Sheu 2014:83; Wang 2014:392; Wang, Huo, Qi & Zhao 2016:416: Paozi, Tamunosiki-Amadi & Fems 2017:692). Section 3.3 reviews literature on supply chain strategies.

3.3 SUPPLY CHAIN STRATEGIES

A supply chain strategy is part of the overall corporate strategy envisioned around a well-defined basis of competition such as innovation, low cost, service, quality (Hugo, Badenhorst-Weiss & Van Biljon 2011:22; Chinna 2016:2; Jajja *et al*. 2016:1658). It is entirely integrated with the marketing strategy, customers' needs, the product strategy, and influences the position of the firm (Hines 2006:33; Hugo *et al*. 2011:22; Tipu & Fantanzy 2014:401). Furthermore, supply chain strategies are a critical backbone to the success of most contemporary organisations and play an important role in achieving a sustainable advantage (Hines 2006:32; Wilbers 2015:16; Chinna 2016:2).

As noted in the literature, there is plethora of supply chain strategies implemented by firms competing in the FMCG industry to upsurge the performance of the supply chain. In this study, however, only five supply chain strategies, namely, innovation strategy, organisational learning strategy, risk management strategy, customer orientation and supplier integration strategy will be considered. Organisations that effectively implement these strategies can achieve a sustainable advantage in terms of innovativeness, flexibility, improved profitability and greater levels of SCP. The supply chain strategies are discussed into greater detail in the following sections.

3.3.1 Innovation

This section analyses literature on innovation. Topics that receive attention include the concept of innovation strategy, practices and dimensions of innovation, factors that affect innovation and its relative importance.

3.3.1.1 Definition of innovation

Innovation is defined as a change in the firm that is characterised by the following elements: relative advantage, compatibility, complexity and observability (Szutser & Szymczak 2016:26). On the other hand, Martin-Rios and Ciobanu (2019:219) define innovation as the implementation of new or significantly upgraded products or processes, a new marketing technique, or a new organisational system in business practices, workplace institutes or external associations. In this study, however, innovation is understood to be a core strategy that helps firms respond swiftly to fluctuations in customer demand, competitiveness and technical expertise (Taghizadeh,Jayaraman, Ismail & Rahman 2014:534; Abdallah, Bahjat, Dahiyat & Matsui 2019:240; Kral & Janoskova 2020:2; Borowski 2021:1; Zhang 2022:2). Ramadhan and Setyowati (2021:675) opine that innovation is frequently regarded as a growth catalyst for economies and enterprise development.

Furthermore, innovation is conceptualised as a management theory, consisting of numerous internal and external activities that augment the innovative potential of the firm and is mainly designed for organisations that innovate erratically and sporadically (Tavassoli & Karlsson 2015:14). According to this definition, innovation in practice can be implemented in methods associated to:

- The introduction of goods (products or services) that are new in the market, or improved products with modernised technological features.
- The implementation of new production techniques that are new in the industry.

- The establishment of new markets.
- Sourcing new or improved raw materials from new suppliers; and
- The establishment of new ways of competition that drives structural changes in the industry.

The notion of introducing different 'special features or extras in a product or service' is pronounced as being innovative. With this being the case, firms can gain leverage over their rivals by constantly improving the features of their products. Several authors and scholars have defined innovation as the process of developing and introducing newly improved products or offerings (Varadarajan 2018:154). The process of innovation therefore includes innovation strategy, concept finding, product development, getting ready for the market and market or product launch (Geschka 2015:130) Figure 3.1 depicts the various phases and stages in the process of innovation.

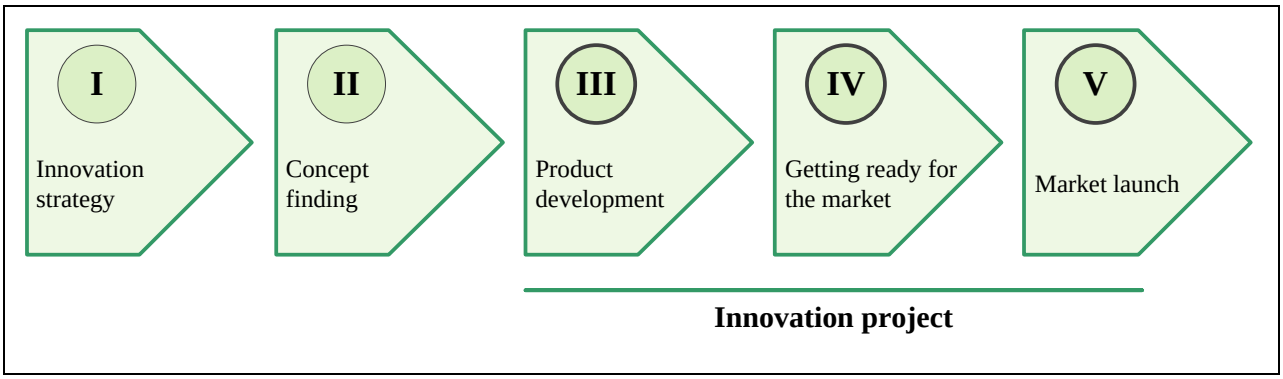

Figure 3.1: The Phases of the Innovation Process

Source: Geschka (2015:130)

Figure 3.1 depicts the phases of innovation process that starts with the core innovation strategy of the organisation, followed by concept generation, product development, getting ready for the market and lastly, product launching as outlined in figure 3.1. The phases of innovation are defined briefly below:

- Innovation strategy: This is the initial innovation idea that the firm wants to invent as its new ways of modernising its service, process and product offerings.
- Concept finding: This involves configuring the concepts that the organisation is looking to improve or innovate.
- Product development: After the concept has been established, new ways to improve or develop the concept are being introduced.
- Getting ready for the market: At this stage, the concept is pretested making sure that it is ready to be launched.

- Market launch: Market launch involves introducing the improved product into the market.

When implementing the aforementioned process, a firm is subject to a four-step procedure that has proven to be more effective. These comprise analysis of contemporary issues, verdict on innovation thrusts, identification of prospective fields and lastly, the selection of potential arenas, as depicted in Figure 3.2.

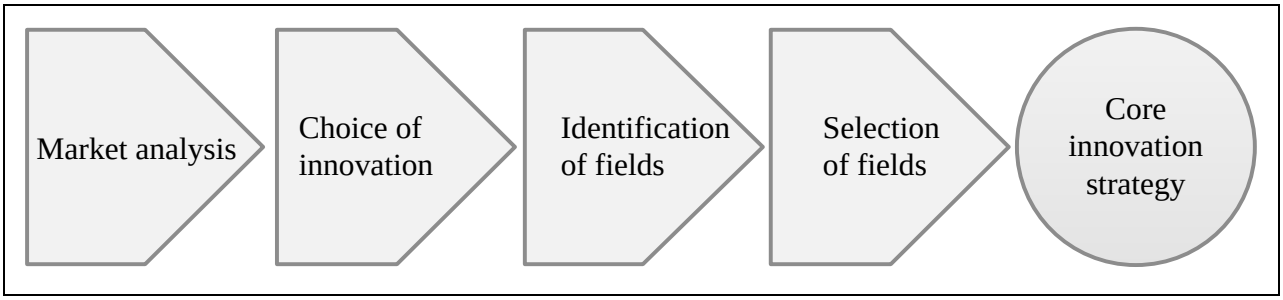

Figure 3.2: Search Process for Innovation Fields

Source: Geschka (2015:131).

Figure 3.2 reveals the four steps searching procedure for a core innovation strategy, ranging from analysing the current market environment, choice of innovation thrusts, identification of probable innovation fields and lastly the selection of promising innovation avenues, as outlined by Geschka (2015:131). The phases are briefly explained below:

- Analysis of the current market environment: This step entails gap and SWOT (Strength, Weaknesses, Opportunities and Threats) analysis through the application of marketing research in an organisation. This allows a company to have plenty of innovation avenues to explore.
- Choice of innovation thrusts: This step involves selecting the thrusts that were identified during gap and market analysis. At this stage, the organisation has identified its innovation shortcomings and reconfigured new innovation ideas that would improve the performance of the firm.
- Identification of effective innovation fields: At this point, the organisation has identified and reconfigured new innovation ideas that it has to choose after intensive analysis and research has been conducted.
- Selection of the core innovation strategy: The most effective innovation strategy is selected and implemented in the company's supply chain. At this point, research has been conducted and customer insights are also incorporated in the new product development process.

The following section explores the practices of innovation occurring when innovation is being carried out in organisations.

3.3.1.2 Practices of innovation

The next section discusses the practices of innovation within an organisation or a supply chain network. These include but limited to invention and product development, new product development, and product refurbishment.

3.3.1.2.1 Invention and product improvement

The pursuit to transform auspicious ideas for products to commercialised products is an essential feature of technical improvement and organisational performance in terms of customer satisfaction and profitabilty (Chandy, Hopstaken, Narasimhan & Pabhu 2005:1; Ahn, Zwikael & Bednarek 2009:559). Sener, Hacioglu and Akdemir (2017:204) stress that invention doesn't necessarily add economic value until an auspicious idea is transformed into practical usage and consumption. Thus, invention in this study is defined as a key enabler of innovation that translates ideas into meaningful innovation that adds value to an organisation. Furthermore, invention is another arsenal that organisations use in today's dynamic marketing environments to achieve competitive advantages and improve the competitiveness of an organisation. Additionally, invention enables the organisation to continuously development and improve their product offerings.

3.3.1.2.2 New product development

A plethora of organisations consider new product development (NPD) in today's competitive environments an essential strategic practice and a short time to market (TTM) as significant to the long-term survival of an entity (Hilletofth & Eriksson 2010:264-281). New product development in this study is contextualised as the process of introducing relatively new products within the supply chain network and constantly improving the product from time to time. It is worth noting that organisations in today's competitive world have also leaned towards the innovation and production of products that are environmentally friendly (Lian, Xu & Zhu 2022:1). Green innovation is defined as the introduction of newly innovative products, systems and technological equipment's that complies to environmental procedures through pollution control, recycling, energy preservation, and emission reduction (Bai, Song, Jiao & Yang 2019:820; Sun & Razzaq 2022:5).

It is important to highlight that green innovation is a concept that is driven by internal procedures and responsive to the external environment (Lian *et al*. 2022:1). Furthermore, successful

introduction of new products and processes not only supports management to successfully synchronise the flow of new produces efficiently across the supply chain network, but also backs the ramp-up of production, transportation, marketing and flexibility to the commercialisation of the products (Hilletofth, Ericsson, Hilmola & Hnendenstierna 2010:2). It is therefore imperative for supply chain executives to restructure their supply chains to accommodate and embrace the introduction of new products (Crippa, Larghi, Pero & Sianesi 2010:83), including environmental compliance products (Irfan, Razzaq, Sharif & Yng 2022:1) with systems such as artificial intelligence, augmented and virtual realities and e-commerce (Feng & Jin 2022:1).

3.3.1.2.3 Product refurbishment

Product remanufacturing and refurbishment is a tool for innovation introduced to redress the reverse logistics in the supply chain network. The National Retail Federation (2020:1) reported that product returns are no small matter in the United States, with goods returns that hit a confounding 8.60% of overall total transactions, or $267.3 billion of returned products in the 2019/20 financial year. This shows that product refurbishment should not be taken for granted as companies could lose a lot of money. Thus, it confirms that product remanufacturing or refurbishment is an important innovation tool for organisations and could be a significant and value added tool if practised frequently and consistently in the FMCG industry. It pleasing to see authors such as Esmaeilian, Saminathan, Cade and Behdad (2021:1) agreeing that selling remanufactured produces is a sustainable activity for firms gunning for approaches to enhance their market reputation.

With this being the case, it could be inferred that FMCG companies that practise this strategic innovation activity could improve their innovation, sales as well as their image. The following section pays special attention to the different dimensions of innovation relevant to this study.

3.3.1.3 The dimension of innovation

This section outlines and describes the various dimensions of innovation. As noted in literature, innovation is a multi-dimensional concept (Celtekligil & Adiguzel 2019:773). This study uses the dimensions by Omoruyi and China (2020:71) on innovation strategies and organisational performance. The four dimensions of innovation as a strategy include aggressiveness, defensiveness, futurity, and proactiveness.

3.3.1.3.1 Aggressive strategy

Aggressively competitive organisations are those who closely monitor their rival's movements and establish a value chain of their own (Muhomen 2017:11). Agressiveness is a type of innovation strategy that intensifies competition and is needed to compete directly with new entrants, potential and existing rivals (Chalchissa & Bertrand 2017:77; Nadkarni *et al*. 2016). An example of highly aggressive companies include Samsung and Huawei in the mobile industry and Procter & Gamble in the FMCG industry. These companies patiently wait for their competitors to move and then counteract them. In simpler terms, Samsung closely monitors what Iphone does and engineers a product with improved features. As noted in literature, Unilever is the leader and dictactor in the FMCG sector (Unilever 2007:5). Similarly, multinationals like Procter & Gambe wait for companies to move and then counteract them.

Furthermore, multinationals display aggressiveness through intensive and extensive research and development (R&D) (Eke & Onuoha 2020:78). Juslin (2019) empirically found that competitive aggressiveness directly affects firm performance. FMCG companies can benefit from adopting the practices of aggressiveness competition as this could allow them to master the dynamic and volatile market in terms of offering competitive products.

3.3.1.3.2 Defensive strategy

Competition has forced companies to engage in defensive strategies to fend off their competitors (Grend, Naata & Kpunee 2017:31). Companies that are defensive oriented are those that reflect a firm's performance to defend its market position (Morgan & Strong 1998:1056). In other words, if a company realises that the introduction of a new products offers manufacturing flexibility and improved financial performance, the organisation will by all means attempt to defend the product through trademarks and copyrights, etc. Moreover, defensive strategies are practices undertaken by firms envisioned to convince potential entrants and competitors to believe that producing the same product would be difficult or unprofitable (Grend, Naata & Kpunee 2017:31). More so, defensive organisations place themselves in a safe position to survive in stable markets (Akman 2003: 86; Sisson & Storey 2000:49). Last but not least, the defensive strategy includes all forms of relatively new innovation resources that enable firms to exploit market opportunities and establish compliance with governing goals (European Risk Forum 2016:1).

3.3.1.3.3 Futurity

Futurity as a strategy which allows firms to establish a long-term possibility and provide an opportunity to transform inventive ideas and opportunities to innovations (Jaworski & Kohli (1996:121). Therefore futurity refers to the notion that it is better to reflect on the future and possible consequences in the medium and long-term of choices made today (Le Breton-Miller & Miller 2011:1172). Eke and Onuoha (2020:78) opine that futurity allows firm to reflect on variables such as sales projections, changing consumer taste and preference and tracking of the marketing environment. Thus, it is important for companies to consider implementing futurity strategies because it allows them to make projections based on the ideas generated and evaluate whether they will improve sales and subsequently, profitability. Karabulut (2015:1338) revealed that innovation strategies clarify financial performance more than other variables. In support of this, the author found that futurity improves the financial performance of the sampled manufacturing firms in Turkey, which shows that the Gauteng FMCG industry can experience financial benefits from implementing and executing the futurity strategy.

3.3.1.3.4 Proactive strategy

Proactiveness exhibits the grasping inventiveness and opportunities to enable the market environment to influence trends and establish demand (Karabulut 2015:1340). Companies that are proactive-oriented are the first movers in the market industry and dictate trends in the industry they are competing in. Chen and Hambrick (1995:457) believe that an entity should possess the characteristics of both proactiveness and responsiveness in its market industry in terms of technology, new product development, innovation, competition, customers, and so forth. Companies that possess these characteristics include Unilever in the FMCG industry due to their competitive capacity in terms of technology, and frequent product development which meets customer demand. Proactive orientation also allows companies to facilitate the development of organisational capabilities and generate expertise in order to gratify the present and future expectations of customers (Palacios & Alonso 2019:724). It is clear that companies in the Gauteng FMCG industry could become one of the leaders in the industry in terms of technology, innovation and meeting customer demands which, in turn, improves flexibility and SCP, provided they become proactive and responsive. The following section outlines and explains the various types of innovation that organisations sought to improve.

3.3.1.4 Types of innovation

Innovation itself as a concept is multi-dimensional, encompassing various types of innovation (Celtekligil & Adiguzel 2019:773). For the purpose of this study, however, only four dimensions of innovation are given attention, namely, product or service innovation, process innovation, organisational innovation and marketing innovation (Hjalager 2010:2; Nieves & Segarra-Ciprés 2015:52: Gomezelj 2016:518).

3.3.1.4.1 Product/Service innovation

Product innovation is defined as the improvement of components, features and technologies to produce new products, while service innovation is defined as the improvement and introduction of a new service (Prajogo 2016:241; Martin-Rios & Ciobanu 2019:219). Furthermore, product or service innovation presents companies with new knowledge and state-of-the-art technologies. Companies in various industries may collaborate with suppliers and rivals to upsurge service innovation, while others may also embrace product innovation (Visnjic, Wiengarten & Neely 2016). With this being the case, companies aim to target a higher number of consumer fragments, and thereby improve turnover and profits (Sjödin, Parida, Kohtamäki, & Wincent 2020:478). Thus, product and service innovation aim at reducing costs, creating new activities and opening new passageways to markets (Lehtinen & Järvinen 2015:169).

3.3.1.4.2 Process innovation

Process innovation is not only the act of combining and coordinating external resources to improve and internalise innovative knowledge, but also of legitimising and conforming to normative standards and pressures (Tsinopaulos, Sousa & Yang 2018:31). Furthermore, process innovations are introduced to attain specific goals, for example to better define and improve repeated activities associated with the delivery of a particular service (Prajogo 2016:241). More so, it is considered to be the greatest critical factor for minimising total costs, cultivating performance (Bernstein & Kok 2009:552; Dost & Badir 2019:1457), gaining competitiveness (Keupp, Palmie & Gassmann 2012:2), augmenting quality and bringing greater monetary success (Reichstein & Salter 2006:2). Therefore, the ultimate aim of process innovation is to decrease the unit costs of delivery, or to increase the quality of the service. Innovation in products, processes or services can be generated within and/or adopted from outside the organisation.

3.3.1.4.3 Organisational innovation

Organisational innovation is hypothesised as the application of newly organisational processes in the firm's business practices, workplace organisation or external relations that aim to improve the efficiency, effectiveness and performance of the organisation (Damanpour, Walker, Avellaneda 2009:655; Hollen, Van den Bosch & Volberda 2013:41: Rajapathirana & Hui 2018:46; Limaj & Bernroider 2019:1). Innovation is the reason that organisations exist as it ensures their long-term existence, thereby contributing to continued growth and development of competitive advantage (Ahmad, Widen & Huvila 2020:1), and in dynamic environments, it plays a significant role in business performance (Chen 2017:649). Furthermore, organisational innovation can improve managerial performance through cost reduction, as well as improve personnel and exceed customer expectations (Yusheng & Ibrahim 2020:1219).

3.3.1.4.4 Marketing Innovation

Marketing augments significance to the sales interface and to the modernisation performance of an organisation (Medrano & Olarte-Pascual 2016:206). Marketing innovation is therefore demarcated as the implementation of a new marketing technique entailing substantial modifications in product design or packaging, placement, promotion, or pricing (OECD- Eurostat 2005:49). Through marketing innovation, enterprises can diversify into new products and services (Medrano-Saez & Olarte-Pascual 2016:2) and increase the willingness-to-pay for product innovations (Schubert 2010:190). Furthermore, Schubert (2010:210) found that marketing innovation positively impacts the share of turnover from new products amongst organisations that have invented a new state-of-the-art technological innovation. This outcome is greater for organisations with an advanced technology orientation and for those that successfully implement more than one marketing innovation action at the same time (D'Attoma & Leva 2020:65).

3.3.1.4.5 Technological Innovation

Technological innovation, including variables such as new product development and open innovation, has also received significant research by a number of scholars (Yu, Qian & Chen 2022:1; Zorilla, Gracia, Valazquez, Gracia, Duran & Sevilla 2014:356). The concept of technological innovation is industrialised within the technical arena of innovation studies, which clearly communicates the nature and extent of technological transformation (Azubike 2013:45). Technological innovation is defined by Damanpour and Evan (1984:394), as the implementation of relatively new ideas for product development, or the introduction of new technological components in an organisation's manufacturing operations. Furthermore, since it's a technological

element in organisation, it has the potential to improve the organisations's competitive advantage. This is supported by the findings of Zhang, Ukman, Lee and Salik (2019:1), who found that it significantly and positively contributes to sustainability and organisational performance. Thus empirical findings confirm the necessity of implementing innovation in the Gauteng FMCG industry as it has the potential to improve an organisations's performance. Section 3.3.1.5 outlines and explains the factors affecting innovation in an organisation.

3.3.1.5 Factors affecting innovation

While defining and conceptualising the concept of innovation, it is imperative to also scrutinise the critical factors that affect it. Furthermore, supply chain innovation strategy is influenced by a number of facets, including, but not limited to human and organisational resources, customers, suppliers, organisational support, technology, and research and development (Glor 2002:2; Genis-Gruber & Ogut 2014:719; Nam, Tuan & Minh 2017:525; Ngibe & Lekhanya 2020:6). These critical success factors are discussed below:

3.3.1.5.1 Human and organisational resources

Human Resource (HR) practices play a vibrant role in attaining the organisation's goals that keep a competitive advantage (Koser, Rasool & Samma 2018:13) and directly influence its innovation capabilitites (Kuntonbuti, Juturat, Konosu & Wilairatana 2017:14040; Sharma & Sharma 2018:159). Anjum, Ming, Siddiqi and Rasool (2018:4) stressed that the success of a firm heavily depends upon numerous factors, the most important one is employees who affect the organisational performance. Furthermore, successful innovation requires wide-reaching technological skills, therefore human resources and insights allow firms to nature and deliver relatively new innovative ideas, solutions, produces, and services that eventually deliver value to customers and companies (Price Waterhouse Coopers 2017:14).

Scholars such as Rasoo, Samma, Anjum, Munir and Khan (2019:13) found that human resource practices have a significant positive relationship with innovation, and performance management has a greater positive and significant impact on organisational innovation. Furthermore, performance management can serve as an important instrument in the establishment of a sustainable culture of innovation processes (KPMG 2013:3).

3.3.1.5.2 Customers

Customer insights and participation are viewed as a critical strategy in new product development (NPD) (Djelassi & Decoopman 2013:683; Wang, Hsiao, Yang & Hajli 2016:56). This is

confirmed by the findings of Price Waterhuse Coopers (2017:10) as they reported that 54% of companies relied on customer insights, emphasising that customer engagements helps them define innovation easily from ideation. Furthermore, the Australian FMCG industry found that where market power in the sector is highly intense, it is particularly imperative for the firms operating in the industry to involve customers early in the design and planning processes (Davis, Chelliah & Minter 2014:6). Customer involvement includes supplier-initiated activities with the purpose of acquiring customer information, feedback, and knowledge to (co-)develop new products or improve existing ones (Menguc, Auh & Yannopoulos 2014:315).

Moreover, higher levels of customer involvement in new product development enables employee and customer integration during the NPD process in joint problem-solving and sharing product in development responsibilities and value creation (Chang & Taylor 2016:48; Cui & Wu 2016:8; Kimita, Sugino, Rossi & Shimomura 2016:54). Wang, Jin and Zhou (2019:192) propose that customer involvement improves firms' new product performance. Thus, organisations that gradually seek insights and expertise outside their organisational boundaries, among which customer participation can offer tailored solutions, can meet customers' unique needs and pre-empt product failures (Luchs, Swan & Creusen 2016:323).

3.3.1.5.3 Suppliers

Relationship with customers and suppliers are the most crucial factors influencing innovation strategy of an organisation (Genis-Gruber & Ogut 2014:719). The strength of the relationship is important in collaboration between companies (Eisto, Holtta, Mahlamaki, Kollanus & Niemen 2010:857). Supplier participation in new product development is imperative, since suppliers' own specialised product and process competences which are critical as products are becoming progressively multifaceted (Jensen 2009:187). More so, suppliers typically have superior expertise and knowledge concerning specifications, parts and components, which may be indispensable to a firm's new product innovation (Sun, Yau & Seun 2010:72). Supplier expertise and knowledge leads to higher efficiency that can lead to the reduction of development costs and the reduction of development lead-time (Merilainen 2018:16). As noted in the literature, supplier involvement plays a very important role in organisational innovation, as it improves product and firm performance, customer satisfaction and greater profitability, which in turn help attain sustainable competitive advantage.

3.3.1.5.4 Information Technology (IT)

One of the fundamental areas of technology is information technology, which has become a crucial function for every organisation and has greater future benefits to business opportunities that will enable the firm to minimise cost, improve productivity, implement new business strategies, and gain competitive advantage (Kihara, Bwisa & Kihara 2016:157). In the world of globalisation, information technologies play a key role of change and are actually the basis of innovation. In a study conducted by Kmieciak, Michna and Meczynska (2012), information technology has been shown to significantly influence innovation through enhancement in communication, sharing of information and knowledge, inter-organisational exchange and procedures of intra-organisational learning.

Information technology furthermore aids organisations in achieving value advantages through IT investments that enable an organisation to achieve innovation empowered products and services (Naido & Hogue 2018: 645). More so, the utilisation of information technology in innovation and knowledge formation processes is, perhaps, the most critical to a firm's long-term success (Pfano & Beharry 2016:277). Moreover, it can aid by giving management a methodology to be more innovative in making crucial decisions due to its capability to implement new and state of the art ideas and scrutinise its impact on reality (Alsalim 2020:2489). Technological competencies of an organisation can also be achieved through research and development.

3.3.1.5.5 Research and development (R&D)

Research and development has been regarded as one of the crucial approaches to secure technological potential in an organisation, thereby providing innovation and economic growth (Bayarcelik & Tasel 2014:746). Research and development is a constituent of innovation. (Ildirar, Ozmen & Iscan 2016:36). Research and development (R&D) includes detecting new technologies, developing and controlling product and process design technologies and preparing for a product (Jugend & da Silva 2012:54). With COVID-19 on the horizon, its impact on research and development and engineering is less discernible than others, yet highly critical in the medium-term, with hidden influence on the mid-to long-term (Oliver 2020:7). Companies therefore need to invest heavily on research and development in order to counterattack the threats that COVID-19 poses on successful product development and innovation. Moreover, different innovation outputs, such as measures of the commercial success of innovations can be seen as the consequences of numerous innovation contributions and R&D (Conte & Vivarelli 2013:3). The importance of innovation is discussed in the following section.

3.3.1.6 The importance of innovation

Innovation is a strategy that several firms use to create a sustainable competitive advantage, manufacturing products that competitors cannot imitate, or introducing superior, cheaper, and faster services (Goedhuys & Veugelers 2012:516; Shu, Page, Gao & Jiang 2012:125; Aziz & Samad 2016:258; Byukusenge, Munene & Orobia 2016:83). More so, innovation strategy allows an organisation to create long-standing competition by attaining knowledge, skills in technology, and expertise in creativity and development and constantly introducing new ideas in the form of product innovation, process innovation, or organisational model innovation (Distanont & Khongmalai 2018:4; Tavassoli & Karloson 2015:2). Innovation as a strategy helps companies to determine the usage of resources and how to enhance its usability and achieve organisational performance (Bakar 2015:4).

Moreover, innovative products could improve sales because of their improved performance (e. g., reliability or durability), enhanced features (e. g., integrated facilities), others (including artistic products) compared to the current products offered by contestants in the market (Hana 2013:84; Nawaz, Hassan, Shaukat 2014:108). Innovation is not solely embeddded in the notion of improving products but also on improving production or operational techniques. Therefore, if companies in the FMCG industry view innovation as strategy that improves efficiency, they would reap greater results. For example, Kraft Foods was awarded a Supply Chain Innovation Award in 2009 for its innovation prowess in its distribution centres (Zawawi, Wahab, Al-Mamun, Yaacob, Kumar & Fazal 2016:87). Kraft had renowned a passive radio frequency identification (RFID) technology as the best method to offer real-time visibility, along with more efficiently spot and track trailers on its premises.

From the above argument, it can be concluded that innovation decisions are the most important tactical decisions for every organisation, since innovation is the most essential apparatus that aids firms to enter into new markets, upsurge current market shares, and strengthen their competitive edge. Nevertheless, it is important for them to decide on how to dispense their limited innovation resources on product, process, organisational and market innovations as well as different combinations of these basic types of innovation, and how to alter this distribution in the long run, as internal and external settings change when innovating (Tavvassoli & Karlsson 2015:7). This endeavour could be achieved through intensive research and development in the organisation. It is pleasing to note that scholars such as Day (2011:186), Bayene, Shi and Wu (2016:127) agree with the notion that firms that are relentlessly pursuing the innovation strategy usually allocate

adequate research and development resources to acquire new technology and accumulate better human resource competence.

Researchers such as Siddhey and Jain (2011:5) empirically found that supply chain strategy (innovation strategy) directly affects SCF. As noted in the literature, the innovation strategy remains important in Gauteng's FMCG industry as it can be utilised as a resource that makes it difficult for rivals to duplicate, which could contribute to an enterprise's competitive advantage. The empirical findings further suggest that FMCG multinationals in the Gauteng province should by all means adopt innovation and align it with the vision, mission and objectives of their firms as they play a pivotal role in the flexibility of their supply chains. The following section reviews literature on organisational learning.

3.3.2 Organisational learning

This section reviews literature on organisational learning. Topics that receive attention include the concept of organisational learning, its key enablers, factors affecting organisational learning and its relative importance.

3.3.2.1 Definition of organisational learning

Literature on organisational learning has been reviewed by a number of scholars from several management disciplines, which resulted in the concept being given various definitions (Agyabeg-Mensah, Tang, Afum, Baah & Dacosta 2021:649). Organisational learning, often referred to as institutional learning, is defined as the ability of an organisation as a whole to detect inaccuracies and address them as well as deviations in knowledge and values of the organisation so that new skills of problem-solving and capacity for executing activities is created (Scott 2011:1; Vera, Crossan & Apaydin 2011:154; Gilaninia,Ganjinia & Kobra 2013:55: Ojha, Acharya & Cooper 2018:219; Rehman, Bhatti & Chaudhry 2019:6; Kang, Turi, Bashi, Alam & Shah 2021:2). Argote and Miron-Spektor (2011:1124) and Kragulj (2016:196), on the other hand, define organisational learning as a change that occurs in the organisation as it acquires more experience. For the purpose of this study, organisational learning is defined as the capability of a firm to acquire useful knowledge and insights that can be utilised to improve the flexibility of its supply chain and consequently SCP. Organsiational learning plays a pivotal role in the development of enterprises operating in dynamic and highly competitive settings (Mai, Do & Phan 2022:3) and is an essential mechanism for crisis management (Eismann, Posegga & Fischbach 2021:3).

Organsiational learning has received great attention in research, and a number of scholars have empirically studied this concept meticulously (Alerasoul, Afeltra, Hakala, Minelli & Strozzi

2022:2; Canbaloglu, Treur & Roelofsma 2022:51). It is important to highlight that it augments firm competitiveness when an organisation's response to market requirements are intensely aligned with the firm's environment (Hannan & Freeman 1984:151). The reviewed literature has outlined its processes, practices, outcomes and its relative importance when implemented successfully in an organisation. Aleresoul *et al*. (2022:2) propose a framework that greatly complements the concept of organisational learning in this study, and Figure 3.3 provides a graphical presentation of the framework.

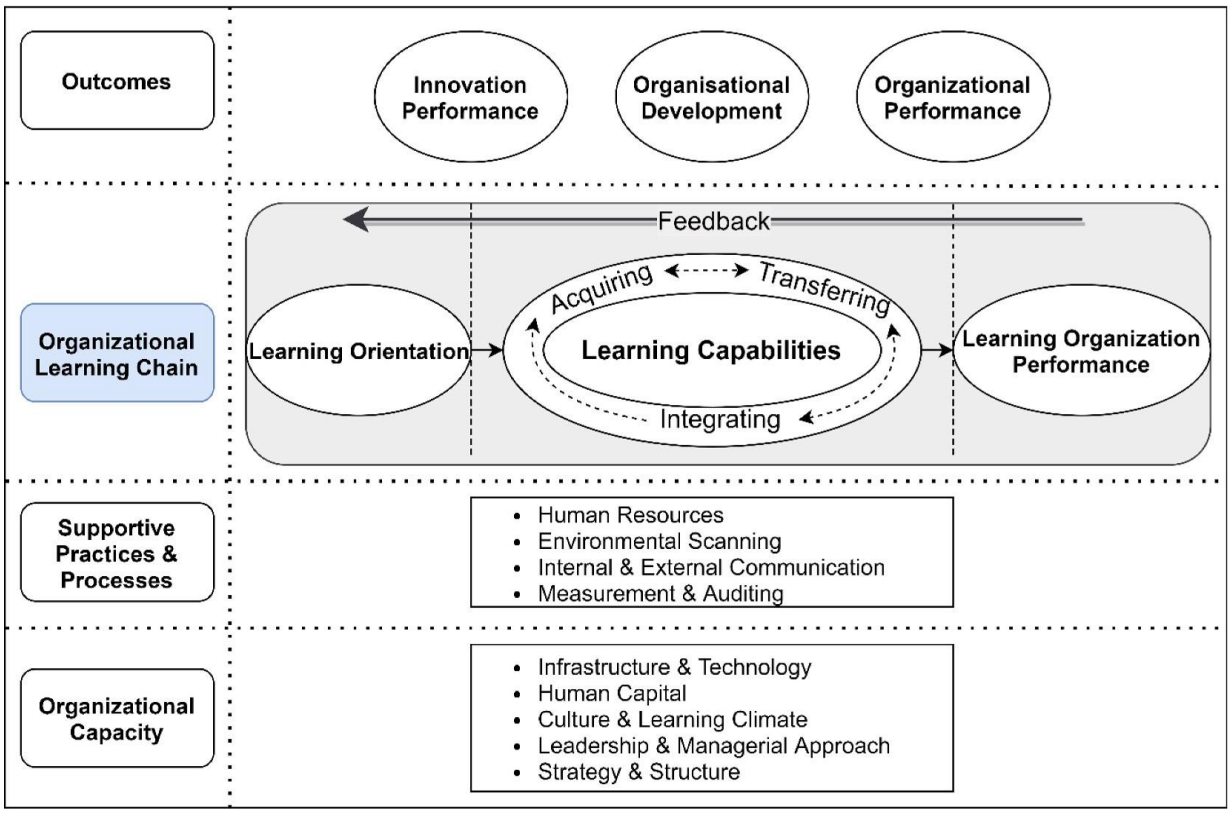

Figure 3.3: Organisational Learning Chain framework, developed from the SLNA

Source: Alerasoul, Afeltra, Hakala, Minelli & Strozzi (2022:2)

Figure 3.3 shows a depiction of organisational learning framework which consists of outcomes, namely, innovation performance, organisational development and organisational performance. These are discussed in Section 3.3.2.4**.** Additionally, supportive practices and processes include human resources, environmental scanning, internal and external communication, measurement and auditing; moreover, organisational capacity variables such as infrastructure, technology, human capital, culture, leadership and managerial approach, strategy and culture. The framework provides a comprehensive explanation that is of paramount importance, especially when organisations are attempting to implement organisational learning as it outlines and provides the arsenals needed in an organisational learning chain and processes.

The concept organisational learning includes a comprehensive range of phenomena, including, but not limited to, desired processes of individual change and organisational adaptation to improve the performance of the organisation through learning and distribution of knowledge throughout the organisation (Wallace 2013:22). Figure 3.4 clearly depicts the process of organisational learning.

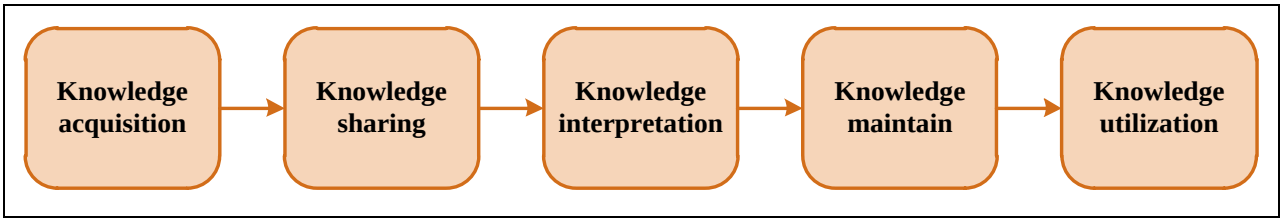

Figure 3.4: The process of organisational learning

Source: Gilaninia, Rankou and Gilden (2013:46).

Figure 3.4 shows the process of organisational learning, ranging from knowledge acquisition, knowledge sharing, knowledge interpretation, knowledge maintenance and lastly knowledge utilisation, as captured by Gilaninia, Rankou and Gilden (2013:46). These steps are mutually influential to each other, as suggested by Gilaninia *et al*. (2013:46). They are briefly explained below, as delineated by Weerd-Nederhof, Pacitti, Da Silva and Pearson (2002:325):

- Knowledge acquisition: the process that an entity uses for obtaining new ideas, data and knowledge.
- Knowledge sharing: the process by which personnel share ideas and useful information within the firm.
- Knowledge interpretation: the interpretation of information occurs when individuals within the organisation give meaning and transform the information that is shared in new common knowledge.
- Knowledge maintenance: the process of keeping the information acquired for daily and future use.
- Knowledge utilisation: which occurs when the information acquired and stored is being used to achieve organisational goals.

To further understand the process of organisational learning, a theoretical framework for analysing it is illustrated in Figure 3.3.

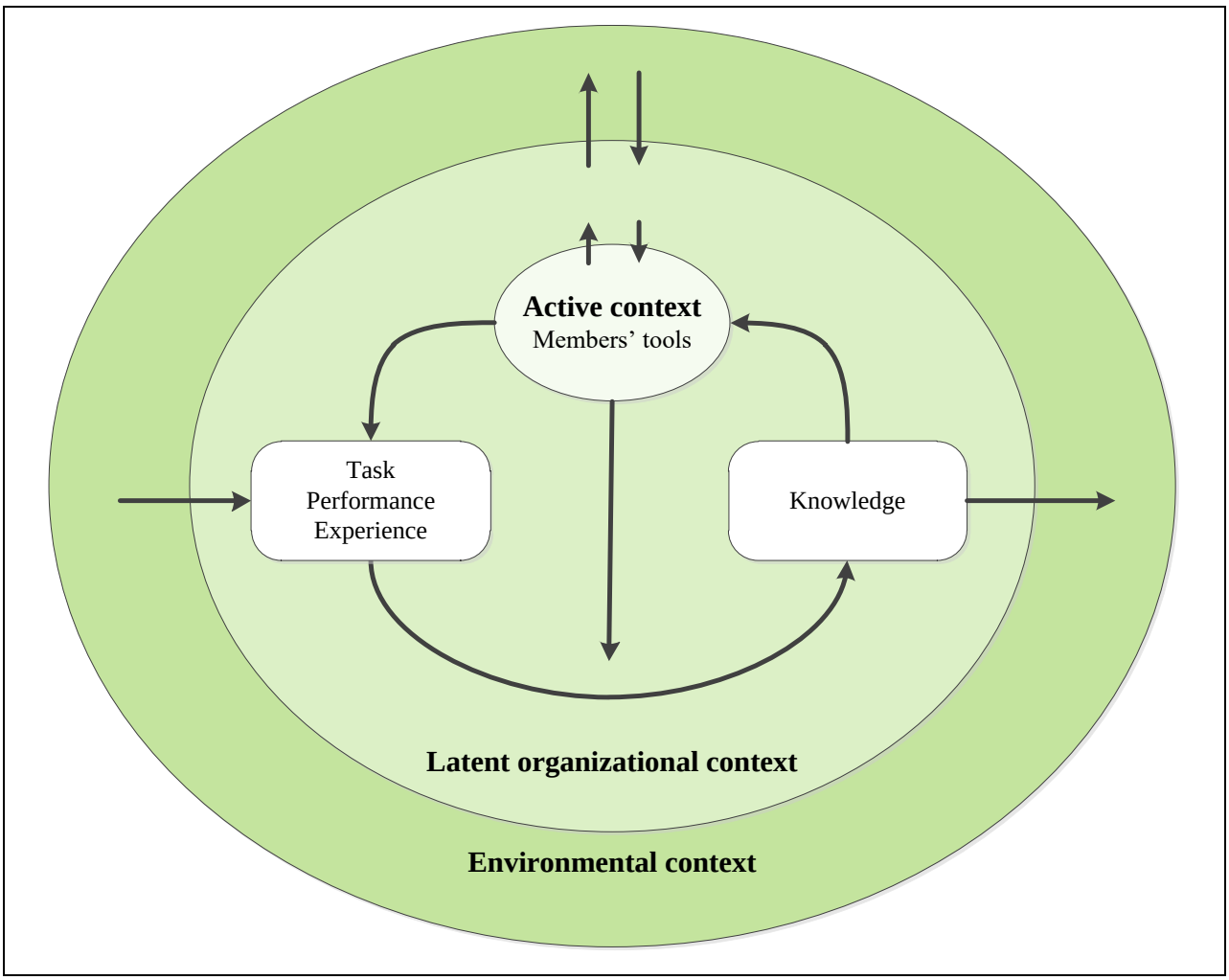

Figure 3.5: A theoretical framework for analysing organisational learning

Source: Argote and Miron-Spektor (2011:1125).

Figure 3.5 illustrates a continuing cycle through which task performance experience is transformed into knowledge that changes the context of the entire organisation and as a result, affects future experience. The graphic above also verifies that organisational learning is an ongoing cycle that occurs over time (Argote & Miron-Spektor 2011:1125). Thus, a learning organisation must continuously endeavour to develop and implement policies and strategies which encourage learning at all levels within the organisation (Bui & Baruch 2012:17).

A plethora of scholars would agree with conceptualising organisational learning as a change in the organisation's knowledge that transpires as experience is acquired. As such, Simon (1991:125) postulated that all learning starts with an individual person; an organisation learns in only two ways: (a) by the learning of its associates, or (b) by recruiting new members who have knowledge outside the organisation. Similarly, Canbaloglu *et al*. (2022:51) highlight that learning in an organisation is dependent on an individual in personnel to cultivate psychological models and transform them unambiguously to developing new knowledge within the organisation. As such, it

can be interfered that an organisation knows something even if just one of its members has knowledge, and that the culture and structure of the organisation allows it to be applied effectively. Therefore, knowledge is rooted in a variety of fountains, including individuals, routines, and transactive memory systems (Argote &Miron-Spektor 2011:1124).

Furthermore, the knowledge that the organisation has acquired through learning from past experiences is fundamental to the organisation when embarking on new projects and risk management (Duffield & Whitty 2016:1281). The knowledge that organisations acquire should be knowledge that enhances the competitive advantage and organisational development such technological and market knowledge (Basic 2021:163). This vantage point clearly shows that organisational learning indeed brings human capital, systems through marketing analysis and its implementation. For example, Duffield and Whitty (2016) in their recent research have shown that the integration of associates and system elements can significantly affect an organisation's competence for storytelling, and therefore learning and accumulating lessons from stories of past project experiences is of paramount importance. To clearly define the dissemination and application of the knowledge accumulated from past experience, the Systemic Lessons Learned Knowledge model is adopted and depicted in Figure 3.6.

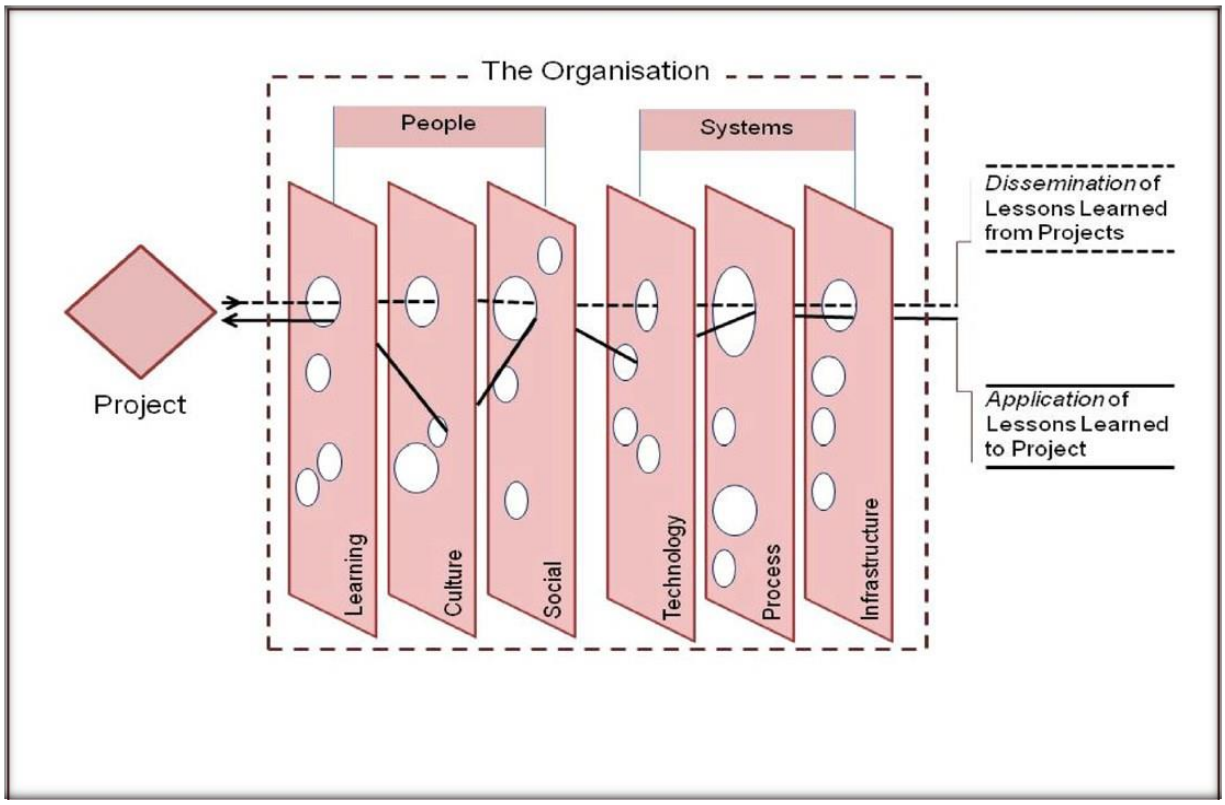

Figure 3.6: The systemic lessons learned knowledge model

Source: Duffield and Whitty (2015: 318)

Figure 3.6 shows the dissemination and application of knowledge acquired. As illustrated in the above figure, the dissemination of knowledge in an organisatin is heavily influenced by two factors, namely, people and technology. Furthermore, the model shows that all the elements which are affected by personnel (people) include: learning, culture, social, and the factors that influence systems include technology, process and infrastructure. More so, the converse relationship refers to the fact that the exposed holes in the figure in each component signify the various facilitators (lessons learned practices) within each of those components that need to be brought into line to enable the effective propagation and solicitation of the identified lessons (Duffield and Whitty 2015:318). The following section outlines and explains the types of organisational learning.

3.3.2.2 The types of organisational learning

The current section outlines and explains the two types of organisational learning. It is worth noting that the concept has two dimensions, namely, intra-organisational learning and inter-organisational learning. The two dimensions are briefly discussed in the following sub-sections.

3.3.2.2.1 Intra-organisational learning

Intra-organisational learning is the processes of obtaining, understanding, storing, sharing and utilising information among internal functions or units of an organisation, leading to new knowledge and insights that impact organisational activities and performance (Agyabeg-Mensah *et al*. 2021:649). In the knowledge-based view (KBV) of the firm, knowledge and expertise within an organisation are considered as primary enablers of continuous innovation and sustainable competitive advantage (Argote & Ingram 2000:155; Chauhan & Kalkis 2021:123). This assertion made by the KBV theory confirms that the RBV adopted in the current study greatly complements and supports the implementation of organisational learning in organisations. Jamm (2018:2) maintains that knowledge or expertise kept privately has a tendency of only benefiting single personnel or units, whereas departments that function as teams could leverage benefits of mutual creation and sharing.

It has frequently been argued over the past few decades that the viability of up-to-date knowledge depends on organisational problem-solving and intra-organisational learning capabilities (Powell & Snellman 2004:199). This is because intra-organisational learning requires that all associates within the organisation to spontaneously share their knowledge, experience and expertise with each other (Agneessens & Wittek 2011:333). Therefore, companies in the Gauteng FMCG industry could utilise intra-organisational learning to cultivate organisational performance (i. e.,

flexibility) (Škerlavaj, Dimovski, Mrvar & Pahor 2010:39) and encourage productivity and efficiency of human and intellectual capital (Mohammad 2012:26).

3.3.2.2.2 Inter-organisational learning

Inter-organisational learning (IOL) was formerly introduced in the mid-1990s, shifting the focus of learning in a single entity to multiple-organisations and inter-organisational systems (Alashwal, Low & Kamls 2019:3). Therefore, inter-organisational learning (IOL) is understood as a method of learning (acquiring knowledge) that takes place by means of cooperative relationships (interactions) between the parties involved in a particular network (Mozzato & Bitencourt 2014:290). The authors further reveal that these relationships improve and expand each member's knowledge base and enhance the potential to establish individual and collective comparative advantages. It could be inferred then that this type of learning offers the same benefits as intra-organisational learning to organisations. These include, among others, competitive advantage (Ouro, Olave & Barreto 2020:74; Wegner & Mozzato 2019:174), flexibility, and organisational performance (Wegner & Mozzato 2019:180).

Inter-organisational learning is a unique form of learning because organisations acquire knowledge from the experience of others rather than from their own experiences (Greve 2005:1026). The fact that inter-organisational learning allows information to be shared beyond a single entity allows a firm to establish a channel of private information communication. When the main participants of the organisation institute a private relationship channel, economic cooperation for organisations can be promoted through the personal association between the parties within the value chain (Dongling & Lam 2019:188). From the above argument, it is apparent and necessary for firms, including those operating in the Gauteng FMCG industry, to prioritise inter-organisational learning with its key suppliers. The subsequent section discusses the key enablers and practices of organisational learning in a supply chain context.

3.3.2.3 Key enablers of organisational learning and supporting practices

This section discusses the key enablers of organisational learning and supporting practices in a supply chain context, which include human capital, supplier associations (SA), conferences and workshops.

3.3.2.3.1 Human Resources

The term human capital emerged in the early 1980s in the United States (O'Riordan 2017:4; Boselie, Van Harten & Veld 2021:486) after the work of Drucker and McGregor in 1950 and 1960

respectively, when the authors stressed the necessity for idealistic goal-directed management and control of business processes. Since then, the concept of human capital has advanced due to its importance on firms, global supply chains, technological developments and academic developments (Indermun 2014:125; O'Riordan 2017:4). Furthermore, the concept of human resources is considered as a crucial ingredient in improving the assets of companies since it is a source of sustainable competitive edge and upsurges the efficiency of employees (Pasban & Nojedeh 2016:249). This confirms the assertions of the RBV theory used in this study, as human resources also contribute to the competitive advantages of an organisation. Brito and Oliviera (2014) found that human resources have a significant influence on organisation performance. This further suggests that human resource practices, such as personnel development, play a significant role in enabling the organisation to acquire knowledge that in turn helps the organisation's flexibility and performance.

Scholars such as Jiang, Lepak, Han, Hong, Kim and Winkler (2012:73) agree that attention of organisations should be on systems because personnel are concurrently exposed to a unified set of human resource (HR) practices rather than solitary practices at a time, and their impact are likely to depend on the other practices within the system. Human resources practices and organisational systems therefore should be fused rather than isolated in organisations. This is due to the significant importance of human resource (HR) practices on organisational systems and performance. Furthermore, human experience aids organisations in shaping and delivering new insights, solutions, products, and services that ultimately adds value to market places and enterprises (Price Waterhouse Coopers 2017:14). Thus, human capital enables organisational learning in organisations as personnel experience helps firms achieve sustainable advantage and provide value through knowledge acquired in the organisation and through training and development.

3.3.2.3.2 Training and development

The importance of personnel training and development platforms is increasingly growing for organisations that pursue competitive advantage and higher levels of operational and business performance. It is, however, important to highlight that a flexible supply chain is a key enabler for operational (Fantanzy 2014:403) and firm performance. Thus, organisational learning is an important ingredient for superior SCF and can even contribute more significantly if training and development is prioritised. Training and development was introduced in the early 1970s to young and dedicated employees who had potential (Jehanzeb & Bashir 2013:243).

In today's competitive world, however, training and development are treated as holistic activities that allow everyone in the organisation to be equipped with the necessary skills such as negotiation skills, research skills, innovative skills, analytical thinking, etc. Furthermore, many companies and practitioners found strategic workshops where teams across the organisation are brought together in a space to communicate innovation goals clearly (Dobni, Klassen & Wilson 2021:36). Nonetheless, organisational learning is of the notion that every employee in the organisation, including engineers, supply chain professionals, recruiters, marketers etc. should all be equipped with the necessary training and development in order for the respective organisations to be competitive and flexible (Rodriquez & Walters 2017:206).This shows that FMCG organisations also need to provide relevant training to its personnel, as this could allow them to remain competitive in the volatile and extremely competitive FMCG arena.

3.3.2.3.3 Supplier associations (SA)

Supplier associations (SAs) have been an effective tool of various manufacturing companies in Japan in the 1950s (Lysons & Farington 2012:254). A supplier association is defined by Hines and Rich (1998:526) as a reciprocally benefiting alliance of an organisation's most prominent suppliers coming together on a frequent basis in order to share and achieve strategic, operational and supply chain awareness. This alliance improves the expertise of both buyers and suppliers, particularly in terms of JIT, total quality management and joint problem solving. Thus, learning organisations could benefit much from attending such associations as they help in developing suppliers and organisations lacking strategic information that could enhance competitive advantage. A study conducted by Izushi and Morgan (1998:83) reported that most entities were of the view that SAs helped them build stronger and longer relationships with their suppliers. This also implies that FMCG industry could greatly benefit by establishing supplier associations with their key suppliers, as strategic information would be shared and long-term relationships established across the supply chain network.

3.3.2.3.4 Conferences

Conferences are platforms for professional development (Jenkins 2015:156) and knowledge dissemination platforms, which allows an organisation to acquire expertise useful for day-to-day operations. Conferences could be related to supplier associations because they are also networks that brings together supply chain professionals, suppliers and customers. These are powerful platforms that allow an organisation to acquire strategic information. As noted in literature, knowledge acquisition is one of the processes of organisational learning that allows an entity to obtain new ideas, data and knowledge (Gilaninia *et al*. 2013:46; Weerd-Nederhof *et al*. 2002:325).

With this being the case, FMCG companies should also arrange and attend conferences, as these are platforms that would allow them to acquire knowledge they need and translate into valuable ideas that would improve the flexibility of supply chains and consequently business performance. Section 3.3.2.3 explores the factors affecting organisational learning.

3.3.2.4 Factors affecting organisational learning

As noted in the literature, organisational learning is affected by personality traits possessed by employees in an organisation. These include, among others, openness to experience, conscientiousness, neuroticism, extraversion and agreeableness. The next section discusses how personality traits impact organisational learning.

3.3.2.4.1 Openness to experience

Openness to experience consists of the facets like imagination, creativeness, curious to generate new ideas (Gupta & Gupta 2020:3105). Furthermore, openness reflects the ability and tendency to explore sensory and appealing information through perception, fictional, and inventive effort (De Young, Quilty, Peterson & Gray 2015:47). A study conducted by Patterson, Kerrin and Gatto-Roissard (2009:12) proclaimed that openness to experience is the greatest noticeable personality trait to envisage the propensity for innovation in an organisation, and further pointed out that there is a great deal of empirical studies that indicate the positive relationship between openness to experience and innovation. More so, individuals that are open to experience are more willing to interrogate other individual's insights and share their own knowledge (insights). Open individuals are therefore more likely to partake in knowledge acquisition and distribution with cross-functional teams within the organisation (Xu, Jiang & Walsh 2016:3).

3.3.2.4.2 Conscientiousness

Conscientious people, are ones who are perseverant and committed to their goals, regardless of difficulties they are facing, and who are more likely to weigh up different information in order to accomplish tasks (Gupta & Gupta 2020:3105). Matzler, Pichler, Fuller and Mooradian (2011:5) postulated that highly conscientious individuals also demonstrate high tendencies of documenting knowledge for organisational usage. Thus, having conscientious people in an organisation encourages teamwork and eliminates time wasted on answering the same old questions. Moreover, they tend to strive for achievement and competence as well as display self-discipline in themselves (Grindwichal, Kulwanich, Piromkan & Kwanmuangvanich 2020:187). In addition, conscientious individuals are trustworthy and more tenacious, due to extra effort in their tasks, and work

tirelessly to ensure that they give a better performance to their organisations (Terrier, Kim & Fernandez 2016:3).

3.3.2.4.3 Neuroticism

Neurotic people are likely to encounter anxiety, stress and depression and negative self-assessment during the process of learning (Klang 2012:3). They are frequently regarded as poor group performers and tend to be insubordinate and interpret the prerequisite for change adversely (Therasa & Vijayabanu 2015:144). Hence, neuroticism is defined as the tendency to experience frequent, intense negative emotions associated with a sense of uncontrollability (the perception of inadequate coping) in response to stress (Barlow, Ellard, Sauer-Zavala, Bullis & Carl 2014:481; Terrier *et al*. 2016:4). A neurotic leader probably does not have a positive attitude towards work and may lack of confidence and optimism, which result in less ambition and less focus on career goals (Ghani,Yunus & Bahry 2016:47). Moreover, during the learning process, the learning organisation must be ready to accommodate neurotic personnel as they can positively or negatively impact the performance of an organisation.

3.3.2.4.4 Extraversion

Extraversion represents individuals who are high in positive emotions and excitement seeking (Therasa & Vijayabanu 2015:143). Accordingly, extraversion refers to the tendency to be invigorated by social interfaces, excitement and miscellaneous activities (warmth, gregariousness, assertiveness, activity, excitement-seeking and positive emotions) (Terrier *et al*. 2016:3). As a result, it could be interfered that an individual who exhibits greater extraversion levels would partake in knowledge dissemination more than others who have low levels of extraversion (Lofti, Muktar, Ologbo & Chiemeke 2016:244). In a study conducted by Wang, Noe and Wang (2014:998), it was found that extrovert employees would share their knowledge/information whether there is reward or no reward. Furthermore, when interacting with others, highly extraverted individuals become exuberant in their behaviour and expressiveness (Jusoh, Chinna & Udayangaine 2019:37). Since organisational learning encourages participation and higher levels of information sharing, extraverted individuals are likely to contribute significantly to the process of learning within the FMCG industry.

3.3.2.4.5 Agreeableness

Agreeableness is a tendency to be empathetic and cooperative rather than distrustful and unfriendly towards others (Kazako, Safin & Rahim 2013:183). Furthermore, agreeableness

enhances benevolence compared with resentment, as well as diverse feelings and activities (Castillo 2017:12). Given recent management trends, it is proposed that leaders who are neither too agreeable nor disagreeable are most likely to improve group performance (Dale & Harrison 2017:12). They also demonstrate higher job satisfaction and are less likely to be involved in workplace incidents (FLORIDA TECH 2020:1). In work environments, agreeable employees display greater levels of interpersonal competency and work effectively when collective action is needed (Tuteja & Sharma 2018:7363). This personality trait, thus, could play an important role in speeding up the process of organisational learning in the FMCG industry as it encourages teamwork. The next section discusses the importance of organisational learning and its outcomes.

3.3.2.5 The importance of organisational learning

Organisational learning is not only essential to the organisation when embarking on new projects and risks management (Duffield & Whitty 2016:1281) but it also leads to new insights and understandings that jointly emerge through the collaborative sharing of information and knowledge between multiple entities in a supply chain (Flint *et al*. 2005:118; Janezic *et al*. 2018:57). Academics, scholars and practitioners have long agreed that organisational learning contributes to organisational competitiveness (Gilaninia *et al*. 2013:54; Saadat & Saadat 2016:220; Yang, Secchi & Homberg, 2018:155). Furthermore, an organisational learning strategy enables supply chain executives to conjointly learn how to syndicate capabilities and processes to achieve a competitive advantage by continually creating value for the final consumer (Hannan & Freeman 1984:151; Manuj, Omar & Pohlen 2014:103).

Learning is key to solving organisational glitches. The most successful organisations are those that learn and move faster than their competitors (Gilaninia, *et al*. 2013:54). More so, learning organisations envisage change, and are devoted to new knowledge generation, continuous innovation, and flexibility (Janezic *et al*. 2018:60). Santos-Vijande *et al*. (2011:1086) empirically found that organisational learning enhances the firm's ability to respond rapidly to environmental contingencies. This findings are further confirmed by Eismann *et al*. (2021:3), who found that organisational learning is a strategy used to address crisis in an organisation.

Organisational learning doesn't necessarily need to be centralised. Khunsoonthoinjit and Panjakanjornsak (2018:458) postulated that a learning organisation is one with the philosophy and tenacity to create maintainable solutions and results, as well as integrating them with the systems and perspectives with associates in order to stimulate the organisation. It can be inferred then that organisational learning often leads to strategic information sharing within the supply chain

network, which helps in anticipating change and developing an effective supply chain risk management strategy.

Furthermore, through knowledge acquisition, organisations can gain access to strategic knowledge and current trends about foreign marketplaces, which in turn allows firms to withstand challenges emanating from trends in the environment outside, and consequently improve organisational performance (Mohr & Batsakis 2017:155; Griveanu & Carstina 2018:229; Kang, Zhao & Battisti 2022:15). In addition, organisational learning promotes innovation and sustainable growth for organisations (Migdadi 2019:151).Furthermore, it supports organisations to innovate and counteract unforeseen occurrences such as Covid-19 and unsettled circumstances (Carnevale & Hatak 2020:183; Mai *et al*. 2022:1; Kutieshat & Farmanesh 2022:1).

It is pleasing to note that authors such as Juceviciene and Leonaviciene (2007:570) agree with the notion that it essential to develop an understanding of the process of organisational learning and knowledge management established with individual learning. Companies in the Gauteng FMCG industry should therefore highlight and emphasise the importance of organisational learning and individual learning in order for the firms to be proactive (flexible) in dealing with supply chain glitches. Section 3.3.3 reviews literature on risk management.

3.3.3 Risk management

This section reviews literature on risk management. Topics that receive attention also include the risk mitigation process, factors that affect risk management and the importance of risk management in organisations.

3.3.3.1 Definition of risk management

To gain an in-depth understanding of supply chain risk management, supply chain risk needs to be defined, although it is important to stress that the concept of risk has a range of definitions, depending on the field of research (Dias, Hernandez & Oliveira 2020:4). In supply chain management, risk is defined as the difference in the distribution of possible supply chain consequences, their likelihoods, and their distinctive values (Colicchia *et al*. 2010:68; Diehl & Spinler 2013:313; Heckman, Comes & Nickel 2015:122; Parinduri, Sinulingga & Sembiring 2019:1). These risks are unforeseen occasions caused by human or natural factors which minimise the performance of the supply chain (Yi *et al*. 2013:75; Vilko, Ritala & Hallikas 2019:471). These risks can result from a number of causes, including but not limited to demand uncertainty, supply disruptions, unpredictable exchange rate, political unrest, supply capacity constraints, quality issues, supplier liquidity problems, supplier dependency, product design changes, delivery delay,

dynamic consumer markets and even unforeseen occurrences such as on-duty incidents, cyber-attacks, natural disasters and terrorism (Thun & Hoenig 2011:242; Price Waterhouse Coopers 2013:6; Rajagopal, Venkatesan & Goh 2017:646). For example, the Risk Management Institute of Australia (2016:3) highlighted that one of the risks faced by firms with respect to effectively managing their supply chain is failure to undertake satisfactory diligence on firms before appointing them as a supplier.

Supply chain vulnerabilities are interconnected. A slight problem can halt the entire supply chain and a number of disruptions have affected firm supply chains (Shahbaz, Rasi & Ahmad & Rehman 2017:93234). Instances include the Tsunami and earthquake in Japan when a single disruption disturbed many elements of global supply chain and harmed many businesses in other countries. Overall economic loss was roughly 300 billion US dollars. Another well-known example includes Hurricane Floyd in the United States of America (USA), which swept away farms and disrupted food retail supply chains for at least seven days ((Dias *et al*. 2020:6). Another example is the well-known melamine crisis in Chinese dairy products (Vilko *et al.* 2014:3).

The COVID-19 pandemic and the current Russia-Ukraine war has disrupted and halted production for many firms globally. Additionally, it was reported that, on average, the percentage of companies around the world reporting a loss of income due to a supply chain risk increased from 28% in 2011 to 42% in 2013 (Saenz & Revilla 2014:22).Many companies have also reported losses due to the COVID-19 pandemic, Russia-Ukraine war, inflation, instability, power outages and blackouts globally. This clearly shows that supply chain risk management should be viewed as a corporate-level strategy concern with strategic importance, as it is an arsenal that could be used to counteract these risks. Furthermore, the Gauteng FMCG industry could benefit from strategically implementing the risk management strategy because it was one of the sectors that are still crippled by the pandemic, instability, blackouts in the country, as well as the ongoing war between Russia and Ukraine.

The concept of supply chain risk management has been the major topic worldwide and its focused has vastly evolved due to its importance in supply chain management and enterprises (Rinaldi, Murino, Gebennini, Morea & Bottanni 2022:1). Its relative importance was apparent in the recent global pandemic as it was one of the strategies used to neutralise the COVID-19 pandemic (Delloite 2020:4). Risk management has been defined by academics from numerous perspectives (Shojaei & Haeri 2019:838). As a consequence, supply chain risk management is defined as a strategy used to the identify possible causes of risk and implementation of effective strategies through a synchronised methodology among supply chain partners to minimise supply chain

vulnerability (Juttner, Peck & Christopher 2003:211; de Oliveira, Espindola & Marins 2018:682; Gurtu & Johny 2021:1). On the other hand, supply chain risk management is defined as a systematic technique of detecting, assessing and mitigating risks in supply chains (Shahbaz *et al*. 2017:9236). For the purpose of this study, supply chain risk management is conceptualised as a strategic tool that is used to detect, monitor and mitigate potential risks in the supply chain network to improve flexibility and SCP.

The main objective of supply chain risk management (SCRM) is to reduce the probabilities of any uncertainty within the supply chain network and develop an appropriate set of strategies to survive the situation efficiently and effectively (Shahbaz *et al*. 2017:9236; Jacobs & Chase 2018:31). Effective risk management is becoming a central concern for firms to survive and thrive in a competitive business environment (Charted Institute of Purchasing and Supply Chain 2009:1; Olson & Wu 2011:23; Singhal, Agarwal & Mittal 2011:16). As noted in literature, a supply chain is vulnerable to different types of risk, depending on the nature of the value chain network. The various risks are outlined and explained in the following section.

3.3.3.2 Types of supply chain risks

Supply chain risk management has been studied, reviewed and classified in literature extensively by a number of scholars. APICS (2016:1) hinted that organisations are vulnerable to supply chain risks such as those including, but not limited to unforeseen occurrences, demand risk, internal risk, economic risks, procurement risks, which they are aware of and not overlooking. Table 3.1 provides a clear presentation of the type of risks affecting the flexibility and performance of supply chains.

Table 3.1: Types of risks occurring in a supply chain network

Type of risk	Description	Source
Internal risk	Internal risks are production related risks or disruptions such as machine malfunctions and IT disruptions.	Cheng and Wu (2013:634); Thun & Hoenig 2011:242; Price Waterhouse Coopers (2013:6)
Demand risk	Demand risks are risks related to uncertainty in the upstream downstream activities that affect customers and supply chain members	Cheng and Wu (2013:634); Faress, Elouadi & Erragi (2021:136)

Type of risk	Description	Source
Procurement risk	Risks related to authority and experts making adverse contractual decisions.	Lysons & Farrington (2018:582); APICS (2016:1).
Economic risk	Economic risks are a result of instability in counties and the general rise in prices (Inflation).	Cheng and Wu (2013:634); Faress *et al*. (2021:136)
Unforeseen risk	These are risks that are uncontrollable and are a results of nature such as earthquakes, flooding, strikes, terrorism etc	APICS (2016:1); Rajagopal, Venkatesan & Goh (2017:646)

Source: Authors own construction.

Table 3 shows and describes the different types of risks that affect the flexibility and performance of a supply chain. They should be observed closely and not be overlooked by supply chain managers as they pose a threat in the performance of a supply chain. Therefore, applying the risk management process could be advantageous (Chaudhuri *et al*. 2017:694) and help supply chain managers mitigate and control the risks. Section 3.3.3.3 pays special attention to the risk management process.

3.3.3.3 The phases of risk management

This section discusses the management process of risk management. Its processes encompass identifying the various risks to which a company is vulnerable to assessing, and ranking such risks (Barbosa, Carrasco & Abarca 2022:1). A supply chain's typical risk management process involves the following segments: risk or hazards identification (usually denoted as risk identification); risk assessment; decision making and the execution of risk management actions; and monitoring (Behzadi, O'Sullivan, Olsen & Zhang 2018:26; Vilko, Ritala & Hallikas 2016:471). The supply chain risk management process is shown in Figure 3.7 and is discussed in greater detail.

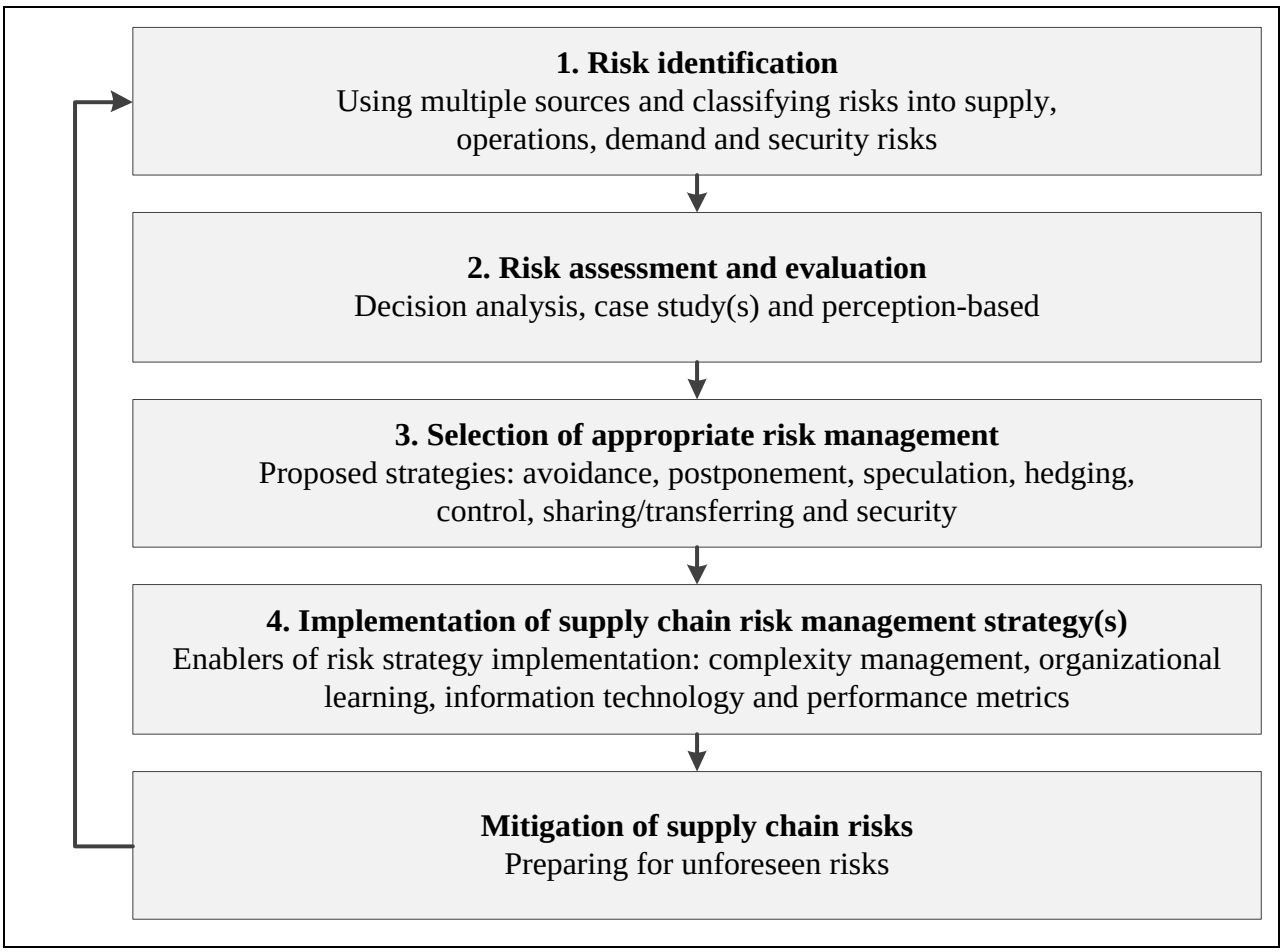

Figure 3.7: A five-step SCRM process

Source: Manuj & Mentzer (2008b:137)

Figure 3.7 represents a five-step supply chain risk management process. The first step includes risk identification, which entails using multiple sources and classifying risk into supply, operational demand and security risk. The second step is risk assessment and evaluation, which deals with decision analysis, case study(s) and is perception-based. The third step focuses on the selection of the appropriate risk management strategies such as avoidance, postponement, speculation, hedging, control, sharing and transferring and security. The fourth phase focuses on the implementation of supply chain risk management strategies. Implementing effective strategy(s) entails complex management, organisational learning, and information technology and performance metrics. The fifth and last step focuses on risk mitigation, which involves preparing for unforeseen risk. These five phases are further discussed in the next sections.

3.3.3.3.1 Risk identification

The first important step of the supply chain risk management process is risk identification as it detects all the types of vulnerabilities to the firm, including hidden risks, which have possible

disruptive impacts on the supply chain (Breuer, Haasis & Wildebrand 2013:335; Colin, Pfohl, Gallus & Thomas 2011:839; Sachdeva, Kayis & Dana-Karningsih 2012:835; Wilding, Colicchia & Strozzi 2012:413; Behzadi *et al*. 2018:26 2018:26). Risk identification usually commences with brainstorming sessions, previous risk assessments, surveys, and list of possible uncertainties within the supply chain network (Supply Chain Risk Leadership Council 2011:12; Lavastre, Gunasekaran & Spalanzani 2012:831). This phase also encompasses the classification of the nature of vulnerability and its potential impact on the overall supply chain network. Furthermore, supply chain risk sources can be classified into external and internal risks (Wilding *et al*. 2012:413; Simba *et al*. 2017:4).

Internal risks are related to decisions made and actions taken within the parent organisation, whereas external risks are all the potential vulnerabilities outside the control of the enterprise (Trkman & McCormack 2009:247; Zamora, Adarme & Palacios 2012:396). Internal risks include quality issues, production risk, supplier dependency and product design changes (Lin & Zhou 2011:177. External risk sources, on the other hand, include policy risk, supply risk and unpredictable exchange rate, political unrest, supplier liquidity problems, delivery delay, and dynamic consumer markets (Lockamy 2011:412; Rajagopal, Venkatesan & Goh 2017:657). The objective of risk identification is to discover future uncertainties in order to manage them proactively (Renault, Agumba & Ansary 2016:776).

3.3.3.3.2 Risk assessment and evaluation

Risk assessment serves as an important mechanism for examining and assessing risks and disturbances facing critical functions and services, and provides a foundation for captivating actions to improve resiliency in the supply chain network (Cadergren, Hassael & Tehler 2022:1). After identifying all the types of vulnerabilities, their likelihood and influence of these on the firm are ascertained in the risk assessment phase (Simba *et al*. 2017:4). Although vulnerabilities can be diversified and comprise multifaceted circumstances, the risk assessment or evaluation phase involves ascertaining the likelihood of the risk event and the influence of it (Waters 2011:131; Bandaly, Satir, Kahyaoglu & Shanker 2012:265; Amundson, Brown, Shuaib, Badurdeen, Jawahir & Goldsby 2013:3945; Sharma & Bhat 2014:48). Simba *et al*. (2017:4) assert that the outcome of risks is ascertained through its impacts on the performance indicators of an enterprise, such as profitability and productivity. Furthermore, the impact and likelihood of the vulnerabilities guide firms to determine the most catastrophic risks within the supply chain network (Kumar, Himes & Kritzer 2014:878; Lockamy 2014:769).

More so, the impact from each risk can vary, from nearly insignificant risks which will not bring pertinent consequences on the supply chain network, to catastrophic occurrences that might result in complete and irrecoverable loss to the chain (Yan 2017:26). Additionally, from the perspective of risk assessment or risk management, the nature of the risk impact plays a significant role in supply chain risk management (Vilko *et al*. 2016:471) and in choosing an applicable risk mitigation strategy (Liu, Li & Wu 2014:1203; Sodhi, Son & Tang 2012:6; Wagner & Neshat 2012:2888). As such, assessing and evaluating risk within the supply chain network can assist supply executives in developing risk mitigation strategies that will mitigate supply chain risks and improve the performance of the supply chain.

3.3.3.3.3 Development risk mitigation strategies

Following risk identification and assessment, efficient and effective risk mitigation strategies are developed. Supply chain risk mitigation strategies refer to firm actions envisioned at minimising the probability of uncertainty and undesirable effects of risks. Supply chain risk mitigation strategies include, but not limited to keeping strategic emergency stock (buffer inventory, avoidance, postponement, collaboration between supply chain partners, speculation, hedging, control, sharing, security (Ghagde, Dani & Kalawsky 2013:535; Kumar Sharma & Bhat 2014:1025; Thun *et al*. 2011:5517), increasing SCF and resilience (Pettit, Croxton & Fiksel 2010:1; Zsidisin & Wagner 2010:4) and developing agility (Johnson, Elliott & Drake 2013:333; Wilding *et al*. 2012:404).

Furthermore, it is crucial for supply chain managers choose a suitable risk mitigation strategy for each vulnerability (Liu *et al*. 2014:1203; Sodhi *et al*. 2012:6; Wagner & Neshat 2012:2888) as this determines whether an organisation would be able to effectively deal with risks (Marley, Ward & Hill 2014:143; Scholten, Sharkey-Scott & Fynes 2014:219).Moreover, in order for managers to select an appropriate risk mitigation strategy for each risk, a cost–benefit analysis (Diehl & Spinler 2013:317; Kumar, Sharma & Bhat 2014:1032) and the Failure Modes and Effects Analysis (FME)(Angara 2011:5) needs to be undertaken to determine the cost of utilising that particular strategy.

3.3.3.3.4 Implementation of risk mitigation strategies

After selecting the appropriate supply chain risk mitigation strategy, the implementation of the risk management strategies follows. According to Manuj and Mentzer (2008b:148), the enablers of risk management strategies implementation are complexity management, organisational learning, information technology and performance metrics. Furthermore, the strategies adopted by

an organisation to mitigate the risk include transferring it to an external party, which permits the enterprise to transfer the risk and related responsibilities to an additional entity, such as an insurance company (Mamai & Yinghua 2017:220). Risk mitigation strategies, however, extend to collaboration, choice of suppliers, visibility and transparency, relationships/partnerships, flexibility, redundancy (inventory), collaboration, postponement, multiple sourcing as well as flexible contracts and joint planning and coordination (Kilubi 2016:13). In completing the SCRM process, firms need to follow through to risk mitigation and monitoring (Simba *et al*. 2017:5).

3.3.3.3.5 Risk mitigation and monitoring

Risk mitigation firms have three mitigation responses for risks, which may affect their day to day operations and range from accepting, reducing and sharing the risk with other supply chain partners (Curkovic, Scannell, Wagner & Vitek 2013:21; Simba *et al*. 2017:5). The likelihood of risk events is an indispensable determinant of strategies to be implemented within the SCRM process (Kumar *et al.* 2014:879). Therefore, supply chain mitigation strategies are implemented according to the likelihood of the risk within the supply chain network. While mitigating the supply chain risk, it is vital for firms to meticulously monitor the likelihoods of innumerable risk events (Jüttner & Maklan 2011:25). Furthermore, risk monitoring includes benchmarking suppliers, visits to supplier sites, regular assessment of suppliers' processes and supplier performance measurement systems, on-site capability reviews and financial risk assessment (Curkovic *et al*. 2013:25; Scannell, Curkovic & Wagner 2013:372).

Based on risk analysis, even organisations in the Gauteng FMCG industry can develop action plans to mitigate and monitor the various risks encountered in their supply chains in ways they consider acceptable, as suggested by Perez-Cornejo, de Quevedo-Puente & Delgado-García (2019:1). It is worth noting that it is essential for FMCG organisations in the Gauteng province to establish and implement risk management committees in their organisations as they assist enterprises to counteract risk efficiently and effectively (Jia & Li 2022:100337). The authors further argue that the committee is a key monitoring apparatus implemented to improve the transparency of risk management in an organisation. Thus, establishing and implementing risk committees in the Gauteng FMCG industry would enable industrial enterprises to increase the degree of risk detection, readability and monitoring as they provide transparency in the supply chain network.

Section 3.3.3.4 explains the factors affecting supply chain risk management.

3.3.3.4 Factors affecting supply chain risk management

Supply chain risk management is cripplingly influenced by two fundamental factors, namely, supply chain visibility, and supply chain controllability. Faress *et al.* (2021:137) stated that visibility and controllability are the two factors that play a fundamental role in determining how the risks are going to be mitigated and monitored.

3.3.3.4.1 Supply chain visibility

In the context of supply chain management, visibility can be described as the result of an external integration in the supply chain network (Vilko *et al*. 2016:471). It is pleasing to see authors such as Smaros, Lehtonen, Appelquist and Holstrom (2003:340) agree that supply chain visibility offers various benefits such as operational efficiency, productivity and effective planning. Furthermore, supply chain visibility is argued to influence risk management efficiency in the supply chain context, although the information associated with visibility is usually distributed across supply chain partners, functions and geographic regions (Vilko *et al*. 2016:471). Williams, Roh, Tokar and Swink (2013:544) argue that supply chain visibility on its own is not a sufficient resource to manage disruptions and suggest that only with the appropriate level of control over the risk events can visibility be employed to improve risk management.

3.3.3.4.2 Supply chain controllability

Supply chain controllability is conceptualised as a risk management action that is taken after assessing the risk to successfully implement changes in the supply chain aimed at mitigating risk exposure (Heckmann *et al*. 2015:124). According to Vilko *et al*. (2016:471), supply chain controllability may be assimilated either directly from the key supplier in question, or from the supplier's supplier in the supply chain network. Van Veen-Dirks and Verdaasdonk (2009:467) posit that a major difficulty in attaining effectiveness in supply chains relates to controlling and co-ordinating a chain across individual organisational boundaries and to successfully overcome this problem. Thus, strategies such as information sharing and supply chain integration and other types of collaboration are necessarily to control and coordinate the entire supply chain network. The subsequent section pays special attention on the significant importance of risk management in organisational supply chains.

3.3.3.5 The importance of supply chain risk management

Supply chain risk management (SCRM) is an enterprise extensive phenomenon (Munir, Jajja, Chatha & Farooq 2020:3) and of paramount importance to senior managers, given the potentially

dire concerns of risk occurrences (Manuj, Esper & Stank 2014:241). Furtherrmore, the potential benefits of successful risk management implementation by an entity include the reduction of potential economic loss, improved business performance, good business practice and augmenting a competitive edge (Mamai & Yinghua 2017:220). More so, the implementation of the SCRM process indicated an amplified resilience among grocery companies when faced with a disturbance (Simba *et al*. 2017:11).

Additionally, effective supply chain risk management has been shown to have a significant positive influence on resilience competencies, such as flexibility, velocity, visibility and collaboration (Jüttner & Maklan 2011:252; Töyli, Wieland & Wallenburg 2013:310). This is consistent with the results of Chaudhuri *et al*. (2017:703) who found that supply chain risk management is a key enabler of flexibility performance and has positive influence on flexibility performance. Furthermore, successful risk implementation has presented the following benefits when practised across supply chains (Scannell *et al*. 2013:19; Apics 2015:18):

- Risk management encourages supply best practices.
- Risk management generally improves supply chain collaboration.
- Risk management provides visibility of supply chain-wide risk.
- Competitive advantage is sustained through risk management.
- Risk management presents flexible sourcing initiatives to organisations.
- Risk management encourages inventory buffering.

From the above, it is clear that supply chain risk management should be viewed as a corporate-level concern with strategic importance. Considerable factors such as complexity, specialisation and disintegration are emerging as key challenges as far as risk management in supply chains is concerned, making them vulnerable to disruptions from both within and outside the supply chain network. With this being stated, supply chain risk strategy can play a significant role for firms in the Gauteng FMCG industry in mitigating disruptions and making the supply chain less vulnerable to disturbances. The subsequent section analyses literature on customer orientation.

3.3.4 Customer orientation

This section analyses literature on customer-orientation. Subjects that receive attention include the concept of customer orientation, factors that affect customer orientation and its relative importance.

3.3.4.1 Definition of customer orientation

As a cornerstone of marketing department, customer orientation, which was familiarised by Kohli and Jaworski in the early 1950s, denotes an organisation's management viewpoint, or tenacity that integrates all business functions to gratify customers' needs and wants (Narver & Slater 1990:21). Customer orientation, sometimes termed customer focus, refers to the degree to which an organisation acquires and utilises information from its consumers, develops a strategy that will meet and exceed customer expectations, and implements that strategy by being responsive to customer needs (Atuahene-Gima & Ko 2001:55; Susskind, Kacmar & Borchgrevink 2003:181; Mathe, Halsell, Roseman 2016:2; Liu, Chen & Gao 2020:20; Yulianthini, Mayasari, Dewanti & Atidira 2021:406). On the other hand, Smirnova *et al*. (2018:457) define customer orientation as a set of beliefs that establishes customers' requirements and satisfaction as the main priority for an enterprise. In this study, however, it is well-defined as a strategy which a firm uses its customer to provide offferings that will meet and exceed the expectations of the ultimate customer.

Since the customer is the ultimate judge of SCP, effective and timely responses to ever- changing consumer tastes and preferences have become crucial mechanisms for successful business performance (Jeong & Hong 2007:578; Priem & Swink 2012:07). A customer-oriented enterprise, therefore, is considered as one that greatly depends on its present and future customer needs and has advanced its abilities to sense events and trends in their customer base (i. e., customer sensing) and to respond to that information (i. e., customer responsiveness) (Lu & Zhang 2016:1; Mokhtaran & Komeilian 2016:23; Ziggers & Henseler 2016:19). Furthermore, companies that put emphasis on customer orientation usually put the needs of its customers first to ensure that their expectations are met (Lee, Jung, Kang, Petrick & Park 2022:4).

It is pleasing to note that scholars such as Day (1994:43) and Foley and Fahy (2009:17) agree with the notion that customer orientation is regarded as a strategic tool that results from an organisation’s continuous improvement of its customer sensing and customer responsive competences. Furthermore, Theoharakis and Hooley (2008:70) in their study highlighted that in terms of its practical implications, customer orientation plays a substantial role that is imperative in Eastern economies as it is in Western economies. Due to this reason, organisations have triggered scholars to investigate the importance of customer orientation on supply chain and firm performance (Feng, Wang, Lawton & Luo 2019:111). More so, customer orientation is a significant strategy because it helps an organisation acquire customer insights and understand their specifications.

Information on customers' specifications is acquired in a multiplicity of ways, which ranges from marketing investigation, customer interviews, focus groups, customer complaint management data, observations, warranty data and field reports (Lysons & Farrington 2012:287; Jiatong & Tae-Soo 2019:137). Such information helps organisations reduce ambiguities pertaining the external environment regarding challenges related to customer satisfaction (Santos, Perin, Simões, & Sampaio 2020:5). However, to gain an in-depth understanding of customer intelligence acquisition and the translation of customer information into their specifications, an integrated framework for Customer-Oriented Business Model Development is adopted and demonstrated in Figure 3.8. As depicted, the components of the customer-oriented business mode framework and their connections complement each other very well. The components range as outlined by Wirtz and Daiser (2018:32):

- Customer centricity, customer intelligence, with customer-oriented business model change being its complements;
- Customer interfaces and customer intelligence are sub-components that facilitate connection among the components and complements within the framework.
- Customer-oriented BM change; and
- BM evolution

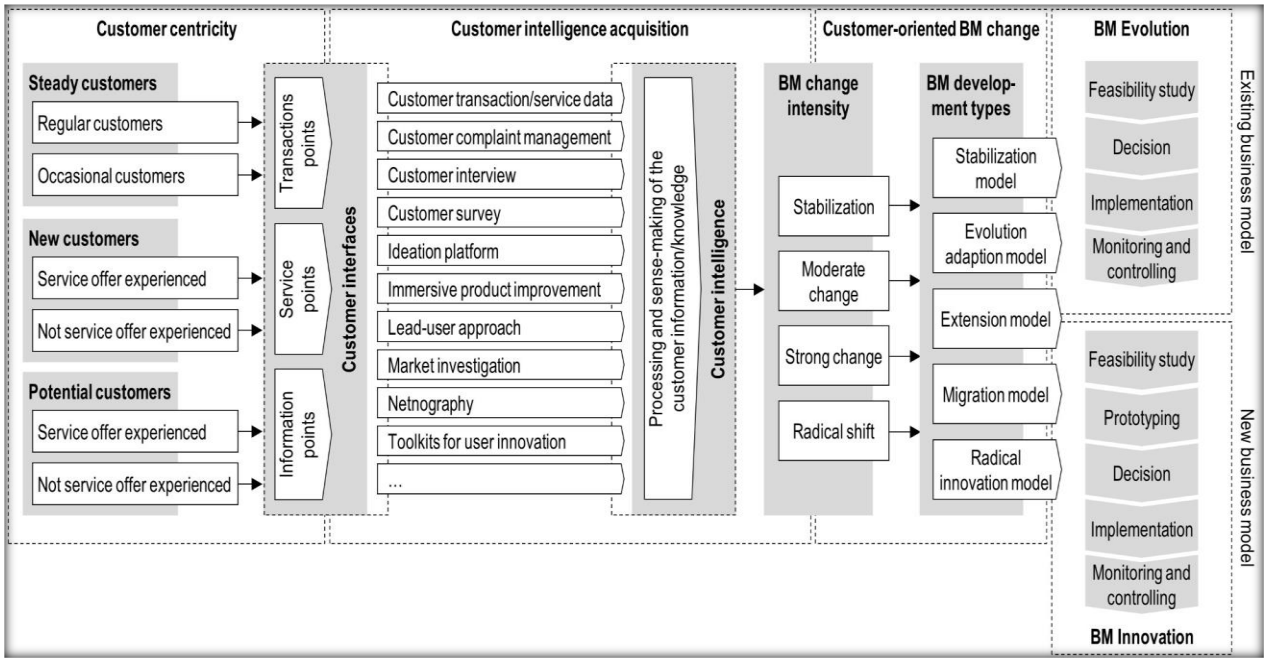

Figure 3.8: An integrated framework for customer-oriented business model development

Source: Wirtz and Daiser (2018:32).

Moreover, translating customer knowledge into specific customer requirements, an alternative planning technique called Quality function deployment, can be employed. The Quality Function Deployment (QFD) technique is a managerial tool that is used by organisations to satisfy customer expectations, thereby improving service offerings, product quality and its suppliers (Yenradee 2018:190). These techniques address questions such as:

- How do we understand the quality that our customers expect?
- How do we make it possible in a dynamic way?

These questions are imperative for organisations that have implemented, or are intending to adapt the customer orientation strategy and could also be beneficial to Gauteng FMCG organisations. Moreover, the quality function deployment ensures that customer expectations are exceeded by means of a technique called House of Quality (HOQ) - an outline which is depicted in Figure 3.9.

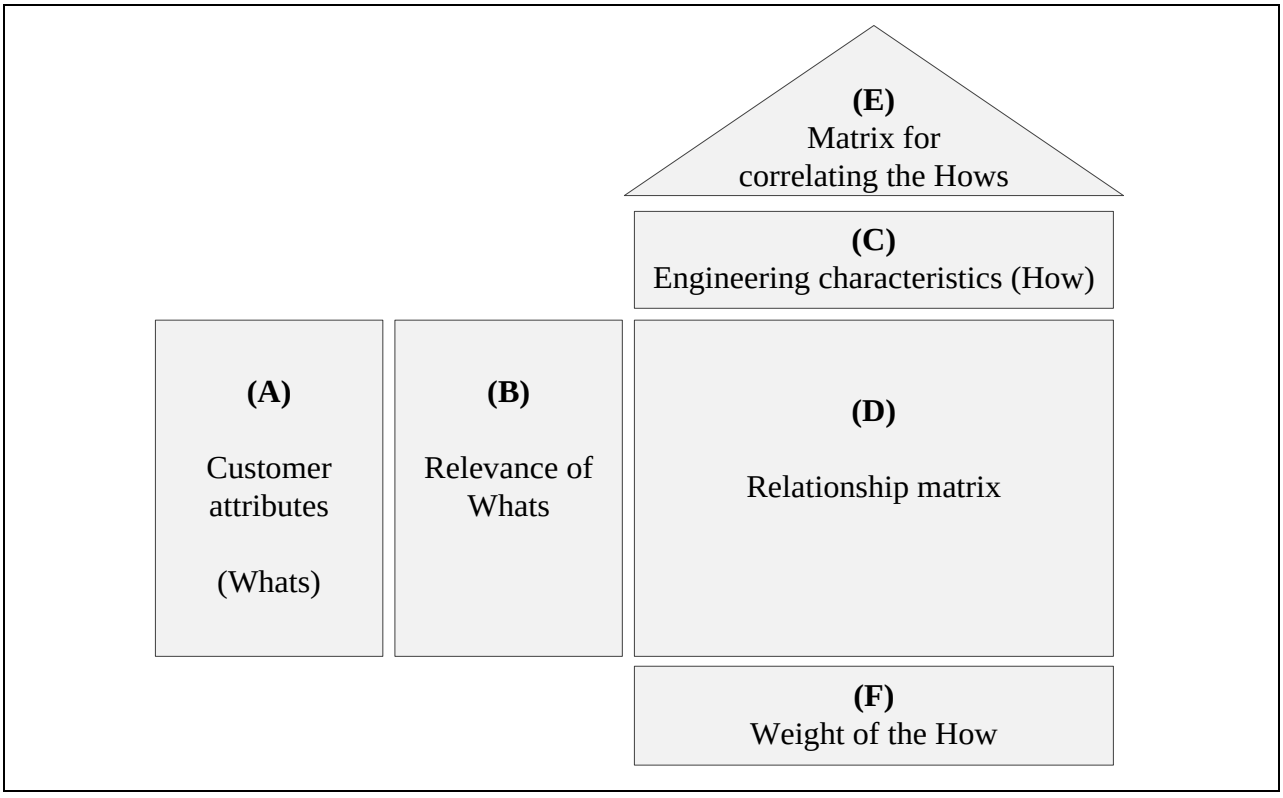

Figure 3.9: House of quality

Source: Lysons and Farrington (2012:287).

Figure 3.9 illustrates the four sequential phases of the quality function deployment. The house of quality, or product planning denoted by (A) is, however, only the first of a four-stage process, with the other three sequential phases denoted by B, C and D, being product quality, product quality and process control (Lysons & Farrignton 2012:287). Furthermore, the QFD process has the

capability to transform customer specification to implementable arrangements (Yenradee 2018:190) and has assisted organisations in achieving sustainable competitive advantage (Lysons & Farrignton 2012:289). Section 3.3.4.2 outlines and provides a detailed explanation of the practices associated with customer orientation.

3.3.4.2 Customer orientation practices

This section discusses the practices of customer orientation within a supply chain context. They encompasse information sharing, customer management and joint problem solving.

3.3.4.2.1 Information sharing

Strategic information sharing has emerged as a more efficient mechanisms in supply chains, which facilitates the improvement of a firm's competitive advantage (Lofti *et al*. 2013:298). The sharing of information in a supply chain network has been limited to buyers and suppliers, disregarding the end-users of the products. However, it is of pararamount importance for supply chain partners to consider the insights of customers when designing a supply chain. Nazifa and Ramachandran (2019:23) posit that strategic information sharing between supply chain partners (i. e., suppliers, local firms, customers and third-parties) creates value by paying special attention to essential key performance loop-holes that assist organisations to identify fresh insights for enhanced decision making in its competitive advantage. It clearly shows that it is necessary for customers to be involved when structuring supply chains, particularly for organisations operating in the Gauteng FMCG industry.

3.3.4.2.2 Joint problem solving

In the early 1990s, collaboration in a supply chain network in the form of efficient consumer response (ECR) persuaded firms to attain sustainable competitive advantage (Kumar, Banerjee, Meena & Ganguly 2017:46). This shows that good relations with customers in a supply chain are important and significant. Fynes, De Bu´Rca and Marshall (2004:181) posit that good partnerships within the supply chain network based on mutual trust, joint problem solving, and fulfilment of pre-specified promises assist companies in avoiding multifaceted and long-lasting contracts that are expensive and difficult to assess. In today's world, supply chains are vulnerable to unforseen occurrences, risks (Schlegel & Trent 2015:1) and unexpected problems, conflicts, and disagreements, which are usual in a relationship (Kumar *et al*. 2017:49); therefore working together with customers can enable problems to be solved effectively and efficiently, especially if the problem is customer-related (i. e., to product development and customer satisfaction).

3.3.4.2.3 Customer Relationship Management (CRM)

In today's competitive and dynamic environments, supply chain enterprises are compelled to adjust and implement new strategies and solutions to discover challenges (Özlen & Hadžiahmetović 2013:126). One strategy is customer orientation, which encompasses customer management. CRM is an information system that organisations use to acquire, collect, analyse and disseminating customer insights in the supply chain network (Zhu 2022:3029). In this study, CRM is conceptualised as the process that comes into play between firms and its customers downstream as part of the supply chain network (Chopra & Meindl 2013:491). Furthermore, it plays a significant role in the tactic-alignment of an organisation (Oliviera & Gimeno 2014:4) and is widely regarded as a method used to acquire knowledge (Gu, Schiedrjans & Cao 2015:2). The next section explains the factors that affect customer orientation.

3.3.4.3 Factors affecting customer orientation

Customer orientation is fundamental to implementing the marketing concept in modern firms because it creates an in-depth understanding of customer needs, which improves the firm's ability to service its clients effectively and thereby improve customer gratifications (Smirnova *et al*. 2018:457). It is not only focused on customers' needs and preferences, but also emphasises the obligation to market intelligence in order to maximise profitability (Lu & Zhang 2016:1). In order to achieve this obligation, supply chain partners should be devoted to satisfying and exceeding the expectations of the ultimate customer and consider the facets that play a pivotal role in those expectations.

Jeong and Hong (2007:582) identified three fundamental factors that influence customer orientation in supply chains, extending from customer-closeness, customer-flexible, and customer-accessible. Additionally, each of these factors influences the core logistics activities of an entity, for example, inventory, transport and order management (Giannokas, Mcfarlane & Strachan 2018:76).

3.3.4.3.1 Customer-closeness

Customer-closeness, being the first factor, refers to the degree to which a supply chain displays readiness to keep in contact, to communicate with customers effectively, and to understand their needs and requests throughout the entire supply chain (IBM 2006:5; Jeong & Hong 2007:582; Bügel 2010:65). Customer intimacy can achieve many benefits for organisations, such as enhancing organisational performance (Cuganesan 2008:86), and improving an organisation's competitive position (Osei 2017:600). By staying in touch with customers, an organisation

enhances its ability to develop products that fit the specification of its customers and to be a step ahead as their needs change over time.

3.3.4.3.2 Customer-flexibility

Another significant factor that influences customer orientation is customer-flexibility. Due to the fact that customers tastes and preferences are changing rapidly in dynamic social environments, firms need to build internal strategies, engineering service capabilities in view of frequently changing customer expectations (Jeong & Hong 2007:583). The constantly changing marketplace circumstances accompanied over the years by the universal economic catastrophes and recessions have brought about the necessity for closer relations between organisations in the value network, with the vision to accomplish a faster and more flexible response to the needs and desires of the customer (Lostakova & Peciniva 2014:563). Customer-flexibility therefore refers to the degree of responsiveness and the intent of organisations willing to respond to changing customer taste and preferences (Winthecustomer 2015:1).

3.3.4.3.3 Customer-accessible

The third significant factor that influences customer orientation is customer-accessible. It is defined as the degree to which a supply chain is ready to permit consumers to fully access data that is important in gratifying their manifold requirements (CustomerThink 2018:10). Information regarding location and distribution systems have been considered as strategic decisions in targeting customers (Jeong & Hong 2007:583). Furthermore, organisations spread the notion of market and service latitude by making information accessible, conferring to customer needs (Cho & Park 2003:526). Customer accessibility involves an operational strategy for developing effective operational and service delivery structure for customer interaction (Boyer, Hallowell & Roth 2002:183). Additionally, customer access to information in the value chain network allows information regarding their needs and wants flow seamlessly, which in turn encourages more customer orientation within the network. Section 3.3.4.5 highlights the important outcomes of implementing a customer orientation strategy in an organisation.

3.3.4.4 The importance of customer orientation

The ultimate rationale of having customer orientation as a strategic weapon which allows the organisation to emphasise finding supply chain opportunities and constraints from the customers' perspective in order to create value for potential customers (Satgunalingam, Abeysekera & Fernando 2017:29). When a firm's mission and objective are to create customer value, it generates higher levels of satisfaction, loyalty, innovation and performance (Kirca, Jayachandran & Bearden

2005:31). This shows that as the key element of market orientation, customer orientation is also an essential driver of firm performance. Moreover, customer orientation is related to a variety of customer outcomes and customer-oriented behaviours (Mathe, Halsell & Roseman 2016:199), such as customer satisfaction, service quality and customer intimacy (Barends 2019:1).

Firms that pursue customer-oriented strategies are more likely to deliver quality service, contribute to customer satisfaction and accomplish organisational objectives more resourcefully and meritoriously than competitors (Acar, Zehir, Ozgene & Oszahin 2013:528). Customer orientation cascades into the notion of a value chain, consequently exceeding buyer–seller relations (Widelska, Jeseviciute-Ufaitiene & Tuncikiene 2018:23). Furthermore, being oriented for customers' requirements means collaborating at an inter-organisational level, thus contributing to the forming cooperative connections (Park, Oh & Kasim 2017:949).

Customer orientation is important in today's dynamic and competitive environment if firms are to provide products and services that please their customers. It can play a significant role for companies in the Gauteng FMCG industry if viewed as a corporate-level concern of strategic importance. The succeeding section reviews literature on supplier integration.

3.3.5 Supplier integration

This section reviews literature on supplier integration. Topics that receive attention include the concept of supplier integration, supplier integration practices, factors that affect supplier integration and their relative importance.

3.3.5.1 Definition of supplier integration

Supplier integration, a subset of supply chain integration, is defined as the extent to which a manufacturer collaborates with its key suppliers to meet the requirements of its customers by modelling inter-organisational structures, strategies, and practices into collaborative and synchronised processes (Swink, Narasimhan, Wang 2007:151; Narasimhan, Swink & Viswanathan 2010:357; Wang, Huo, Qi & Zhao 2016:420). In new product development (NPD), supplier integration refers to the collaborative involvement of key suppliers in an organisation's new product development process in order to satisfy the requirements of the ultimate consumer (Perols, Zimmermann & Kortmann 2013:155; Lau 2014:220).

Conversely, supplier integration is defined as a subset of supply chain integration that specifically focuses on the upstream part of the supply chain network (Lockstrom, Schadel, Harrison, Moser & Malhotra 2010:241). For the purpose of this study, supplier integration is conceptualised as

those collaborative efforts made by firms and suppliers in order to improve the performance of the supply chain network (i. e. flexibility).The purpose of supplier integration is to ensure that buying organisations becomes efficient and effective in their supply chain and manufacturing endeavours in terms of producing highly innovative products that conform to the needs of the end-users (Amoako-Gyampah, Boakye, Famiyeh & Adaku 2019:3; Pakurar, Haddad, Nagy, Popp & Olah 2019:4; Bento, Schuldt & Carvalho 2020:3).The collaborative relationships that suppliers and buying firms forge enables the buying firm to attain competitive advantage (Price Waterhouse Coopers 2013:10).

Section 3.3.5.2 outlines and explains supplier integration practices.

3.3.5.2 Supplier integration practices

Supplier integration is a complex and multi-faceted concept that requires a comprehensive approach that provides and recognises perspectives from numerous angles (Lockstrom *et al.* 2010:241) and includes a number of practices that enhances a firm to lever SCP (Danese 2013:1030). Its practices include information sharing, joint product development, early supplier involvement, joint inventory management (Lockstrom *et al.* 2010:241; Lau 2014:220; Wang *et al*. 2016:420):

3.3.5.2.1 Information sharing

Information sharing is the extent to which a firm can synchronise the activities of information sharing, and conglomerate key elements from heterogeneous information managerial systems, content organisational systems, data warehouses, and other initiative applications into a common platform in order to support integrative supply chain strategies (Yeung, Selen, Zhang & Huo 2008:67). Effective information sharing between a firm and its suppliers is a key element (Cao & Zhang 2011:166; Danese 2013:1031: Rahman & Chan 2018:25) as it enhances SCF (Swafford, Ghosh & Murthy 2008:290), improves responsiveness to industry fluctuations (Li & Lin 2006:1643) and mitigates the bullwhip effect (Dejonckhere Disney, Lambrecht & Towill 2004:727). In general, exchanging information with suppliers cultivates better confidence, plummeting dysfunctional conflict between a buying firm and its key suppliers. Moreover, the exchange of confidential and critical information in the supply chain network can also allow firms to strategically restructure their supply chains in a fashion that they allow firms to encounter risk by being agile and flexibile.

3.3.5.2.2 Early supplier involvement (ESI)

Early supplier involvement has been defined as a practice that integrates one or more suppliers throughout the product development processes, from concept development to product planning, product/process engineering, pilot production, and ramp-up (Lyson & Farrington 2012:248). Its ultimate objective is to secure access to the competencies and technologies of nominated suppliers in circumstances that impede the possibility of vertical integration due to resource limitations and managerial restrictions (Lyson & Farrington 2012:248). Furthermore, supplier involvement is one of the most essential practices in effective supplier integration and plays a fundamental role in identifying possible design glitches and elucidations in advance, which in turn reduces product development time and cost (He, Lai,Sun & Chen 2013:262). By involving suppliers prior to product development, organisations can minimise operation costs as critical suppliers provide firms with relatively new technological competences that improve the innovativeness and sustainable competitive advantage.

3.3.5.2.3 Joint inventory management

Vendor managed Inventory (VMI) has been considered widely on joint inventory management. Its concept is defined as a coordinated hypotheses in the incorporated management of the supply chain that attempts to enhance simultaneous inventory and routing (Maio & Lagana 2020:462). VMI is a coordinated platform which is cost benefited in the entire supply chain network (Taleizadeh, Shokr & Konstantaras 2020:1). Furthermore, it can improve the performance of a supply chain for a definite range of highly auto-correlated demand products, but not necessarily for others with a strongly auto-correlated demand, when the value of VMI decreases (Belalia & Ghaita 2016:672). Additionally, well managed materials and products flow throughout the supply chain network, which result in production, time and cost-related advantages such as lower cost, faster delivery and higher flexibility (Prajogo *et al*. 2012; Zhao, Hou,Sun & Zhao 2013:118). Thus, this supply chain practice helps companies manage their inventory efficiently and effectively, thereby minimising total logistics costs and supply chain risk as the inventory is managed by critical suppliers.

3.3.5.2.4 Building long-term relationships

A long-term relationship with suppliers involves supply chain partners exchanging information and knowledge for their mutual commitment and development (Li, Chow, Choi & Chan 2016:58). The core of achieving a successful supply chain is through the effective management of buyer-supplier relationships (Morsy 2017:34). Furthermore, building a long-term partnership with

suppliers helps an organisation reduce lead-time, enhances flexibility and cost performance (Prajogo *et al*. 2012:123). Moreover for a firm to be one step ahead of its competitors, its relationships with its key suppliers have to have a long-term perspective. Regarding financial and operational performance, buyer-supplier relationships have demonstrated benefits such as reduced costs, enhanced product quality, improved delivery performance and improved flexibility (Axelsson & Karlsson 2014:17).

Importantly, forging long-term relations with key supplier within the supply chain network is one of the fundamental elements in today's competitive market, and enhances a company's competitive advantage.

3.3.5.2.5 Supplier development

Supplier development has been defined by Lysons and Farrignton (2012:251) as an action that a buying firm undertakes to improve a suppliers' capabilities, or performance to meet and exceed the expectations of the buying firm. Through the use of this practice, joint goal setting and continuous improvement programmes include joint meetings, supplier associations, and supplier assessment can be established (Li *et al*. 2016:58). These programmes guide the supplier towards improvement (Krause, Scannell & Calantone 2000:36) and generate benefits for the corporate such as improved communication, trust, problem-solving, product quality, cost and lead time (Lysons & Farrignton 2012:255). To date, supplier development has been and is still one of the best practices of supplier integration, and has presented a plethora of benefits to companies ever since it was introduced in the field of SCM. It is also important to outline and explain factors that enable companies to enjoy the benefits associated with supplier integration. The next section outlines and explains these factors.

3.3.5.3 Factors affecting supplier integration

Supplier integration is influenced by a large number of internal and external contingency factors such as supplier commitment, supplier trust, information quality, supplier performance and capabilities as well as information sharing (Ellstrom 2015:14), described below:

3.3.5.3.1 Supplier-buyer commitment

Commitment is an indispensable element for the long-term success for supply chain partners committed to investing their resources; thus, a short-term expense for the long-term success (Kim, Park, Ryoo & Park 2010:863; Padget, Hopkins & Williams 2020:16). Commitment is defined as the assurance of one of the parties that are forging good relationships with other partners

(Tanskanen & Aminoff 2015). The abilities of an organisation to successfully achieve the essential levels of performance required is mainly through their willingness to engage in effective and adequate commitment with their supply chain partners (Prahinski & Benton 2004:40; Liu, Huang, Luo & Zhao 2012:355). Supplier commitment is a willingness from both the company and the supplier to strive to maintain long-term relationships (Loice 2015:59), which results in the mutual exchange of critical information and a knowledge-base, both of which are essential in facilitating business's growth (Mafini & Loury-Okoumba 2016:619).

3.3.5.3.2 Supplier-buyer trust

Trust is defined as the assurance or confidence that exchange partners have in each other's dependability and reliability (Ullah, Narain & Sigh 2012:74). Suppliers and buyers in business-to-business (B2B) transactions pursue forming closer associations to increase the effectiveness and efficiencies of their transactions (Suh & Houston 2010:744). Furthermore, building the supplier's trust in its buyer firm can be regarded as a particularly crucial and relevant factor for the performance of manufacturing supply chains (Hemmert, Kim & Cho 2016:26). An atmosphere of trust between industry and collaboration partners means that parties treat the information and the knowledge they share confidentially; secondly, they do not have to fear to be cheated; thirdly, they act professionally without detailed legitimately binding agreements; and lastly, are dependable and trustworthy (Bonte 2008:860). In a study by Kulangara, Jackson and Prater (2016:1615), trust was found to arbitrate a positive significant relationship between information sharing and buyer's innovation competences. This vantage point clearly shows that supplier trust is one of the fundamental factors that plays an essential role in collaborating with suppliers.

3.3.5.3.3 Information quality

Information quality includes important facets such as the accuracy, timeliness, adequacy, accessibility, accuracy, availability, completeness, currency, integrity, redundancy, reliability, trustworthiness, usability and credibility of the information communicated (Forslund 2007:515; Floridi 2013:2).The United States Patent and Trademark Office express quality as a term that encompasses the elements of objectivity, utility, and integrity, which means the information communicated within the supply chain network is clear, unbiased and secured (Marinagi, Trivellas & Reklitis 2015:474). In the new data-driven era of business, organisations recognise that the information they gather about their customers, competitors, and operations are important resources with significant potential value (Torres & Sidorova 2019:316). While information sharing is important within the supply chain network, managers need quality information to make

operational, tactical or strategic decisions, which in turn, improve the performance of an organisation (Omar, Ramayah, May-chuin, Sang & Siron 2010:2489).

3.3.5.3.4 Supplier capabilities and performance

Suppliers as external sources of knowledge and innovation, have an important role for consumers in any industry (Ruuska, Ahola, Martinsuo & Westerholm 2013:543). Dynamic capabilities refer to an organisation's ability to use suppliers' resources, specifically to assimilate, reconfigure, gain and release resources to counteract and even persuade market change (Eisenhardt & Martin 2000:1107; Zhou, Zhou, Feng & Jiang 2019:732). At Toyota, for example, dynamic capabilities refer to the active involvement of suppliers in new car development, from a very early phase in an effort to improve quality, minimise development time overheads (Joongsan & Seung-Kyu 2010:759) and improve process flexibility and firm performance (Vanpoucke, Vereecke & Wetzels 2014:449). This vantage point clearly illustrates that suppliers play a major role in improving the performance of an organisation through superior performance. Supplier performance refers to a supplier's ability to deliver goods at the right time, at the right quality and quantity, consistency and at reasonable costs (Masnita, Triyowati & Rasyaal 2017:21). Therefore companies in the Gauteng FMCG industry need to successfully integrate with their key suppliers in the supply chain network, while suppliers must consistently display superior performance.

3.3.5.3.5 Information sharing

Information sharing is defined as the degree to which one party in the supply chain network transfers important and intense information to another party (Fiala 2005:419; Ha, Tong & Zhang 2011:566; Özer, Zheng & Chen 2011:1111). Lofti, Mukhtar, Sahran & Zadeh 2013:298) opine that information sharing in supply chains has become more effective by the global introduction of continuing cooperation and synchronisation, which leads ultimately to the enhancement of firms' competitive advantage. Moreover, the more critical and proprietary information is shared within the supply chain network, the more the business will be successful (Wei, Wang & Lu 2020:1). More so, information sharing within a supply chain has a wide range of benefits among supply chain members as it reduces different varieties of uncertainties associated with demand, product and innovation that add costs to supply chain processes (Hassan & Nesereddin 2018:6770). To this end, Özer *et al*. (2014:2439) consider information sharing as a stimulus for efficient supply chain integration, thereby empowering firms to realise more consistent deliveries and minimise the time to market their products. The following section explains the significance of successful implementation of supplier integration in organisations.

3.3.5.4 The importance of supplier integration

Supplier integration has become an imperative concept for cultivating SCP (Lockstrom *et al*. 2010:241) and working with suppliers necessitates continuous integration activities from the buyer during project execution (Martinsuo & Ahola 2010:107). Lee, Kwon and Severance (2007:449) empirically found that supplier integration improves supply chain cost control, in- and out-bound activities, total logistics costs, and asset turnover. Danese (2013:1033), on the other hand, found that supplier integration is positively related to flexibility performance. In other words, supplier integration improves the flexibility of the entire supply chain network without incurring costs.

Supplier integration also ensures that complex information flows seamlessly within the supply chain network (Prosman & Waehrens 2019:114). Also, the exchange of information sanctions organisations not only to direct better quality improvement programmes but attain a smooth, efficient materials flow within the supplier network and prevent potential obstacles in the process of procurement and production (Danese 2013:1031). Additionally, supplier aptitude and competences can bring about substantial benefits to the product improvement process (He *et al*. 2014:262).

The proceeding argument shows that supplier integration could play a prominent role for organisations competing in the Gauteng FMCG industry in terms of innovation, competitive advantage, flexibility, operational performance and SCP. The next section focuses on SCF.

3.4 SUPPLY CHAIN FLEXIBILITY

This section analyses literature on SCF. Topics that receive attention include the concept of SCF, its dimensions factors that affect it and its importance in the supply chain.

3.4.1 Definition of supply chain flexibility

Flexibility is the firm’s ability to change or react to environmental uncertainties and to exceed the growing variety of consumer expectations without excessive budgets, time and performance losses (Manders 2009:20; Gligor, David, Holcomb & Stank 2013:97; Shekarian, Nooraie & Parast 2019:2). Thus, SCF is the supply chain's ability to quickly respond to changing customer requirements without compromising performance (Yi, Ngai & Moon 2011:272). To further study the concept, Williams *et al*. (2013:545) captured competences that reflect the means that supply chain managers decide to implement to change their production quantity and quality in order to amicably respond to variations in demand and supply. In addition, SCF is broadly concerned with

the ability to speedily discover significant supply chain resources in an endeavour to sustain competitive advantage.

A supply chain is said to be flexible if it can ensure the smooth and undisrupted flow of the products from suppliers to the end customer under all risks and uncertainties in the environment, with the least variation in the difference between the demand and supply at every demand-supply node, and without much penalty or impact on the supply chain resources and the costs incurred (Tiwari *et al*. 2013a:212; Bauer & Gobl 2017:2). Thus, the capability of the dyadic supply chain network to deliver required products quickly without incurring costs while over-coming more demanding and fluctuating requirements is a robust indicator of flexibility (Seebacher & Winkler 2015:177). Additionally, investing in crafting a flexible supply chain is perceived to be more advantageous than investing in creating redundancies, because having a flexible supply chain network helps a firm achieve its operational objectives and mitigate disturbances. Section 3.4.3 outlines and discusses the five adopted dimensions of SCF in the current study.

3.4.2 Dimensions of supply chain flexibility

SCF is a complex and multifaceted concept, challenging to summarise (Sanchez & Perez 2005:682; Manders et al. 2016:183). It consists of 95 dimensions which were classified into seven business functions: product development flexibility, procurement flexibility, manufacturing flexibility, logistics flexibility, marketing flexibility, (financial) information flexibility, and organisation flexibility. However, only 30 of the most used dimensions identified that cover 'flexibility' within the FMCG supply chain are used here (Manders *et al*. 2016:183). Also, only five types of SCF are identified and adopted for this study:

- Volume flexibility: entails the supply chain's ability to adjust (increase or decrease) capacity, batch sizes, output levels and/or quantities in response to customer requests.
- Delivery flexibility: the aptitude of the supply chain to quickly adjust to changes in the delivery requests regarding location and/or delivery date.
- Mix flexibility: the capability to change the variety of products or items delivered and produced within the supply chain.
- New product flexibility: the ability to innovate and constantly introduce new products into the supply chain network.
- Supply flexibility: the ability to change from one source to another in the supply chain network.

The subsequent section explains the factors affecting SCF.

3.4.3 Factors affecting supply chain flexibility

Notwithstanding the significant role that the dimensions of SCF play on SCP, Christopher and Lee (2003:395) point out that 'agility' and 'adaptability' are two fundamental components contributing to supply chain success.

3.4.3.1 Supply chain agility

Agility is defined as the supply chain's ability to adjust to short-term changes to be able to meet the demand or supply of products and address peripheral challenges efficiently (Wisner, Tan & Leong 2012:451; Gligor & Holcomb 2013:95). Sukwadi, Ronald, Wee, and Yang (2013:298) reveal that agility has the capacity to close the gap which is left by leanness, by offering superior customer service. Thus, organisations need to be more effective in responding towards customers' needs as they become more flexible and able to deal with a greater product variety (Meyer, Nieman & Peckover 2017:7). Additionally, it is also presumed that agility is the modern phase in the amplification of mass production, as it allows to produce mass customised products (Inman, Sale, Green & Whitten 2011:345; Narasimhan, Ram, Swink & Kim 2006:450).

3.4.3.2 Supply chain adaptability

Adaptability, on the other hand is defined as the capability to adapt different supply chain's designs to encounter structural changes in markets (Muntaka *et al*. 2017:132). Adaptability has become another "key-word" involving the development of new features: for instance, a country's labour cost and regulations can change so rapidly that it is often necessary to consider the possibility (Steffanelli, Belivacqua & Sanctis 2015:1). Hence, Dubey, Altay, Gunasekaran, Blome and Papadopoulos (2018:132) argue that supply chain adaptability prepares the supply chain members to adjust according to the situation and gain desired competitive advantage. More so, agility and adaptability have proven to be essential elements of SCF as they allow the network to provide products and services that meet the individual demands of customers and partners of the supply chain. The following section explains the importance of SCF in a supply chain network.

3.4.4 The importance of supply chain flexibility

SCF has presented a number of countless benefits to organisations (Delic & Eyers 2020:1; Katsaliaki, Galetsi & Kumar 2021:14) and the significant advantages are enumerated below:

- SCF reduces the amount of backorders.
- SCF leads to augmented customer satisfaction.

- SCF improves order lead-time.
- Flexibility has the ability to accommodate periods of insufficient delivery performance and supplier performance.
- Flexibility helps in responding to new competitors and products.
- Flexible supply chain networks respond effectively and efficiently to natural catastrophes, political changes and unforeseen circumstances.
- Flexibility improves both non-financial and financial performance of a supply chain network.

With the above benefits enhancing the performance of a supply chain, it could be interfered that organisations are growing increasingly conscious that in order to compete continuously and successfully in the volatile competitive arena, it is imperative to constantly monitor, understand and control their flexibility capabilities. Furthermore, greater levels of flexibility could present an organisation in the Gauteng FMCG sector with a range of countless benefits, from customer satisfaction, increased sales and SCP (FP & NFP). The subsequent section analyses literature on SCP.

3.5 SUPPLY CHAIN PERFORMANCE

This section analyses literature on SCP. Subjects that receive attention include SCP, measurements of SCP, factors that affect SCP and its importance.

3.5.1 Definition of supply chain performance

SCP is defined as the ability of the supply chain to deliver quality products and services in the right quantities and at the time and lastly, to minimise total cost of the products and services to the final customers of the supply chain (Green *et al*. 2005:276; Ambe & Badenhurst-Weiss, 2012:11006). On the other hand, SCP has been defined by Ambe and Badenhurst-Weiss (2012:11006) as a monitoring process, undertaking a demonstrative analysis of whether the proper processes have been followed and the desired objectives were attained. Furthermore, it is increasingly acknowledged as an integral aspect in achieving an organisation's competitive advantage (Sezen 2008:233; Boston Consulting Group 2010:1). Thus, the process of achieving a sustainable competitive advantage requires firms to integrate its processes towards satisfying the requirements of the final consumer through displaying superior performance (Ramanathan, 2014:210). Section 3.5.2 outlines various indicators of SCP and explains the two used indicators in the current study.

3.5.2 The dimensions of supply chain performance.

Performance measurement system (PMS) is defined as a framework of methods developed by companies to assess the performance of organisational activities (Ahmad & Zabri 2016:477). This form of data is valuable for decision making process (i. e., planning, managing and coordinatig) (Zuriekat, Salameh & Alrawashdeh 2011:160). Measuring the performance of a supply chain include a number of metrics that cannot be exhausted, as noted in literature (Liu, Liao, Zhao & Yang 2015:19; Delipinar & Keocaoglu 2016:398; Akkawuttiwanich & Yenrandee 2018:189; Quesado, Guzman & Rodriques 2018:186; Lima-Junior & Carpinetti 2019:19; Mehdizadeh 2019:1). The metrics include but are not limited to:

- Financial Performance Measurent (FPM) and Non-financial performance Measurements (NFPMS).
- Supply chain balanced scorecard (SCBC).
- ABC Analysis.
- Qualitative and quantitative measures.
- Supply Chain Operations Reference (SCOR).
- Economic Value Added (EVA).
- Intangible and tangible SCP.
- Dimension-based Measurement Systems (DBMS).
- Function-based Measurement System (FBMS).
- Effiency-based measurement System (EBMS).
- Generic Performance Measurement System (GPMS).
- Hierarchical-based Measurement Systems (HBMS), Perspective-based Measurement Systems (PBMS).Dimension-based Measurement Systems (DBMS).

For the purpose of this study, however, SCP is measured using FP and NFP metrics, which are explained in the following sections.

3.5.2.1 Non-financial performance

NFP indicators are regarded as one of the most important metrics to measure the performance of supply chains and organisations (Zarzycka & Krasodomska 2021:140). Ahmad and Zabri (2016:477) opine that the application of NFP metrics in a production environment is even more

vital, especially when its typical operations are more complex. Furthermore, Niven (2005:23) condemns the stakeholder value tactics and postulate that several organisations fail to successfully implement their strategies because they concentrate solely on financial targets and ignore the drivers for strategy implementation. This is because cost stress and revenue maximisation values lead to a short-term strategic orientation (Müller-Stewens & Lechner 2011:623), which in turn impedes organisation to successfully evaluate strategy implementation (Kaplan & Norton 1996:3).

NFP measures are descriptive in nature (Milost 2013:824) and measures a set of variables such as customer satisfaction, job satisfaction, management, order lead-time, control system flexibility, information and material flow integration, effective risk management, and supplier performance, which are not measured by financial systems (Malgharni, Soomasundaram & Multaiyah 2010:123; Leonczuk 2016:108). For the purpose of the current study, however, NFP will be measured using the following variables:

- Customer satisfaction: this relates to the level of the supply chains conformity to the specifications (i. e. needs and wants) of the end-users in terms of value.
- Order lead-time: order lead-time is the total amount of time it takes to process orders and for customers to receive the ordered products in the supply chain network.
- Responsiveness: the organisation's ability to address customers' queries timeously in the supply chain network.
- Service systems: this entails the medium of communications used to correspond with customers and improve their services in the supply chain. Service systems are useful in obtaining feedback from customers (i. e. after-sales service).

From the above argument, it is pleasing to see that a number of scholars agree that NFP measures are important when measuring SCP as they can help supply chain managers successfully evaluate strategy implementation. This vantage point clearly shows the necessity to use NFP metrics in this study as they will allow the researcher to assess the strategic importance and influence of the supply chain strategies on flexibility and the overall performance of the supply chain network. Notwithstanding the importance of NFP metrics as noted in literature, financial performance metrics have also been observed and applied in SCP evaluation (Fantanzy *et al.* 2009:179).

3.5.2.2 Financial performance

FP indicators have been broadly conferred as a basic priority in all financial decision-making, both in the public and private sector to enable companies detect difficulty in all functions across an

organisation (Chashmi & Fadee 2016:1).Furthermore, firm FP metrics are numeric in nature (Chashmi & Fadee 2016:2), measured for a certain financial period (Fatihudin, Jusni & Mochklas 2018:553) and used as an instrument to measure development and potential growth of an organisation (Kim, Duvernay & Thanh 2021:268). Supply chain financial performance measures are associated with the cost, sales, profit, and wealth maximisation (Fantanzy *et al*. 2009:179).

Moreover, FP measurements are important for strategic decisions and external reporting, day-to-day control of manufacturing (Tipu & Fantanzy 2014:405). Supply chain financial performance indicators measure variables such as growth opportunities, firm size, return on assets, profitability, and return on equity, sales growth, operational costs and many others. For the purpose of this study, FP will be measured using these mentioned and defined variables:

- Profitability: refers to an organisations' efficiency to utilise its investment to generate income (Alseemgeest, Du Toit, Ngwenya & Thomas 2021:77).
- Sales growth: refers to the percentage change of a specific produces within a specific period of time.
- Revenue growth: is the amount of cash an organisation generates over a pre-determined financial period compared to previous and identical periods.
- Operational costs: these are expenses related to the maintenance and administration of an organisation on a day-to-day basis.

From the above, it is observed that FP indicators are important as they assist supply chain managers to measure and quantify their performance using comprehensive arithmetic financial figures. Furthermore, financial SCP indicators aids companies in assessing profitability, improvement of sales, and also allows organisations to minimise operational costs. For this rationale, the FMCG industry in the Gauteng province could benefit from using financial indicators to assess supply chain performance as they are adopted in this study. The following section outlines and explains the factors affecting both non-financial and financial performance of a supply chain.

3.5.3 Factors affecting supply chain performance

Superior SCP is driven by a number of cross-functional factors (Fan & Zhang 2016:7). As noted in the literature, a number of scholars pointed out numerous factors affecting SCP, including but not limited to inventory, logistics, information sharing and flexibility (Sandberg 2007:7;Tripathy,

Aich, Chakraborty & Lee 2014:269; Azadeh, Rabi & Khazee 2014:444; Mei & Affli 2017:3; Joby & Madhusudanam 2019:30). These are described in greater detail below:

3.5.3.1 Inventory

Inventory is important to organisations for production activities, maintenance of plant and machinery as well as other operational requirements (Afolabi, Onifade & Olumide 2017:3). Inventory is defined by Singh and Verma (2018:3868) as the raw materials, work-in-process products and finished goods that are considered to be the portion of a business's assets that are ready or will be ready for sale. Inventory also involves all the goods and materials in a segment of supply chain, expressed in quantities, location and value (Lyson & Farrignton 2012:310). In the field of supply chain management it is essential for an organisation to supply its customers at the right time, right place and right number of required units (Mankazan, Silase & Molefe 2018:390). Therefore, it can be inferred that inventory plays a significant role in the entire supply chain network by ensuring that customers receive the required goods at the right time, right quantity and at the right place.

3.5.3.2 Logistics

Globalisation and the development of the economy accelerates the establishment of a single market and in this process, logistics is an essential tool (Kherbach & Mocan 2016:405). Logistics as an activity, has now advanced, and in the business arena it relates to the management flow of products or services from the point of origin to the point of consumption (Azmi, Hamid, Hussin & Ibtishamiah 2017:1). Transportation also plays a crucial role in facilitating the smooth flow of goods in the supply chain network and its significant impact cannot be disregarded (Mei & Affli 2017:3). The importance of the issue which involves the transportation activity and its effects on the logistics of enterprises is developed in the aspects of outsourcing and the hiring of operators (Kherbach & Mocan 2016:406). Logistics, thus, ensures the smooth flow of products within the supply chain network which in turn contributes significantly to the performance of the supply chain.

3.5.3.3 Information sharing

Information technology devices add a significant value towards infrastructural stability, which ensure the efficient and effective flow of information within the supply chain network (Tripathy *et al*. 2014:271). As this is the case, the development of supply chains, material flows and financial flows are largely dependent on efficient and effective information flows (Wang & Zhuo 2020:1). Additionally, extensive research confirms that information sharing has the ability to minimise

supply chain costs, improve supply and demand thereby reduce the bullwhip effect (Liu, Dan, Zhang & Ma 2020:3). This vantage point clearly shows that information sharing plays a prominent role in the performance of the entire supply chain network, from the point of origin (upstream) to the point of consumption (downstream).

3.5.3.4 Flexibility

Due to complexities in dynamic markets, ferocious competition and rapid fluctuations in demand requires companies to be prepared to respond promptly to customers' needs (Quesado *et al*. 2012:37) and flexibility has been a crucial constituent for an organisation's ability to adjust to changing market dynamics and to remain competitive (Blome, Schoenherr & Eckstein 2013:307; Sreedevi & Saranga 2017:332; Burin, Perez-Arostegui & Llorens-Montes 2020:1). It can be inferred then that flexibility has the ability to respond and adapt swiftly to unexpected variations in demand and supply of customers' products, and to speed up or slow down the manufacturing processes when necessary (Yi, Ngai & Moon 2011:272; Nooraie & Parast 2019:2). Thus, flexibility in supply chains may well denote a potential approach of improving an organisation's efficiency, which may be a significant measure of SCP.

3.5.3.5 Supply chain integration (SCI)

SCI is a dominant subject in the field of supply chain management (Lam 2013:2; Basnet 2013:174) and a tool for sustainable competitive advantage (Rungtusanatham, Salvador, Forza & Choi, 2003:105; Awad &Nassar 2010:1; Annan, Boso, Mensah & Nagbe-Sulee 2016:3; Pakurar, Haddad, Nagy, Popp & Olah 2019:4). SCI is defined by Flynn, Huo and Zhao (2010:59) as the extent to which buying companies strategically join forces with their supply chain partners to manage and synchronise organisational processes. A number of scholars such Devaraj, Krajewski and Wei (2007:1200) and Flynn *et al*. (2010:58) posited that SCI is significantly positive on a firm's overall performance such as JIT, quality, flexibility and financial performance.

Furthermore, close bonds among key supply chain participants and logistics service providers (LSPs) significantly influence distribution and delivery performance in the downstream, and subsequently superior SCP (Kim, Lee & Hwang 2020:1). The role of supply chain integration on operational and SCP therefore cannot be disregarded and if treated as a corporate strategic tool it can assists companies in the Gauteng FMCG industry to subdue competition. Section 3.5.4 explains the importance of supply chain performance.

3.5.4 The importance of supply chain performance

Based on review of literature, it may be noted that a properly performing supply chain has yielded the mentioned benefits (below) and significant outcomes (Chasmi & Fadee 2016:1; Willis, Stefan & Chen 2016:759; Kumar, Chibuzo, Garza-Reyes, Kumari, Rocha-Lona & Lopez-Torres 2017:817; Muntaka *et al*. 2017:132):

- Performing supply chains provide a sustainable competitive advantage.
- Properly structured supply chains provide faster response times on-time order deliveries.
- Performing supply chains minimise total logistics costs.
- Performing supply chains help organisations minimise operational (i. e production) costs.
- Performing supply chains lead to higher levels of customer satisfaction and higher retention rates.
- Higher levels of SCP enhance the overall performance of an organisation.
- Financial performance measures help supply chain managers and executives to detect the areas lacking in an organisation.
- Financial performance allows the organisation to determine which products are relevant to the market.

The following section focuses on the formulation of hypotheses for the current study.

3.6 FORMULATION OF HYPOTHESES

A well-developed research study needs a hypothesis statement in order to effectively answer the research questions (Tredoux & Durrheim 2002:128). Thus, a research hypothesis is a predicted statement recommended by the scholar to statistically test and find a solution to a research problem or key question based on observation or experience (Cargan 2007:36; Singh & Bajpai 2008:91). The research hypothesis formulated for this study signifies a testable statement expected to have a statistically significant relationship between the proposed research variables. In formulating hypotheses between the latent variables in the current study, the proposed conceptual framework depicted in Figure 3.10 will be used as a reference.

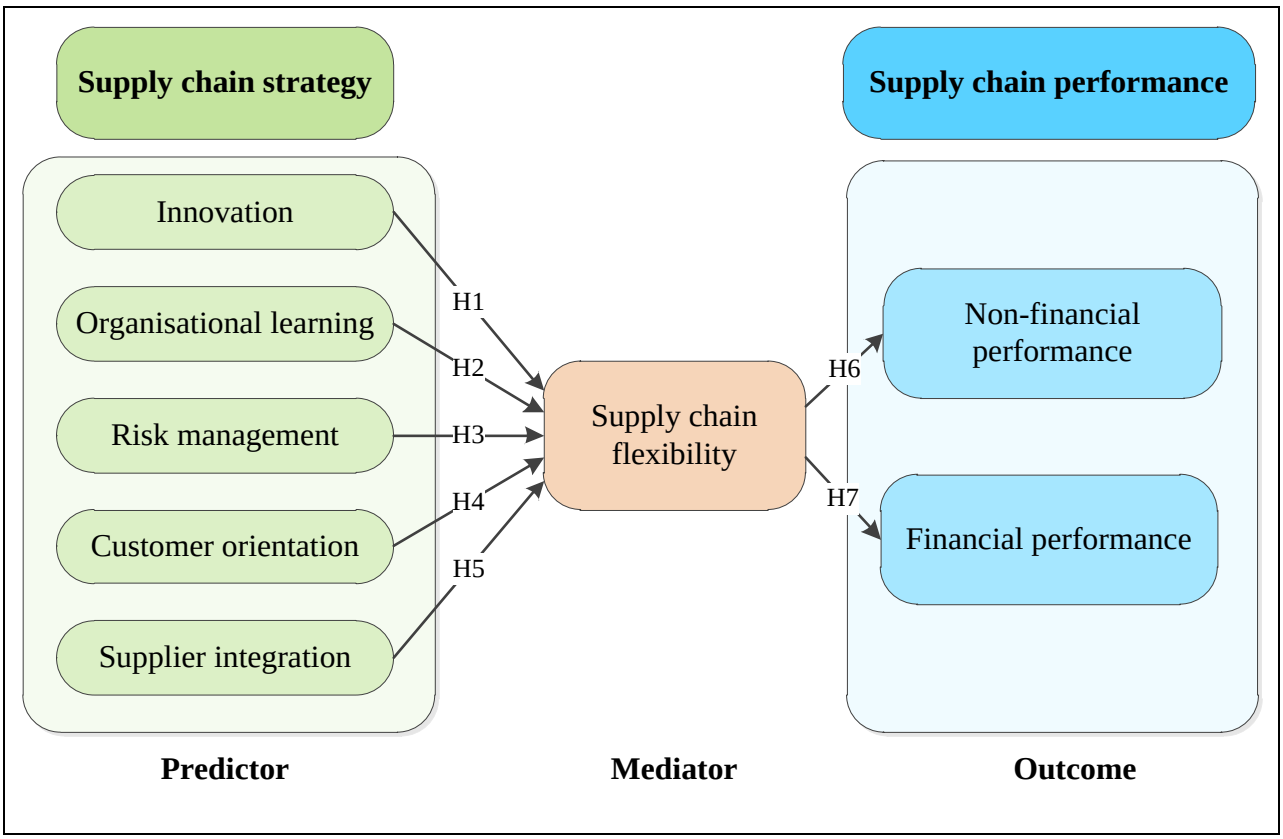

Figure 3.10: A detailed conceptual framework

Source: Compiled by author

3.6.1 Innovation strategy and supply chain flexibility

Innovation strategy is one of the fundamental elements that is used by most organisations in achieving sustainable competitive advantage other than low cost, differentiation and focused strategy (Sang, DonHee & Schniederjans 2011:1194; Faiq, Nomahaza,Wan & Nozama 2019:340). Furthermore, supply chain innovation strategy helps companies in the competitive market by providing high-quality products and services at low cost that satisfy the consumers' needs and allows greater flexibility in terms of efficient customisation and production volume flexibility in the supply chain network. More so, innovative supply chains expedite flexible sourcing, manufacturing and distribution (Sunil 2019:3) and improves supply chain efficiency for more effective customer satisfaction, which have a significant organisational performance (Sang *et al*. 2011:1194). Consequently, Siddhey and Jain (2011:5) empirically found that supply chain strategy (innovation strategy) directly affects SCF, which leads to the following hypothesis being formulated:

H1: *Innovation strategy has a significant positive influence on supply chain flexibility (SCF).*

3.6.2 Organisational learning and supply chain flexibility

Supply chain learning or organisational learning has been acknowledged as a resilient predictor of differentiated organisational performance that is closely aligned with improved innovation process, greater knowledge systems, and organisational products and capabilities (Willis *et al*. 2015:757). Furthermore, the capability of an organisation to gather knowledge about its constituents (including customers, suppliers, and other key members in its supply chain) with its ability to better predict and respond to ever-changing market needs and requirements has emerged as an important theme (Willis *et al*. 2015:756). Organisational learning enables organisations to attain a competitive advantage by improving information processing activities, which allows faster and more effective adjustment to changing environments and market conditions than competition (Santos-Vijande, Lopez-Sanchez & Trespalacios 2011:1082). Santos-Vijande *et al*. (2011:1086) empirically found that organisational learning enhances the firm's ability to respond rapidly to environmental contingencies, that is, strategic flexibility, which leads to the following hypothesis being established:

H2: Organisational learning has a significant positive influence on supply chain flexibility (SCF).

3.6.3 Risk management integration strategy and SCF

Flexibility, a fundamental component in managing vulnerabilities (Manuj & Mentzer 2008:135) and disruption within the supply chain (Braunscheidel & Suresh 2009:120), has been linked with countless forms of risk management. Thus, manufacturing organisations have started crafting supply chain risk management strategies to prevent, detect, mitigate, and respond more effectively to supply chain risks, and use it to improve their agility, i. e. their responsiveness to environmental changes (Toyli, Wieland & Wallenburg 2012:892). Micheli, Leo, Butner Martone & Shester (2014:224) found that risk mitigation by adopting information technology to share production plans with suppliers reduces the probability and the severity of disruptions in supply and congestions in the suppliers' production processes, with positive effects on flexibility. Chaudhuri *et al*. (2017:703) found that supply chain risk management is a key enabler of flexibility performance and has positive influence on flexibility performance, which leads to the following hypothesis being formulated:

H3: Risk management strategy has a significant positive influence on supply chain flexibility (SCF).

3.6.4 Customer orientation strategy and SCF

Organisations that employ customer orientation in their supply chain networks allow information to flow seamlessly within the supply chain network and allow participants to collaborate with other partners in the supply chain (Jeong & Hong 2007:578). As such, customer roles in supply chains are very pre-emptive, in that their specifications are integrated (Priem & Swink 2012:07) and companies that rely on customer insights in supply chains communicate their foremost goals throughout the supply chain participants and collaborate with other partners successfully (Smirnova *et al*. 2018:457). Furthermore, a firm with a high level of customer orientation has the ability to dissect the competitive landscape and devote its resources to meeting and exceeding the needs of its customers. It can be inferred then, that customer orientation has a significant positive influence on external flexibility, including volume flexibility and mix flexibility (Braunscheidel & Suresh 2009:125). Additionally, Fantazy *et al*. (2009:182) found that customer orientation strategy positively associates with four flexibility dimensions, which lead to the following hypothesis being proposed:

H4: Customer-orientation has a significant positive influence on supply chain flexibility (SCF).

3.6.5 Supplier integration strategy and supply chain flexibility (SCF)

External or supplier integration is often mentioned as a key driver to enable long-term competitiveness of the supply chain as a whole (Cao & Zhang 2011:164). Relationships with key suppliers intended at synchronising upward information and downward material flows within the supply chain network is regarded as a crucial facet in effective supply chain management (Danese, Romano & Formentini 2013:125). Danese (2013:1033) found that supplier flexibility enhances buyer flexibility, since the buyer's capacity to change the output level of products made within a given time period strongly depends on the availability of the essential goods in the right quantity. Correspondingly, Braunscheidel and Suresh (2009:123) maintain that supplier integration is necessary to ensure connected and coordinated response to meet unforeseen changes in customer needs and requirements, that is, flexibility. Additionally, Petroni and Bevilacqua (2002:942) found that supplier involvement in new product design increased the company's manufacturing flexibility. A positive significant relationship clearly emerges between supplier integration and SCF, which leads to the following hypothesis:

H5: Supplier integration has a significant positive influence on supply chain flexibility (SCF).

3.6.6 Supply chain flexibility (SCF) and supply chain perfomance (SCP)

The next sections aim to formulate hypotheses between SCF and SCP (NFP & FP)

3.6.6.1 Supply chain flexibility (SCF) and supply chain non-financial performance (NFP)

There are a number of empirical as well as theoretical studies supporting the link between flexibility and performance (Fantanzy *et al*. 2009:179). As noted in the literature, SCP have been and can be measured non-financially. Supply chain NFP includes but is not limited to customer satisfaction performance and lead-time performance (Sillanpaa & Kess 2011:805). Fantanzy *et al*. (2009:179) pointed out that SCF dimensions have direct effects on supply chain NFP, which lead to the following hypotheses being established:

H6: Supply chain flexibility (SCF) has a significant positive influence on financial performance (NFP).

3.6.6.2 Supply chain flexibility and supply chain financial performance.

Flexibility in supply chains may well denote a potential approach of improving an organisation's efficiency, which may be a significant measure of SCP (Vickery *et al*. 1999:16; Duclos, Vokurka & Lummus 2003:447). Furthermore, SCF aims to internally and externally integrate with its key suppliers and customers, to address challenges related to uncertainties and customer requirements without excessive costs, time and performance losses (Huo *et al*. 2018:5883). Higher levels of flexibility lead to improved performance and strategic decisions, which in turn improve the performance of an organisation, especially for firms competing in very dynamic markets (Fantanzy *et al*. 2009:180; Siddhey & Jain 2011:5).

FP indicators include net profit performance, return on investment, return on sales, return on equity and sales growth performance (Leonczuk 2016:109). Fantanzy *et al*. (2009:179); Siddhey and Jain (2011:5) empirically found that SCF dimensions have direct effects on supply chain financial performance, which lead to the following hypothesis being established:

H7: Supply chain flexibility (SCF) has a significant positive influence on non-financial performance (NFP)

3.7 CHAPTER SUMMARY

The purpose of this chapter was to review literature on the adopted theory and latent variables in the study. It is important to highlight that supply chain strategies have emerged as key elements in

the field of supply chain management. Furthermore, they play a fundamental role in helping orgnisations achieve sustainable competitive advantage and improved SCP. Additionally, the RBV theory of the firm is adopted in the study as it is an appropriate grounding theory for supply chain management. The resource-based view theory of a firm was adopted and used because it identifies a series of pragmatic indicators with which to identify indicators capable of providing such a competitive advantage. The indicators that distinguish a firm from its competitors include innovation, risk management, organisational learning, customer integration and supplier integration.

The supply chain strategies mentioned above are not only fundamental in helping firms achieve sustainable completive advantage but also improve the overall performance of an organisation in terms of flexibility and SCP. As noted in the literature, supply chain strategies have a positive significant impact on SCF, which in turn improve the performance of the supply chain. With COVID-19 on the horizon, organisations are urged to pay more attention on relevant and implementable supply chain strategies. Previous literature has attested that companies that have effectively adopted and successfully implemented supply chain strategies have a competitive edge over their competitive rivals as they experience greater levels of flexibility and improved SCP. Subsequently, it can be concluded that well-structured supply chain strategies, greater levels of flexibility and SCP play an essential role in successfully competing in today's dynamic completive markets.

The following chapter focuses on the methods and procedures that were used to gather and analyse data on the study.

CHAPTER 4
RESEARCH METHODOLOGY

4.1 INTRODUCTION

The purpose of this chapter is to provide a detailed discussion of the research methodology used in the study. It begins with the discussing topics such as research reasoning and paradigms as well as the philosophy adopted in the study. It then provides a detailed analysis of the research approach, design, strategy as well as the time horizon selected for the research project. Attention then turns to the literature review and empirical part of the study. The latter comprises sampling design in terms of the targeted population, sampling frame, sample size as well as the approach and technique used to identify respondents in the FMCG industry. Furthermore, the chapter also covers critical topics such as data collection instrument, data collection procedure and data analysis. Thereafter, ethical considerations underpinning the study are discussed briefly. The subsequent section outlines and explains the types of research reasoning.

4.2 RESEARCH REASONING

Reasoning is conceptualised as an academic process which encompasses the derivation of assumptions from information exchanged (Goel & Dolan 2004:109; Rowe 2014:6). Research reasoning judgements can be divided into inductive and deductive reasoning. Bradford (2015:1) accentuates that it is of paramount importance to study the meaning of each type of reasoning so that proper claims can be generalised. It is essential to understand each meaning so that it becomes clear in which study each type of reasoning is applicable and relevant. The following sections provide an explanation of the two types of research reasoning considered in research.

4.2.1 Inductive reasoning

Inductive reasoning involves gathering specific data to formulate a general claim (Plooy-Cilliers, Davis & Bezuidenhout 2014:127; Malhotra 2017:172). Hayes, Heit and Swendsen (2010:278), on the other hand, denote that inductive reasoning is the amplification of forecasts about an existing problem, situation or phenomenon. As such, inductive reasoning involves the process of collecting data and formulating a general claim. Figure 4.2 provides an illustration of inductive reasoning.

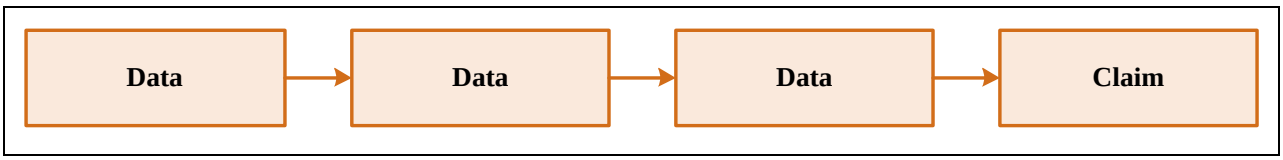

Figure 4.1: An illustration of inductive reasoning

Source: Plooy-Cilliers *et al*. (2014:127)

The process of inductive reasoning, as illustrated on Figure 4.2, involves collecting of data that lead to similar a specific claim. This type of reasoning starts by determining the effects prior to generalising the causes. Inductive reasoning is usually applied to reason from effect to cause (Plooy-Cilliers *et al*. 2014:128), is more subjective (Goel & Dolan 2004:110) and for that reason more suitable and relevant in qualitative based studies (Hayes *et al.* 2010:278; Heit & Rotello 2010:805). Section 4.2.2 explains the other form of research reasoning.

4.2.2 Deductive reasoning

Deductive reasoning, on the other hand, reasons from a universal claim (major premise) to a narrower claim (minor premise), to a specific claim (Plooy-Cilliers *et al*. 2014:128; Malhotra 2017:173). Deductive reasoning is viewed as a valid and more objective line of cognitive reasoning about a valid premise (Goel & Dolan 2004:110). Figure 4.2 provides an illustration of deductive reasoning.

Figure 4.2: An illustration of deductive reasoning

Source: Plooy-Cilliers *et al*. (2014:128)

Deductive reasoning, as illustrated in Figure 4.3, claims to originate from major premises to minor premises. More so, the norms of deductive reasoning are said to be accurate and more valid than those of inductive reasoning (Heit & Rotello 2010:805; Casula, Ranggarajan & Shields 2020:1708). As such, deductive reasoning is deemed to be appropriate and suitable for this study as it follows quantitative research methods and has proved to be more valid (Jelsma & Clow 2005:4). Additionally, deductive reasoning blends very well with the primary objectives of this study because it seeks to examine relationships between supply chain strategy, flexibility and performance. Table 4.1 provides a synopsis of both research reasoning: from reason to research.

Table 4.1: Deduction and induction: from reason to research

	Deduction	Induction
Logic	In a deductive inference, both the premises and conclusion must be true.	In an inductive inference, identified premises are used to generate untested assumptions.
Generalizability	Conclusions emanate from the general to the specific.	Conclusions emanate from the specific to general.
Use of data	Data collection is used to formulate hypotheses related to an existing theory.	Data collection is used to discover a phenomenon, classify subjects and patterns and formulate a conceptual framework.
Theory	Theory is subject to prevarication or verification.	Theory generation and edification.

Source: Saunders, Lewis & Thornhill (2012:153)

The subsequent section focuses on the research paradigm underpinning the current study.

4.3 RESEARCH PARADIGMS

In empirical studies, research paradigms play a central role in assisting the researcher in determining the appropriate research design, research methodology and research instruments (Easterby-Smith, Thorpe & Lowe 2002:27; Ponterotto 2005:128; Plooy-Cilliers *et al*. 2014:19-20). Therefore, it is vital for researchers to have an in-depth understanding of the research paradigms as they significantly influence research approach selections (Wilson 2010:9). A research paradigm is defined by Jonker and Pennink (2010:29) as a set of theoretical assumptions and beliefs that provide direction in the execution of a research project. Moreover, research paradigms are viewed as the foundation of a research project and dictate the tone for its justification regarding its validity and suitability (Hakansson 2013:4; Plooy-Cilliers *et al*. 2014:127; Kivunja & Kuyini 2017:26). The main research paradigms that dictate modern literature include, among others: positivism, interpretivism, post-positivism, realism, constructivism, pragmatism and phenomenology (Hussey & Hussey 1997:47; Mangan, Lalwani & Gardner 2004:565; Creswell 2009:6; McMillan & Schmacher 2010:4; Hakansson 2013:1; Henderson 2011:341; Rehman & Alhatri 2016:51).

In line with the outlined research objectives, the research philosophy that is relevant and suitable for the current study is positivism. Positivism is an unbiased research approach which aims its emphasis on the fairness of realistic mechanisms of life and appeals for a scientific method to understand real life problems (Heppner, Wampold & Kivlighan 2008:7; Antwi & Hmza 2015:218). The main elements of the positivism paradigm as outlined by Hussey and Hussey (1997:54) are listed below:

- Positivism follows quantitative methods of data collection and analysis.
- Positivism uses larger samples.
- The positivist paradigm seeks elucidation, which includes the establishment of connecting relationships between research variables.
- Data is highly specific and precise.
- It generalises results from sample to population;
- This paradigm is normally linked with greater levels of validity and reliability since it is a highly structured approach;

As alluded in Chapter 1, the primary objective of this study was to investigate the relationship between supply chain strategy, SCF and SCP in the FMCG industry in Gauteng province, thus the current study is in agreement with the positivism paradigm since it seeks to explain and establish hypotheses between research constructs. More so, the quantitative techniques adopted in terms of data collection and analysis makes it a suitable paradigm for the study. The positivism paradigm also enabled the researcher to generalise results from sample to the population. Section 4.4 focuses on the research approach employed.

4.4 RESEARCH APPROACH

There are three broad categories of methodologies used in research, which have been applied by scholars consistently over the past years. The three main research methods/strategies are quantitative, qualitative and mixed methods. Quantitative studies are embedded in both positivist and post-positivist paradigm and they employ statistical procedures and techniques to determine the relationships among the variables that outline the phenomenon underneath the study (Denzin & Lincoln 2000:8; Bryman & Bell 2011:152). Hopkins (2000:4) opines that the major aim in quantitative research is to determine the relationship between one research variable (an independent variable) and another (a dependent or outcome variable) in a population. The main

advantage claimed by quantitative methods is the ability to generalise research results to the whole population (Wiid & Diggines 2011:4; Daniel 2016:94).

Contrary to quantitative research is qualitative research, which is rooted on the constructivist paradigm that generalises that reality is a multifaceted interactive, common social experience that is interpreted by researchers (McCuskey & Gunaydin 2014:1). Qualitative research has been found to be the most relevant approach in sociology, psychology, anthropology, engineering, nursing and cultural arenas in which principal and participants' opinions are mandatory (Flick 2014:14). The major advantage held by a qualitative study over a quantitative study is that it permits the selected area of interest to unfold as expected (Patton 2001:39). A mixed-methods approach is also considered to be one of the widely used methods in research. Traditionally, the concept of mixing methods originated in the year 1959 when Campell and Fisk used multi-methods to study the validity of psychological traits (Creswell 2009:14). This method is integrative in nature and combines both qualitative and quantitative methodologies (Zou, Sunindijo & Dainty 2014:320).

For the purpose of this study, however, the quantitative approach was followed since it takes the form of the deductive approach (Borrego, Douglas & Amelink 2009:53) and positivism paradigm (Denzin & Lincoln 2000:8; Bryman & Bell 2011:152) that seeks to generalise research findings through the use of statistically proven empirical evidence. Furthermore, the quantitative approach blends well with the current study as it helped the researcher to statistically prove the relationship between supply chain strategy, flexibility and SCP. This method is relevant and suitable for the current study as it allows the researcher to quantify data applying some statistical data analysis methods such as confirmatory factor analysis (CFA), structural equation modelling (SEM) and Exploratory factor analysis (EFA). Section 4.5 focuses on the research design employed for the current study.

4.5 RESEARCH DESIGN

A research design is viewed as a strategy that indicates how a specific research project will be executed (Punch 2013:206; Asenahabi 2019:77). It outlines guidelines for the researcher in the process of collecting, analysing and interpreting data (Ostlund, Kidd, Wengstrom & Rowa-Dewar 2011:369: Welman, Kruger & Mitchell 2011:52). Traditionally, there are several basic research design approaches in research; and research studies can be either exploratory, descriptive or causal in nature (Sekeran & Bougie 2009:102; Creswell 2014:41). The main aim of an exploratory research design is to deliver insights into the research phenomena with the goal of generating new facts (Wiid & Diggines 2009:55). Exploratory research design is suitable and relevant in studies whereby little is known about phenomena, or there is no information available on how related

research problems or issues were undertaken in the past (Sekeran & Bougie 2009:102). Wilson (2010:104) highlights that exploratory research methods are mainly used in qualitative studies, which allow the use of focus groups, in-depth interviews, ancient analysis and observations.

Contrary to exploratory research is descriptive research, which employs scientific approaches and procedures to collect and analyse data in an attempt to respond to the research problem (Shiu *et al.* 2009:62). This design method is more inclined in addressing questions such as the "*what*" as opposed to the "*when/how/and why*" (De Vaus 2013:22). The primary objective of descriptive studies is to provide the researcher with a profile to describe the relevant aspects of the research problem, ranging from individual, organisational to industrial (Sekeran & Bougie 2009:106). Causal designs, which are contrasting to descriptive designs, are mainly concerned with finding out "why" (Dick, Heras & Casadesus 2008:695) and establish the cause-and-effect relationships between research variables. As such, experiments are commonly used in causal research designs because they are best suited to determine cause and effect (Yin 2013:7).

Since the current study is situated within the quantitative paradigm and aims to determine the relationship between supply chain strategies, SCF and performance, the causal research design is deemed suitable for the purpose of the study. As such, the causal research design assisted the researcher in determining the relationship between the research constructs. It also enabled the researcher to describe the relevant aspects of the research problem at hand pertaining to the Gauteng FMCG industry. Section 4.6 discusses the time horizon selected for the current study.

4.6 TIME HORIZON

Time horizons are crucial for research designs as they outline the time frame of a research project (Melnikovas 2018:34).A researcher has the choice of the research time frame, which is determined by the research questions or phenomena (Saunders *et al*. 2012:130). Traditionally, a research project can either be cross-sectional or longitudinal. A cross-sectional study, usually termed short-term study, involves the collection of data at a specific period of time, while longitudinal studies involve a sequence of snap shots in a lengthier time period (Kindy, Shah & Jusoh 2016:895; Melnikovas 2018:34). This study, however, is a cross-sectional one that seeks to address a particular phenomenon (or phenomena) at a specific period of time.

This phenomenon is the relationship between supply chain strategies, flexibility and performance in the Gauteng FMCG industry. Olsen and St George (2004:7) opine that a cross-sectional survey is one of the most widely used survey research designs. Additionally, the researcher employed the

short-term survey research designs because they are more economical and easier to manage than longitudinal studies. The following section discusses the literature part of the study.

4.7 LITERATURE REVIEW

A literature review is defined by Creswell (2014:57) as a disciplined process of gathering relevant and useful information and data that will be used in a research study. Seemingly, the literature review is seen as an objective, thorough overview and perilous analysis of the relevant information and knowledge on the topic being studied (Welman *et al.* 2011:38). It is an essential part of any research project (Mudavanhu 2017:189) and even more significant in research because of the following rationale:

- Literature review provides the researcher with valuable ideas and insights that are usually used in the development of the questionnaire (Notar & Cole 2010:2).
- Literature review helps a researcher draws up a conceptual framework for a research study.
- Literature review helps a researcher determine whether the study is worth pursuing or not.
- Literature review assists the researcher in constructing the scope of the study (Creswell 2009:23).
- Literature review provides scholars with invaluable insights that are also used in the development of research questions (Notar & Cole 2010:2).
- Literature review also helps the researcher to draw conclusions and recommendations for a research project.
- Literature review helps a researcher identify research gaps and unanswered open questions from previous studies.
- Literature review also helps scholars to identify areas of prior scholarship to avoid repetition of the same work and acknowledge other researchers.
- Literature review helps a researcher to achieve theoretical research objectives in a research study.

The current study has two literature review chapters, which is Chapter Two and Three. Chapter Two conducted a literature review on the FMCG industry both nationally and internationally, while Chapter Three reviewed literature on the proposed theory underpinning the study, research variable(s) and hypotheses development. The research engines that were used to review literature on the study include Google scholar, Emerald Insight, science direct, Taylor& Francis, Scopus,

research gate and many others. The literature study also involved the use of documents such as textbooks, peer-reviewed journals, conference papers and electronic devices available at a University of Technology. Section 4.8 focuses on the empirical part of the study.

4.8 EMPIRICAL RESEARCH

The empirical research pertains to the actual collection of primary data. Empirical research in the present study comprised sampling design, structured questionnaire and the data collection approach and data analysis approach.

4.8.1 Sampling design

Sampling design refers to a plan for the numeric description of trends, attitudes, or opinions of a population by studying a sample of that population (Freeborn, Wooster, Roberts & 2011:475; Taherdoost 2016:18). It encompasses defining the target population, selecting a sample frame, determining a sample size and choosing sampling techniques**.** Figure 4.3 provides a graphic delineation of the sampling design for this study.

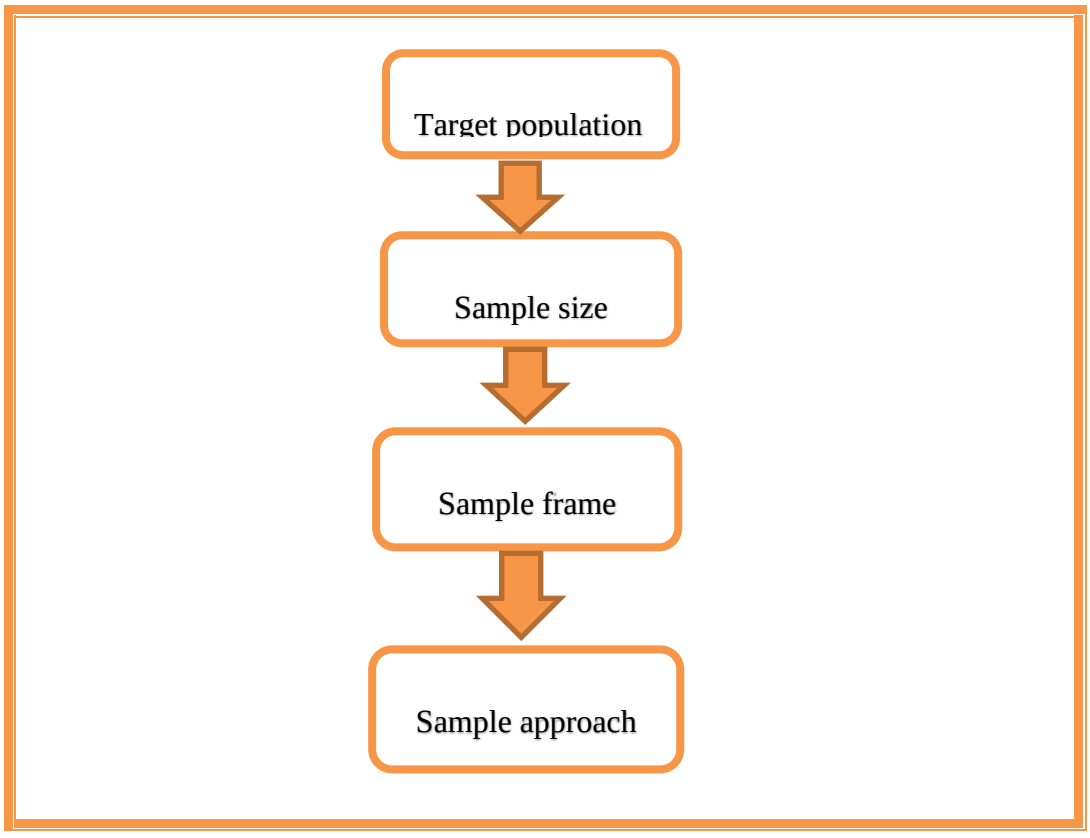

Figure 4.3: Sampling design framework

Source: Compiled by author

4.8.1.1 Target population

A population in research is defined as the aggregate units (objects) that are eligible to participate in a study (Salkind 2012:95; Berndt & Petzer 2013:347). As such, a target population refers to an overtly well-defined universum that retains certain characteristics that are of relevance and suitable for the purpose of the study (Wiid & Diggines 2009:186; Casteel & Bridier 2021:344). A target population can be consumers, supply chain professionals, engineers, miners, retail stores, etc. For the purpose of this study, the universe consisted of all the companies within the Gauteng FMCG industry, while the targeted population comprised supply chain professionals plying their trade in the Gauteng FMCG sector.

4.8.1.2 Sample frame

A sample is defined by Salkind (2012:9) as a sub-group of the population that is selected for participation in a study. Thus, a sampling frame is a complete list of all the universum members and the list of elements from which the sample is actually drawn (Malhotra 2010:359; Casteel & Bridier 2021:345). Malhotra (2007:335) opines that a good sample frame is one that precisely represents the views and of the targeted population selected on the study. The sampling frame for this study consisted of companies in the Gauteng FMCG industry. A sample frame is closely linked to a sample size.

4.8.1.3 Sample size

A sampling size refers to the size of the sample from which the necessary data or information is obtained (Kumar 2014:194). Determining a sample size for a research project is a problematical matter because it is highly dependent on a number of factors such as the type of research, history, cost and time, the homogeneity of the population and the availability of the participants selected in the study (Surujlal 2004:144; Sekaran & Bougie 2009:268; Kaur 2017:48365). The sample size should be selected from the right population in order to avoid bias and invalid results (Levy & Lemeshow 2008:210). This study, however, employed the historical evidence approach to determine the sample size. Based on a similar study conducted by Muntaka, Haruna and Mensah a sample size of 250 respondents were deemed adequate.

Tipu and Fantazy (2013) on the other hand, conducted a study on supply chain strategy, flexibility and performance using a questionnaire survey from a total of 170 small and medium-sized Pakistani manufacturing companies. More so, in an empirical study conducted by Fantanzy, Kumar and Kumar (2009), 1500 questionnaires were distributed among manufacturing firms in Canada. For the purpose of this study, however, the sample size was purposefully pitched at 350

in order to augment the statistical power of the structural equation modelling techniques and the results of the study (Hair, Anderson, Tatham & Black 2006:25; Ho 2008:77; Gupta 2011:122). Section 4.8.1.4 discusses the sampling technique employed in this study.

4.8.1.4 Sample approach

Choosing the appropriate sampling technique to use when selecting participants for a research project remains a sophisticated matter. The selection of participants for a research project is referred to as sampling (Englander 2012:17). As such, a sampling is defined as the process of selecting a group of people, events or behaviours with which to conduct a study (Wiid & Diggines 2011:193; Taherdoost 2016:18). As noted in literature, sampling is different to census. Traditionally, there are two broad types of sampling methods used in research, namely non-probability and probability sampling (Quinlan 2011:209), as depicted in Figure 4.4.

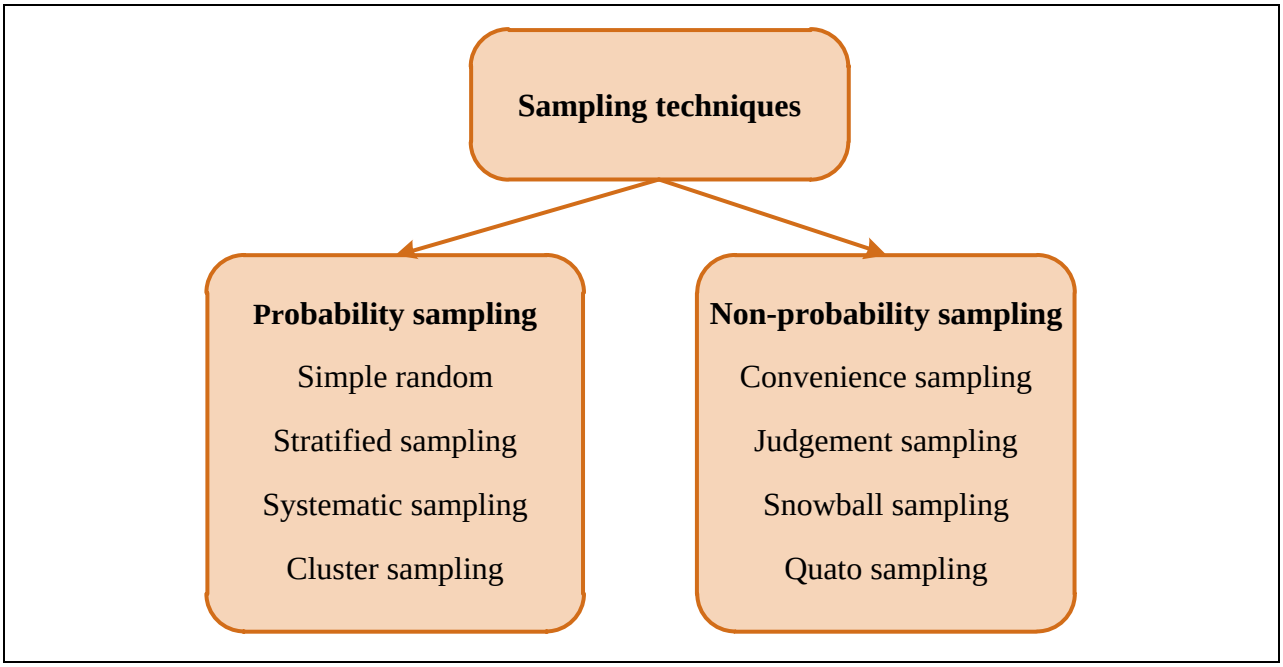

Figure 4.4: Sampling techniques

Source: Taherdoost (2016:20)

The probability sampling technique denotes that each element of the population has a known chance of being selected as a unit of the sample (Fowler 2009:19; Babbie 2013:228). The most popular probability sampling techniques are simple random, stratified, systematic, and cluster sampling techniques (Zikmund *et al.* 2010:395), as depicted in Figure 4.4. Contrary to probability sampling is non-probability sampling, which denotes that the chance that a particular unit of the population will be selected is unknown (Santhakumaran & Sargunamary 2008:33; Wiid &

Diggines 2011:199). The most popular non-probability sampling techniques are convenience sampling, judgement sampling, snowball sampling and quota sampling (Robinson 2014:25).

For the purpose of this study, the non-probability sampling was employed because the researcher did not have a fixed sample frame. As such, the researcher chose to use both the convenience sampling and purposive sampling. Convenience sampling was used to identify companies in the Gauteng FMCG industry, while purposive sampling was used to select the respondents. Using both convenience and purposive sampling was easy and convenient because participants were nominated with the idea that they are easily accessible and willing to participate in the current study (Sousa, Zauszniewski & Musil 2004:131). Additionally, both techniques are cost-effective and timesaving. Section 4.9 discusses the data collection instruments that were used to collect data in the current study.

4.9 DATA COLLECTION INSTRUMENT

The researcher used a structured questionnaire when collecting data and a research cover letter was also attached in the questionnaire.

4.9.1 Research Cover Letter

A research cover letter play an important role in questionnaire surveys because they tend to seek informed consent from the sampled participationts (Hove 2015:97). It worthy to highlight that the researcher used a cover letter to seek for informed consent from the supply chain professionals that participated in the survey. The research cover letter contained important information such as anonymity, confidentiality, data treatment as well as the time it took the respondents to fill each questionnaire. The research cover letter used in the study was also attached (Refer to Appendix A).

4.9.2 Questionnaire design and layout

A questionnaire was developed by Sir Francis Galton, a British anthropologist, surveyor and statistician in late 1800s (Burbridge 1994:443). A structured questionnaire is defined as an instrument written set of reformulated questions designed to generate the necessary data to accomplish the objectives of a research project (Shammout 2007:107; Wiid & Diggines 2013:164). It comprises specific mutual exclusive response categories from which the respondents choose a category that best suits their views. The structured questionnaire used in the study consisted of closed-ended questions to save completion time for the respondents (Bryman & Bell 2011:250), coding and statistical analysis are easy and sensitive questions are answered easily (Maree 2020:275). Engel and Schutts (2013:83) maintain that close-ended questions are expedient

because they provide higher levels of uniformity of responses and easily processed. As such, the questionnaire method was deemed suitable for the purpose of the study (refer to Appendix B).

The questionnaire included a covering letter requesting the consent of the respondents and explaining the purpose of the study. It was designed using measurement instruments adopted from similar studies with minor modifications. Furthermore, the questions contained in the questionnaire were 5-point Likert scale questions. With that being the case, multi-item scaled questions (mainly Likert scales) hold the following benefits, as outlined by Wegner (2012:86-87):

- They reduce bias amongst the respondents.
- Likert scale statements assess the attitudes, beliefs, opinions and perceptions among respondents.
- Likert scale questions make the response items comparable amongst the respondents.

Likert scale statement answers are easy to code and analyse directly from the questionnaires. It consisted of three main variables, namely, supply chain strategy(s), SCF, and SCP. The aggregate number of measuring instruments the questionnaire contained were pitched at 39. All these measurement items were measured on a 5-point Likert-type scale anchored by 1=strongly disagree to 5=strongly agree to express the level of agreement. SCP measurement items were also measured on a 5-point Likert-type scale, although it was anchored by 1=decreased significantly to 5=increased significantly. The following section focuses on the operational measurements of the research variables.

4.9.3 Operational measures of the variables

In general, the questionnaire was divided into four main sections (Section A-D): basic data, supply chain strategy, SCF, and SCP.

4.9.3.1 Section A-basic data

This section comprised nine questions requesting information on the demographic profile of the respondents. The questions requested information on gender, age group, race, and highest educational qualifications, number of years of experience in SCM, position in the organisation, employment period in the organisation, contract type, occupational area and the department where the respondent is based.

4.9.3.2 Section B construct items

This section consisted of six questions that elicited information on supply chain innovation strategy. The measurement items were obtained from a previous study conducted by Ayoub, Abdallah & Siufan (2017:616). Further details regarding the measurement items are provided in Table 4.2.

Table 4.2: Scale development and reliability for innovation strategy (SCI)

Item Code	Code description	Author(s) and Year	Industry and region where the scale was applied	Reliability (Cronbach's Alpha) (α)
SCI1	Our firm is able to replace obsolete products.	Ayoub, Abdallah & Siufan (2017:616)	Various electrical, electronics, machinery, and mechanical appliances manufacturing companies in Jordan.	0.85
SCI2	Our firm is able to reduce the time to develop a new product until its launch in the market.			
SCI3	Our firm is able to develop environmentally friendly products			
SCI4	Our firm is continually developing programmes to reduce production costs.			
SCI5	Our firm has valuable knowledge for innovating manufacturing and technological processes.			
SCI6	Our organisation pursues continuous innovation in core processes.			

Source: Ayoub *et al*. (2017:616)

As illustrated in Table 4.1, the supply chain innovation strategy scales used in this study achieved a Cronbach alpha value of 0.85 in the study conducted by Ayoub *et al*. (2017:616). This confirms that the scale is reliable and suitable for use in this study. All these measurement items were measured using a 5-type Likert-scale and their results are presented in the following chapter.

4.9.3.3 Section C construct items

This section consisted of five questions that elicited information on organisational learning strategy. The measurement items were obtained from a previous study conducted by Nafukho,

Graham & Muyia (2009:40). Further details regarding the measurement items are provided in Table 4.3.

Table 4.3: Scale development and reliability for organisational learning strategy (OLS)

Item Code	Code description	Author(s) and Year	Industry and region where the scale was applied	Reliability (Cronbach's Alpha) (α)
OLS1	Employees are recognized or rewarded for learning new knowledge and skills	Nafukho, Graham & Muyia (2009:40)	Various SMEs in the United States.	0.77
OLS2	Employees are cross-trained to perform various job functions			
OLS3	Team meetings address both team processes and work content			
OLS4	Currently available information tells us what we need to know about the effectiveness of our programs, processes, products, and services			
OLS5	Employees have access to the information they need to make decisions regarding their work			

Source: Marsick & Watkins (2003:143)

As illustrated in Table 4.3, organisational learning strategy scales used in the study achieved a Cronbach alpha value of 0.77 in the study conducted Nafukho, Graham & Muyia (2009:40). This confirms that the scale is reliable and suitable for use in this study. All these measurement items were measured using a 5-type Likert-scale and their results are presented in the subsequent chapter (Chapter 5).

4.9.3.4 Section D construct items

Section D consisted of five questions that elicited information on supply chain risk management strategy. The measurement items were obtained from a previous study conducted by Chaudhuri *et al*. (2015:697). Further details regarding the measurement items are provided in Table 4.4.

Table 4.4: Scale development and reliability for risk management strategy (RMS)

Item Code	Code description	Author(s) and Year	Industry and region where the scale was applied	Reliability (Cronbach's Alpha) (α)
RMS1	Our firm has mechanisms for preventing operations risks (e.g. select a more reliable supplier, use clear safety procedures, preventive maintenance).	Chaudhuri *et al.*, (201:697)	Various manufacturing plants in Asia	0.90
RMS2	Our firm has procedures for detecting operations risks (e.g. internal or supplier monitoring, inspection, tracking).			
RMS3	Our firm responds to operations risks (e.g. backup suppliers, extra capacity, and alternative transportation modes).			
RMS4	Our firm has systems for recovering from operations risks (e.g. task forces, contingency plans, and clear responsibility).			
RMS5	Our organisation and supply chain partners exchange confidential information.			

Source: Adapted from Chaudhuri *et al*. (2015:697)

As clarified in Table 4.4, risk management strategy scales used in this study achieved a Cronbach alpha value of 0.90 in the study conducted by Chaudhuri *et al*. (2015:697). This confirms that the scale is reliable and suitable for use in this study. All these measurement items were measured using a 5-type Likert-scale and their results are presented in the following chapter.

4.9.3.5 Section E construct items

Section E consisted of five questions that elicited information on customer orientation strategy. The measurement items were obtained from a previous study conducted by Kotcharin (2013:6). Further details regarding the measurement items are provided in Table 4.5.

Table 4.5: Scale development and reliability for customer orientation strategy (CO)

Item Code	Code description	Author(s) and Year	Industry and region where the scale was applied	Reliability (Cronbach's Alpha) (α)
CO1	Our business objectives are driven primarily by customer satisfaction.	Kotcharin (2013:6)	Various automotive industry in Thailand	0.85
CO2	Our strategy for competitive advantage is based on our understanding of customer's needs.			
CO3	Our firm measures customer satisfaction systematically and frequently.			
CO4	Our firm often looks for measurements to increase customer value or decrease product costs.			
CO5	Our firm gives close attention to after-sales service.			

Source: Adapted from Kotcharin (2013:6)

As exemplified in Table 4.5, customer orientation strategy scales used in this study achieved a Cronbach alpha value of 0.85 in the study conducted Kotcharin (2013:6). This confirms that the scale is reliable and suitable for use in this study. All these measurement items were measured using a 5-type Likert-scale and their results are presented in the following chapter.

4.9.3.6 Section F construct items

Section F consisted of five questions that elicited information on supplier integration strategy. The measurement items were obtained from a previous study conducted by Ayoub, Abdallah & Siufan (2017:616). Further details regarding the measurement items are provided in Table 4.6.

Table 4.6: Scale development and reliability for supplier integration strategy (SI)

Item Code	Code description	Author(s) and Year	Industry and region where the scale was applied	Reliability (Cronbach's Alpha) (α)
SI1	Our firm establishes a quick ordering system with our major suppliers.	Ayoub, *et al*., (2017:616).	Various electrical, electronics, machinery, and mechanical appliances manufacturing companies in Jordan.	0.83
SI2	Our firm determines the level of strategic partnership with our major suppliers			
SI3	Our firm shares its production plans with our major suppliers.			
SI4	Our firm shares its demand forecasts with our major supplier.			
SI5	Our firm shares its inventory levels with our major supplier.			

Source: Adapted from Ayoub *et al*. (2017:616)

As exemplified in Table 4.6, supplier integration strategy scales used in this study achieved a Cronbach alpha value of 0.83 in the study of Ayoub *et al*. (2017:616). This confirms that the scale is reliable and suitable for use in this study. All these measurement items were measured using a 7-type Likert-scale and their results are presented in the following chapter.

4.9.3.7 Section G construct items

This section of the questionnaire consisted of five questions that sought information SCF. The measurement items used for this research construct were adopted in studies conducted by Kotcharin (2013:6), Liao, Hong and Rao (2010:21). Further details regarding the measurement items are provided in Table 4.7.

Table 4.7: Scale development and reliability for suplychain flexibility (SCF)

Item Code	Code description	Author(s) and Year	Industry and region where the scale was applied	Reliability (Cronbach's Alpha) (α)
SCF1	Our firm has the ability to rapidly change production volumes.	Kotcharin (2013:6), Liao, Hong & Rao (2010:21)	Various automotive industry in Thailand and SMEs in the United States.	0.87 & 0.91
SCF2	Our firm has the ability to respond to changes in delivery requirements.			
SCF3	Our firm is able to replace one supply source for another in a short time			
SCF4	Our major suppliers are willing to accommodate changes that we have requested.			
SCF5	Our firm has the ability to changeover to a different product quickly.			

Source: Adapted from Kotcharin (2013:6); Liao, Hongand and Rao (2010:21)

As exemplified in Table 4.7, SCF scales used in this study achieved a Cronbach alpha value of 0.87 and 0.91in the study conducted Kotcharin (2013:6) and Liao *et al*. (2010:21) respectively. This confirms that the scale is reliable and suitable for use in this study. All these measurement items were measured using a 5-type Likert-scale and their results are presented in the succeeding chapter.

4.9.3.8 Section G construct items

This section of the questionnaire comprised eight questions eliciting information on the two dimensions of SCP, namely, non-financial performance and supply chain financial performance. The questions used in this study were adapted from previous scales validated through studies by Roll (2010:48). The criteria compared with the relative major competitors within the FMCG industry for the last three years and the response options were anchored on a seven-point scale with "1" indicating a decrease and "5" an increase in the performance of the supply chain. Further details regarding the measurement items are provided in Table 4.8.

Table 4.8: Scale development and reliability for supply chain performance (SCP)

Item Code	Code description	Author(s) and Year	Industry and region where the scale was applied	Reliability (Cronbach's Alpha) (α)
Supply chain non-financial performance				
NFP1	Response time to customer query time.	Roll (2010:48)	Various manufacturing industries in Canada.	0.86
NFP2	Level of customer perceived value of product.			
NFP3	Level of service systems to meet customer needs.			
NFP4	Order lead-time.			
Supply chain financial performance				
FP1	Average net profit.	Roll (2010:48)	Various manufacturing industries in Canada.	0.86
FP2	Average sales growth rate.			
FP3	Revenue growth			

Source: Adapted from Roll (2010:48)

As exemplified in Table 4.8, SCP scales used in this study achieved a Cronbach alpha value of 0.86 in the study conducted by Roll (2010:48). This confirms that the scale is reliable and suitable for use in this study. All these measurement items were measured using a 5-type Likert-scale and their results are presented in the following chapter. Section 4.10 discusses the procedures followed during data collection.

4.10 DATA COLLECTION PROCEDURES

The researcher used a structured self-administered questionnaire to gather information for this study. As noted in the literature, there are numerous approaches used when distributing questionnaires, such as emails, postal, telephone, drop and collect, group administered and online surveys. For the purpose of this study, however, the researcher used only two methods, which is the drop and collect approach and mailing approach. The first method was the drop-and-collect approach in which structured self-administered were dropped to the FMCG multinationals selected to participate in this study. Respondents were given a period of three weeks to complete the

questionnaire. After the period predetermined by the researcher, questionnaires were then collected from the participants.

With COVID-19 on the horizon, some of the questionnaires were emailed to selected respondents. In this regard, the Food and Beverages SETA conveniently assisted in identifying the respondents in the FMCG. The respondents were given a period of 7-14 days to complete the questionnaire. The data was intended to be collected from the 3rd of May 2021 until the 24th of June 2021, although it escalated to the year 2022, in the month of April. A total of 350 questionnaires were distributed to respondents and only 245 were returned. Out of the 245, only 228 were suitable to be used in the study. Consequently, 17 questionnaires were found to be improperly completed and were not considered for further analysis. As outlined in Section 4.11.1.1 and 4.11.1.2, editions were made on five questionnaires that were not fully completed and they were further coded and cleansed. Section 4.11 provides a detailed procedure for analysing data.

4.11 PROCEDURES FOR DATA ANALYSIS

This section provides a detailed discussion of analysing data. Data analysis is defined by Neuman (2006:467) as the process of examining, sorting, categorising, evaluating, comparing, synthesising and contemplating the data coded as well as reviewing the initial recorded data. Data analysis for this study entails data preparation, tests for data normally, descriptive statistics, exploratory factor analysis (EFA), structural equation modelling (SEM) and confirmatory factor analysis (CFA). Section 4.11.1 focuses on data preparation.

4.11.1 Data preparation

Following data collection, the next step is data analysis which starts with data preparation. Data preparation is defined as the process of checking data for errors such as omissions, illegibility and inconsistency and if such errors are detected then the data is subject to corrections (Khan 2005:2). Traditionally, there are three widely used data preparation techniques, namely, data coding, data editing and data cleansing. To ensure consistency and to avoid typical anomalies on the questionnaires, the above techniques were employed and they are discussed briefly in the following sections.

4.11.1.1 Data editing

The main aim of editing data is to identify and rectify possible anomalies or errors in the questionnaire that may have arisen during data collection (Malhotra 2007:429). Malhotra also stresses that the process of data editing necessitates the inspection of the data to ensure uniformity,

consistency and accuracy. In this study, the editing process was undertaken to assess the relevance of responses, inconsistencies in responses and completeness of questionnaires (Wiid & Diggines 2011:230). Furthermore, the researcher employed the editing technique to validate and to improve consistency of the research process. As such, the collected questionnaires were assessed to ensure that they were filled completely and if variances are detected, corrective action were then taken by comparing the respondent's data with that of similar respondents. After corrective actions are taken, data coding then followed.

4.11.1.2 Data coding

After the collected questionnaires have been edited successfully, data coding follows. Data coding is the process of converting data into variables and categories of variables using numbers so that the data can be captured into a computing device for analysis (Lockyer, Michael, Lewis, Alan & Timothy 2004:137-138). As such, coding includes assigning numbers or codes to ensure that the responses can be clustered into a limited number of classification or categories (Pallant 2013:506). Data coding is usually performed when all the questionnaires distributed were collected and corrected. The data is coded in an Excel spreadsheet using a computing device. In this study, however, the 228 collected questionnaires were captured and coded accordingly in an Excel spreadsheet. The coded data is then subject to cleansing.

4.11.1.3 Data cleansing

Due to human error, the coded data must be assessed again to detect any irregularities. Data cleansing refers to the process of identifying and addressing inaccurate and corrupt entries from the data. In this study, data cleansing was undertaken to ensure that the final data set is used accurately, sufficiently and consistently to achieve the objectives of statistical data analysis. This process is similar to the process of data editing as its main objective is to identify anomalies before data analysis. The researcher examined the coded data in the Excel spreadsheet to ensure that there are no errors that were made during data coding. Due to human error, the researcher also cross-checked the data on the Excel spreadsheet for possible variances and corrections were done using other respondents' data. The next section focuses on testing the normality of the data collected.

4.11.2 Test for data normality

A priori statistics about data distribution is not always known until tests are conducted (Arnastaukskaite, Ruzgas & Brazens 2021:1). Although SEM produces consistent approximations of results even when the data being tested are non-normally distributed, it is still compulsory to carry out the tests for normality to rationalise the procedure of parametric tests. With this being

the case, tests for data would be carried out in this study. The main tests for the assessment of normality are Kolmogorov-Smirnov (K-S) test, Lilliefors corrected K-S test, Shapiro-Wilk test, Anderson-Darling test Cramer-von Mises Test, D'Agostino skewness test, Anscombe-Glynn kurtosis test, D'Agostino-Pearson omnibus test and the Jarque-Bera test (Oztuna, Elhan & Tuccar 2006:173; Ghasemi & Zahediasl 2012:487). In this study, however, normality of data will be tested using the D'Argostino's K-squared test, which is a goodness of fit measure which seeks to determine if a sample is drawn from a normally distributed population.

Furthermore, in testing the normality of data, the sample skewness and kurtosis are computed. Orcan (2020:256) orated that skewness is a measure of the lack of symmetry while kurtosis determines whether the data are either heavily tailed or light-tailed, relative to a normal distribution. A number of scholars have proposed various rules of thumb to measure skewness; however, this study adopted -2 to +2, as recommended by Garson (2012:18) to be the satisfactory range to prove the normal distribution of data. The anticipated kurtosis value for any univariate normal distribution, on the other hand, is deemed to be 3 (Garson 2012:19), therefore, values closer to this threshold was adopted in this study. The D'Argostino's K squared test was carried out using the SPSS (27.0) software simultaneously with the analysis of descriptive statistics. The results for data normality are presented in Section 5.6.

4.11.3 Descriptive statistics

Descriptive analysis is defined by Babbie and Rubin (2011:518) as an arithmetical technique that helps a researcher describe the characteristics or the relationship among constructs in a sample. Thus, descriptive statistics are utilised to categorise, summarise and extract significant information on the relationship among constructs in a study (Manoharan 2010:663-665; Lomax & Hahs-Vaughn 2012:6). More so, descriptive statistics helps a researcher identify profiles, arrays within the responses of participants, relationships and trends and then quantify the data in a meaningful and manageable format. In the current study, descriptive statistics were employed to summarise and label the data obtained from the respondents. The information obtained from selected respondents were presented in the form of percentages, frequencies, mean scores, and standard deviations. These descriptive statistics are reported in Section 5.3 of the current dissertation.

4.11.4 Exploratory factor analysis

Exploratory factor analysis (EFA) is a statistical method that is used to minimise data or information into a smaller summary set, and discover the underlining hypothetical structure of a research phenomenon (Cramer 2006:28; Watkins 2018:219). The Exploratory Factor Analysis

(EFA) statistical procedure is one of the most widely used methods in social and behavioural sciences (Izquierdo, Olea & Abadi 2014:395). As such, it is used when a researcher seeks to ascertain the factors influencing variables and to ascertain which variables are correlating (De Coster 1998:2). As outlined by Goldberg and Velicer (2006:2019), the main objective of science is to understand the relationships among variables, and the exploratory factor analysis plays a central role in this quest. It assisted the researcher in understanding the correlation between latent variables (supply chain strategies, flexibility and performance).

Factor analysis is useful for studies that involve a few or hundreds of variables and a larger sample size (Yong & Pearce 2013:80). This study consisted a few latent variables, namely, innovation strategy, organisational learning, risk management strategy, customer orientation strategy, supplier integration, SCF and SCP. The sample size of the current study was pitched at 350, which is a greater sample size, as recommended by Yong and Pearce (2013: 80). In determining the factor structure of the variables in this study, Izquierdo, *et al*. (2014:396) claim that a preliminary analysis of the metric quality of the items should be conducted.

The proposed factor structure was analysed and reported on as mean(s), standard deviation, and item-test correlation of each one of the items, as well as the Cronbach's alpha of the scales of the test as commended by Izquierdo *et al*. (2014:396). Moreover, eigenvalue (K1), Cartel scree-test and communalities were also considered to determine which factors are retained. Additionally, to confirm the factorability of the data, the Bartlett's Test of Sphericity and Kaiser Meyer Olkin (KMO) test of sampling adequacy were considered. The Bartlett's test checks whether the correlation matrix is an identity matrix. A significant p= value of less than 0.05 indicates that the variables in the correlation matrix are related (Hadi, Abdullah & Sentosa 2016:216). The KMO tests, on the other hand, checks whether the sample size is adequate, which was indicated by a value greater than 0.5. (Hadiet *et al*. 2016:216). The EFA procedure of the current study was performed on SPSS (27.0). The results for exploratory factor analysis (EFA) are presented in Section 5.4 in the next chapter.

4.11.4.1 Structural equation modelling

Structural equation modelling (SEM) is defined Sweeney (2009:186) as a statistical technique that uses a number of models to test the relationships between different variables in a study. Byrne (2001:53) maintains that SEM is a multivariate data analysis technique that employs either exploratory or confirmatory factor analysis as well as the testing of premises to examine the structural theory bearing on some phenomena. SEM is the most popular technique used in social and behavioural science (Schamberger, Schuberth. Henseler & Dijkstra 2020:207) and its main

objective is to test a theoretical model that is hypothesised in a given study. As such, SEM was applied in the current study to test the relationship between supply chain strategies, flexibility and SCP as well as the hypotheses proposed in the theoretical or conceptual framework, as depicted in Chapter Three.

As suggested by Hair *et al*. (2010:17), the application of SEM involves two components, namely, confirmatory factor analysis (CFA), and path analysis. In this study, CFA was applied to determine the psychometric properties of the measurement scales used and path analysis was applied to test hypotheses proposed. SEM was applied using the partial least squares (PLS) technique. Partial Least Squares (PLS) sometimes called composite-based SEM, component-based SEM or variance-based SEM is a generally used statistical tool in chemometrics, especially in the instances where the number of predictor variables is relatively larger than the number of data points (Kee 2013:1; Garson 2016:8). The Smart-PLS was employed in the study as a path model, establishing causal paths between predictor variables and mediator variables as well as paths relating the outcome to variable(s) (Garson 2016:8). Using the Smart-PLS enabled the researcher to model supply chain strategies, SCF as well as SCP indicators.

Confirmatory factor analysis (CFA) is defined by Joreskog and Sorbom (1979:1) as a systematic analysis of psychometric properties of the measurement scales used, which consist of dormant variables estimated after improvement for measurement inaccuracies. The main objective of confirmatory factor analysis (CFA) is to statistically test the possibility that a hypothesised factor structure is supported (Cramer 2006:28). Furthermore, to test that a hypothesised structure is supported or confirmed in the study, three measurement models, namely, reliability, validity and model fit were followed.

4.11.4.2 Reliability

Reliability is the degree to which a measurement item can produce the same results if it is repeated under constant conditions (Riege 2003:81; Clark & Harcourt 2004:64; Ang 2014:176). Iramaneerat, Yudkowsky and Downing (2008:479) advocate that for a measurement instrument to be considered reliable, it must have zero random errors. In this study, the reliability of the measurement items was tested using the Cronbach alpha test, composite reliability, inter-item correlations and the Rho-A spearman test.

- **Cronbach alpha**

Cronbach alpha measures the extent to which the items on a measurement scale or test provide consistent information (Wells & Wollack 2003:4; Gadermann, Guhn & Zumbo 2012:2). Cronbach

alpha (α), is the most commonly applied technique to test multiple item scales and represents the average of all possible split-half reliabilities for a construct (Zikmund *et al.* 2007:320). Furthermore, the Cronbach's reliability scales are usually stated in values confined between 0 and 1 (Tavakol & Dennick 2011:53). A high Cronbach alpha represents a great extent of applicability across the items in the scale, while a low Cronbach Alpha indicates that the reliability of the instrument is very low (Wells & Wollack 2003:4). Additionally, the table below (Table 4.8) clearly shows the values that meet the required threshold or internal consistency of the measurement items.

Table 4.9: Rules of Thumb for the Cronbach Alpha

Cronbach Alpha Value	Internal Consistency
$\alpha \geq 0.9$	Excellent
$0.8 < \alpha \leq 0.9$	Good
$0.7 < \alpha \leq 0.8$	Acceptable
$0.6 < \alpha \leq 0.7$	Questionable
$0.5 < \alpha \leq 0.6$	Poor
$\alpha < 0.5$	Unacceptable

Source: Adopted from Cronbach (1951:311), Cronbach (2004:394)

In this study, the required threshold for the Cronbach alpha as suggested by Cronbach (1951:311) should be greater than 0.7 for a measurement instrument to be regarded as meeting the internal consistency level and therefore be concluded as acceptable, good or excellent, as illustrated in Table 4.9. The results of the Cronbach alpha (α) coefficient are presented in Chapter Five, Section 5.7.1.1.

- **Composite reliability**

Composite reliability measures play a pivotal role in psychology, mathematics, engineerig and related disciplines (Terry & Kelley 2012:371). The authors' emphasise that in research and practice, composite reliability is crucial when reporting, and critically evaluating issues of reliability in testing and measurement situations cannot be overstated. In simpler terms, composite or construct validity measures the internal consistency of the measurement items. A number of scholars such as Triwidyati and Tenatama (2020:197) and Hulland (1999:195) suggest that composite reliability value, the same as the Cronbach's Alpha, should be greater than 0.7 but less than the cut-off threshold of 1. Composite reliability results are presented in Section 5.7.

- **Item-total correlations**

Item-total correlations are a psychometric method used to measure the trustworthiness and consistency of measurement items (Churchill 1979:64). Churchill opines that item-total correlations measures are applied to test whether the measurement items in a scale are reliable with the behaviour of the other measurement items on the same scale. To meet the required threshold of reliability, the study adopted Nunnally's (1978:244) recommendations that the item-total correlation of each item should be above 0.3. Item-to-correlation results are presented in Section 5.7.

- **Rho A test**

The Spearman correlation, sometimes called the Spearman Rho-A test is a statistics technique used to assess the relationship between the two continuous variables from a gathered data sample (Palin & Cleesem 2017:197). In the current study, the Rho-A test was employed to measure supply chain strategies and SCF. The technique was further used to test the relationship SCF and SCP. The use of the Spearman rho in the study allowed the researcher to measure the strength and direction of a supposed relationship between constructs, as suggested by Prion and Haerling (2014:535). The Spearman rho states that values between 0 and 1 indicate that a relationship is existing between the constructs., with 0 denoting there is no relationship between the constructs at all (Cicchetti 1994:284; Prion & Haerling 2014:535). The Spearman Rho-A test results of the study are presented in Section 5.7.1.2 of the following chapter.

4.11.4.3 Validity

Validity is the extent to which the measurement instrument that was selected measures what it was supposed to measure (Collins & Hussey 2003:58: Mustafa 2010:220-222; Maree 2020:261). In other words, the measurement instrument should measure what it is intended to measure (Burns & Grove 2009:71). Traditionally, there are many types of validity, with the most popular types being content validity and construct validity (Malhotra 2011:44; Moutinho & Hutcheson 2011:327). Notwithstanding the popularity of content validity and construct validity, this study measured the validity of measurement items using three types of validity, namely, face validity, content validity and construct validity.

- **Content and Face validity**

Face validity is a measure of whether a research study gives the impression to be a good project when represented at its face value (Niemann 2006:192; Maree 2020:262). Brink (2006:160) points out that face validity is the appropriate representative of an instrument. To ensure face validity, as

suggested by Babbie (2013:65), the research study asked three specialists in the field of supply chain to judge the questions. Content validity on the other hand, is defined as the extent to which a specific measurement item provides a meticulous meaning of a construct (Polit & Beck 2006:490; Maree 2020:262). Zikmund and Babin (2000:320) state that content validity is conventional when an item content rationally appears to reflect what it was supposed to measure. Furthermore, content validity is ascertained through expert judgement (Lawshe 1975:363).

Both content and face validity were validated by a panel of experts at a selected university of technology located in Gauteng province. These experts provided feedback and improvements on the questionnaire were done by means of implementing certain changes regarding its structure, wording and technical aspects.

- **Construct validity**

In the current study, construct validity was measured using both convergent and discriminant validity.

- **Convergent validity**

Convergent validity measures the extent to which the measurement items show consistency within the same latent construct validated (Cooper & Schindler 2011:281). It demonstrates the relationship or the correlation of the latent constructs in terms of the results when testing the measurement instruments. Thus, for convergent validity to exist and be measured, a measurement item is projected to correlate highly with the other measurement items that are used to measure the same latent construct (Hove 2015:108). In this study, convergent validity was established using the item-to-total correlation values (Chinomona 2011:1) and item (factor) loadings that are computed as standardised regression weights on CFA. More so, the item-to-total correlation values should be more than 0.3 while the item (factor) loadings should more than 0.5 to be considered valid. The results are presented in Section 5.7 of the next chapter.

- **Discriminant validity**

Discriminant validity is established when the latent variables are foretold to be uncorrelated, and the results obtained when measuring them are found to be empirically uncorrelating (Sekaran & Bougie 2010:160). Malhotra (1996:10) opines that each item scale must provide a number of loadings different to other constructs. For this reason, it can be suggested that discriminant validity measures the extent to which the latent variable offers results that are different to the other variables. Ascertaining discriminant validity in this study, the AVE was employed and the correlation matrix table was observed.

The rule of thumb associated with assessing discriminant validity states that the acceptable threshold between constructs should be not more than 1 but greater than 0.5 (Anderson & Gerbing 1988:411). The correlation between constructs in the correlation matrix table should not exceed the cut-off threshold of 1. Discriminant validity results are presented in Section 5.7.2.1.2, Chapter 5.

The model fit analysis is discussed in the following section.

4.11.4.4 Model fit assessment

The main objective of model fit is to verify the extent to which the hypothesised model is consistent with the data. Schreiber, Stage, King, Nora and Barlow (2006:330) reiterate that a research model fit is viewed as the evaluation of the hypothesised relationships that exist between latent variables of a research model. As prescribed by Bagozzi and Yi (1988:74), the various indicators were used to test for model fit and these involved the chi-square/degrees of freedom,Goodness fit Index(GFI), Trucker-Lewis Index(TLI), d_ULS(unweighted least squares), d_G(geodesic distance), the Normed Fit Index (NFI), and the standardised root mean square residual (SRMR) among others. For the purpose of this study, the model fit was established using the chi square test, d_ULS (unweighted least squares), d_G(geodesic distance), the normed fit index (NFI), and the standardised root mean square residual (SRMR) and these indices are briefly discussed below:

4.11.4.4.1 Chi-square/degrees of freedom ($\chi 2$)

Chi square ($\chi 2$) test is a numerical test which measures the association between two or more variables (Ugoni & Walker 1995:61). The Chi-square ($\chi 2$) test is used in scientific studies to validate correlations among nonnumeric constructs that have been used in statistical studies (Kothari 2007:27). Hu & Bentler (1998:2) further states that the Chi-square value ($\chi 2$) is designed to evaluate the discrepancy between the sample and covariance matrices. However, the two distinctive purposes of Chi-square ($\chi 2$) test are to test the hypothesis to confirm that there is no correlation among two or more clusters, populations or criteria, and to assess the extent to which the pragmatic data distribution fits to the estimated distribution (Turhan 2020:576).For the purpose of the study, the Chi-square value ($\chi 2$) technique was adopted to assess the extent to which practical data distribution fits to the estimated distribution. As noted in literature, there have been inconsistent reports concerning the acceptability of a research model Chi-square ratio (Hooper Coughlan & Mullen 2008:54), however, the current study follows the recommendations suggested by prominent authors such as Wheaton, Muthen, Alwin and Summers (1977:84), and Tabachnick

and Fidell (2007:6) who indicated that an acceptable chis-quare ($\chi 2$) ratio ranges between 2 and not more than 5. The chi-square test ($\chi 2$) results are presented in the subsequent chapter, Section 5.7.3

4.11.4.4.2 Standardised root mean square residual (SRMR).

The standard root mean square resideual (SRMR) is defined as the variance between the experiential association and the model inferred correlation matrix (SMART-PLS 2022:1). As a result, it allows evaluating the normal degree of the inconsistencies between pragmatic and expected associations as an absolute measure of model fit criterion. Furthermore, the mathematical representation of the research in SmartPLS aslo included the standardized root mean square residual (SRMR) (Pinedaa, Mohamadc, Solomon, Bircob, Siperioe, Cuencof & Bognot 2022:57) among others. Henseler, Ringle and Sarstedt (2015:115) and Hu and Bentler (1999:5) suggest that the SRMR index's acceptable range is between 0 and 0.08 for the data used in the research to fit the proposed model. SRMR results are presented in chapter 5(Section 5.7.3)

4.11.4.4.3 Exact model fit criteria (d_G & d_ULS)

The exact model fit criteria (i.e d_G & d_ULS) respresents two different techniques to compute inconsistency (Dijkstra & Henseler 2015:302). SMART-PLS (2022:1) posit that the values of the d_ULS and d_G do not necessarily pertain any value, however, comparisons of the original values against the confidence interval created from the sampling distribution are recommended. In other words, the exact model fit criteria should achieve insignificant values for it to be deemed fit. Supportively, both d_ULS (i.e., the unweighted least squares) and d_G (i.e., the geodesic distance) should offer values that are not significant ($p>0.05$), representing a good model fit (SMART-PLS 2022:1). The exact model fit results are reported in section 5.7.3 of Chapter 5.

4.11.4.4.4 Normative Fit Index (NFI)

The NFI evaluates the model by linking the chi-square value of the model and the same independence model (Bentler & Bonnet 1980:588). This index is enormously affected by sample size and cannot be considered alone, hence it is compared with the chi-squre value (Dash & Paul 2021:3). Some studies recommended > 0.95 (Hu & Bentler 1999:5), however, an estimated threshold value between 0.90 and 1 will be considered in the study because it suggests a good model fit (Bollen 1990:256: Dash & Paul 2021:3).

The following section focuses on path analysis.

4.11.4.5 Path analysis

The aim of path analysis is to offer acceptable explanations of experimental causal relationships by constructing models of cause-and-effect relations (Huang *et al.* 2002:149; Hove 2012:83; Hove 2015:106). In other words, path analysis results show the degree and the importance of the hypothesised connections between dependent and independent variables in a study. According to Schumacher and Lomax (2010:3), the statistical estimates of the hypothesised connections are referred to as factor loadings or pattern coefficients, which are sometimes called regression coefficients. For the purpose of this study, the analysis of path modelling and hypotheses testing emanating from the application of SEM was conducted using SMART-PLS (version 3.3.5) software. Path analysis results are presented in Section 5.8.

The following section outlines the regulations governing the current study.

4.12 ETHICAL CONSIDERATIONS

Ethics refers to a set of moral principles or guidelines that clarify the conditions under which the research will be conducted (Gupta 2011:21; Shah 2011:205; Akaranga & Ongong'a 2013:8). Hammersley and Traianou (2012a:3) pointed out that academics and scholars depend largely on being permitted access to data, which may involve individuals cooperating in a number of ways. With this being articulated, an ethical clearance was obtained at Vaal University of Technology and all the stipulated guidelines and conditions were adhered to by the researcher. The following sections discusses the ethics that the researcher adhered to:

4.12.1 Informed voluntary consent

It is necessary to attain informed consent prior to selecting any participant to enrol in a research project (Jelsma & Clow 2005:4). Heath, Charles, Crow and Wiles (2004:1) pointed out that attainment of informed voluntary consent from the participants involved in research is commonly regarded as essential to ethical research practice. This ideally means that pressure will not be applied on the identified respondents into agreeing to participate in a research project. Additionally, a covering letter (refer to Appendix A) was attached on the questionnaire explaining the primary objectives of the study and also stated that participation is voluntarily, not compulsory.

4.12.2 Confidentiality and anonymity

Data obtained from the respondents who participated on the research project was treated with confidentiality and anonymity. Jelsma and Clow (2004:4) reiterate that a respondent's data in

quantitative research frequently remain anonymous in order for a researcher to be able to generalise the results. As such, the companies and names of the respondents participated in this research project were not articulated in the questionnaire, and neither in the study. The data obtained was treated with confidentiality and anonymity as articulated in the covering letter.

14.2.3 Ethical expectations

An ethical clearance was obtained from the ethics committee at the Vaal University of Technology. Refer to Appendix C for the permission letter. The survey questionnaire was viewed, examined and approved by the research committee before it was dispersed to conveniently and purposively selected respondents. Permission to collect data was also obtained from the relevant authorities in the FMCG industry prior to data collection.

14.2.4 Advocacy and safety

It is essential to protect the data that was obtained from the respondents who participated in a research project (Fleming & Zegwaard 2018:211). The 228 questionnaires used to collect data were kept in a secure space to ensure safety and unused data was destroyed. Furthermore, this research project did not infringe on the rights and safety of the respondents. It also considered the potential harm (reputation) of the participants and companies that were involved in the data collection process. As articulated in Section 4.12.2**,** the data was treated with confidentiality and anonymity to ensure security.

4.13 CHAPTER SUMMARY

The purpose of this chapter was to explain the methodology that was adopted in the study. As stated in Section 4.1, research methodology provides a framework that assists a researcher in transforming data into information. The first part of the chapter discussed the types of research reasoning (inductive and deductive reasoning), thereby providing a detailed distinction between the two kinds. Deductive reasoning was deemed suitable for the current study because it follows quantitative approaches. Thereafter, the research paradigm underpinning the study was discussed concisely. All the methodological topics such as research design, sampling design and sampling procedure were covered. The study used a structured questionnaire to obtain data. It was pre-tested prior to data collection for reliability and validity rationales. The procedure that was employed to analyse data was also discussed. Lastly, the ethical considerations underpinning this study were outlined. The next chapter focuses on data analysis and interpretation of results.

CHAPTER 5
DATA ANALYSIS AND INTERPRETATION

5.1 INTRODUCTION

The previous chapter provided a detailed overview of the all the fundamental procedural and methodological apparatuses utilised to collect data in the study. This chapter presents the final results from the data collected as well as the analyses and interpretation of the research results. The data used in this chapter were accessed from the research questionnaires that were dispersed amongst supply chain professionals in the South African FMCG industry, Gauteng. More so, the data used in this study was deemed satisfactory as the participants met the criteria outlined for the current study.

The current chapter is divided into four sections, namely, response rate, characteristics of the research participants, and empirical results analysis. It begins with discussing the characteristics of the research participants, describing elements such as gender, age, race, highest qualifications obtained in the field of supply chain management. Information on the experience and serving period of the respondents was also obtained as well as the nature of employment. It is followed by the empirical results of the data collected. Data analysis entails data preparation, descriptive statistics, exploratory factor analysis (EFA), structural equation modelling (SEM) and confirmatory factor analysis (CFA).

The chapter presents and discusses the results of the path analyses to offer acceptable explanations of experimental causal relationships by constructing models of cause-and-effect relations of the latent variables. This is followed with the analysis of path modelling and hypotheses testing emanating from the application of SEM conducted using the SMART-PLS (version 3.3.5) software. The data analysed used a combination of the SPSS (Version 27.0) and SMART-PLS (version 3.3.5) statistical software. The following section discusses the response rate of the research participants.

5.2 RESPONSE RATE

There are higher expectations for surveys regarding the response rates of research participants, as opined by Fincham (2008:1) The author accentuates that response rates of approximately 60% for most research projects should be the ultimate aim for researchers. Response rate has been well-defined traditionally by Morthon, Bandara, Robinson and Carr (2012:106) as the total number of

respondents who participate in the study, divided by the aggregate total number of respondents who were eligible and anticipated to participate in it. The current study was guided by this view in determining the response rate of the research participants. Table 5.1 presents the response rate.

Table 5.1: Response rate

Description	Number
Total number of questionnaires distributed	350
Total number of questionnaires returned	245
Total number of questionnaires not returned	105
Usable responses discarded	17
Valid questionnaires retained	228
Response rate percentage	65%

Source: Compiled by author

Table 5.1 illustrates the aggregate number of questionnaires distributed, returned, discarded and retained during the survey and data coding process. A total of 350 questionnaires were dispersed to supply chain professionals in the Gauteng FMCG industry. Among the 350 distributed, only 245 were returned to the researcher, which is represented by a response rate of 65%. Table 5.1 also shows the number of discarded questionnaires, denoted by n=17, which resulted from the number of distributed questionnaires minus (-) the total number of returned questionnaires. The 17 questionnaires were discarded from analysis because they had equivocal responses such as double-ticking, and some sections had not been completed.

As a result, a total of 228 questionnaires were retained after data preparation procedures such as editing and cleansing were observed. Therefore, the usable total number of responses available for analysis was 228 questionnaires. The response rate of the current study was deemed satisfactory, as a number of scholars such as Babbie (2007:22), Fincham (2008:43) posit that a response rate greater (>) than 50 per cent is usually deemed acceptable for analysis and reporting. Section 5.3 focuses on the results of the main survey of the study.

5.3 RESULTS OF THE MAIN SURVEY

The data was intended to be collected from the 3rd of May 2021 until the 24th of June 2021, however, it escalated to the year 2022, the month of April due to the COVID-19 pandemic. This

section focuses on the results of the survey with regards to the descriptive statistics and inferential statistics.

5.3.1 Descriptive statistics

Descriptive analysis involves a detailed explanation of the data collected in the form of frequencies, sizes, mean, median, quartiles, standard deviation, inter-quartiles range (Hussain 2012:741). This stage is the most crucial phase because it leads to the argument on the entire research project and dependent on the delineated objectives of the study. The demographics results are explored in the following sections.

5.3.1.1 Demographic results

This section outlines the outcome results on the demographic profile of all participating supply chain management professionals in the Gauteng FMCG industry, which consists of two sections. The first part comprises constructs such as gender, race, age, highest academic qualification. The second part focuses on constructs such as employment period in the organisation, experience as a supply chain professional as well as the type of employment (Section A of the questionnaire). The demographic results are shown in Table 5.2 and 5.3 respectively.

Table 5.2: The demographic results of the respondents

Variable	Category	Frequency (n)	Percentage (%)
(A1) Gender	Male	123	53.9
	Female	105	46.1
Total		**n= 228**	**100**
(A2) Age	25 years and below	7	3.1
	26-33 years	48	21.1
	34-41 years	70	30.7
	42-49 years	79	34.6
	50 years and above	24	10.5
Total		**n= 228**	**100**

Variable	Category	Frequency (n)	Percentage (%)
(A3) Race	Black	86	37.7
	White	92	40.4
	Indian	36	15.8
	Mixed Race	15	6.1
	Other	0	0
Total		**n= 228**	**100**
(A4) Highest qualification	Matric	11	4.8
	Certificate	11	4.8
	Diploma	44	19.3
	Degree	108	47.4
	Postgraduate	54	23.7
	Other	0	0
Total		**n=228**	**100**

Source: Compiled by author

The following section briefly discusses the results of respondents' gender.

5.3.1.1.1 Gender of respondents

This section illustrates the results of the survey regarding the gender of the respondents as depicted in Table 5.2 and figure 5.1 respectively.

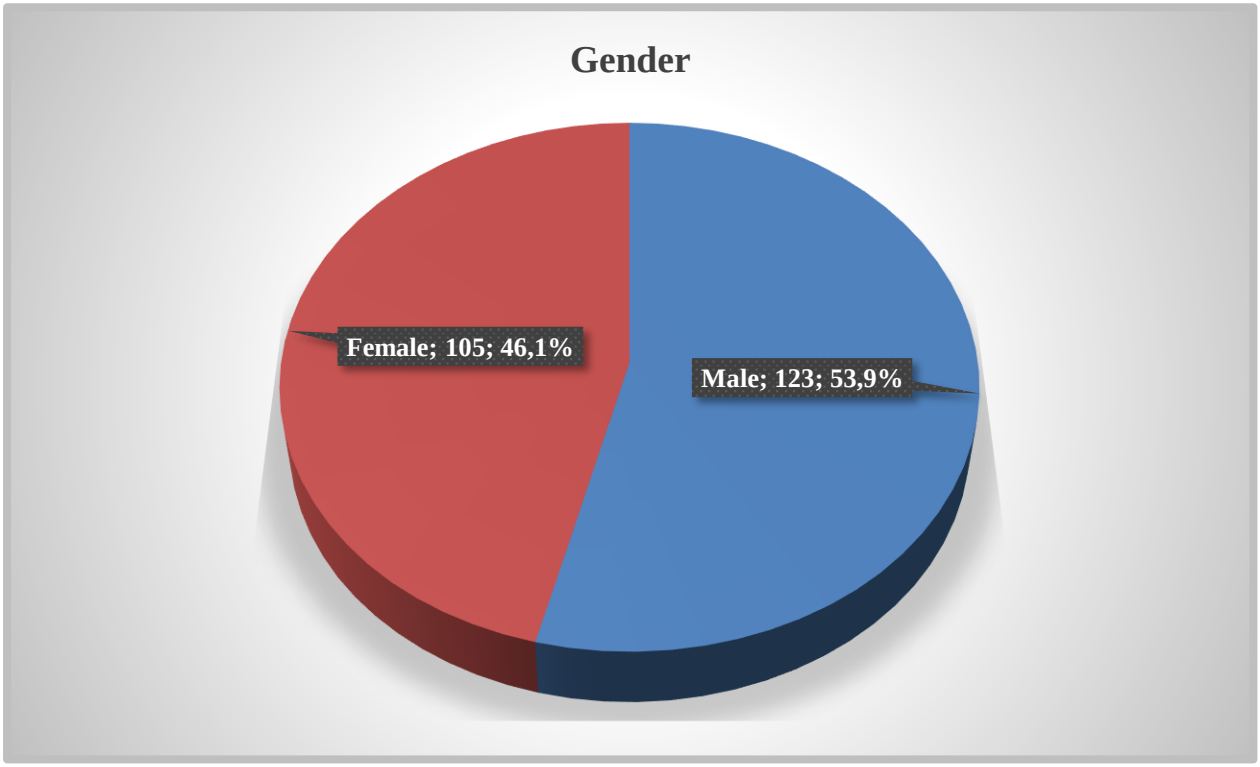

Figure 5.1: Gender distribution of respondents

Source: Compiled by author

Figure 6.1 depicts that male respondents n=123 participated in the study, which equates to 53.9%, whereas female respondents were pitched at 105, which is equivalent to 46.1%. The male gender therefore was the most surveyed in this study during the dispensation of the questionnaires among supply chain professionals in the Gauteng FMCG industry. Section 5.3.1.1.2 briefly discusses the adage distribution of the respondents.

5.3.1.1.2 The age distribution of respondents

This section outlines and discusses results pertaining to the ages of the respondents, which showed interesting results, tabulated and depicted in Table 5.2 and Figure 5.2 respectively.

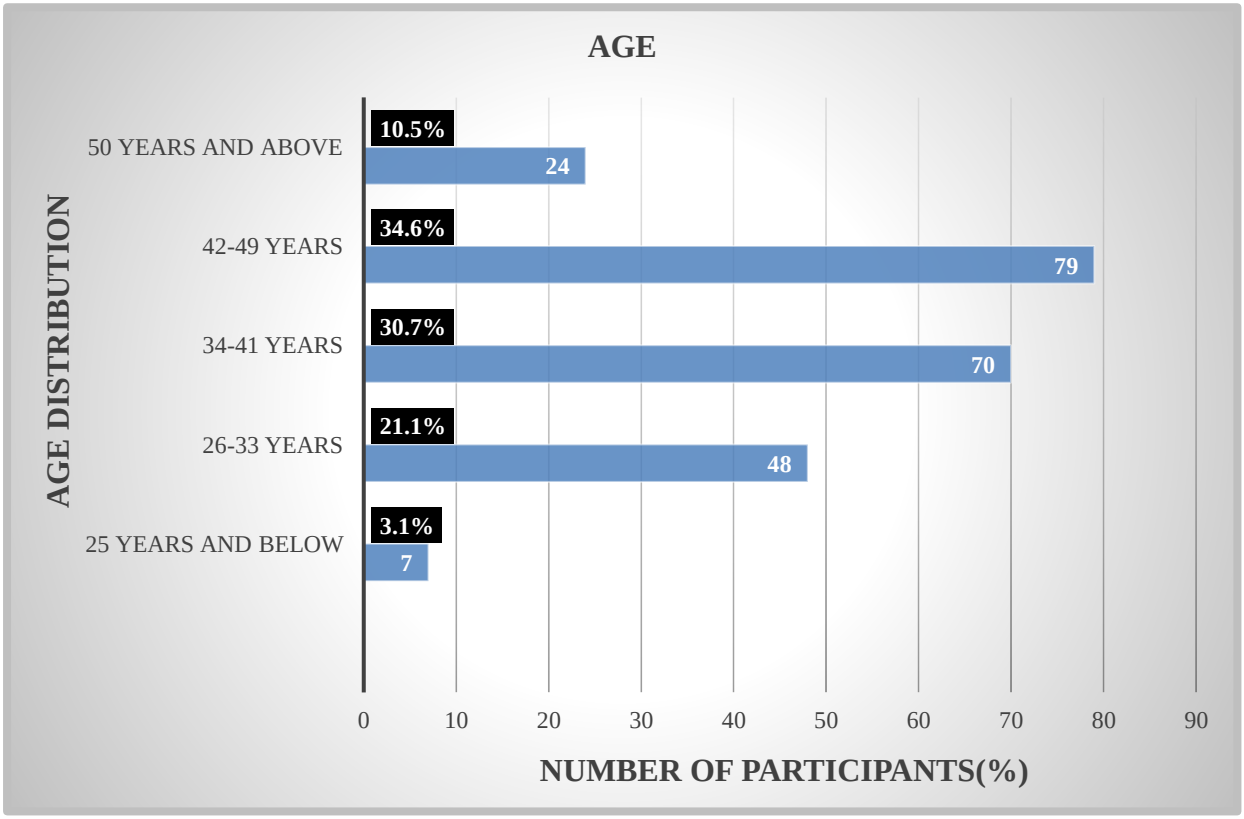

Figure 5.2: Age distribution of respondents

Source: Compiled by author

Figure 5.2 illustrates results of the age distribution of respondents, whereby the most surveyed age group is from the ages of 42-49 years, represented by (n=79;34.6%). The second highest age group surveyed was from the ages of 34-41 years, denoted by (n=70; 30.7%), while the third highest group ranges from the ages of 26-33 years, by (n=48; 21.1%). Respondents from the ages of 50 and above were (n=24; 10.5%), while the smallest portion of surveyed respondents was from of 25 years and below (n=7; 3.1%).

5.3.1.1.3 The race distribution of respondents

This section explains and depicts the racial distribution of the respondents surveyed in this study. Figure 5.3 clearly represents the results obtained.

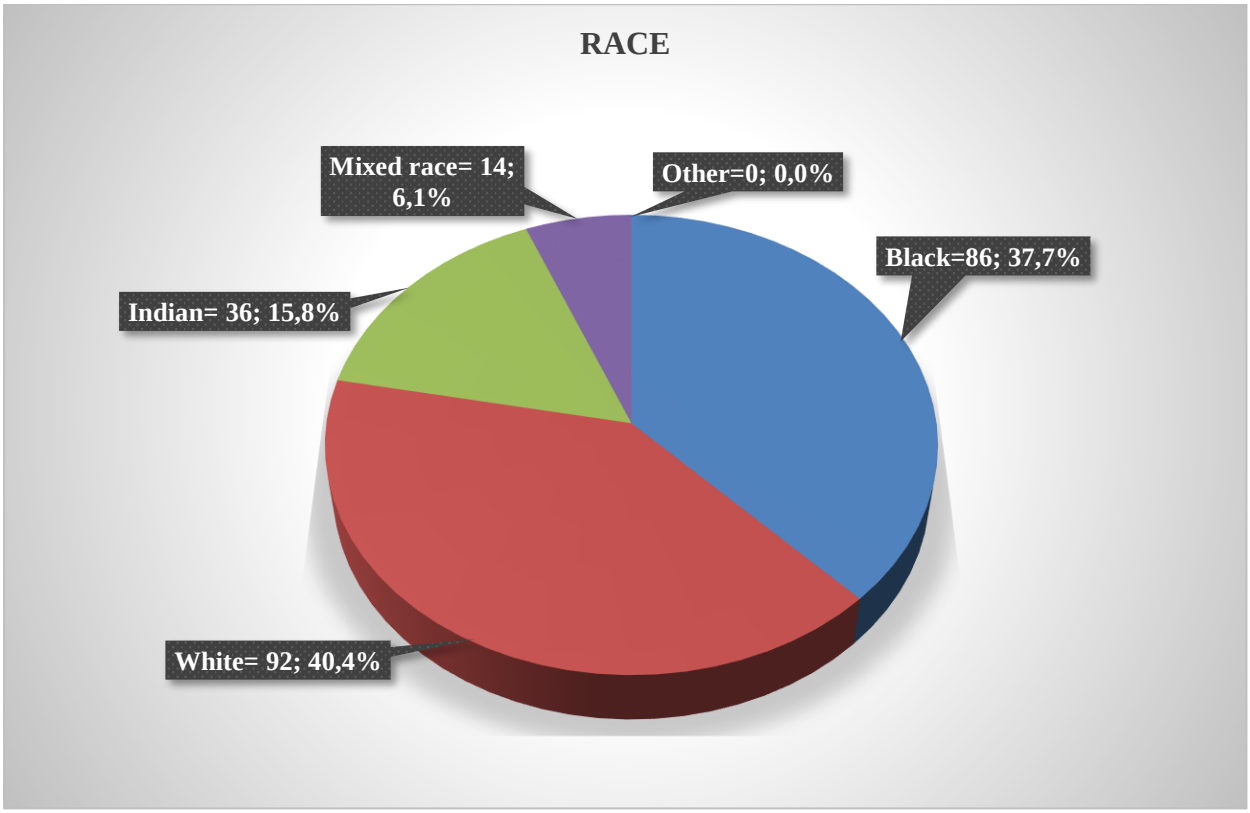

Figure 5.3: Racial distribution of respondents

Source: Compiled by author

Regarding the racial distribution of respondents, the white race (n=92; 40.4%) clearly dominated the survey of the study as depicted in Figure 5.3. The race with the second largest portion are black people (n=86; 37.7%, while the Indians came third with 36 respondents, which equates to 15.8%. Out of the 228 questionnaires distributed, only 14 questionnaires were answered by the mixed race, which is equivalent to 6.1%. According to the above figure, there were no other races identified in this research project as zero figures are depicted. The next section briefly explains the qualifications of the surveyed respondents.

5.3.1.1.4 Highest qualification distribution of respondents

This section discusses the qualification distribution of the participants in the current study. The results show that most respondents have degrees, denoted by 108, which equates to 47.4 %. The results also reveal that the least number of respondents were matric and certificates holders as they constitute the same frequency and percentage (n=11; 4.8%) with regard to the respondents (n=11; 4.8%). Out of the 228 respondents, only 54 respondents, which equates to 23.7 %, were postgraduate qualifications holders. Additionally, there was 44 respondents who hold diplomas in the field of supply chain management that gave their meaningful insights. Diploma holders equate

to 19.3%, as observed in Figure 5.4**.** There were no respondents who held different qualifications other than the qualifications presented in Table 5.2 and Figure 5.4 as zero figure were observed.

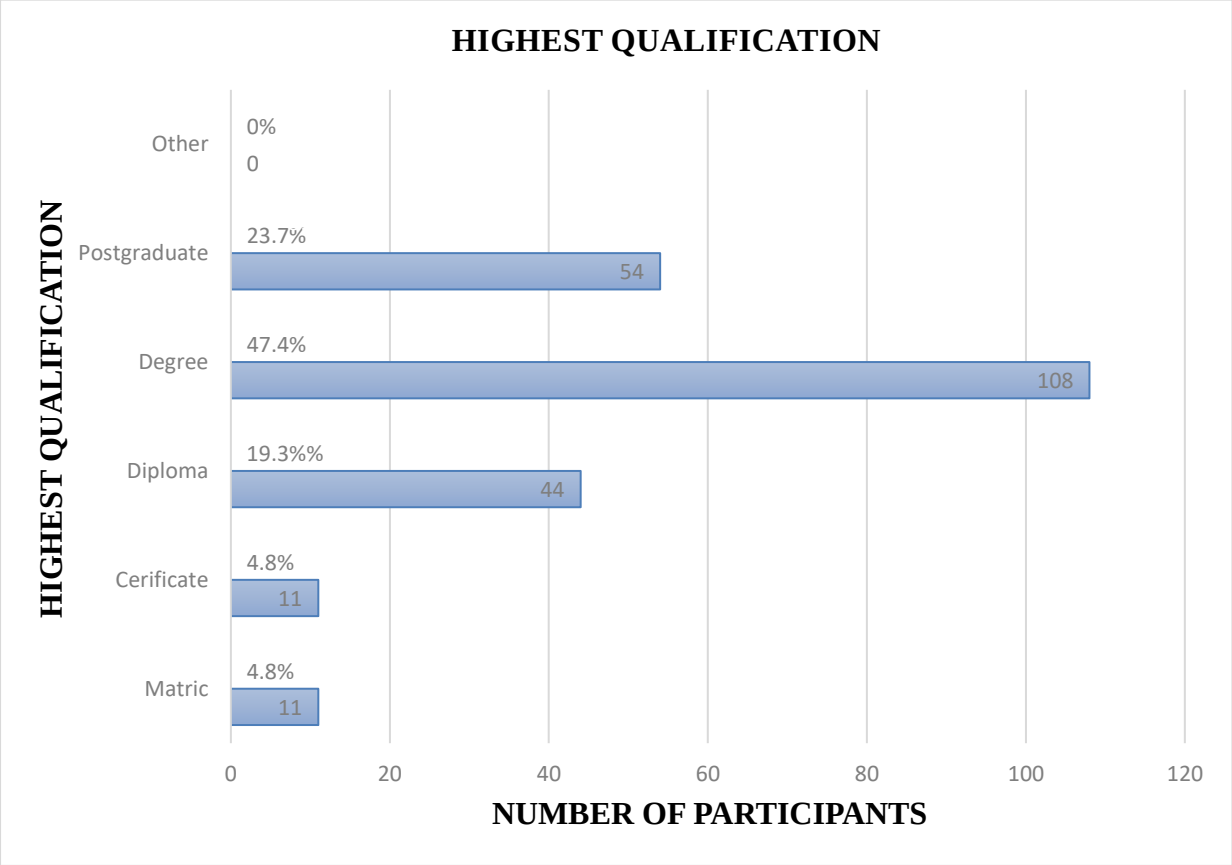

Figure 5.4: Highest qualification distribution of respondents

Source: Compiled by author

The following section explains the demographic analysis on the status of the employees surveyed.

5.3.2 Demographic analysis of results on employee status

This segment provided detailed results on the status of employment of the surveyed respondents, which was segmented into three categories, ranging from the employment period in the organisation, experience as an SCM professional, and type of employment as tabulated in Table 5.3.

Table 5.3: Status of employment

Variable	Category	Frequency (n)	Percentage (%)
(A5) Employment period in organisation	Less than 1 year	5	4.5
	1-2 years	19	8.3
	3-5 years	43	18.9
	6-9 years	76	33.3
	10 years and above	85	37.3
Total		**n=228**	**100**
(A6) Experience as a supply chain management professional	Less than 1 year	6	2.6
	1-2 years	19	8.3
	3-5 years	35	15.4
	6-9 years	51	22.4
	10 years and above	117	51.3
Total		**n=228**	**100**
(A7) Type of contract	Permanent	201	88.2
	Contract	15	6.6
	Internship	12	5.3
Total		**228**	**100**

Source: Compiled by author

The following sections explain the details above (Table 5.3) in greater detail.

5.3.2.1 Employment period of the respondents in the organisations

This fragment explains and depicts the number of years the respondents had been employed in their respective organisations in the FMCG industry and the results tabulated in Table 5.3 and depicted in Figure 5.5.

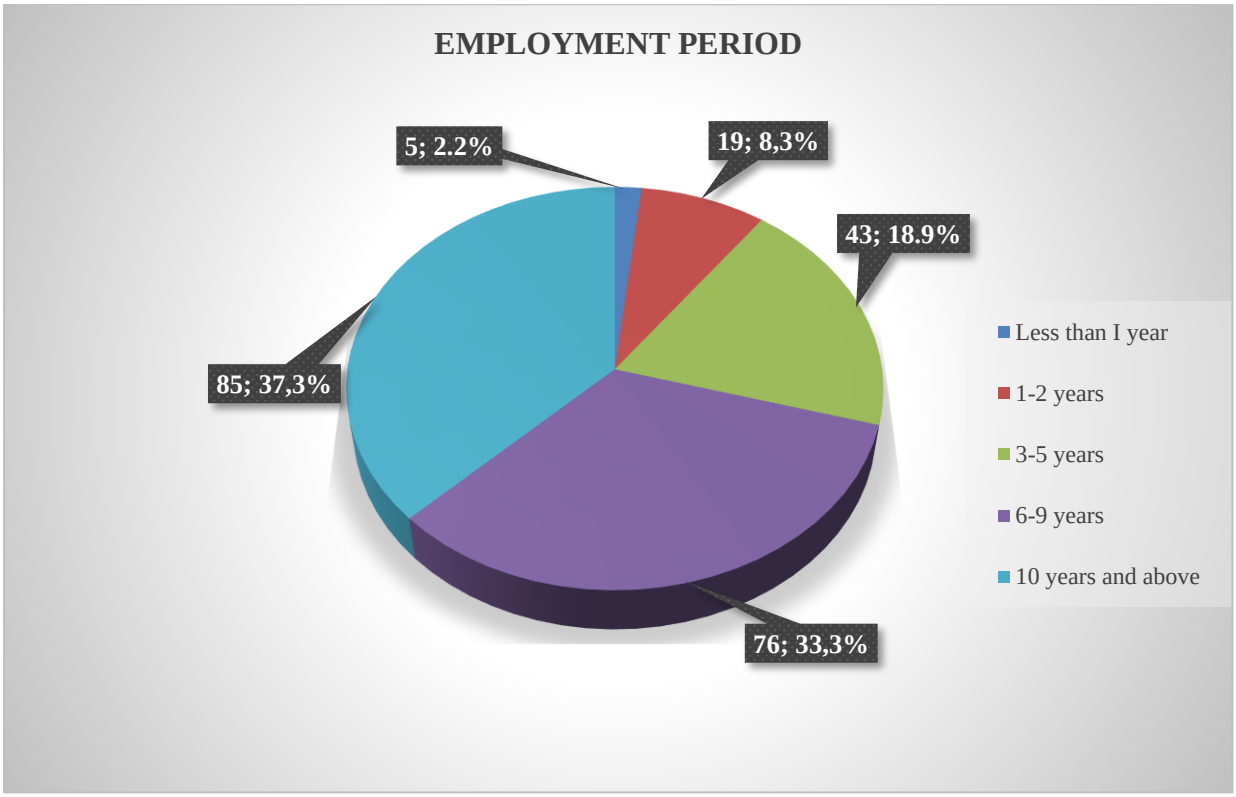

Figure 5.5: Employment period of the respondents in their organisations

Source: Compiled by author

With regard to the number of years the respondents have served in their organisations, it was observed that 37.3 % of the supply chain professionals (n=85) had been serving for 10 years and longer, whilst 33.3% (n=76) only served for 6-9 years, and 18.9% (n=43) only served for 3 to 5 years. Of the 228 respondents, only 8.3% of the supply chain professionals (n=19) had served in the sampled organisations for 1-2 years, while the lowest margin (n=5; 4.5%) emanated from the respondents who served for less than a year.

5.3.2.2 Experience as supply chain management professionals

This section depicts and briefly discusses the results of the survey based on the experience and the number of years the respondents had been serving as supply chain professionals in the field of supply chain management. The results are shown as tabulated in Table 5.3 and depicted in Figure 5.6.

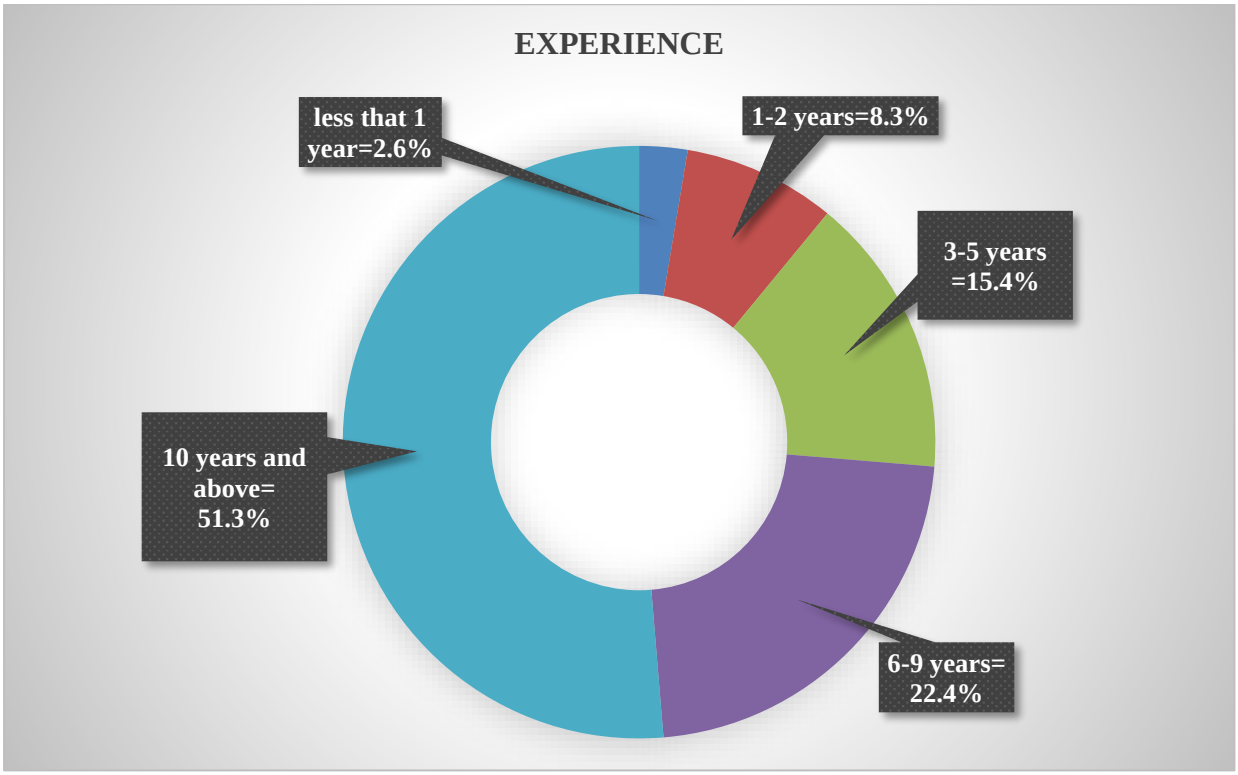

Figure 5.6: Experience as supply chain management professionals

Source: Compiled by author

With regard to the experience of the respondents, employees that had served or more than 10 years as supply chain professionals constituted the largest portion n=117, which equates to 51.3% of the entire universum. Of the 228 respondents, only n=51(22.4%) professionals that had served for more than 6 years but less than 10 years as supply chain professionals. Respondents who had served between 3-5 years were only n=35, which is equivalent to 15.4%, while employees with 1-2 years' experience constituted the second lowest portion, represented by n=19 respondents, equating to 8.3%, as shown in the above figure. The lowest portion (n=6; 2.6%) was observed for respondents with 1 year and less experience. Section 6.3.2.3 focuses on the type of employment of the surveyed respondents.

5.3.2.3 Type of employment

This section briefly discusses the type of employment in terms of their contracts with their respective organisation in the FMCG industry. This construct comprises supply chain professionals who are permanent, contracted and those that are serving as interns. As shown in Table 5.2 and depicted in Figure 5.7, interesting results were revealed.

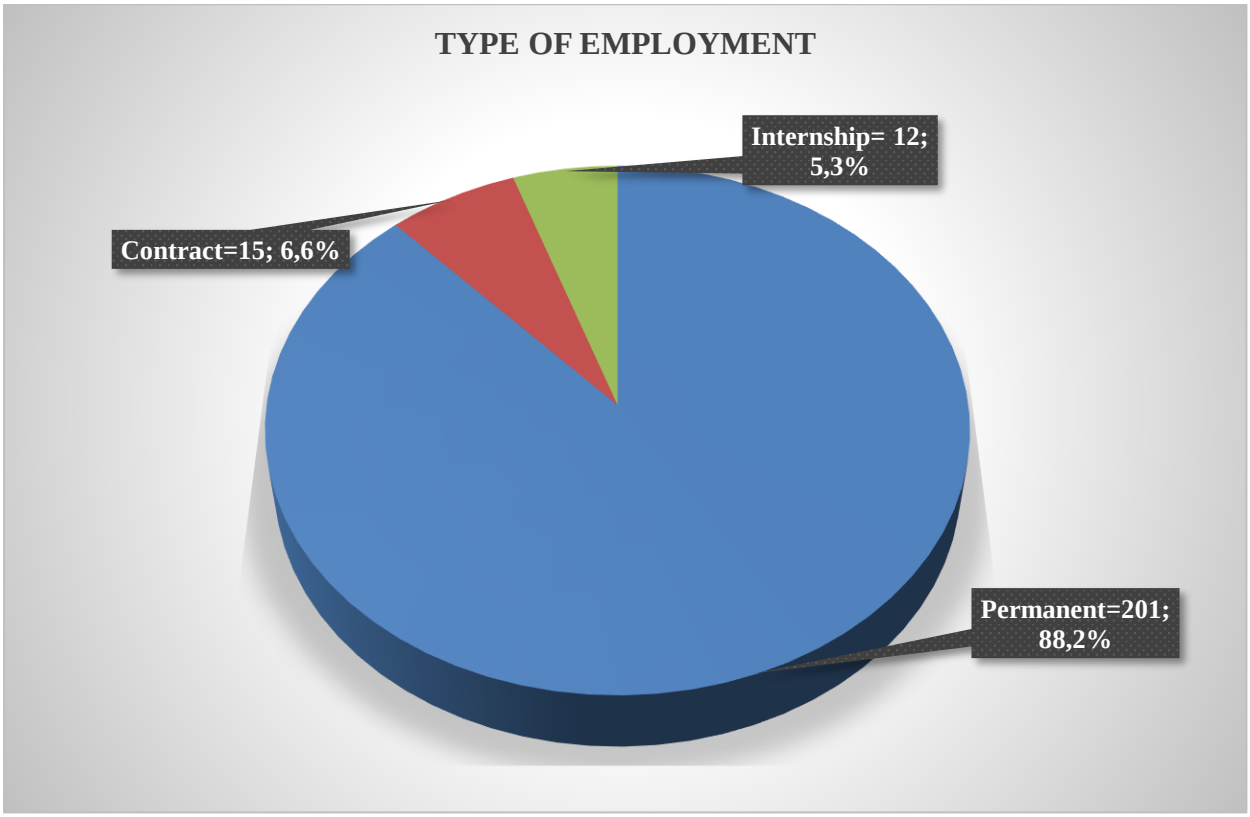

Figure 5.7: Type of employment

Source: Compiled by author

Out of the 228 employees that contributed with meaningful insights, permanent employees dominated, as shown in Figure 5.7, tabulated in Table 5.2. Permanent respondents n=201, which equals to 88.2%. There is a huge gap between permanent professionals and those serving on contractual terms. Only (n=15; 6.6%) respondents working on contractual terms participated in the study. The third and lowest group surveyed comprised interns, only 12, equating to 5.3% of the entire surveyed population.

5.4 EXPLORATORY FACTOR ANALYSIS

This section focuses on exploratory factor analysis (EFA) into greater detail. It first defines EFA and its criterion, followed by the methods used to ascertain the sampling adequacy of the retained factors and factorability of the data.

5.4.1 Definition of exploratory factor analysis

Exploratory Factor Analysis (EFA) is one of the most frequently used techniques to analyse variables in research (Izquierdo *et al*. 2014:395). EFA is defined by Watkins (2018:219) as a multivariate statistical procedure that helps researchers to increase the reliability of the scales by

identifying inappropriate items that can be removed and parsimoniously clarify the covariation pragmatic among a set of measured constructs. The procedure for EFA in the current study is factor analysis. Factor analysis manoeuvres on the conception that computable and observable constructs can be concentrated to fewer latent variables that share a communal variance (Bartholomew, Knott, & Moustaki, 2011:33: Shrestha 2021:1). A priori criterion for further analysis has been developed and observed by a number of scholars such as Arizmendi and Gates (2019:820) and was adopted in the current study.

5.4.2 Criteria for exploratory factor analysis

This section outlines and explains the criterion used to determine which factors to retain for further analysis in this study. The criterion used to determine the computable and to parsimonious the covariation of the latent variables here was the sample size, the number of variables, observations for each variable, tally for factor loadings Kaiser's eigenvalue, Cattell's Scree test and commonalities. Additionally, the adequacy of each factor has to be ascertained using widely-used methods known as Bartlett's Test of Sphericity and Kaiser Meyer Olkin (KMO), test as discussed. The following section pays special attention to factor loadings.

5.4.2.1 Factor loadings

Factor loadings measure the matrix of correlations between the latent variables and factors (Tavakol & Wetzel 2020:245). They indicate the influence of each factor in approximating the initial variables. The variable retained on any research project should be at least a tally greater than 0.5 in the component matrix as mentioned by Yong and Pearce (2013:80). Factor loadings are represented in section 5.4.3.2.1(Shaded in yellow).

5.4.2.2 Kaiser's eigenvalues (K1)

The Kaiser's eigenvalues (K1) were also considered in the EFA procedures. Scholars such as Izquierdo *et al*. (2014:398) revealed that K1 is one of the most accurate methods for determining which factors should be retained. According to the K1-Kaiser's technique, only paradigms which have the eigenvalues greater than 1 should be reserved for further interpretation (Marcus & Minc 1998:144). These techniques further suggest that the number of components that should be retained commonly ranges from 1-6 of the number of variables included in the correlation matrix (Zwick & Velicer 1982:254). These values are usually graphically depicted on a scree plot.

5.4.2.3 Cattell's Scree test

Another common utilised technique for ascertaining the number of variables to retain is the Cattell's Scree test, which encompasses the graphical demonstration of the eigenvalues for cut-offs. Taherdoost, Sahibuddin and Jalaliyoon (2014:379) opine that the number of data-points beyond the break (excluding the break) is the number of factors to be retained. Furthermore, the Cattell's scree test is useful when determining the number of factors to extract if a great number of variables/factors indicate eigenvalues greater than 1.0 (Santos, Gorgulho, Castro, Fisberg, Marchioni & Baltar 2019:6). After the scree tests have been conducted, communalities among the constructs are also observed.

5.4.2.4 Communalities

Another method used to determine the factor structure is known as communalities. A communality is being defined by De Silva, Chinna and Azam (2019:70) as the degree to which a variable correlates with all other variables. Furthermore, communality values show the extent of variance in each construct explained by the extracted factors referred to as R^2 type usually affect size. The greater the communalities, the healthier the correlation of the latent variables (O'Brien 2007:154) and ascertaining the correlation of the variables and deciding to further analyse the factors, the communalities should be 0.3 or greater.

5.4.2.5 The Bartlett's Test of Sphericity and Kaiser Meyer Olkin (KMO) test

Notwithstanding the significance factor loadings, eigenvalues, scree test and communalities in research and the role played in various fields, including research but not limited to psychology, education, science and management, it is necessary to test the adequacy of the data before exploring the factors and analysing them. These are important decisions as they aid researchers to corroborate the factorability and adequacy of the data. As noted in literature, the factorability of the retained is determined using two widely-used methods known as Bartlett's Test of Sphericity and Kaiser Meyer Olkin (KMO) test.

5.4.2.5.1 Bartlett's Test of Sphericity test

The Bartlett's Test of Sphericity measures the multivariate normality of distribution set. (Hadi, Abdullah & Sentosa 2016:216). In simpler terms, this method of factoring data estimates the degree to which the inter-correlation matrix created is an identity matrix. As per the requirements of the Bartlett's test, a significant value of less than 0.05 indicates that the data meets the required threshold and are thus approximately multivariate normal and adequate for further analysis (Reddy

& Kulshrestha 2019:3). The Bartlett's Test of Sphericity results in this study are presented in section 5.4.3.1, 5.4.4.1 and 5.4.5.1.

5.4.2.5.2 Kaiser Meyer Olkin (KMO) test

The Kaiser Meyer Olkin (KMO) test, on the other hand, is defined by Shrestha (2021:6) as a factorability tool intended to measure the adequacy of data before factor analysis. In simpler terms, the KMO measures the appropriateness of the sample size. Furthermore, KMO value varies from 0 to 1 (Othman & Judhi 2019:5). The KMO values between 0.8 to 1.0 indicate the sampling is adequate and values between 0.7 to 0.79 are middling and values between 0.6 to 0.69 are mediocre, indicating that the sampling is not adequate (Williams, Onsman & Brown 2010:5; Ayuni & Sari 2017:5; Matore, Noh,Zainal & Matore 2020:248). The Kaiser Meyer Olkin (KMO) test results of each factor in this study are discussed in the beginning of each of the following sections.

5.4.3 Exploratory Factor analysis on supply chain strategies SCS

This section focuses on factor analysis for supply chain strategies (SCS). It is divided into two sections. The first section focuses on the adequacy of the data, while the second focuses on factor loadings and eigenvalues, scree test, commonalities and the interpretation of the factors. The following section assesses the adequacy of the data.

5.4.3.1 Assessment of the adequacy of the data

This section focuses on the factorability of the data using both the Bartlett's Test of Sphericity and Kaiser Meyer Olkin (KMO) test. Table 5.4 represents the results for both the Bartlett's Test of Sphericity and Kaiser Meyer Olkin (KMO) test for supply chain strategies (SCS).

Table 5.4: Bartlett's Test of Sphericity and Kaiser Meyer Olkin (KMO) test for SCS

CONSTRUCT	KMO MEASURE	BARTLETT'S TEST		
		Approximate Chi-Square	Degrees of freedom	Significance level
Supply chain strategy (SCS)	0.884	4987.086	300	0.000

Source: Compiled by author

Table 5.4 presents the results for both KMO and the Bartlett's Sphericity tests on supply chain strategies that were performed using SPSS (27.0) on the five variables latent constructs. The KMO values of supply chain strategies (SCS) show a value of 0.884, which is above the minimum

required threshold value of 0.5 and the significance level was p=0.000. This indicates the sampling is adequate, therefore the construct can be retained and can be further factorised. Section 6.1.1.2 factorises the constructs as they met and exceeded the required threshold.

5.4.3.2 Factor Extraction and Interpretation

After the data was assessed successfully, the data is then subject to extraction and interpretation. Factor extraction incorporates ascertaining the least number of factors that can be used to better indicate the interrelationships among a set of variables (Shrestha 2021:7). In this study, a number of techniques were used to assist in the decision regarding the number of factors to retain, such as the sample size, the number of variables, observations for each variable, tally for factor loadings Kaiser's eigenvalue, Cattell's Scree test and commonalities. The following sections outline and discuss the results of supply chain strategies using the aforementioned criterion.

5.4.3.2.1 Factor loadings and eigenvalues (K1) for Supply chain strategies (SCS)

This section explores supply chain strategies (SCS) in greater detail, thereby observing the criterion mentioned in Section 5.4.2**.** It also focuses on the factor loadings, eigenvalues and cumulative variance explained, extracted from total variance. Table 5.5 presents results of the five extracted factors as well as the factors retained (shaded in Factor 1).

Table 5.5: Five-factor extracted solution for supply chain strategies (SCS) scale

ITEM CODE	Description	Factor				
		1	2	3	4	5
SCI1	Our firm is able to replace obsolete products	0.806	0.175	0.244	0.076	0.088
SCI 2	Our firm is able to reduce the time to develop a new product until its launch in the market.	0.796	0.196	0.174	0.186	0.074
SCI 3	Our firm is able to develop environmentally friendly products	0.865	0.114	0.045	0.136	0.038
SCI 4	Our firm is continually developing programmes to reduce operational costs	0.832	0.115	0.058	0.106	0.138
SCI 5	Our firm has valuable knowledge for innovating manufacturing and technological processes.	0.833	0.174	0.192	0.176	0.206

ITEM CODE	Description	Factor				
		1	2	3	4	5
SCI 6	Our organisation pursues continuous innovation in core processes.	0.859	0.195	0.200	0.090	0.153
OLS1	Employees are recognized or rewarded for learning new knowledge and skills	0.126	.195	0.867	0.000	-0.033
OLS2	Employees are cross-trained to perform various job functions	0.224	-.025	0.904	0.074	0.002
OLS3	Team meetings address both team processes and work content	0.313	-.062	0.763	0.138	0.150
OLS4	Currently available information tells us what we need to know about the effectiveness of our programs, processes, products, and services	0.157	0.126	0.830	0.119	0.014
OLS5	Employees have access to the information they need to make decisions regarding their work	-0.008	0.143	0.828	0.126	-0.027
RMS1	Our firm has mechanisms for preventing operations risks (e.g. select a more reliable supplier, use clear safety procedures, preventive maintenance).	0.197	0.208	0.038	0.735	0.027
RMS2	Our firm has procedures for detecting operations risks (e.g. internal or supplier monitoring, inspection, tracking).	0.082	0.193	0.143	0.817	0.306
RMS3	Our firm responds to operations risks (e.g. backup suppliers, extra capacity, and alternative transportation modes).	0.119	0.258	0.080	0.828	0.238
RMS4	Our firm has systems for recovering from operations risks (e.g. task forces, contingency plans, and clear responsibility).	0.111	0.178	0.161	0.820	0.251
RMS5	Our organisation and supply chain partners exchange confidential information.	0.208	0.242	0.102	0.753	0.209
CO1	Our business objectives are driven primarily by customer satisfaction.	0.162	0.030	-0.036	0.227	0.809

ITEM CODE	Description	Factor				
		1	2	3	4	5
CO2	Our strategy for competitive advantage is based on our understanding of customer's needs.	0.067	-0.002	-0.077	0.191	0.889
CO3	Our firm measures customer satisfaction systematically and frequently.	0.165	0.404	0.112	0.217	0.608
CO4	Our firm often looks for measurements to increase customer value or decrease product costs.	0.220	0.252	0.117	0.269	0.791
SI1	Our firm establishes quick ordering systems with its major suppliers.	0.184	0.719	0.091	0.122	0.354
SI2	Our firm determines the level of strategic partnership with its major suppliers	0.192	0.769	0.130	0.202	0.200
SI3	Our firm shares its operational plans with its major suppliers.	0.115	0.846	0.047	0.215	0.001
SI4	Our firm shares its demand forecasts with its major suppliers.	0.168	0.827	0.073	0.259	0.046
SI5	Our firm shares its inventory levels with its major suppliers.	0.233	0.804	0.095	0.227	0.006
Eigenvalue		**9.578**	**3.465**	**2.535**	**2.137**	**1.432**
Total variance explained		**38.312**	**13.858**	**10.138**	**8.550**	**5.729**
Cumulative variance explained		**38.312**	**52.170**	**62.308**	**70.858**	**76.587**

Source: Compiled by author

As shown in Table 5.5 all five factors for supply chain strategies (SCS) were retained as they had factor loadings greater than 0.50, as advised by Comrey and Lee (1992:35). The total variance explained was also observed as an extraction procedure to condense it to well-ordered numbers prior to analysis. This process entailed the extraction of items with eigenvalues exceeding 1.0 into different components. Based on Table 5.5, the results indicate that the EFA has produced five dimensions or factors of SCS with eigenvalues greater than >1. This indicates that these items are grouped into five broad components and will be considered for further analysis. Table 5.5 also illustrates that the cumulative variance explained extracted from total variance explained accounts

for 76.857%. As indicated in literature, if the eigenvalues (K1) are greater than 1, then they are subject the Cattell's scree test.

5.4.3.3 Scree test for supply chain strategies (SCS)

This section attempts to graphically delineate the Kaiser's eigenvalues (K1) that are greater than 1, extracted from Table 5.5. Figure 5.8 presents the K1 value in a scree plot diagram.

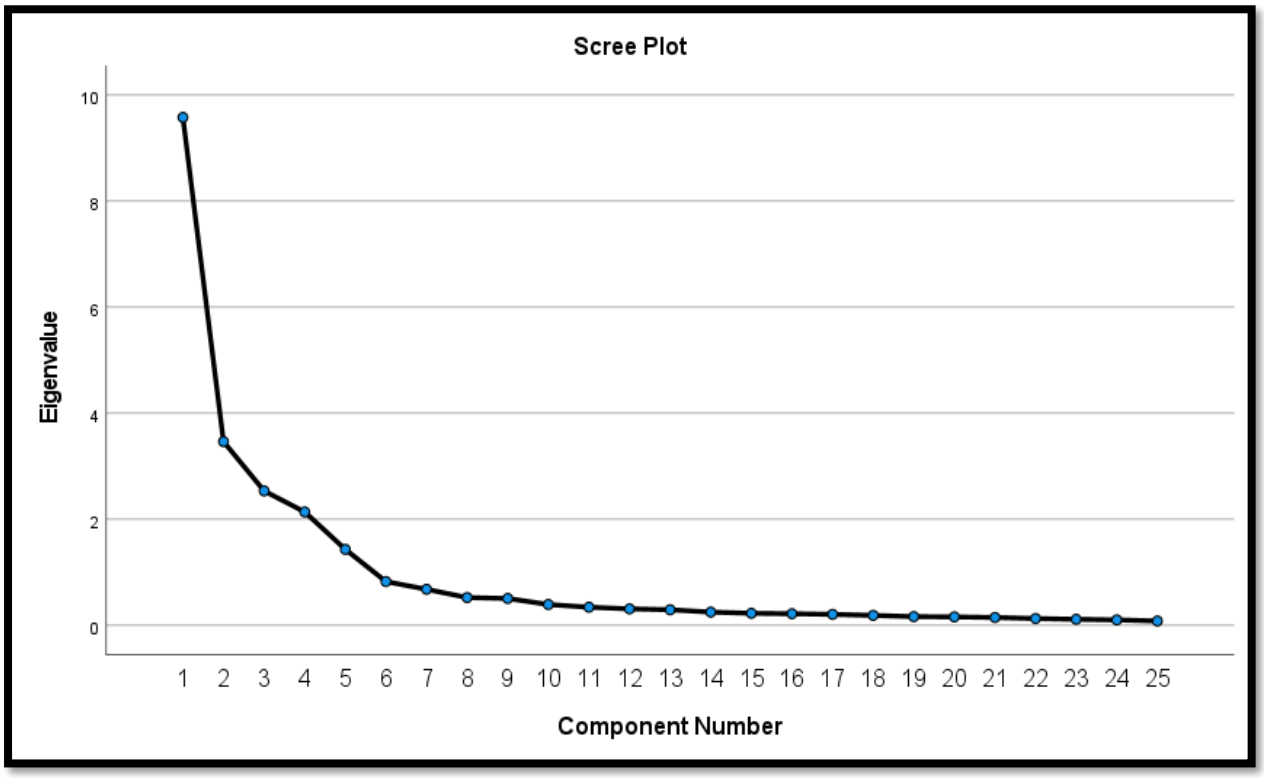

Figure 5.8: Scree plot for SCS components

Source: Exported from SPSS (27.0)

Figure 5.8 presents enthralling scree test results, plotted with eigenvalues (K1) on the y-axis against the 25 component numbers in their order of extraction from the five-factor extracted component Table 5.5, on the X-axis. The foremost elements extracted are colossal factors with greater eigenvalues trailed by lesser factors. The Cattell's scree plot was also used in this study to ascertain the number of factors that were retained. Furthermore, the scree plot demonstrates that all the five factors which had an eigenvalue (K1) greater than one and indicates greater degrees of complete variability in data. Additionally, the remaining 20 items account for a very little fraction of the variability of the data and are considered insignificant. The following section explains the communalities of the components.

5.4.3.3.1 Commonalities

This section observed and explained the commonalities results of the latent variables to ascertain if they are fit to be further analysed. Table 5.6 illustrates the communality values for the five components of supply chain strategies (SCS).

Table 5.6: Communalities for supply chain strategies (SCS)

	Initial	Extraction
SCI1	1.000	0.753
SCI2	1.000	0.742
SCI3	1.000	0.784
SCI4	1.000	0.739
SCI5	1.000	0.834
OLS1	1.000	0.807
OLS2	1.000	0.873
OLS3	1.000	0.725
OLS4	1.000	0.744
OLS5	1.000	0.723
RMS1	1.000	0.625
RMS2	1.000	0.826
RMS3	1.000	0.829
RMS4	1.000	0.805
RMS5	1.000	0.723

	Initial	Extraction
CO1	1.000	0.735
CO2	1.000	0.837
CO3	1.000	0.621
CO4	1.000	0.823
SI1	1.000	0.700
SI2	1.000	0.727
SI3	1.000	0.777
SI4	1.000	0.787
SI5	1.000	0.760

Source: Compiled by author

Communalities results are shown in Table 5.6, and indicate that all extraction values range from 0.621 to 0.873, which are well above acceptable threshold of 0.3. Therefore, communalities for supply chain strategies (SCS) further corroborates that the factors are acceptable and can be analysed. The following section names and interprets the factors retained.

5.4.3.4 Naming and interpretation of factors

This section focuses on naming and interpreting the extracted factors of supply chain strategies (SCS). As observed in Table 5.6, supply chain strategy (SCS) comprised five factors, namely, innovation, organisational learning, risk management, customer orientation and supplier integration. This fragment explains the supply chain strategies with reference to the factor loadings value, eigenvalues, total variance explained and lastly the mean of the variable.

5.4.3.4.1 Innovation (SCI)

The first in the ***f***ive-factor component matrix table is labelled as **'Innovation'** which contains six items that strive for new product development, time to develop, green supply chain, reduction of operational costs, valuable knowledge, and continuous improvement, and have factor loadings values of 0.806, 0.796, 0.865,0.832, 0.833 and 0.859 respectively. The component of innovation (SCI) explained (R^2 =39.312 %) of the total variance with an eigenvalue of 9.578. Furthermore, this component contained six items that tends to agree, according to its mean score of 4.099 as observed in Table 5.16.

Innovation (SCI) as a strategy in supply chain is theorised as a lever followed by executives to innovate and has been widely regarded as a tool for business competitiveness, growth and performance (Kaya, Abubakar, Behravesh, Yildiz & Mert 2020: 278: Erzurumlu 2017: 43). It is highly characterised by new product development, time to market (TTM), green supply chain practices, and reduction of operational costs, valuables insights and continuous improvement. Hence, the measuring instrument used in the current study encompassed these characteristics. Moreover, supply chain innovation combines advances of relatively new information and related expertise with new logistic and marketing techniques to improve operational efficiency (i. e., flexibility) and improve service effectiveness across the supply chain network (Artisiomychyk & Zhivitskaya 2015:1695). Lakhani and Tushman (2012:373) opine that innovation practices should be flexible, allowing an organisation to decompose its innovation process and access the required knowledge in a timely manner that do not hamper the effectiveness of the organisation. Additionally, innovation is also a key component utilised by organisations to attain sustainable competitive advantages over their rivals in modern, dynamic, and volatile marketing environments.

5.4.3.4.2 Organisational learning (OLS)

The second component is labelled as **'Organisational learning'** according to the enlisted strategies. However, it labelled as factor 3 on the ***f***ive-factor extracted solution, as illustrated in Table 5.5 and contains five items that strive for rewards, training, process and work content, information sharing and access to useful information. As observed in Table 5.4, organisational learning (OLS) achieved factor loadings values of 0.867, 0.904, 0.763, 0.830 and 0.828 respectively. Furthermore, organisational learning accounts to (R^2 =10.138 %) of the total variance explained with an eigenvalue of 2,535. This component contained five items that tend to agree according to its mean score of 3.528, as observed in Table 5.16.

Organisational learning (OLS) in the context of supply chain management is conceptualised as a joint learning practice in which personnel and cross-functional learning experiences are transferred into daily organisational routines, methods, and structures (Shilling & Kluge 2009:338; Massimo & Nora 2022:2). This means that the knowledge or expertise within the firm is disseminated across the supply chain network to improve the flexibility of the supply chain (in terms of mix, volume, supply, delivery and new product flexibility) and SCP. Following the assertions of the RBV theory, organisational learning is one of the key ingredients of sustainable competitive advantage for firms competing in markets characterised by innovation, ferocious competition and consequently changing markets demands (Hannan & Freeman 1984:151; Mai, Do & Phan 2022:1). Moreover, organisational learning was one of the tools that executives in organisations employed during the COVID-19 pandemic to remain innovative and overcome such harsh and turbulent situations (Mai *et al*. 2022:1).

5.4.3.4.3 Risk management (RMS)

The third component is labelled as **'Risk management'** according to the sequential manner of enlisted strategies. However, it is labelled as factor 5 on the ***f***ive-factor extracted solution, as illustrated in Table 5.5 and encompasses five items that strive for mechanisms to prevent operations risks, procedures for detecting operations risks, mechanisms to respond to operations risks, systems for recovering from operation risks and the exchange of confidential information. As observed in Table 5.5, these items achieved factor loadings coefficients of 0.735, 0.817, 0.828, 0.820 and 0.873 respectively. Organisational learning accounts to ($R^{2=}$8.550%) of the total variance explained with an eigenvalue of 2,535. Furthermore, this component contained five items that tend to be agreeing according to its mean score of 4.345, as observed in Table 5.16.

Risk management (RMS) as strategy in a supply chain is theorised as the ability to control and mitigate risks or disruption in the supply chain network (Shahbaz *et al*. 2017:9236). In this study, however, risk management was adopted to pay special attention to variables that address matters such as mechanisms to prevent operations risks, procedures for detecting operations risks, mechanisms to responds to operations risks, systems for recovering from operations risks and exchange confidential information in the supply chain network. It is worth noting that the risk management strategy was used by organisations to attempt to address the challenges posed by the COVID-19 pandemic in their respective organisations (Rinaldi *et al*. 2022:1). Additionally, risk management strategy was adopted by firms to also remain competitive during the pandemic (Barbosa *et al*. 2022:1) and enable resilience in their supply chain networks (Rinaldi *et al*. 2022:1).

5.4.3.4.4 Customer orientation (CO)

The fourth component is labelled as **'Customer orientation'** according to the sequential method of listed strategies. It is labelled as factor 5 on the ***f***ive-factor extracted solution, as illustrated in Table 5.5 and contains four items that: strive for business objectives: strategise for competitive advantage: measure for customer satisfaction; and measures to increase customer value or decrease product costs. As presented in Table 5.5, the items have factor loadings values of 0.809, 0.889, 0.608, and 0.791 respectively. Customer orientation accounts to (R^2 = 5.729 %) of the total variance explained with an eigenvalue of 1.432. This component contained four items that tend to agree, according to its mean score of 4.345, as observed in Table 516. However, it should be emphasised that item 5 (CO5), which states: *Our firm pays close attention to after-sales service*, had an inconsequential loading, and was consequently removed completely during the process of factor analysis.

Customer orientation (CO) in the modern era refers to an organisation's ability to collaborate with its customers and structure their supply chain (in terms of processes) in a way that suits the needs of the customers (Feng, Wang, Lawton & Luo 2019:112; Barney-McNamara, Peltier, Chennamaneni & Niedermeier 2021:157). In the current study, customer orientation is regarded as a variable regarding an employee's attitude towards satisfying a customer and customer needs within the supply chain network (Mathe, Scott-Halsell & Roseman 2016:2). It is important to highlight that satisfying the needs of the end-users is not necessarily embedded in organisational innovativeness, but also on the flexibility of the supply chain in terms of meeting the demands of the customers at the right time and right quantity. Hence, this study adopted measurement items that consist of variables that encompass the elements of customer satisfaction, namely, customer-oriented business objectives, strategy for competitive advantage, measures for customer

satisfaction, and measures to increase customer value, or decrease product costs in the supply chain network.

Liu, Huang, Huang, Song and Kumar (2021:620) proposed that customer orientation as a strategy will affect customer needs and consequently influence the results of innovation in an organisation. In line with the adopted theoretical framework in this study, customer orientation is one of the secret arsenals that organisations use to capture larger portions of market share, improve innovation, profitability and enhance their sustainable competitive advantage in their industries.

5.4.3.4.5 Supplier integration (SI)

The fifth component is labelled as **'Supplier integration'** according to the sequential method the researcher used to enlist the strategies. However, it is labelled as factor 2 on ***f***ive-factor extracted solution, as illustrated in Table 5.5 and contains five items that strive for ordering systems, level of strategic partnership, operational plans, demand forecasts and inventory levels. As tabulated in Table 5.5, the items have factor loadings values of 0.719, 0.769, 0.846, 0.827 and 0.804 respectively. The total variance for supplier integration accounts to (R^2=13.86%) with an eigenvalue of 3.456. Furthermore, this component contained four items that tend to agree, according to its mean score of 4.191, as observed in Table 5.16. The next section conducts EFA on SCF.

Supplier integration (SI) is the degree to which suppliers and buyers synchronise decisions related to inventory control, collaborative and demand planning, replenishment, and the flows of goods within a supply chain network (Wong, Boonitt & Wong 2011:605; Siagian, Tarigan & Jie 2021:6). The concept of supplier integration has been considered a strategic tool for improving firm performance (Danese 2013:1029; Afshan, Mandal, Gunasekaran & Motwani 2021: 670; Afshan & Motwani 2021:138), organisational innovation (i. e. new product development) (He, Lai, Sun & Chen 2014:260; Zhang, Lettice, Chan & Nguyen 2018:803) and a source for competitive advantage (Lau 2014:213: Alshahrani, S., Rahman & Chan 2018:36). In line with the adopted theoretical framework in the study, manufacturing companies that manage to successfully integrate with its key suppliers will achieve sustainable competitive advantage (Lau 2014:214). Furthermore, collaboration with material suppliers in the innovation process, moreover, can provide considerable benefits for reaching a company's targets (Bento, Schuldt & Carvalho 2020:3).

Supplier integration enables goods to flow seamlessly without disruptions in the supply chain network (Parente, Baack & Hahn 2011:281). Danese (2013:1031) highlights that the exchange of

strategic information with key suppliers enables the smooth, efficient, and effective flow of materials within the supplier network and can help firms prevent possible disruptions. It is apparent then, that supplier integration does not only provide competitive advantage related benefits but also allows firms to have flexibile supply chains that help prevent disturbances across the network.

5.4.4 Exploratory Factor analysis on supply chain flexibility (SCF)

This section focuses on factor analysis for SCF and is divided into two broad sections. The first section focuses on the adequacy of the data, while the second focuses on factor loadings and eigenvalues, scree test, commonalities, and the interpretation of the factors. The following section assesses the adequacy of the data.

5.4.4.1 Assessment of the adequacy of the data

This section focuses on the factorability of the data using both the Bartlett's Test of Sphericity and Kaiser Meyer Olkin (KMO) test. Table 5.9 represents the results for both the Bartlett's Test of Sphericity and Kaiser Meyer Olkin (KMO) test for SCF.

Table 5.7: Bartlett's Test of Sphericity and Kaiser Meyer Olkin (KMO) test for SCF

CONSTRUCTS	KMO MEASURE	BARTLETT'S TEST		
		Approximate Chi-Square	Degrees of freedom	Significance level
Supply chain flexibility (SCF)	0.844	752.652	10	0.000

Source: Compiled by author

Table 5.7 presents the results for both KMO and the Bartlett's tests on SCS that were performed using SPSS (27.0) on the five variables latent constructs. The KMO values of the SCF indicates a value of 0.844, which is above the minimum required thresholds value of 0.5 and the significance level was p=0.000. This indicates the sampling is acceptable, therefore the construct can be retained and further factorised. Section 6.6.3.2 factorises the constructs as it is met and exceeded the required threshold.

5.4.4.2 Factor Extraction and Interpretation

Factor extraction and interpretation is one of the fundamental steps taken by researchers after data has been assessed successfully. It incorporates ascertaining the least number of factors that can be

used to better indicate the interrelationships among a set of variables, as mentioned by Shrestha (2021:7). In this study, however, a number of techniques were used to assist the researcher in deciding the number of factors to retain, such as the sample size, the number of variables, observations for each variable, tally for factor loadings Kaiser's eigenvalue, Cattell's Scree test and commonalities. The following fragments explore SCF in greater detail.

5.4.4.2.1 Factor loadings and eigenvalues (K1) for supply chain flexibility (SCF)

This fragment explores SCF in greater detail to observe the criterion mentioned in Section 5.4.2. It focuses on the factor loadings, eigenvalues and cumulative variance extracted from the total variance explained. Table 5.8 presents interesting results of the five extracted factors as well as the factors retained (shaded in factor 1).

Table 5.8: Five-factor extracted solution for the SCF scale

ITEM CODE	Description	Factor 1
SCF1	Our firm has the ability to rapidly change retail volumes.	0.722
SCF2	Our firm has the ability to respond to changes in delivery requirements	0.796
SCF3	Our firm is able to replace one supply source for another in a short time.	0.904
SCF4	Our major suppliers are willing to accommodate changes that we have requested.	0.908
SCF5	Our firm has the ability to changeover to a different product quickly.	0.881
Eigenvalue		**3.574**
Total variance explained (%)		**71.475**
Cumulative variance explained (%)		**71.475**

Source: Compiled by author

As shown in Table 5.8 all the items for SCF indicate values or factor loadings greater than 0.50, which was retained for further analysis. The total variance explained was also observed as an extraction procedure to condense it to well-ordered numbers prior to analysis. This process entailed the extraction of items with eigenvalues exceeding 1.0 into different components. Established on Table 5.8, the results indicate that the EFA for SCF has an eigenvalue of 3.574, which is greater than >1. This indicates that SCF will be considered for further analysis. Table 5.8

also illustrates that the cumulative variance extracted from total variance explained accounts for 71.475%. As indicated in literature, if the eigenvalues (K1) are greater than 1, then they are subject the Cattell's scree test.

5.4.4.2.2 Scree test for supply chain flexibility (SCF)

This section sought to graphically demarcate the Kaiser's eigenvalues (K1) that are greater than 1 extracted from Table 5.8 and Figure 5.9 depict the K1 value in a scree plot diagram.

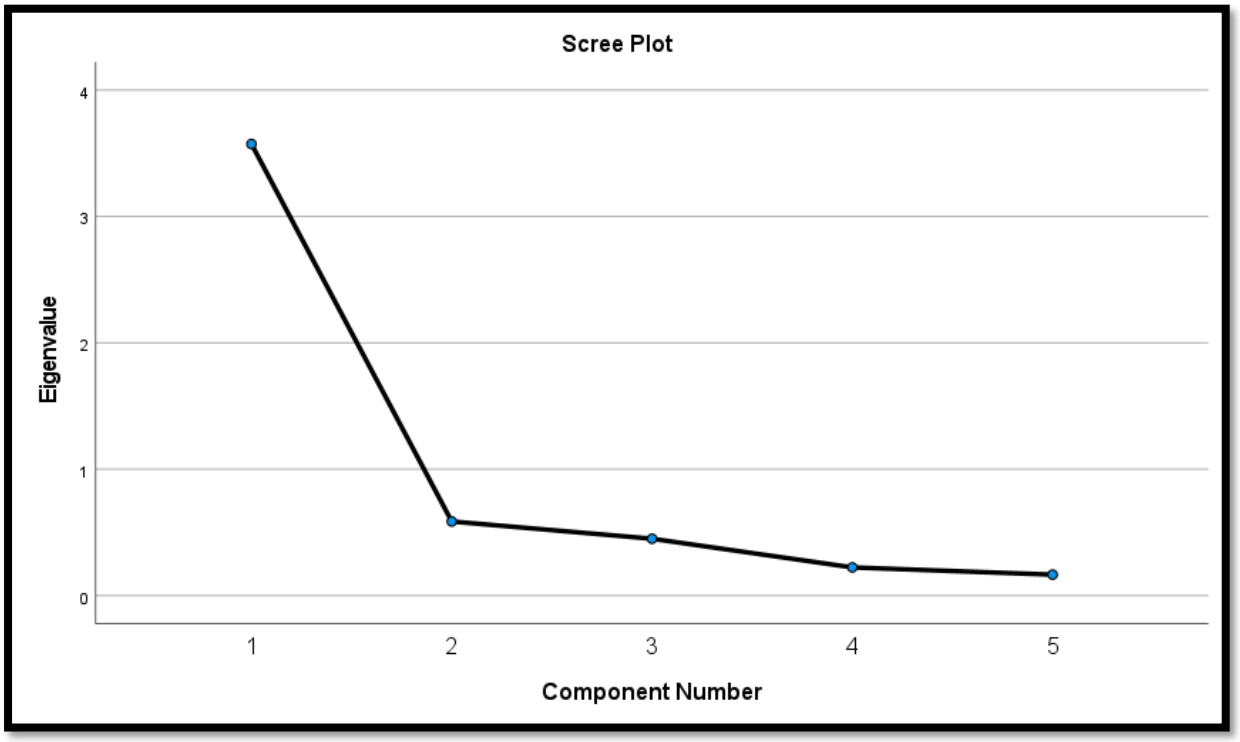

Figure 5.9: Scree plot for supply chain flexibility components

Source: Compiled by author

Figure 5.9 depicts scree test results, plotted with eigenvalues (K1) on the y-axis against the 5 component numbers in their order of extraction from the five-factor extracted component Table (5.6) on the X-axis. The foremost element extracted are colossal factors with greater eigenvalues trailed by lesser factors. The Cattell's scree plot was also used in this study to ascertain the number of factors that were retained. Furthermore, the scree plot demonstrates that SCF has an eigenvalue (K1) of 3,574 which is greater than one and indicates greater degrees of complete variability in data. Additionally, the remaining four components account for a very little fraction of the variability of the data and considered insignificant. The following section explains the communalities of the components.

5.4.4.2.3 Communalities for supply chain flexibility (SCF)

This section pragmatically explained the commonalities results of the latent variables to ascertain if they are fit to be further analyses. Table 5.9 illustrates the communality values for the five components for SCF.

Table 5.9: Communalities for supply chain flexibility (SCF)

Communalities		
ITEM CODE	**Initial**	**Extraction**
SCF1	1.000	0.521
SCF2	1.000	0.633
SCF3	1.000	0.817
SCF4	1.000	0.825
SCF5	1.000	0.777

Source: Compiled by author

Table 5.9 presents communalities results for SCF measurement items and indicates that all extraction values range from 0.521 to 0.825, which are well above acceptable threshold of 0.3. Therefore, communalities of the contemporary study are acceptable for further analysis.

5.4.4.3 Naming and interpretation of factors

This section focuses on naming and interpreting the extracted factor (SCF). This fragment explains SCF with respect to the items; correlation value, eigenvalues, total variance explained and lastly the mean of the variable.

5.4.4.3.1 Supply chain flexibility (SCF)

The factor is labelled as **'Supply chain flexibility (SCF)'** which contains six items that strive for retail volumes, delivery requirements, supply source, changes in the supply chain network, and new product development and have factor loadings values ranging from of 0.722, 0.796, 0.904,0.908, and 0.881 respectively. The component of supply chain innovation explained (R^2 =71.48 %) of the total variance with an eigenvalue 3,574. Furthermore, this component contained six items that tends to be agreeing according to its mean score of 4.280 as observed in Table 5.16.

Supply chain flexibility (SCF) is considered as a fundamental requirement for manufacturing companies and source of sustainable competitive advantage. Companies have paid special attention to flexibility during the past few decades and viewed it as a basis for the majority of manufacturing systems due to the fast-changing realities in market environments (Pretoro, Negny & Monstastruc 2022:1). This is because SCF has become an important competitive weapon for firms in the current dynamic and extremely volatile environments (Burin *et al*. 2020:1). For example, the current coronavirus (COVID-19) outbreak and recently the ongoing war between Russia-Ukraine has presented a significant challenge for global supply chains (DHL Resilience360 2020:4; Ivanov & Dolgui 2020:2904). Rajesh (2021:903) highlights that in times of crises like the pandemic, flexibility in manufacturing and supply chains are widely discussed. This is due to its ability to effectively assist firms and their supply chains to manage disruptions across all levels (El-Khalil & Darwish 2019:48). The current study adopted variables such as retail volumes, delivery requirements, supply source, changes in the supply chain network, and new product development to address the challenges crippling the FMCG industry.

5.4.5 Exploratory Factor analysis on supply chain performance (SCP)

This subdivision pays attention on SCP. This section is divided into two sections. The first segment focuses on the assessment of data adequacy, while the second part focuses on factor loadings, eigenvalues, scree test, commonalities, and the interpretation of the factors. The following section assesses the adequacy of the data.

5.4.5.1 Assessment of the adequacy of the data

This subdivision focuses on the factorability of the data using both the Bartlett's Test of Sphericity and Kaiser Meyer Olkin (KMO) test. Table 5.10 denotes the results for both the Bartlett's Test of Sphericity and Kaiser Meyer Olkin (KMO) test for SCP (SCP).

Table 5.10: Bartlett's Test of Sphericity and Kaiser Meyer Olkin (KMO) test for SCF.

CONSTRUCT	KMO MEASURE	BARTLETT'S TEST		
		Approximate Chi-Square	Degrees of freedom	Significance level
Supply chain performance (SCP)	0.733	1275.916	21	0.000

Source: Compiled by author

Table 5.10 presents the results for both KMO and the Bartlett's tests on SCP were performed using SPSS (27.0) on the five variables latent constructs. The KMO values of the SCF indicates a value of 0.733, which is above the minimum required thresholds value of 0.5 and the significance level was p=0.000. This indicates the sampling is adequate, therefore the construct can be retained and further factorised. Section 5.4.3.2 factorises the constructs as it met and exceeded the required threshold.

5.4.5.2 Factor Extraction and Interpretation

In this study, a number of techniques were used to assist the researcher in deciding the number of factors to retain such as the sample size, the number of variables, observations for each variable, tally for factor loadings Kaiser's eigenvalue, Cattell's Scree test and commonalities. The subsequent section explores SCP in detail.

5.4.5.2.1 Factor loadings and eigenvalues (K1) for supply chain performance

This section explains SCP into greater detail thereby observing the criterion mentioned in Section 5.4.2**.** It focuses on the factor loadings, eigenvalues and cumulative variance explained extracted from total variance explained. Table 5.11 presents interesting results of the extracted factors as well as the factors retained (shaded in yellow) for further analysis.

Table 5.11: Factor extracted solution for supply chain performance (SCP) scale

ITEM CODE	Description	Factor 1	Factor 2
NFP1	Response time to customer query time	0.846	0.177
NFP2	Level of customer perceived value of product	0.878	0.218
NFP3	Level of service systems to meet customer needs	0.865	0.197
NFP4	Order lead-time	0.826	0.136
FP1	Average net profit	0.121	0.938
FP2	Average sales growth rate	0.198	0.914
FP3	Revenue growth	0.275	0.890
Eigenvalue		**4.025**	**1.666**
Total variance explained (%)		**57.502**	**23.806**
Cumulative variance explained (%)		**57.502**	**81.308**

Source: Compiled by author

As shown in Table 5.11 the two variables of SCP indicate values or factor loadings greater than 0.50, thus, they were retained for further analysis. The total variance explained was also observed as an extraction procedure to condense it to well-ordered numbers prior to analysis. This process entailed the extraction of items with eigenvalues exceeding 1.0 into different components. Established on Table 5.11, the results indicate that the EFA for NFP and FP has eigenvalues of 4.025 and 1.666 in which they are greater than >1. This indicates that SCP is considered for further analysis. Table 5.13 also illustrates that the cumulative variance explained extracted from total variance explained for NFP accounts for (R^2 =57.502%) and accounts (R^2 =23,806%) for FP. As indicated in literature, if the eigenvalues (K1) are greater than 1, they are subject to the Cattell's scree test.

5.4.5.2.2 Scree test for supply chain performance (SCP)

This section explains the scree test results by graphically demarcating the Kaiser's eigenvalues (K1) that are greater than 1, extracted from Table 5.11 and Figure 5.10 depict the K1 value in a scree plot diagram.

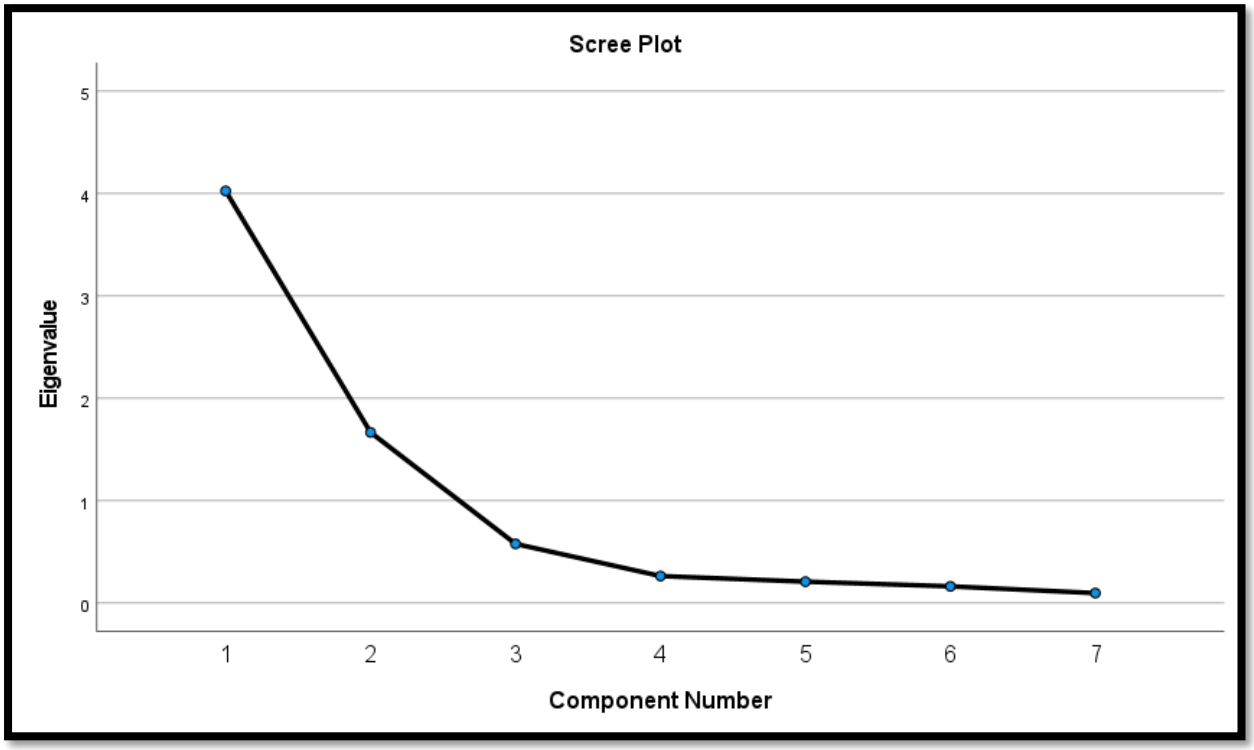

Figure 5.10: Scree plot for supply chain performance components

Source: Exported from SPSS (27.0)

Figure 5.10 depicts interesting scree test results, plotted with eigenvalues (K1) on the y-axis against the seven component numbers in their order of extraction from the five-factor extracted

component Table (5.5) on the X-axis. The foremost element extracted are colossal factors with greater eigenvalues trailed by lesser factors. The Cattell's scree plot was also used in this study to ascertain the number of factors that were retained. The scree plot demonstrates that NFP and FP an eigenvalue (K1) of 4.025 and 1.666, in which they are both greater than one, and indicate greater degrees of complete variability in data. Additionally, the remaining five components account for a very little fraction of the variability of the data and considered insignificant. The following section explains the communalities of the components.

5.4.5.3 Communalities for supply chain performance

This section pragmatically explained the commonalities results of the latent variables to ascertain if they are fit to be further analysed. Table 5.12 illustrates the communality values for the five components for SCP.

Table 5.12: Communalities for supply chain performance

ITEM CODE	Initial	Extraction
NFP1	1.000	0.748
NFP2	1.000	0.817
NFP3	1.000	0.787
NFP4	1.000	0.701
FP1	1.000	0.895
FP2	1.000	0.875
FP3	1.000	0.869

Source: Compiled by author

Table 5.12 presents' communalities results and indicates that all extraction values range from 0.701 to 0.895, which are well above acceptable threshold of 0.3. Therefore, communalities of SCP further corroborate that the factors are acceptable and can be further analysed. Section 5.4.5.3 names and interprets the two SCP constructs.

5.4.5.4 Naming and interpretation of factors

This section focuses on naming and interpreting the extracted factors of SCP. This contemporary fragment explains the SCP. SCP consists of two variables, namely, NFP and FP with respect to

the items' correlation value, eigenvalues, total variance explained and lastly the mean of the variable.

5.4.5.4.1 Non-financial performance (NFP)

The first factor 1 is characterised as '**Non-financial performance' (NFP**), which contains four items that strive for response time, value of product, customer needs and order lead-time. These items have factor loadings ranging from of 0.846, 0.878, 0.865, and 0.862 correspondingly. NFP explained (R^2 =57.502%) of the total variance with an eigenvalue of 4.025. Furthermore, this component contained four items that tend to be agreeing, according to its mean score of 3.652, as observed in Table 5.16.

Non-financial performance (NFP) in a supply chain is used to evaluate the performance of the chain. The use NFP indicators in the manufacturing environment is fundamental where its normal operation is more complex than any other type of industry (Ahmad & Zabri 2016:476). Correspondingly, the current study employed NFP indicators to measure SCP of the companies in the Gauteng FMCG industry because they operate in complex and extremely volatile environments. In addition, evaluating SCP using non-financial performance indicators can effectively enhance organisational strategy through information sharing between parties in the in the supply chain network (Lee & Yang 2011:85). In simpler terms, their adoption and utilisation would enable organisations in the FMCG industry to assess the implementation and influence of the supply chain strategies on supply chain flexibility and consequently SCP. NFP indicators variables such as response time, value of product, customer needs and order lead-time should be considered in order to determine the performance of a supply chain.

5.4.5.4.2 Financial performance (FP)

The second factor for SCP, characterised as **'Finacial performance' (FP)** contains four items that strive for average net profit, average sales growth rate and revenue growth. These items have correlation values ranging from of 0.938, 0.914, and 0.890 respectively. FP explained (R^2 =23.806%) of the total variance with an eigenvalue of 4.025. Furthermore, this component contained three items that tend to be agreeing, according to its mean score of 3.965, as observed in Table 5.16.

Financial performance (FP) is one of the measures that allow organisations to successfully evaluate supply chain performance. A number of companies have established various financial statements and reporting systems to assess their SCP (Galankaski & Rafier 2021:6). Furthermore,

it is of paramount importance for firms to use FP indicators because they help executives in terms of making tactical and strategic choices (Horvathova, Mokrisova & Suhanyiota 2015:361). In this study, however, FP indicators were employed to assess the implementation and influence of the supply chain strategies on SCF and consequently FP. As noted in literature, a flexible and performing supply chain should improve sales, profitability and minimise total costs in the supply chain network. Hence, variables such as average net profit, average sales growth rate, revenue growth and operational costs were used as measuring items in the current study.

The next section presents the descriptive statistics of the latent variables in the study.

5.5 DESCRIPTIVE RESULTS OF THE CONSTRUCTS

This section presents the descriptive statistics of the latent variables of the study. They include elements such as means, standard deviations of the constructs, as presented in Table 5.13.

Table 5.13: Mean scores and standard deviations of research variables

Study Constructs	Sample size (N)	No of items	Means	Minimum	Maximum	Standard Deviation	$\bar{x}$ rank
	Predictor Variables						
SCI	228	6	4.099	1.67	5	0.676	5
OLS	228	5	3.528	1.00	5	0.911	7
RMS	228	5	4.201	1.20	5	0.565	3
CO	228	4	4.345	2.75	5	0.509	1
SI	228	5	4.191	1.20	5	0.690	4
Mediating Variable							
SCF	228	5	4.280	2.00	5	0.542	2
Outcome Variable							
NFP	228	4	3.652	1.00	5	0.729	6
FP	228	4	3.965	1.00	5	0.760	5

SCI = Supply chain innovation; **OLS**=Organisational learning strategy; **RMS** = Risk management strategy; **CO**= Customer Orientation; **SI** = Supplier Integration; **SCF =** SCF; **NFP** = Non-financial performance**; FP**=Financial performance. Scale: 1= Strongly disagree, 2=Disagree, 3=Neutral, 4=Agree, 5=Strongly agree. Scale for **NFP** and **FP:** 1=Decreased significantly, 2=Decreased somewhat, 3=Neutral, 4=Increased somewhat, 5=Increased significantly

Source: Compiled by author

The mean value for **innovation (SCI)** was 4.099, which indicates an 'agree' response as observed in Table 5.13. This result clearly shows that the most respondents agree that supply chain innovation was satisfactory in their respective organisations. The results of the analysis shows that the concept of innovation is full embraced in the Gauteng FMCG industry and such practices can lead to high levels of innovativeness of supply chains, which would in turn expedite flexible sourcing, manufacturing and distribution (Sunil 2019:3). Furthermore, innovation have the ability to improve supply chain efficiency for more effective customer satisfaction, which has a significant organisational performance (Sang, Don, Hee & Schniederjans 2011:1194). Thus, it is necessary for organisations in the FMCG industry to implement and execute this supply chain strategy.

Organisational learning (OLS) was presented by a mean score of 3,528, which means that the respondents were of the view that it is satisfactory in their firms. This vantage point indicates that the organisations of the surveyed respondents perceive that organisational knowledge is a critical source of organisational benefits (Turi & Sarooshian 2019:206). This is because organisational learning enables the development and renewal of strategic assets. Furthermore, the knowledge acquired through learning provides a high level of strategic flexibility and allows a more flexible reaction to environmental changes, as mentioned by Hart, Gilstrap and Bolino (2016:3986). This in turn enables supply chain officials to conjointly learn how to syndicate capabilities and processes to achieve a competitive advantage by continually creating value for the final consumer (Hannan & Freeman 1984:151; Manuj *et al*. 2014:103). Thus, it could be inferred that an organisational learning strategy is imperative and can play a fundamental role in the organisations of the surveyed respondents in the FMCG industry.

The average mean value for **risk management (RMS**) is presented by 4,201, as observed in Table 5.13. This result evidently indicates that most participants agree that risk management was adequate in their respective firms. This view means that risk management measures were undertaken in the organisations of the respondents in this research. This can lead to the reduction of any uncertainties, risks in the supply chain network and implement an appropriate set of solutions to manage the risks and uncertainties efficiently and effectively (Shahbaz *et al*. 2017:9233). Therefore, the implementation of this supply chain strategy could lead to less disruptions of the supply chain network, enhanced flexibility, and SCP for the FMCG respondents who participated in the study.

The mean value for **customer orientation (CO)** was 4.345, which indicates an 'agree' response, as shown in Table 5.13. This means that most of the participants are of the view that customer orientation strategy was satisfactory in their organisations. This means that customer orientation is one of the most important supply chain strategies that could aid companies achieve sustainable competitive advantage, service quality and customer satisfaction, as mentioned by Xia & Ha (2021:5) in their study on service quality and customer satisfaction. This sentiment clearly shows that it is necessary for FMCG companies to implement and consider customer integration as one of their core supply chain strategies.

Supplier integration (SI) is presented by a mean score of 4.191, as observed in Table 5.13. This also indicates that most of the respondents who participated in this study 'agree' and felt satisfied with the supplier integration in their organisations. This vantage point clearly shows that supplier integration, highly characterised by information sharing alongside cooperative relationships with key suppliers and allows firms in the FMCG sector to smooth out upstream material flows such as avoiding possible problems in the procurement process which might have adverse impacts on the firm's production process, resulting in inefficiencies and inflexibility in the supply chain network (Danese 2013:1033). With this being the case, the necessity of implementing the supplier integration strategy in the FMCG industry is clearly supported by these benefits that would be established when efficienctly and effectively is instigated.

The mean value for **supply chain flexibility (SCF)** is 4.345, which indicates an 'agree' response, as shown in Table 5.13. This means that most of the participants are of the view that SCF is satisfactory in their respective organisations. This could mean that their supply chain allows their organisations to meet and exceed customer expectations (for example, customer satisfaction) and reduce inventory (such as cost-containment performance) as pointed out by Bauer and Gobl (2017:3). Furthermore, flexibility in supply chains offers a wide range of benefits such as countering and meeting demand changes such as seasonality, reduced production times, mediocre supplier performance, poor logistics performance and reacting to new products (Katsaliaki *et al*. 2021:16). With this being the case, it is apparent that companies in the FMCG industry may possibly enjoy the benefits if they were to design their supply chain networks in such a way that they offer higher flexibility levels, as observed in the results surveyed (Table 5.13).

Supply chain performance (SCP) results were presented, as observed in Table 5.13. SCP in this study consists of two measures, namely, FP and NFP. **Non-financial performance (NFP)** is presented by a mean value of 3.652, which indicates an 'agree' response, as shown in Table 5.13. This means that the surveyed respondents agree that supply FP indicators are satisfactory in their

respective organisations. This could lead to the organisations' capability to respond to customers' needs, deliver the right quantities, order-lead time, reduce production and inventory costs (Sezen 2008:234). This clearly shows that NFP indicators are also important when assessing SCP and could be employed by firms in the FMCG industry.

Financial performance (FP), on the other hand, is present by a mean value of 3,965, which indicates an 'agree' response as observed in Table 5.13. This means that the respondents agree that supply chain financial performance indicators are satisfactory in their respective organisations. It could be inferred then that the surveyed respondents felt that their organisations have competitive advantage in the FMCG industry that enable them to capture market share and gain profit (Putri, Huda & Sinulanga 2019:1). This could also mean that most of the sampled firms in the FMCG industry observed improvements in average net profit, average sales growth and revenue growth compared to their competitors. More so, the firms also managed to minimise operational costs as their average net profit, average sales growth and revenue growth were satisfactory over the last five years. Thus, it is essential for companies, particularly in the Gaueteng FMCG industry to measure their supply chains using financial performance indices such as market share and profitability.

The following section focuses on testing the normality of the data conducted.

5.6 TEST FOR DATA NORMALITY

A priori information about data distribution may be unknown (Arnastaukskaite *et al*. 2021:1), which further prompts the assessment of the data conducted. Mishra, Pandey, Singh, Gupta and Heshri (2019:70) opine that an assessment of the normality of the data conducted is essential for arithmetical checks because normal data is an underlying conjecture in parametric testing. The major tests for the assessment of normality are Kolmogorov-Smirnov (K-S) test, Lilliefors corrected K-S test, Shapiro-Wilk test, Anderson-Darling test, Cramer-von Mises test, D'Agostino skewness test , Anscombe-Glynn kurtosis test, Agostino-Pearson omnibus test, and the Jarque-Bera test (Henderson 2006:123; Ghasemi & Zahediasl 2012:487; Das & Imon 2016:10; Yoshida, Ichiki & Nishizawa 2021:3; Rahman & Wu 2013:3). For the purpose of this study, however, the D'Agostino's K-squared test was employed to test whether the data was normally distributed as mentioned in Section 4.11.2 of Chapter 4.

The D'Agostino's K squared test uses two measurements statistics, namely, skewness and kurtosis to measure the normality of the distributed data (Orcan 2020:255). Skewness is a measure of the asymmetry in which the shape of the histogram for numerical data and elucidates the degree of

eccentricity that befalls on the left or right of the mean of data distributed (Kim 2013:52). Kurtosis, on the other hand, measures the 'peakedness' or flatness of the distribution compared with the normal distribution of the distributed data (Bai & Ng 2005:51; Kim 2013:52). To demonstrate the satisfactory of the data collected in terms of normal univariate distribution, the researcher leaned on the assumptions laid down by Field (2013:89) that states that skewness must be between ranges of -2 to +2 and kurtosis must be between the ranges of -3 to +3. Table 5.14 clearly shows the skewness and kurtosis results of the research constructs.

Table 5.14: Skewness and kurtosis results

		Skewness			Kurtosis		
Item code	**Valid cases**	**Sig.**	**Statistic**	**Std. Error of Skewness**	**Sig.**	**Statistic**	**Std. Error of Kurtosis**
SCI	228	0.000	-1.407	0.161	0.000	2.323	0.321
OLS	228	0.000	-0.372	0.161	0.000	-0.685	0.321
RMS	228	0.000	-1.020	0.161	0.000	2.808	0.321
CO	228	0.000	0.034	0.161	0.000	-0.839	0.321
SI	228	0.000	-1.377	0.161	0.000	2.977	0.321
SCF	228	0.000	-1.053	0.161	0.000	2.905	0.321
NFP	228	0.000	-1.366	0.161	0.000	2.170	0.321
FP	228	0.000	-1.306	0.161	0.000	2.838	0.321

Source: Compiled by author

Table 5.14 shows the skewness and kurtosis statistics for all the variables of the current study and satisfactory results are presented, as observed in Table 5.14. The skewness results ranges from -1.407 and to 0.034. This suggests that the data was normally distributed as the values fall within the prerequisite threshold, as suggested by Field (2013:89). Kurtosis, on the other hand, shows results that range from –0.685-2.977, which suggest that the captured dataset had light tails relative to a normal distribution. The subsequent section explains confirmatory factor analysis as it is one of the methods used to psychometrically evaluate measurement instruments.

5.7 CONFIRMATORY FACTOR ANALYSIS

Confirmatory factor analysis (CFA) is regarded as a theoretical or model-driven methodology that assesses how adequate the data confirm to the proposed model or theory of a study (Tavakol &Wetzel 2020:246). Thus, CFA is conceptualised as a tool that deals explicitly with measuring models, especially the relationships between pragmatic measures or and research variables (Brown 2006:1; Prasertsin 2015:2201; Prudon 2015:1). Tavakol and Wetzel (2020:246) opine that this measurement tool allows researchers to confirm or disconfirm the principal factor structures, or constructs of a research study. Similar to this study, CFA was utilised to assess or confirm the relationship between supply chain strategies, SCF and SCP. CFA properties encompasses reliability, validity, rho, Cronbach alpha, item-to-correlations, and model fit. Table 5.15 presents psychometric properties and results of this study.

Table 5:15: Psychometric properties analysis results

Research constructs		Factor Loadings	Cronbach Alpha α Value	Item-to-total correlation	C.R. value	Rho A	√AVE
Supply chain Innovation strategy	SCI1	0.876	0.868	0.810	0.907	0.902	0.711
	SCI2	0.870		0.804			
	SCI3	0.864		0.812			
	SCI4	0.850		0.790			
	SCI5	0.908		0.864			
	SCI6	0.915		0.876			
Organisational learning strategy	OLS1	0.862	0.929	0.810	0.954	0.941	0.875
	OLS2	0.918		0.878			
	OLS3	0.850		0.707			
	OLS4	0.888		0.777			
	OLS5	0.793		0.740			
Risk management strategy	RMS1	0.772	0.896	0.647	0.926	0.924	0.759
	RMS2	0.899		0.836			
	RMS3	0.907		0.845			
	RMS4	0.888		0.822			
	RMS5	0.856		0.758			

Research constructs		Factor Loadings	Cronbach Alpha α Value	Item-to-total correlation	C.R. value	Rho A	√AVE
Customer orientation strategy	CO1	0.795	0.915	0.673	0.936	0.931	0.745
	CO2	0.817		0.710			
	CO3	0.837		0.618			
	CO4	0.918		0.833			
Supplier integration strategy	SI1	0.796	0.916	0.682	0.937	0.918	0.750
	SI3	0.848		0.756			
	SI3	0.872		0.799			
	SI4	0.896		0.828			
	SI5	0.866		0.788			
Supply chain flexibility	SCF1	0.702	0.898	0.601	0.925	0.921	0.714
	SCF2	0.794		0.684			
	SCF3	0.911		0.834			
	SCF4	0.910		0.845			
	SCF5	0.888		0.801			
Supply chain perfomance	NFP1	0.840	0.942	0.747	0.954	0.947	0.776
	NFP2	0.875		0.807			
	NFP3	0.894		0.804			
	NFP4	0.874		0.714			
	FP1	0.941	0.909	0.863	0.932	0.913	0.733
	FP2	0.926		0.853			
	FP3	0.939		0.846			

SCI=Supply chain Innovation; **OLS**=Organisational learning strategy; **RMS**=Risk management strategy; **CO**=Customer orientation strategy; **SI**= Supplier integration strategy; **SCF**=SCF; **NFP**=Non-financial performance; **FP**=Financial performance.

Source: Compiled by author

5.7.1 Reliability Analysis

Reliability relates to the dependability of the measurement items used or adopted in a study. (Twycross & Heale 2015:66; Sürücü & Maslakçi 2020:2697). In other words, reliability measures the consistency of the measuring instruments across times and maneuvres on the idea that the same measurement instruments will yield the same results. When measuring reliability, the Cronbach's alpha test (α), spearman's Rho-A, composite reliability test (CR), and item-to-total correlations are employed.

5.7.1.1 Cronbach's alpha test results

The Cronbach's alpha (α) statistic is regularly reported in science education studies. One of the benefits of utilising the coefficient alpha (α) co-efficient is because it is easy to interpret the results (Nawi, Tambi, Samat & Mustapha 2020:20). The Cronbach alpha coefficient was employed to measure all the variables in this study. Barbera, Naibert, Kamperda and Pentecost (2020:257) highlighted that Cronbach's alpha (α) coefficients greater than 0.70 are acceptable since they exhibit higher levels of reliability. The measuremet constructs (SI=0.868; OLS=0,929; RMS=0.896; 0.915, CO=0.916, SI=0.898, SCF=0.942, SCP=0.909) in this study were considered reliable as they yielded Cronbach alpha (α) coefficient values greater than 0.70, as presented in Table 5.15 This indicates that the measuring instruments used in this study are reliable.

5.7.1.2 Rho A test results

The spearman's (Rho-A) is one of the most-popular properties used to measure reliability (Kojadinovic, Quessy & Rohmer 2015:931). The values Rho A range from 0 to 1 zero and values above 0.8 show an excellent internal consistency, while values below 0.7 indicate an inferior limit of acceptability (Cicchetti 1994:284). Furthermore, Spearman's values in this study range from 0.902-0.947 for all the variables, indicating excellent internal consistency. The results in Table 5.13 show that all of the measuring intsruments adopted in the study were reliable (SI=0.902; OLS=0,941; RMS=0.924; 0.931, CO=0.918, SI=0.921, SCF=0.947, SCP=0.913). This further indicates that the measuring instruments used are reliable.

5.7.1.3 Composite reliability (CR) test results

In research, it is of paramount importance to understand the reliability scores of any particular composite measure (Kelley & Terry 2012:371). Hulland (1999:195) suggests that composite reliability (CR) values must be restricted within the threshold of 0.70 and 1.00 to prove satisfactory levels of internal consistency. The results revealed in Table 5.13 show that the composite reliability of all the measuremt items (SI=0.907; OLS=0,954; RMS=0.926; 0.936, CO=0.937, SI=0.925, SCF=0.954, SCP=0.932) were above the suggested minimum threshold of 0.7 as suggested. The CR test results further show that the scales used in this study are reliable.

5.7.1.4 Item-to-total correlations

As indicated in Section 5.1.1, another technique used to measure reliability is the item-to-total correlations. Item-to-total correlations, also called item discrimination, is a psychometric criterion for measuring of measurement scales and cut-offs measurement that don't satisfy its recommended

threshold (Abubakar, Wimmer, Bereznicki, Dwan, Black, Bezabhe & Peterson 2020:4). According to Nunnally (1978:1), item discrimination scores must be equal 0.5 or above the 0.5. The loadings of all constructs met the minimum threshold of 0.5, with supply chain innovation (SCI) ranging from 0.790 to 0.876; organisational learning strategy (OLS) from 0.707 to 0.878; risk management strategy (RMS) from 0.647 to 0.845; customer orientation (CO) from 0.618 to 0.833; supplier integration (SI) from 0.682 to 0.828; supply chain flexibility (SCF) from 0.601 to 0.828; non-financial performance(NFP) from 0.714-0.807; financial performance(FP) from 0.846 to 0.863 as shown in Table 5.15. This shows that the measuring instruments used here are reliable. However, it should be hinted that item 4 (FP4), *Operational performance* was discarded in the initial reliability tests to improve the reliability of the FP scale.

5.7.2 Validity Analysis

Validity can be defined as the degree to which an instrument measures what it claims to measure and the accuracy of the results (Robson 2015:10; Abubakar *et al*. 2020:4). In research methodology, validity analysis is a sequential process comprising parameters included and limited to content, convergent and criterion validity (Heale *et al*. 2015:66). In this study, validity analysis was done through the observation of face, content and content validity.

5.7.2.1 Construct validity

Construct validity was measured using both convergent and discriminant validity Section 5.7.2.1.1 and 5.7.2.1.1 discusses both convergent and discriminant validity.

5.7.2.1.1 Convergent validity

Convergent validity measures the extent to which the measurement items show consistency within the same latent construct validated (Peter 1981:113; Cooper & Schindler 2011:281). In this study, convergent validity was established using the item-to-total correlation values (Chinomona 2011:1) and item (factor) loadings. More so, the item-to-total correlation values should be more than 0.3 while the item (factor) loadings should more than 0.5 to be considered valid. The results in Table 5.13 show that the factor loadings results met the minimum required threshold as supply chain innovation strategy(SCI) had item loadings ranging from 0.850 to 0.908; organisational learning strategy(OLS) ranging from 0.850 to 0.918; risk management strategy(RMS) ranging from 0.772 to 0.907; customer orientation(CO) from 0.795 to 0.918; supplier integration(SI) from 0.796 to 0.896; supply chain flexibility(SCF) ranging from 0.702 to 0.911; non-financial performance(NFP) ranging from 0.840 to 0.894; and financial perfomance(FP) ranging from 0.926 to 0.941.

Convergent validity was also measured using the item-to-correlations coefficients. as presented in Table 5.16, The loadings of all constructs met the minimum threshold of 0.5, with supply chain innovation (SCI), ranging from 0.790 to 0.876; organisational learning strategy (OLS) from 0.707 to 0.878; risk management strategy (RMS) from 0.647 to 0.845; customer orientation (CO) from 0.618 to 0.833; supplier integration (SCI) from 0.682 to 0.828; supply chain flexibility (SCF) from 0.601 to 0.828; non-finacial perfomace(NFP) from 0.714 to 0.807; financial performance(FP) from 0.846 to 0.863. This shows that the constructs are converging and therefore valid.

5.7.2.1.2 Discriminant validity

Discriminant validity is established when the latent variables are foretold to be uncorrelated, and the results obtained when measuring them are found to be empirically uncorrelating (Matthes & Ball 2019:211). Discriminant validity, in simpler terms, is crucial if instances where a research variable is being introduced in research and little has been done to prove its correlation with other variables and certain theories. Discriminant validity in research is measured using three methods, namely, Fornell and Larcker criteria, cross loadings, AVE and heterotrait-monotrait (HTMT) ratio. In this study, AVE was employed to determine discriminant validity. As suggested by Van der Vaart (2021:6), the AVE for all the variables should be not greater than 0.9.

Table 5.16: Correlations between constructs

Research constructs	Correlation constructs							
	CO	**FP**	**NFP**	**OLS**	**RMS**	**SCF**	**SCI**	**SI**
Customer Orientation (CO)	**1.000**							
Financial performance (FP)	0.080	**1.000**						
Non-financial performance (NFP)	0.177	0.407	**1.000**					
Organisational learning strategy (OLS)	0.164	0.094	0.062	**1.000**				
Risk management strategy (RMS)	0.556	0.176	0.225	0.274	**1.000**			
SCF(SCF)	0.383	0.248	0.274	0.322	0.395	**1.000**		
Supply chain innovation (SCI)	0.398	0.171	0.174	0.386	0.393	0.391	**1.000**	
Supplier integration (SI)	0.438	0.378	0.209	0.259	0.530	0.696	0.427	**1.000**

SCI= Supply chain innovation, **OLS**=Organisational learning, **RMS**=Risk management **CO**=Customer orientation; **SI**= Supplier integration; **SCF**=SCF; **NFP**=Non-financial performance; **FP**=Financial performance.

Source: Compiled by author

Table 5.16 shows the correlation matrix of the variables this study. It is revealed that there were positive correlations across all the constructs when they are paired. Furthermore, the paired variables were found to be below the cut-off threshold of 1 (as the discriminant validity ranges from 0.080 to 0.427), which then shows the discriminant validity of the latent constructs. As revealed in Table 5.16, the AVE values of the paradigms indicated 0.711 supply chain innovation; 0.875 for organisational learning; 0.759 for risk management strategy; 0.745 for customer orientation; 0.750 for supplier integration. SCF, non-financial performance and financial performance AVE values were 0.714, 0.776 and 0.733 respectively. It was noted that the AVE were well above the recommended threshold of 0.5 and confirms discriminant validity.

5.7.2.2 Content and face validity

Content validity is the degree to which the measuring items on the questionnaire and the scores from these items denote all probable enquiries that could be queried about the content (Yusoff 2019:49). Content validity is defined as the degree to which a specific measuring instrument provides a meticulous meaning of a construct (Maree 2020:262). This study used both face and content validity to ascertain the content and validation of the questions as suggested by Mohamad, Sulaiman, Sern and Salleh (2015:169). Content and face validity were then ascertained by a panel of senior lecturers at the Vaal University of Technology in the field of supply chain management. This further proves that content validity was satisfactory in this study.

5.7.3 Model fit analysis

Model fit indices are progressively suggested and employed to determine the number of components in factor analysis (Montoya & Edwards 2021:413). In research methodology, model fit analysis is viewed as a statistical model that describes the relationship between constructs (Hussain, Fangwei, Sidiqi, Ali & Shabbir 2018:10). More so, a plethora of indicators for evaluating model fit analysis have been employed in studies across all fields of study and include but are not limited to, the chi-square test of exact fit, the root meann, square error of approximation (RMSEA), the comparative fit index (CFI), and the Tucker–Lewis index (TLI) (Clark & Bowles 2018:547). As mentioned in section 4.11.4.4 the current study, the d_ULS (unweighted least squares), d_G (geodesic distance), Chi-Square, SRMR (tandardized root mean square residual) and Normative Fit Index (NFI) were employed and their results are presented in Table 5.17.

Table 5.17: Model fit results for confirmatory factor analysis

Model fit indices	SRMR	Exact fit criteria (d_ULS)	Exact fit criteria(d_G)	Chi-Square (χ2/df)	NFI
Acceptable threshold values	SRMR=< 0.08 or 0.10	d_ULS equal or greater than (p>0.05)	d_G equals to or greater than (p>0.05)	Between 1 to 3 [≤ 3.0]	Equal to or greater than 0.90 (≥0.9)
Sources	Henseler, Ringle and Sarstedt (2015:115); Hu and Bentler (1999:5)	Ringle, Wende, & Becker (2015:1); SMART-PLS(2022:1)	Ringle, Wende, & Becker (2015:1); SMART-PLS(2022:1)	Schreiber, Stage, King, Nora and Barlow (2006:330)	Bollen (1990:256); Dash & Paul (2021:3)
Results obtained	**0.084**	**0.575**	**0.632**	**2.58** (2197.394)	**0.932**

Source: Compiled by author

The results revealed in Table 5.17 indicate that all the model fit indices achieved from the analysis are in line with the expected thresholds for model fit assessment. The Chi-square yielded a value of 2.58 (χ2/df=2197/394), while the SRMR coefficient value of 0.084 was in agreement with the recognised threshold as recommended by Henseler, Ringle and Sarstedt (2015:115).Supportively, both the geodesic distance (d_G) and unweighted least squares (d_ULS) recorded non-significant coefficient values(p>0.05) of 0.632 and 0.575 respectively. As revealed by SMART-PLS (2022:1), the variance between the correlation matrix implied by a model and the empirical correlation matrix should be non-significant (p > 0.05) for the model to fit well. As shown in the above table, the NFI coefficient value of 0.932 is within the threshold prescribed by Bollen (1990:256). With this being the case, it was concluded that these coefficients are in agreement with the recognised model fit thresholds. Therefore, the model was fit and acceptable.

The next section presents the path analysis of the constructs.

5.8 PATH ANALYSIS

This section pays special attention to the test of the purposed hypotheses of this study. The study suggested a significant positive relationship between supply chain strategies and SCP. More so, a significant positive relationship was hypothesised between SCF and SCP. These interconnections were tested through the use of the structural model evaluation.

5.8.1 Structural Model Evaluation

The structural model evaluation was done to test the paths among supply chain strategies, flexibility and performance, as indicated in Section 5.8. However, it is of paramount importance to show that the results of the path analysis were generated through the application of Smart-PLS. Furthermore, the path analysis results are depicted in Figure 5.11 and tabulated in Table 5.18. The study used (p< 0.05) significant level to produce the standard error, as recommended by Hair *et al*. (2006:79).

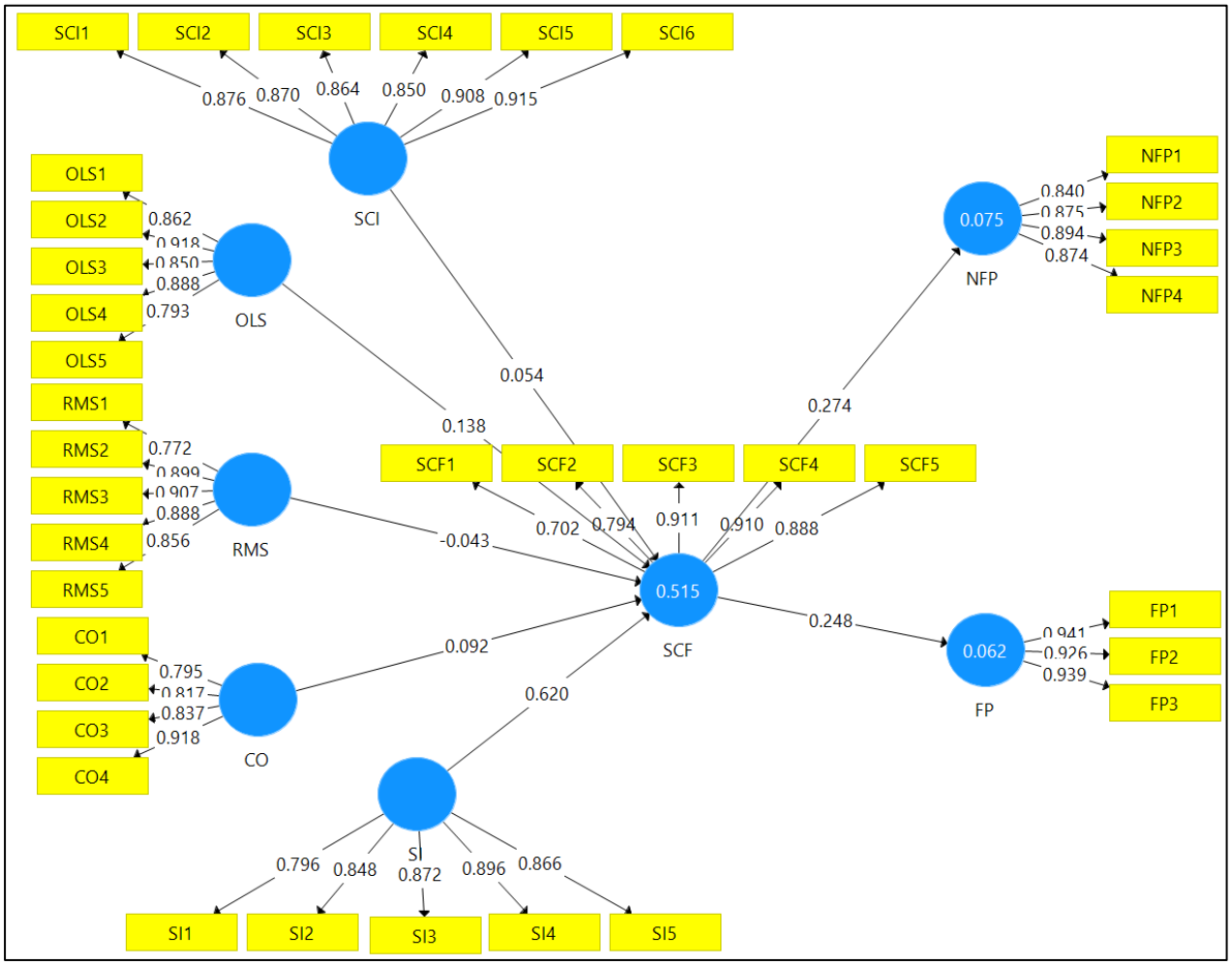

Figure 5.11: Path analysis results

Source: Imported from Smart-PLS analysis, 2022

Figure 5.11 presents the results of Smart-PLS with the construction of pathways based on eight (8) variables. The figure shows the item loadings of the outside model and pathway coefficients (β) obtained from the analysis.

5.8.1.1 Hypotheses tests results

The structural relationships between supply chain strategies, flexibility and performance are paralleled in Table 5.18. It is important to note that if the path coefficient (β***)*** values are greater than (>) 0.5, it suggests that the relationship is supported and significant, and if the significance (*p*) value is less (<) than 0.05, the relationship is supported and significant, as suggested by Massey and Miller (2006:6).

Table 5.18: Hypotheses tests results

Path	Hypothesis	Path coefficient (β)	T-statistic *(t)*	Significance *(p)*	Decision
SCI → SCF	H1	0.054	0.781	0.435	Not supported and not significant
OLS→ SCF	H2	0.138	2.372	0.018***	Supported and significant
RMS→ SCF	H3	-0.043	0.616	0.538	Not supported and not significant
CO→ SCF	H4	0.092	1.419	0.156	Not Supported and insignificant
SI→ SCF	H5	0.620	8.585	0.000***	Supported and significant
SCF→ NFP	H6	0.274	4.096	0.000***	Supported and significant
SCF→ FP	H7	0.248	4.290	0.000***	Supported and significant

*******significant at $p<0.05$; supported at $t>1.96$; strong relationship at $\beta > 0,5$

SCI= Supply chain innovation, **OLS**=Organisational learning, **RMS**=Risk management strategy; **CO**=Customer orientation strategy; **SI**= Supplier integration; **SCF**=Supply chain flexibility; **NFP**=Non-financial performance; **FP**=Financial performance.

Source: Compiled by author

As presented in Table 5.18, only four (4) of the hypothesised hypotheses (H_2=0.138:0.018, H_5=0.620; 0.000; H_6=0.274:0.000, H_7=0.274; 0.000) were accepted because they yielded p-values less than the required threshold. However, the rest of the suggested hypotheses (H_1= 0.054:0.435; H_3= -0.413:0.538 H_4= 0.092:0.156) were rejected because the rest yielded *p*-values ($p>0.05$)

greater than the minimum recommended threshold, and they were considered insignificant and subsequently unsupported. The discussion of the results is delineated in the following sections.

5.8.1.1.1 Discussion of the hypotheses results

This section discusses the hypotheses results of this study. It used the Smart-PLS for the analysis and two criteria of SEM were adopted to evaluate them. In simpler terms, the Smart-PLS was adopted to accept or reject the hypothesised hypotheses. The first criterion used, required determining the path coefficients denoted by beta (β) of the relationship between constructs, which should be 0.5 or greater for the relationship to be considered positive or strong. Then the two-tailed arithmetical checks (*p* and *t*-statistic) values were used to validate the level of impact of the path coefficients. These methods posit that *p*-values ≤ 0.01 demonstrate a great level of significance and p-values ≤ 0.05 are characterised as significant and are accepted. However, *t*-statistic values<1.96 and *p*-values >0.05 were considered insignificant, therefore rejected in the study. More so, these values were deemed not supported because they exert no positive relationship among the variables.

In determining the level of significance in this study, *p*-values ≤ 0.05 and *t*-statistic values > 1.96 were considered significant and supported. This is because they demonstrate a positive and significant relationship between the constructs and therefore were considered statistically significant and supported. It is important to highlight that the research hypotheses in the study were formulated based on the following proposed empirical objectives, which were formulated in support of the theoretical objectives. The empirical objectives of the study were as follows:

1) To determine the implementation of supply chain strategies, namely innovation, organisational learning, risk management, customer orientation and supplier integration in the FMCG industry in Gauteng province.
2) To determine the level of flexibility of the FMCG supply chain in Gauteng province
3) To examine the relationship between supply chain strategy and supply chain flexibility (SCF) in the FMCG industry in Gauteng province.
4) To determine the linkage between supply chain flexibility (SCF) and supply chain performance (SCP) in the FMCG industry in Gauteng province.
5) To establish the performance of the FMCG industry in Gauteng Province using subjective financial and non-financial indicators.

5.8.1.1.1.1 H1: Innovation has a positive significant influence on supply chain flexibility (SCF) in the FMCG industry in Gauteng province.

H1 suggested that innovation has a positive and significant relationship with SCF in the FMCG industry in Gauteng province**.** However, the results (β= 0.054; *t*-statistic=0.781*; p*=0.435) of the analysis indicate that innovation exerts no positive influence on SCF in the Gauteng FMCG industry. These results indicate that the influence is weak, the *t*-statistic value is not supported and the p-value is insignificant. Therefore, this implies that innovation does not play a fundamental role in the flexibility of the surveyed FMCG industries in Gauteng. It could be inferred then, that the supply chains of the surveyed FMCG companies have not been designed in such a way that they positively influence a firm's flexibility and consequently, SCP.

In a study conducted by Fantanzy *et al*. (2009:182) in the Canadian manufacturing SMEs on supply chain strategy, flexibility and performance, the author found that innovation in the surveyed firms was highly characterised by frequent innovation and the supply chain companies' ability to research and develop innovative products to remain competitive. This could suggest that the negative relationship shown by the results implies that the sampled FMCG companies in this study do not possess the characteristics of frequent innovation. Furthermore, the results could also suggest that the sampled FMCG companies lack innovation when it comes to research and development(R & D).

Tejumade and Kelvin (2012:4088) argued further that SMMEs in the FMCG sector in South Africa struggle when it comes to the improvement of innovative goods. The authors further stated that these companies struggle because they lack variations in expertise and their inability to offer goods that satisfy the needs and wants of customers. With this being stated, it could infer that the Gauteng FMCG industry struggles to produce innovative products. This is confirmed by the results obtained on the study as the relationship is weak, negative, unsupported and insignificant. Furthermore, the empirical results suggest that most of the surveyed firms in the Gauteng FMCG industry lacks when it comes to successfully implementing and practising innovation in their respective orgaisations.

Additionally, FMCG companies in Gauteng may have attempted to implement innovation in their respective organisation, however, the COVID-19 led many industries into rethinking their vulnerability to universal tremors through their tiered supply chain network (Deloitte 2021:21). This is because most entities and corporations prioritised agility and flexibility during the pandemic to remain competitive. Nevertheless, the study has proposed several arsenals such as

frequent innovation and intensive R & D that the FMCG industry requires in order to remain competitive and offer produces that gratifies the needs and wants of its customers.

5.8.1.1.1.2 H2: Organisational learning has a positive significant influence on supply chain flexibility (SCF) in the FMCG industry in Gauteng province.

The results of the analysis (β=0.138; *t*-statistic = 2.372; *p*=0.180) confirm that there is a significant relationship between organisational learning and SCF, although, the relationship was found to be weak. This is because the path coefficient (β) of 0.138 is less than the recommended threshold of 0.5 for the relationship to be strong between the two constructs. However, a significant relationship is apparent as both the *t*-value (*t*=2.372) and *p*-value (*p*=0.180) met the required threshold of greater than (*t*>1.9) and less than (*p*<0.05) respectively. This further implies that organisational learning enables FMCG operations of the sampled companies to accomplish a certain level of flexibility.

A significant relationship between organisational learning and SCF confirmed the assertions made by Santos-Vijande *et al*. (2011:1082), who highlighted that it allows organisations to achieve competitive advantage by improving information processing activities for a faster and more effective adjustment to changing environments and market conditions than the competition. It is apparent then, that organisational learning is one of the important strategies that the FMCG industry could use to improve flexibility performance, thereby counteracting changes in the industry as well as in volatile market conditions.

More so, Santos-Vijande *et al*. (2011:1086) empirically found that organisational learning enhances the firm's ability to respond rapidly to environmental contingencies. These findings further support the significant relations between organisational learning and SCF in the current study. Furthermore, the results between organisational learning and SCF confirm the influence organisational learning has on the flexibility of the supply chains in the FMCG industry. The path coefficient of 0.138 signals that there is a weak relationship between organisational learning and SCF, which could imply that this strategy should be linked with the company’s overall corporate strategy as significant benefits such competitive advantage and flexibility of the supply chain could be yielded within the Gauteng FMCG industry.

5.8.1.1.1.3 H3: Risk management has a positive significant influence on supply chain flexibility (SCF) in the FMCG industry in Gauteng province.

Hypotheses 3(H3) proposed a positive and significant relationship between risk management and SCF in the Gauteng FMCG industry. However, the results presented on Table 5.18 and figure 5.11 reveal that there is a negative and an insignificant relationship between risk management and SCF in the Gauteng FMCG industry. This relationship is said to be negative because the path coefficient (β) shows a negative value of -0.043 and an insignificant *p*-value of 0.538, which is greater than the maximum threshold of 0.05. The table also reveals that the relationship is not supported as the *t*-statistic value of 0.616 is less than the minimum required threshold of 1.98. Risk management influence on SCF is also said to be negative because the path coefficient (β) of -0.043 is less than the recommended threshold value of 0.5.

This negative and insignificant relationship is consistent with the findings of Chakabva and Tengeh (2021:32), who empirically found that FMCG SMEs possess risk management mechanisms in their disposal place, although these mechanisms are too basic and not sophisticated. This could mean, according to their results obtained in the study, that FMCG companies in the Gauteng FMCG industry have risk management mechanisms and procedures to manage and mitigate risks at their disposal but fail when it comes to implementing them. Additionally, it could be inferred that the sampled FMCG companies operate in extremely volatile environments and global supply chains, which could also make it difficult for the companies to successfully implement the risk management procedures.

More so, the FMCG industry is more vulnerable to disruptions and risks because the industry is highly characterised by high volatility and likely to be influenced by external factors. It is important to highlight that there are risks that organisations have no control over such as unforeseen occurrences, including but not limited to the COVID-19 pandemic, instability in countries, labour unrest, power cuts (blackouts) and the war between Russia and Ukraine. These assertions are supported by the findings of scholars such as Agigi *et al*. (2016:1), who found that labour unrest is the most common risk faced by the FMCG industry, which in turn fuels disruptions and risk in the supply chain network. Furthermore, the GCR (2022:4) reported that the FMCG sector experienced disruptions during the COVID-19 pandemic, but only the food and beverage manufacturing subdivision managed to be resilient, *albei*t at a realistically satisfactory level. Furthermore, the instability in the country such as strikes and looting have caused delays and prolonged order-lead times in the supply chains and subsequently bullwhip effects. For example, the looting that took place last year in KwaZulu Natal (KZN) and Gauteng disrupted the supply

chains; thus, plethora of FMCG companies were affected as vehicles transporting goods were targeted.

Furthermore, the country has experienced severe blackouts due to strikes and the reported incompetency of Eskom employees over the years and most notably, recently. Such risks have led to delays in production and prolonged order lead-times, which in turn have had an adverse impact on SCF and SCP. Moreover, the current ongoing war between Russia and Ukraine also poses a threat on the flexibility of the South African FMCG supply chains as companies had to stop or pause production for a while due to the inaccessibility of oil inputs (sunflower) and other important inputs in production. KPMG (2022:1) reported that Russia's decision to attack Ukraine further implicates worldwide supply chain challenges and will continue to fuel inflationary densities. The global supply chain challenges include disruptions such as keeping up with shipping and delivery times (JIT) (Jagtap *et al*. 2022:1).

With this being the case, the path coefficient (β= -0.043) further proves that the FMCG industry cannot handle the pressure posed by these unforeseen and unmanageable occurrences that jeopardise the flexibility of their supply chains. However, the FMCG industry, particularly the Gauteng FMCG industry, still needs to get their supply chains up and running by attempting to manage and mitigate controllable risks. This could be achieved through having supply chain risk management mechanisms that are realistic and applicable in their respective organisations. Despite the negative results found in this study, the risk management strategy could still be a potent arsenal that could be used to attain competitive advantage, flexibility and sustainability of the companies operating in the Gauteng FMCG industry (Chakabva *et al*. 2020:145).

5.8.1.1.1.4 H4: Customer orientation has a positive significant relationship with supply chain flexibility (SCF) in the FMCG industry in Gauteng province.

Hypotheses 4(H4) suggested that customer orientation strategy has a positive and significant relationship with SCF in the FMCG industry in Gauteng province**.** However, the results (β=0.092; *t*-statistic = 1.1419*; p*=0.156) of the analysis indicate that it exerts no positive influence on SCF in the Gauteng FMCG industry. The results indicate that the influence is weak, and the relationship is insignificant. This indicates that customer orientation does not play a fundamental role in the flexibility of the surveyed FMCG industries in Gauteng and lacks implementation thereof. Furthermore, these results are consistent with the findings of Fantanzy (2014:410), who found that customer orientation was less visible in the supply chain manufacturing SMEs in Pakistan, including FMCG SMEs that also participated in the study.

With regard to the Gauteng FMCG industry, it could be inferred that customer orientation as a strategy is less implemented and has not been regarded as one of the most significant strategies that could improve SCF and performance in the industry. The *t*-value of 1.418 shows that customer orientation has a potential to improve SCF if it is successfully implemented as the value is not far from 1.96. Moreover, the empirical findings obtained could also signify that the sampled companies in the Gauteng province did not manufacture goods that gratify the needs and wants of the customers. Although, the sampled FMCG companies in the Gauteng province may have attempted to produce goods that meet and exceed the expectations of the customers, they rarely collaborated with their customers. Park, Oh and Kasim (2017:949) stressed that customer insights are valuable in a supply chain, especially when the objectives of the firm are customer driven.

The results obtained between customer orientation and SCF communicates that the Gauteng FMCG industry should collaborate with its customers and be reliant on their insights when designing their supply chains. This decision could lead to satisfying and exceeding numerous expectations of the consumers, improved flexibility and SCP. Jeong and Hong (2008:586) highlighted that customer orientation could deliver significant outcomes for firms and the same could be said about the companies operating in the Gauteng FMCG industry if customer orientation as strategy is implemented successfully. The significant outcomes include information outcomes, operational outcomes and customer outcomes. Information outcomes involve the sharing of strategic information throughout the supply chain network and joint problem solving.

Operational outcomes, on the other hand, are associated to competitive benefits in terms of operational efficiency, as well as cost, quality, Just-in time (JIT), flexibility, and lead-time (Azim, Ahmed &Khan 2015:64). Customer outcomes are, however, highly characterised by customer responsiveness. Jeong and Hong (2008:586) further state that it would be easy for the FMCG companies to respond to the needs of its customers when customer orientation is successfully implemented. Notwithstanding the negative results, customer orientation as strategy could still yield outstanding results, such as greater levels of flexibility, improved non-financial and financial SCP for the Gauteng FMCG industry when successfully implemented and treated as a core strategic tool.

5.8.1.1.1.5 H5: Supplier integration a positive significant influence on supply chain flexibility (SCF) in the FMCG industry in Gauteng province.

Hypotheses 5(H5) suggested that supplier integration has a positive and significant relationship with SCF in the FMCG industry in Gauteng province**.** The results (β=0.620; *t*-statistic=8.585*; p*=0.000***) of the analysis confirm that a positive and significant relationship between supplier

integration and SCF exists in the Gauteng FMCG industry. The relationship between supply chain integration strategy and SCF is said to be very strong because it exceeded the minimum suggested threshold of 1.96 by miles, while the levels of significance according *p*-value threshold is at 100%. The *t*-statistic value obtained supports the strong relationship shown by the obtained results of the analysis.

This implies that supplier integration efforts enable companies in the FMCG industry to achieve greater levels of flexibility. These results are supported by Khanuja and Jain (2021:8), who also found that supplier integration is positively related to SCF. As observed in Table 5.17 and Figure 5.11, supplier integration has a path coefficient (β) greater than all the constructs in this study. With this being the case, it could be inferred that supplier integration is a robust strategy that could be used by FMCG multinationals to achieve greater levels of flexibility due to its higher path coefficient (β) of 0.620. Moreover, the collaborative efforts instituted between the Gauteng FMCG companies and their suppliers facilitates superior capacity planning, improved sourcing and coordinated manufacturing processes, thus minimising total operational cost and generating idiosyncratic benefits for manufacturers such as flexibility (Pishchulov, Quboa Q & Mehandjiev 2022:1).

Muntaka *et al*. (2016:133) opine that integration between independent firms such as raw material suppliers are significant to achieving greater levels of flexibility necessary to enable companies to respond to rapidly changing environments in the market. This is accompanied by their findings that supplier integration, which is a subset of supply chain integration, is positively related to SCF. These results confirm that supplier integration practices such as strategic information sharing, buyer-supplier collaboration and vendor-managed inventories are very important and plays a significant role in the flexibility of the companies operating in the FMCG industry.

More so, the *t*-value (8.585) and *p*-value(0.000***) also support the significance of the relationship between supplier integration and SCF, as indicated in literature by empirical evidence of a number of scholars such as Muntaka *et al*. (2016); Khanuja and Jain (2021) and many others. The significance of this relationship is said to be at 100%, meaning that the significant role of supplier integration together with its practices in the Gauteng FMCG industry are unquestionable and of paramount important. Thus, this strategy needs to be underlined throughout the supply chain network as it could aid companies in addressing global challenges that could hamper the flexibility of FMCG companies. For example, during the COVID-19 pandemic, only companies that had integrated successfully with its suppliers managed to be resilient and remained competitive.

5.8.1.1.1.6 H6: Supply chain flexibility (SCF) has a positive significant influence on supply chain non-financial performance in the FMCG industry in Gauteng province.

A linear connection (positive and significant) was suggested between SCF and supply chain non-financial performance. The results of the analysis (β=0.274; *t*-statistic= 4.096; p=0.000***) confirm than indeed there is a positive and significant relationship between SCF and supply chain non-financial performance, although the relationship is weak. The relationship is said to be weak because the path coefficient (β=0.274) is less than the recommended threshold of 0.5 for a relationship to be strong between the two constructs. However, the results of the analysis signals that the positive significant relationship between the two constructs is supported and significant as both the *t*-value of 4.096 and p-value of 0.000*** met the required threshold of greater than (t>1.96) and less than (p<0.05) respectively. This further confirms that SCF indeed enables superior non-financial performance of supply chains for organisations operating in the Gauteng FMCG industry.

The linear relationship between SCF and supply chain non-financial performance is supported by Fantanzy *et al*. (2009:179), who empirically found that SCF dimensions have direct effects on supply chain non-financial performance. This means that the flexibility dimensions adopted in this study play a significant role in improving supply chain non-financial performance in the sampled FMCG companies. This relationship is further confirmed and supported by Roll (2010:29), who discovered that SCF has a positive relationship with supply chain financial performance. This is in accordance with the findings of Sánchez and Pérez (2005:696), who also found that SCF has a positive relationship with supply chain non-financial performance.

The empirical findings in this study and previous studies confirm that FMCG companies should henceforth consider SCF as a core resource or capability that enhances supply chain non-financial performance. Thus, it could be suggested that this core component or enabler of SCP be linked with the overall corporate strategy of the FMCG multinationals. This is due to the total variance explained ($R^2 = 0.515$) as it signifies that SCF's influence in the Gauteng FMCG industry cannot be disregarded. Furthermore, this implies that SCF contributes 51.5% of the overall SCP in the Gauteng FMCG industry when relatively compared to other factors used to quantify the performance of the supply chain.

With this being the case, this further suggests that SCF is the most influential factor of SCP in the Gauteng FMCG industry. Therefore, FMCG firms that need to achieve superior performance in terms of order lead-times, customer responsiveness and customer satisfaction ought to design highly flexible supply chains. It is, however, imperative to also highlight that it is necessary for

SCP to use non-financial performance indicators in the FMCG industry. This is because the total explained variance (R^2 =0.072) of non-financial performance as it indicates that NFP contributes to 7.2% when compared to the other various factors used in examining SCP. This means that the importance of order lead-times, customer responsiveness and customer satisfaction should not be disregarded when measuring SCP, particularly in the Gauteng FMCG industry.

5.8.1.1.1.7 H7: Supply chain flexibility (SCF) has a positive significant influence on supply chain non-financial performance in the FMCG industry in Gauteng province.

Hypotheses 7(H7) suggested a positive significant relationship between SCF and NFP. This hypotheses is confirmed by results of the analysis (β=0.248; *t*-statistic =4.290; *p*=0.000), which shows a positive significant relationship between SCF and FP, although the relationship is weak. This is because the path coefficient of (β=0.248) that is less than the recommended threshold of 0.5 for a strong relationship to exist between the two constructs. On the other hand, a supported and significant relationship is apparent as both the *t*-statistic value of 4.290 and *p*-value of 0.000*** met the required threshold of greater than 1.9 and less than 0.05 respectively. This further confirms that SCF indeed enables superior FP for the sampled organisations in the Gauteng FMCG industry.

The results are supported by the findings of Roll (2010:29), who found that SCF positively contributes to the average net profit, average sales and revenue growth. This means that the adopted flexibility dimension such as volume flexibility, delivery flexibility, source flexibility, supply flexibility and product flexibility play a significant role in the FP of the companies in the Gauteng FMCG industry. Furthermore, the results signify that over the past five years most firms in the Gauteng FMCG industry improved in sales growth and in profitability due to the flexibility of their supply chains. The results further confirm that SCF indeed positively and significantly influences the FP in the Gauteng FMCG industry, thus, the multinationals should integrate it in the overall corporate strategy of their respective organisations.

It is of paramount important for firms operating in the Gauteng FMCG industry to consider measuring FP when assessing the performance of their supply chains. This is because the total variance explained (R^2 =0.062) signifies that FP contributes to 6.2% of SCP when relatively compared to the other measures used to assess SCP. It is important to note that SCP has countless measures that are almost impossible to exhaust and the fact that FP has a portion of 6.2 % indicates that it is one of the significant measures of SCP in the Gauteng FMCG industry.

5.9 CHAPTER SUMMARY

The purpose of this chapter was to apply the methodical procedures outlined in the previous chapter to analyse and interpret the surveyed data. It explained the response rate in this study, which was satisfactory. The characteristics of the respondents who participated in the study were also delineated. Special attention was paid to exploratory factor analysis (EFA), which helped the researcher determine which factors to retain for further analysis. After ascertaining the factors to retain, a detailed descriptive statistical analysis followed. A method called confirmatory factor analysis (CFA) was also used to confirm the relationships between the adopted constructs in this study.

The purpose of this study was to investigate the relationship between supply chain strategies, SCF and performance in the Gauteng FMCG industry. Furthermore, the relationship between the constructs was tested and confirmed. Only four of the seven hypothesised hypotheses (H2, H5, H6, H7) were supported and validated. The rest of the hypotheses (H1, H3, H4) were considered insignificant and therefore rejected. The following chapter provides implications, conclusion as well as recommendations of these research findings.

CHAPTER 6
CONCLUSIONS AND RECOMMENDATIONS

6.1 INTRODUCTION

The preceding chapter empirically established the relationship between supply chain strategies, flexibility and performance in the Gauteng FMCG industry. Structural equation modelling was carried out using the Smart-PLS analysis (version 3.3.5) in order to validate the hypothesised hypotheses. The results of the analysis indicated that organisational learning and supplier integration are the two supply chain strategies that have a positive and significant impact in the Gauteng FMCG industry. Additionally, the study found no relationship between innovation strategy, risk management strategy, customer orientation strategy and SCF in the Gauteng FMCG industry.

This chapter draws conclusions and provides recommendations for the Gauteng FMCG industry by paying special attention to the literature reviewed and the empirical evidence presented in the previous chapter. It begins by providing concluding remarks on the theoretical objectives of the study that were formulated to support the primary objectives of the study. It also concludes the empirical objectives that were formulated to support the theoretical objectives of this research by observing the empirical results. The chapter further outlines the shortcomings of the study and deliberates how the limitations could have been avoided.

The study delineates its significance and proposes directions for future research. Finally, the chapter presents and draws conclusions of the entire research project. The following section reviews the overall study.

6.2 REVIEW OF THE STUDY

The primary objectives of this study were to investigate the relationship between supply chain strategies, SCF and SCP in the Gauteng FMCG industry. Supply chain strategy encompassed five strategies, namely, innovation strategy, organisational learning strategy, risk management strategy, customer orientation strategy and supplier integration strategy. This dissertation consisted of six carefully presented chapters. Chapter One outlined introduction and background, while Chapter Two reviewed literature on the South African FMCG industry. Chapter Three focused on the hypotheses development and Chapter Four focused on the methodological procedure. The last two chapters focused on empirical results and concluding remarks and

recommendations of the study respectively. The following section provides a brief review of the chapters.

6.2.1 Chapter 1: Introduction and background

This chapter provided a blueprint of the entire dissertation thereby stating its background and outlining the problem statement that inspired the researcher to conduct this study. The chapter outlined the objectives of the study, research methodology and the ethical conducts that governed it.

6.2.2 Chapter 2: The South African FMCG industry

This chapter reviewed literature on the South African FMCG industry by explaining and describing its nature and its segments. It also outlined the challenges facing the industry and its significant contributions to the South African economy.

6.2.3 Chapter 3: Research theory, constructs and formulation of hypotheses

This chapter directed special attention to the RBV theory adopted to explain the capabilities of the supply chain strategies and how flexibility helps an entity achieve sustainable competitive advantage. The limelight then shifted to the supply chain strategies, SCF and SCP. Finally, research hypotheses were formulated.

6.2.4 Chapter 4: Research methodology

This chapter presented the methodological procedure that guided the researcher to conduct an investigation in the Gauteng FMCG industry. The researcher followed the quantitative approach and a questionnaire with closed-ended questions was used to conduct the survey. Additionally, the sample size of the study was pitched at 228. The empirical results were carried out using SPSS 27.0, and Smart-PLS analysis version 3.3.3.5. The ethical considerations governing this study were also delineated.

6.2.5 Chapter 5: Data analysis and interpretation

This chapter analysed and interpreted the empirical results thereby utilising the EFA and CFA procedures to extract and confirm the factors. The study consisted of seven (7) hypothesised hypotheses, as posited in Chapter Three, although only four hypotheses (H_2, H_5, H_6, H_7) were accepted and the rest (H_1, H_3, H_4) were rejected.

6.2.6 Chapter 6: Conclusion sand recommendations

Chapter Six, the last chapter, provided concluding remarks and recommendations for the Gauteng FMCG industry with regard to supply chain strategies, SCF and supply chain performance based on the reviewed literature and empirical results. It also presented the shortcomings that the researcher experienced in the study as well the significance of the current research project. The subsequent section draws concluding remarks based on the formulated theoretical objectives.

6.3 CONCLUSIONS BASED ON THE THEORETICAL OBJECTIVES

This section draws concluding remarks based on the formulated theoretical objectives of the study. The following theoretical objectives were formulated to support the primary objectives:

1) To conduct a literature review on the FMCG industry;
2) To analyse the literature on supply chain strategy and its sub-components such as organisational learning, risk management, customer-oriented strategy and supplier-integration strategy;
3) To conduct a literature review on supply chain flexibility (SCF); and
4) To conduct a literature review on supply chain performance (SCP).

6.3.1 Concluding remarks on the literature review on the South African FMCG industry

The first theoretical objective concentrated on reviewing literature on the South African FMCG industry. The literature review was carried out in Chapter Two, where the nature and segments of the industry were explained in greater detail. The challenges crippling the South African FMCG industry were deliberated. As noted in the literature, scholars and reporters recognise the challenges and have attempted to address them in order to improve the flexibility and performance of the industry. Notwithstanding the challenges faced by the industry, its relative importance was also thoroughly reviewed.

The reviewed literature revealed that the South African FMCG industry is the gateway to the African continent. Furthermore, it plays a huge role the countries' economic growth (GDP) and it is key to the NDP 2030. The Consumer Goods Council of South Africa (2012:1) posited that the FMCG industry is one of the major contributors in the South Africa's economy in terms of taxes and has employed about 20% of the economically active workforce of the country. Furthermore, it is important to note that the industry has also initiated projects aimed at alleviating poverty in the country. Additionally, SPAR initiated a feeding scheme programme in the Eastern Cape, which

caters for more than 25 schools. Tiger brands partnered and agreed a three-year partnership with the Department of Basic Education and the Nelson Mandela Centre of Memory (NMCM), focusing on addressing food security challenges in underprivileged communities in the country. Tiger brands has also partnered with the Vaal University of Technology as they provide food parcels to students that are not fully funded. This further suggests that the contributions of FMCG industry in the South African economy in an attempt to stabilise the economy cannot be disregarded.

6.3.2 Concluding remarks on the literature review of supply chain strategies

The literature revealed that supply chain strategies adopted in this study are appropriate. This was confirmed by the RBV theory as these strategies contribute to the competitive advantage of the FMCG industry. Furthermore, the literature posits that innovation strategy, organisational learning strategy, risk management strategy, customer orientation and supplier integration strategy allow an organisation to attain sustainable competitive advantage. These strategies have given ample evidence to be considered as the most important, and play a fundamental role in the FMCG industry.

It was also revealed that supply chain strategies could enable the Gauteng FMCG industry to improve the non-financial and financial performance of their supply chains through flexibility. Fantanzy, Kumar & Kumar (2009) and Santos-Vijande *et al*. (2011) agree that supply chain strategies improve SCF and consequently SCP. Thus, the literature suggests that these could contribute to help organisations attain competitive, improve the flexibility and performance of the entire supply chain network.

6.3.2.1 Concluding remarks on the literature review on innovation

Innovation in literature has been defined as the implementation of new or significantly upgraded products or processes, a new marketing technique, or a new organisational system in business practices, workplace institutes or external associations. The literature revealed the different types of innovation that firms need to consider in the entire supply chain network to enable them achieve sustainable competitive advantage. Furthermore, it was noted that innovation subjugates a firm's competitive advantage because highly innovative companies produce goods that are inimitable by direct rivals. The RBV theory revealed that it difficult for competitors to have leverage over a firm that has highly innovative supply chains.

Furthermore, the literature revealed that innovation consists of three core practices or activities that contribute to competitive advantage of an organisation as well as flexibility, ranging from

invention and product improvement, new product development and product refurbishment. It noted that invention assists organisations to introduce new ideas that are further transformed into completely new products. Product development allows companies to constantly introduce new products in the FMCG industry supply chains, while product remanufacturing allows an organisation to refurbish the reversed products in the supply chain due to defects and engineering faults.

The literature revealed that these practices allow companies to improve manufacturing flexibility and new product flexibility. Manufacturing flexibility enables a company to manufacture a wide range of highly innovative products that are relevant and conform to the needs of consumers. New product flexibility enables companies to be able to switch to customer specifications as requested in the supply chain network within a short period of time. Furthermore, companies are able to manufacture environmentally friendly products through innovation. Thus, innovation strategy is crucial in the FMCG industry and can help companies operate within this industry to achieve competitive advantage and flexibility.

6.3.2.2 Concluding remarks of the literature review on organisational learning

The literature referred to organisational learning as the capability of an organisation to acquire useful knowledge that can be used to improve its performance. It revealed that organisational learning can also be referred to as supply chain learning and involves a unique process, involving knowledge acquisition, knowledge sharing, knowledge interpretation, knowledge maintenance and lastly knowledge utilisation. A number of scholars suggest that this process should be observed carefully when implementing organisational learning in supply chain organisation as it could help companies remain competitive.

The literature also revealed that organisational learning has three key enablers that allow an organisation to better facilitate the process of learning. It expressed that supplier associations, training and development as well as attending supply chain conferences can help companies acquire knowledge that could in turn be used to improve the flexibility of the supply chain. Furthermore, these key enablers improve the capability of organisations, as suggested and proclaimed by the RBV theory. This is because organisations and their key supply chain partners come together to share strategic information using these platforms that improves their leverage over its competitors.

The literature outlined and highlighted the benefits that FMCG industry could yield by successfully implementing organisational learning in their organisations. (Gilaninia, *et al*.

2013:4654) posited that learning is key to solving organisational glitches and the most successful organisations are those that learn and move faster than their competitors. Janezic *et al*. (2018:60) postulated that learning organisations envisage change and the new knowledge generated allows continuous innovation, and flexibility in the entire supply chain network.

6.3.2.3 Concluding remarks of the literature review on risk management

The literature referred to risk management as a strategy used by organisations to detect, monitor and mitigate potential risks in the supply chain network. The concept of risk management was reviewed from all the angles and it was found that it consists of different types of risks, including but not limited to, demand risk, procurement risk, unforeseen risk, economic risk, internal risk and supply risk. It revealed that risk management strategy consists of a pragmatic risk assessment process that encompasses five carefully deliberated phases that allow organisations to detect, monitor and mitigate risks.

The literature also reported that, on average, the percentage of companies around the world reporting a loss of income due to a supply chain risk, increased from 28% in 2011 to 42% in 2013. Most recently, due to the pandemic and Russian invasion of Ukraine, many companies across the world lost billions in business with their key partners. It was noted that successful risk management implementation is dependent upon two influential factors, namely, supply chain visibility and controllability: only a visible and a controllable supply chain can allow supply chain executives to be able to detect, monitor and mitigate risks. However, the literature indicated that there are risks that organisations do not have control over such unforeseen risks. For example, flooding is an occurrence that is beyond human control and is ‘an act of God’.

The literature outlined and hinted at significant outcomes of successfully implementing the risk management strategy. Mamai and Yinghua (2017:220) delineated the potential benefits of successful risk management implementation by an organisation which include the reduction of potential economic loss, improved business performance, good business practice and augment competitive edge over its competitors. This is supported by the assertions of the RBV theory as it is apparent that risk management can also be a tool for sustainable advantage. A number of scholars found that as a strategy it exerts a positive and significant relationship on SCF. This signifies that successful risk management implementation could aid organisations achieve higher levels of flexibility.

6.3.2.4 Concluding remarks of the literature review on customer orientation

The literature refers to customer orientation as customer focus, which denotes the extent to which an organisation acquires and utilises information from its consumers, develops a strategy that will meet and exceed customer expectations, and implements that strategy by being responsive to customer needs. This strategy fuses well with the suggested theory of competitive advantage that underpins the current study. The literature pronounced that customer orientation is a cornerstone of a marketing department, a point familiarised by Kohli and Jaworski in the early 1950s, who denoted that an organisation's management focus integrates all business functions to gratify customers' needs and wants.

The literature further reviewed that customer focus has a number of practices ranging from information sharing, customer management and joint problem solving. It noted, that a number of scholars posited that organisations should collaborate with their customers in the supply chain network; the rationale being that strategic information should be shared across all participants in the supply chain network through customers. Customers could also assist organisations solve their innovation problems by suggesting how certain products could be improved. Customers should be retained and treated as core partners in the supply chain network, hence, introducing customer management.

The literature stressed the necessity for organisations to pay special attention to factors such as customer-closeness, customer-flexiblity and customer accessiblity due to the influence that these factors exert in organisations today. As noted, the customer is the ultimate judge of the final product, therefore organisations need to be form close bonds with customers, and by so doing, they will have leverage on companies that rarely practice and emphasise this marketing and supply chain strategy. This further augment the adoption of the RBV theory of competitive advantage. It was further noted that firms pursuing customer-oriented strategies are more likely to deliver quality service, contribute to customer satisfaction and accomplish organisational objectives more resourcefully and meritoriously than competitors.

6.3.2.5 Concluding remarks of the literature review on supplier integration

The literature reviewed conceptualised supply chain integration as the extent to which a manufacturer collaborates with its key suppliers to meet the requirements of its customers by modelling inter-organisational structures, strategies, and practices into collaborative and synchronised processes. It outlined that supplier integration is a powerful tool for sustainable competitive advantage for companies that are competing in environments characterised by intense

competition and volatility. Barney (1991:102) and Peteraf (1993:180) posited that any practice/activity that gives an organisation a competitive leverage over its competitors is a crucial resource in the organisation.

The literature futher indicated that the practices of supplier integration contribute significantly to the performance of an organisation in terms of flexibility and SCP. These practices include strategic information sharing, early supplier involvement, joint inventory management, supplier development, new product development and building longer relationships. As noted, strategic information sharing allows information to flow efficiently in the supply chain network, supplier involvement and new product development allows for innovation flexibility, while joint inventory management enhances supply and delivery flexibility as a buffer inventory is withheld throughout the supply chain network.

The literature suggested that practices such as supplier development and building long-term relationships allow suppliers to devote all their resources to improve the buying organisations. These practices must be accompanied by factors such as information quality, buyer-supplier trust, supplier performance and commitment. It is said that motivated suppliers commit to helping buying organisations achieve their operational and supply chain objectives in terms of innovation, flexibility, and superior SCP. An organisation that successfully integrates with its suppliers can experience a smooth and efficient flow of information and materials within the supplier network and prevent potential obstacles in the process of procurement and production.

6.3.2.6 Concluding remarks on the literature review on supply chain flexibility (SCF)

The literature referred to SCF as a tool that enables organisations to speedily rediscover significant supply chain resources in an endeavour to sustain competitive advantage. It indicated that a supply chain is said to be flexible if it can ensure the smooth and undisrupted flow of the products from suppliers to the end customer under all risks and uncertainties in their environments. A flexible supply chain should have at least variation in the difference between the demand and supply at every demand-supply node, and without much penalty or impact on the supply chain resources and the costs incurred. Moreover, a flexible supply chain must improve the performance of a supply chain network.

The literature revealed that SCF is a multi-dimensional concept that includes variables such as volume flexibility, delivery flexibility, new product flexibility, mix flexibility and supply flexibility and many others. It noted SCF is influenced by two factors that cannot be disregarded by supply chain executives. Scholars noted that agility and adaptability play a fundamental role in

the flexibility of a supply chain network: agility as supply chains enable firms to adjust to short-term changes to meet the demand or supply of products and address peripheral challenges efficiently; while adaptability allows firm to adjust to different supply chain designs to encounter structural changes in markets.

The literature posited that firms that wants to experience higher levels of flexibility and superior supply chain non-financial and financial performance should consider instilling the features of supply chain agility and adaptability. As noted in literature, highly flexible supply chains are bound to a number of countless benefits. Scholars such as Delic & Eyers (2020:1) and Katsaliaki, et al., (2021:14) proposed that highly flexible supply chains enables firms to reduces the amount of backorders, improves order lead-time, accommodate periods of insufficient delivery performance and supplier performance. Furthermore, SCF enables firms to respond effectively and efficiently to natural catastrophes, political changes, and unforeseen circumstances.

6.3.2.7 Concluding remarks of the literature review on supply chain performance (SCP)

The literature contextualised NFP and FP as influential indicators of SCP. SCP is defined by a number of scholars as the ability of the supply chain to deliver quality products and services in the right quantities and at the time and to minimise the total cost of the products and services to the final customers of the supply chain. As noted in the literature, NFP and FP indicators are important when quantifying the performance of the supply chain as they enable the organisation to realise which strategies are performing well and which need implementation.

The literature noted that measuring NFP includes paying special attention to variables such as customer satisfaction, order-lead time, responsiveness, and quality of the service systems. These variables are important when assessing the performance of a supply chain. FP and include variables such as profitability, sales growth, income growth and the minimisation of operational costs. It is important to highlight that both supply chain indicators are reliant of the efficiency of logistics, flexibility, inventory, and strategic information sharing in the supply chain network.

A number of scholars mentioned that properly performing supply chains have yielded a number of benefits and significant outcomes to supply chain organisations. These include sustainable competitive advantage, faster response times on-time order deliveries; minimised total logistics costs; higher levels of customer satisfaction and higher retention rates. Furthermore, SCP helps supply chain managers and executives to detect the areas lacking in an organisation and allows them to determine which products are relevant to the market. The next section draws concluding remarks on the formulated empirical objectives of the study.

6.4 CONCLUSIONS RELATED TO THE EMPIRICAL OBJECTIVES

Similar to the preceding section, conclusions on empirical objectives are drawn in support of the above theoretical objectives. The following section draws conclusions based on the empirical objectives, which were outlined as follows:

1) To determine the implementation of supply chain strategies, namely innovation, organisational learning, risk management, customer orientation and supplier integration in the FMCG industry in Gauteng province.
2) To determine the level of flexibility of the FMCG supply chain in Gauteng province.
3) To examine the relationship between supply chain strategy and SCF (SCF) in the FMCG industry in Gauteng province.
4) To determine the linkage between supply chain flexibility (SCF) and supply chain performance (SCP) in the FMCG industry in Gauteng province.
5) To establish the performance of the FMCG industry in Gauteng province using subjective financial and non-financial indicators.

6.4.1 Concluding remarks on the relationship between innovations on supply chain flexibility (SCF)

The empirical results suggested that innovation exerts no positive influence on SCF in the firms of the respondents in the Gauteng FMCG industry. These revealed that innovation does not influence the performance of the supply chain, which signify that innovation has not been thoroughly and successfully implemented in the industry. This rationale is supported by the assertions of Tejumade and Kelvin (2012:4088), who argued that SMMEs in the FMCG sector in South Africa struggle when it comes to the improvement of innovative goods. Furthermore, the lack of implementation impedes organisations from achieving higher levels of new product flexibility in supply chains and subsequently the SCP, due to the high number of goods returned in the network.

The results also signify that research and development has not been prioritised in the sampled FMCG industry firms. Deloitte (2021:21) reported that COVID-19 led many industries into rethinking their vulnerability to universal tremors through their tiered supply chain network. This further confirms that research and development has not been prioritised, except for supplier integration, which was prioritised, and shown to be the strategy with the most positive results.

With this being the case, innovation strategy still has a role to play in the flexibility of the firms in Gauteng FMCG industry despite its negative and insignificant relationship on SCF.

6.4.2 Concluding remarks on the relationship between organisational learning on supply chain flexibility (SCF)

The investigation on organisational learning revealed that the relationship with SCF is weak but positive and significant with SCF in the industry. Notwithstanding its weak influence, organisational learning was found to exert a positive and significant relationship on SCF. The results indicate that organisational learning enables FMCG operations of the sampled companies to accomplish satisfactory levels of flexibility. This is supported by Santos-Vijande *et al*. (2011:1082) who stressed that organisational learning allows organisations to achieve greater levels of flexibility.

These assertions indeed confirm that organisational leaning does have an influence on SCF. The results show a weak relationship because successful strategy implementation remains a challenge for firms operating in the South African FMCG industry, as reported by Imperial Logistics (2013:15). However, the positive and significant relationship that was found between the two constructs further confirms that organisational learning plays a fundamental role and could have a positive influence on the flexibility of companies in the industry when implemented successfully.

6.4.3 Concluding remarks on the relationship between risk management on supply chain flexibility (SCF)

The empirical evidence reveals that there is a negative and insignificant relationship between risk management and SCF in the Gauteng FMCG industry. These results were inconsistent with the findings of several scholars. However, the literature states that organisations also encounter risks that they do not have control over. For example, the current war taking place between Russia and Ukraine is beyond the control of the FMCG companies. More so, the country has experienced power cuts (blackouts) recently and over the past years, which makes it almost impossible for risk management to be utterly influential and significant in the FMCG industry.

Despite its weak influence, negative and insignificant relationship, risk management can still play a fundamental role in terms of influencing and impacting SCF in the Gauteng FMCG industry. Empirical evidence from previous studies indicated a positive and significant relationship between risk management and SCF, although the empirical results in this study are consistent with current trends in the FMCG industry. This is due to the challenges that it is currently experiencing such

as shortages of oil (sunflower), severe power cuts (blackouts), global inflation and instability in the country which further supports the empirical evidence shown.

6.4.4 Concluding remarks on the relationship between customer orientation on supply chain flexibility (SCF)

The extent to which customer orientation influences SCF and the empirical results indicate that customer orientation strategy exerts no positive influence on SCF in the Gauteng FMCG industry. The results signify that customer orientation, like the innovation and risk management strategy, lacks implementation, supported by the findings of Fantanzy (2014:410) whose results were consistent, and found that customer orientation was less visible in the supply chain manufacturing SMEs in Pakistan, including FMCG SMEs that also participated in the study.

The literature indicated that customer orientation has a positive and significant influence on SCF, although the empirical results are inconsistent to what was revealed in previous reviewed literature. This further proves that strategy implementation remains a challenge in the South African FMCG industry, revealed by Imperial logistics (2013:15) in their FMCG industry report. Despite the negative results between customer orientation and SCF, positive results could be yielded if it is thoroughly implemented and regarded as a core business strategy in the FMCG industry in Gauteng.

6.4.5 Concluding remarks on the relationship between supplier integration on supply chain flexibility (SCF)

Regarding the linkages between supplier integration and SCF, the empirical results reveal that supply chain integration has a positive and significant relationship on SCF in the Gauteng FMCG industry. There is a strong, positive, and significant relationship between supplier integration and supply chain integration. The results are identical with the results of Khanuja and Jain (2021:8), who also found that supplier integration is positively related to SCF. These results are also consistent with the literature, as a number of authors revealed that supplier integration practices have a positive influence on supply chain flexibility.

The empirical findings revealed that supplier integration is the most prominent supply chain strategy due to its strong influence, and positive and significant relationship. The results are consistent with the current trends in the FMCG industry as a plethora of companies that managed to be resilient during the COVID-19 pandemic are those that had successfully integrated with its key suppliers. The literature indicated that supply chain resilience can also be achieved through

successful supplier integration. Moreover, the results revealed that supplier integration is the one of the few strategies that had been successfully implemented in the Gauteng FMCG industry.

6.4.6 Concluding remarks on the relationship between supply chain flexibility (SCF) and supply chain non-financial performance (NFP)

The investigation found that SCF exerts a strong, positive, and significant relationship on supply chain non-financial performance in the Gauteng FMCG industry. These findings are supported by Fantanzy *et al*. (2009:179), who found that SCF dimensions have direct effects on NFP. This signifies that higher levels of SCF have a positive significant influence on NFP. These findings are consistent with the literature, as scholars postulated that greater levels of SCF lead to superior SCP.

Furthermore, the findings also quantified the significant contribution made by SCF in the Gauteng FMCG industry. They revealed that SCF contributes 51.5 % to the Gauteng FMCG industry when relatively compared with the other antecedent factors that influence the industry. With this being the case, SCF is indispensable because it is a key factor that determines the performance of a supply chain. Moreover, companies in the FMCG industry should seek SCF if they are to attain a sustainable competitive advantage and satisfy customer needs and wants.

6.4.7 Concluding remarks on the relationship between supply chain flexibility (SCF) and financial performance (FP)

The extent to which SCF contributes to FP in the FMCG industry in Gauteng Province was successfully determined. It was found that SCF contributes positively and significantly on FP in the Gauteng FMCG industry, supported by Roll (2010:29) who found that SCF positively contributes to the average net profit, average sales, and revenue growth. The findings support and complements the literature where it was revealed that SCF positively contributes to FP.

It is important to highlight that SCF contributes to the FP significantly. The empirical results revealed that SCF has an impact of 51.5% when directly compared to all the factors that contribute to FP. This fact confirms that SCF can be regarded as the strongest antecedent factor that influences SCP significantly, due to its influence and contribution in the Gauteng FMCG industry. A number of scholars indicated that SCF is a major contributor on FP, although there were little empirical findings that prove that indeed SCF contributes significantly to FP. Section 6.5 suggests strategic direction for the Gauteng FMCG industry.

6.5 RECOMMENDATIONS

This section provides practical suggestions for the FMCG industry based on the empirical results obtained and made through the observation of the relationships emanating from testing the hypothesised hypotheses.

6.5.1 Recommendations on the relationship between innovation and supply chain flexibility (SCF)

The result determine that innovation exerts a negative influence on SCF. Given these results, it is important to provide strategic directions for the FMCG industry as this strategy remains of the most influential capabilities that can still be utilised to enhance competitive advantage and flexibility. The strategic directions include, among others:

- The innovation strategy should be part of the overall corporate strategy of the organisations operating in the FMCG industry for firms to be able to offer competitive products that have leverage over competitors.
- This strategy should be fully implemented successfully across the supply chain. This endeavour must begin from the sources (suppliers), communicated to all the participants in the supply chain network to avoid producing products that are obsolete.
- Customers should also be involved early in the new product development process as they provide meaningful and value-adding insights on the production of products such as improved features, packaging, etc.
- Companies in the FMCG industry should establish cross-functional research teams that focus solely on innovation, research, and development.
- Innovation, Research and Development (R&D) should be prioritised in the FMCG industry as this practice influences and enhances an organisation's ability to discover new ideas that in turn improve their innovativeness. It is said that companies that lack R&D are the ones that lack implementing innovation successfully.

6.5.2 Recommendations on the relationship between organisation learning and supply chain flexibility (SCF)

This study determined that organisational learning exerts a weak influence on SCF in the FMCG industry, therefore the following strategic suggestions are recommended:

- FMCG companies should emphasise the importance of learning in their organisations and take advantage of all the platforms provided to enhance their knowledge. Supplier associations (SAs) and supply chain conferences should be organised and attended at least three times annually.
- Organisational learning should not only be focused on supply chain executives but all the personnel in the organisation should be involved as they also play a significant role in the flexibility and performance of the supply chain. Engineers, human resource practitioners, marketers, operators, and IT specialists are also required to attend the conferences and relevant workshops that improve the capabilities of organisations.
- Strategic information acquired from suppliers should be dispersed across the supply chain network to enable efficiency and effectiveness of the network.

6.5.3 Recommendations on the relationship between risk management and supply chain flexibility (SCF)

The results suggested that risk management has a negative relationship and an insignificant influence on SCF. They confirm the necessity for this strategy to be examined by providing recommendations that enable it to be influential in the FMCG industry. Chakabva and Tengeh (2021:32) revealed that the FMCG SMEs possess risk management mechanisms in their disposal place, although these mechanisms are too basic and not sophisticated to operate properly. The following recommendations are put forward:

- The FMCG industry should develop a risk management framework in which they could classify and rank the risks according to their level of severity in the supply chain network.
- The risk management framework should be realistic and sophisticated, meaning that the mechanisms adopted should enable the organisations to manage and possibly mitigate the risks.
- Failure Modes and Effects Analysis (FME) needs to be undertaken prior to implementing the proposed framework to determine the cost of utilising them in the supply chain network.
- Uncontrollable risks such as flooding, wars and other natural occurrences require companies to at least have alternative multiple sources globally. For example, many companies in the FMCG had to halt operations because they could not access components that are sourced from Russia. Furthermore, buffer stock should be withheld across the supply chain to try and neutralise the vulnerabilities and disturbances caused by such occurrences.

- Companies in the FMCG should consider outsourcing and transferring risk to their key suppliers to minimise the effects of risk.
- Since FMCG companies compete in complex and global supply chains, minimising supplier base can help companies reduce risk and manage risk efficiently and effectively.
- Firms in the FMCG industry should establish committee to be able to manage risk management disclosure and ensure that companies communicate risk management information throughout the supply chain network explicitly and concisely.

6.5.4 Recommendations on the relationship between customer orientation and supply chain flexibility (SCF)

Customer orientation was found to exert no positive influence on SCF in the FMCG industry. Therefore, the following recommendations are prescribed for the FMCG industry:

- Customer orientation should be implemented across the organisations' supply chains and be treated as part of the core strategies of the organisations so that it impacts organisational performance.
- For companies to be customer-oriented, they should be driven by the needs and wants of the customers. Customer insights in the supply chain network could augment customer orientation and enable organisations in the FMCG to offer innovative products that are appealing to the end-users.
- Customers should also participate in the Supplier Associations (SAs), conferences organised by the manufacturing firms as they could contribute significantly in terms of sharing strategic information that would improve new product and manufacturing flexibility in the supply chain network.

6.5.5 Recommendations on the relationship between supplier integration strategy and supply chain flexibility (SCF)

The relationship between supply chain integration and SCF is said to be very strong. Furthermore, supplier integration exerts a positive and significant influence on SCF. The empirical findings indeed confirmed what has been revealed in literature and triggered the following recommendations for firms in the FMCG industry:

- Supplier integration is a core SCF performance indicator that needs to fostered and continuously emphasised in the FMCG industry companies.

- FMCG companies should always look to establish long-term strategic relations with its key suppliers from time to time.
- Practices such as early supplier involvement, strategic information sharing, and vendor inventory management and supplier commitment should not be taken for granted as they play a significant role in a supply chain network. These practices improve the agility, flexibility, and resilience in the entire network.
- Companies in the FMCG should also channel development programmes for its key suppliers. This endeavour would improve the expertise of the suppliers that will further improve flexibility and subsequently SCP.

6.5.6 Recommendations on the relationship between supply chain flexibility (SCF) and non-financial performance (NFP)

A linear connection (positive and significant) was found between SCF and NFP. However, Fantanzy (2014:2408) found that SCF contributes significantly to NFP but sourcing flexibility (SOF) does not contribute significantly. The same could be said on the results found as the relationship between SCF and NFP, which was not strong. With this being the case, tactical and strategic directions are necessary to further improve the relationship and ensure that SOF also contributes to NFP. Other recommendations include, among others:

- FMCG companies should redesign and structure their supply chains to accommodate the other dimensions of SCF such as new product flexibility to enhance sheer flexibility and SCP.
- FMCG companies should revisit and, if possible, restructure their supply chains timeously in relation to the current trends. For example, the pandemic (COVID-19) and recently the war in Russia-Ukraine forced companies to consider redesigning their supply chains to conform to the needs of its customers regardless of these occurrences.

6.5.7 Recommendations on the relationship between supply chain flexibility (SCF) and financial performance (FP)

The investigation revealed that SCF exerts a positive and significant influence on FP Although a positive and significant influence is observed, it was reported that many FMCG supply chains lost a significant amount of money due to the pandemic and recently the Russia-Ukraine war (Jagtap *et al*. 2022:4) A number of scholars suggested that organisations need to restructure their supply chain so that they conform to agility and resiliency requirements through flexibility. These

recommendations have proved to be effective in the FMCG industry and other suggested solutions are put forward below:

- Companies should consider factors such as supply chain integration, particularly supplier integration because supply chain integration allows for agility and resiliency in the supply chain network.
- Strategies such as innovation, organisational learning risk management, and customer-orientation needs to be implemented and emphasised in the supply chains of the FMCG multi-nationals as they augment agility, resiliency, and flexibility and subsequently, supply chain financial performance.

The next section highlights the contributions of the current study.

6.6 CONTRIBUTIONS OF THE STUDY

The study has significant theoretical and empirical contributions. Theoretically, it contributed to the existing body of knowledge as concepts such as supply chain strategy, flexibility and performance were reviewed from different angles. Supply chain strategies were studied and reviewed by a number of scholars, although, some information was not extensively found, such as factors affecting organisational learning and customer orientation, which made this study more significant and relevant to the body of knowledge. Supply chain performance indicators such as NFP and FP were not extensively researched in the literature and rarely employed supply chain management studies in a local South African context, which further confirms the significance of the current study.

Empirically, there is no evidence in literature that proves that the relationship between supply chain strategies, flexibility and performance had been examined before in a South African FMCG context. Thus, this research was ground-breaking in terms of providing relatively new empirical findings pertaining the relationship between supply chain strategies, flexibility, and performance in the Gauteng FMCG industry. The results of the analysis proved to be relevant with current trends in the supply chains of this industry.

The next section discusses the limitations of the study.

6.7 LIMITATIONS OF THE STUDY

The current study sought to provide meaningful insights of the relationship between supply chain strategies, SCF and SCP in the Gauteng FMCG industry. The researcher attempted to ensure that

the investigation was without flaws; however, shortcomings are inevitable in research. The sample size and the geographical location restricted the research; the investigation was therefore limited to a small sample size of 228 respondents who were based in the Gauteng province. A larger sample size could have improved the quality of the results and minimised bias in the study.

Since questionnaires were answered in the absence of the researcher due to COVID-19 restrictions in the sampled FMCG industry companies, there was no control on the survey responses, which may have affected the adequacy of the collected data. The study could have yielded greater results if the questionnaire was completed in the presence of the researcher.

Section 6.8 briefly discusses the implications for further research.

6.8 IMPLICATIONS FOR FURTHER RESEARCH

There is no research project that is without implications. First, the results of the investigation were limited and relevant to a few FMCG industry corporations in Gauteng province. For future research, the similar study could be conducted using a larger sample size of 350-500 questionnaires, which would make the results valuable for most corporations. If possible, it would be beneficial to survey one or two supply chain professionals in the Gauteng FCMG industry to improve the generalisability of the results. Furthermore, the scope of the study could be extended to other geographical locations in the country, such as surveying two provinces (e.g., Gauteng and KwaZulu Natal).

Thirdly, supply chain strategies were limited to five strategies, namely, innovation strategy, organisational learning strategy, risk management strategy, customer orientation strategy and supplier integration strategy. As noted in literature, strategies in supply chain management are countless and cannot be exhausted, thus strategies such as lean, customer integration, and many others could be adopted to improve the relevancy of supply chain strategies in this industry. The adoption of other supply chain strategies could also help improve the flexibility and performance of supply chains in the FMCG industry. Section 6.9 sums up the entire study.

6.9 FINAL REMARKS

Supply chain strategies can play a significant role in the flexibility which in turn improves the SCP as well as the revenues of Gauteng FMCG industry. The findings further confirmed that successfully implemented supply chain strategies could improve the flexibility of a supply chain. Notwithstanding the importance of supply chain strategies, the empirical evidence indeed confirmed that SCF is a major contributor to superior non-financial and financial performance in

the Gauteng FMCG industry. Supplier integration was found to be the factor in the performance of the supply chain in the FMCG industry in terms of flexibility.

Furthermore, supplier integration along with organisational learning were the only strategies that seem to have been properly implemented in the FMCG supply chains due to their empirical evidence. However, the rest of the supply chain strategies were considered not significant because implementation of strategies was and it is still a challenge, as reported in literature. Nonetheless, these strategies still have a role play in the FMCG industry if they are regarded as one of the core strategies of the firms. Although SCF contributes significantly to the SCP, new product development flexibility needs to be observed cautiously to ensure that it also plays a major role in the overall flexibility of the Gauteng FMCG industry.

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APPENDIX A: RESEARCH COVER LETTER

Faculty of Management Sciences

Research conducted by

Mr. Sikhulile Rhine Ngomane

Cell: 071 455 0281

Email:skhulilem2@gmail.com

Dear Respondent,

You are requested to participate in an academic research study conducted by Mr Sikhulile Rhine Ngomane, a Masters student from the Department of Logistics at Vaal University of Technology. The purpose of the study is to gather information on supply chain strategies, supply chain flexibility and supply chain performance in the Gauteng FMCG industry. You have been chosen to participate in the study based on your experience of working in the FMCG industry. I therefore believe that you will provide relevant information.

Please note the following:

1. This study will provide an anonymous survey. Your name will not appear on the questionnaire and the answers you give will be treated as strictly confidential. You cannot be identified in person based on the answers you give.
2. Your participation in this study is very important to us. You may, however, choose not to participate and you may also stop participating at any time without any negative consequences.
3. Please answer the questions in the attached questionnaire as completely and honestly as possible. This should not take more than 15 minutes of your time.
4. The results of the study will be used for academic purposes only and may be published in an academic journal. We will provide you with a summary of our findings on request.
5. Please contact my supervisors, Prof Chengedzai Mafini, chengedzaim@vut.ac.za or Dr Johannes Van Der Westhuizen, johanvdw@vut.ac.za if you have any questions or comments regarding the study.

APPENDIX B: QUESTIONNAIRE

SECTION A: DEMOGRAPHIC PROFILE

This section has questions that focus on your background information. Please indicate your answer by crossing (X) in the appropriate block or by filling in your answer.

A1	**Your gender**	Male	Female

A2	**Your age group**	25 years and below	26-33 years	34-41 years	42-49 years	50 years and above

A3	**Race**	Black	White	Indian	Mixed Race	Other (Specify)……..

A4	**Highest Qualification**	Matric	Certificate	Diploma	Degree	Postgraduate	Other (Specify)……

A5	**Employment Period in organisation**	Less than I year	1-2 years	3-5 years	6-9 years	10 years and above

A6	**Experience as a supply chain management professional**	Less than I year	1-2 years	3-5 years	6-9 years	10 years and above

A7	**Type of employment**	Permanent	Contract	Internship

A8	**Department where you are based: Please indicate**	

A9	**Your position in the organisation: Please indicate**	

SECTION B: INNOVATION STRATEGY

We would like to find out a little more about your views regarding innovation strategy in the FMCG industry. Please indicate the extent to which you agree or disagree by ticking the corresponding number between 1 (Strongly disagree) and 5 (Strongly agree). A rating of (3) points towards a neutral view of the statement.

Innovation strategy		**Strongly disagree**	**Disagree**	**Neutral**	**Agree**	**Strongly agree**
SCI1	Our firm is able to replace obsolete products.	1	2	3	4	5
SCI2	Our firm is able to reduce the time to develop a new product until its launch in the market.	1	2	3	4	5
SCI3	Our firm is able to develop environmentally friendly products	1	2	3	4	5
SCI	Our firm is continually developing programs to reduce operational costs	1	2	3	4	5
SCI5	Our firm has valuable knowledge for innovating manufacturing and technological processes.	1	2	3	4	5
SCI6	Our organisation pursues continuous innovation in core processes.	1	2	3	4	5

SECTION C: ORGANISATIONAL LEARNING STRATEGY

We would like to find out a little more about your views regarding organisational learning strategy in the FMCG industry. Please indicate the extent to which you agree or disagree by ticking the corresponding number between 1 (Strongly disagree) and 5 (Strongly agree). A rating of (3) points towards a neutral view of the statement.

Organisational Learning strategy		**Strongly disagree**	**Disagree**	**Neutral**	**Agree**	**Strongly agree**
OLS1	Employees are recognized or rewarded for learning new knowledge and skills	1	2	3	4	5
OLS2	Employees are cross-trained to perform various job functions	1	2	3	4	5
OLS3	Team meetings address both team processes and work content	1	2	3	4	5

Organisational Learning strategy		Strongly disagree	Disagree	Neutral	Agree	Strongly agree
OLS4	Currently available information tells us what we need to know about the effectiveness of our programs, processes, products, and services	1	2	3	4	5
OLS5	Employees have access to the information they need to make decisions regarding their work	1	2	3	4	5

SECTION D: RISK MANAGEMENT STRATEGY

We would like to find out a little more about your views regarding risk management strategy in the FMCG industry. Please indicate the extent to which you agree or disagree by ticking the corresponding number between 1 (Strongly disagree) and 5 (Strongly agree). A rating of (3) points towards a neutral view of the statement.

Risk management strategy		Strongly disagree	Disagree	Neutral	Agree	Strongly agree
RMS1	Our firm has mechanisms for preventing operations risks (e.g. select a more reliable supplier, use clear safety procedures, preventive maintenance).	1	2	3	4	5
RMS2	Our firm has procedures for detecting operations risks (e.g. internal or supplier monitoring, inspection, tracking).	1	2	3	4	5
RMS3	Our firm responds to operations risks (e.g. backup suppliers, extra capacity, and alternative transportation modes).	1	2	3	4	5
RMS4	Our firm has systems for recovering from operations risks (e.g. task forces, contingency plans, and clear responsibility).	1	2	3	4	5
RMS5	Our organisation and supply chain partners exchange confidential information.	1	2	3	4	5

SECTION E: CUSTOMER ORIENTATION STRATEGY

We would like to find out a little more about your views regarding customer orientation strategy in the FMCG industry. Please indicate the extent to which you agree or disagree by ticking the corresponding number between 1 (Strongly disagree) and 5 (Strongly agree). A rating of (3) points towards a neutral view of the statement.

Customer orientation strategy		**Strongly disagree**	**Disagree**	**Neutral**	**Agree**	**Strongly agree**
CO1	Our business objectives are driven primarily by customer satisfaction.	1	2	3	4	5
CO2	Our strategy for competitive advantage is based on our understanding of customer's needs.	1	2	3	4	5
CO3	Our firm measures customer satisfaction systematically and frequently.	1	2	3	4	5
CO4	Our firm often looks for measurements to increase customer value or decrease product costs.	1	2	3	4	5
CO5	Our firm pays close attention to after-sales service.	1	2	3	4	5

SECTION E: SUPPLIER INTEGRATION

We would like to find out a little more about your views regarding supplier integration strategy in the FMCG industry. Please indicate the extent to which you agree or disagree by ticking the corresponding number between 1 (Strongly disagree) and 5 (Strongly agree). A rating of (3) points towards a neutral view of the statement.

Supplier integration strategy		**Strongly disagree**	**Disagree**	**Neutral**	**Agree**	**Strongly agree**
SI1	Our firm establishes quick ordering systems with its major suppliers.	1	2	3	4	5
SI2	Our firm determines the level of strategic partnership with its major suppliers	1	2	3	4	5
SI3	Our firm shares its operational plans with its major suppliers.	1	2	3	4	5

Supplier integration strategy		Strongly disagree	Disagree	Neutral	Agree	Strongly agree
SI4	Our firm shares its demand forecasts with its major suppliers.	1	2	3	4	5
SI5	Our firm shares its inventory levels with its major suppliers.	1	2	3	4	5

SECTION F: SUPPLY CHAIN FLEXIBILITY

We would like to find out a little more about your views regarding supply chain flexibility in the FMCG industry. Please indicate the extent to which you agree or disagree by ticking the corresponding number between 1 (Strongly disagree) and 5 (Strongly agree). A rating of (3) points towards a neutral view of the statement.

Supply Chain Flexibility		Strongly disagree	Disagree	Neutral	Agree	Strongly agree
SCF1	Our firm has the ability to rapidly change retail volumes.	1	2	3	4	5
SCF2	Our firm has the ability to respond to changes in delivery requirements	1	2	3	4	5
SCF3	Our firm is able to replace one supply source for another in a short time.	1	2	3	4	5
SCF4	Our major suppliers are willing to accommodate changes that we have requested.	1	2	3	4	5
SCF5	Our firm has the ability to changeover to a different product quickly.	1	2	3	4	5

SECTION G: SUPPLY CHAIN PERFOMANCE

We would like to find out a little more about your views regarding supply chain performance in the FMCG industry. Supply chain performance has two categories, namely financial and non-financial supply chain performance. This criteria compares your company with the relative major competitors within the FMCG industry for the last three years. Please indicate whether performance improved by ticking 1(decreased significantly) and 5(increased significantly). A rating of (3) points towards a neutral view of the statement.

Supply Chain Flexibility		**Strongly disagree**	**Disagree**	**Neutral**	**Agree**	**Strongly agree**
Non-Financial Performance						
NFP1	Response time to customer query time	1	2	3	4	5
NFP2	Level of customer perceived value of product.	1	2	3	4	5
NFP3	Level of service systems to meet customer needs.	1	2	3	4	5
NFP4	Order lead-time.	1	2	3	4	5
Non-Financial Performance						
FP1	Average net profit.	1	2	3	4	5
FP2	Average sales growth rate.	1	2	3	4	5
FP3	Revenue growth	1	2	3	4	5
FP4	Operational costs	1	2	3	4	5

Thank you for taking time to complete this questionnaire. Your views are much appreciated.

APPENDIX C: ETHICAL CLEARANCE LETTER

Vaal University of Technology

Your world to a better future

VUT

Richard Mashaba
Faculty of Management Sciences
Research Ethics Committee
E-mail: richardm@vut.ac.za

30 April 2020

RESEARCHER: Mr S.R. Ngomane

Supervisor: Prof C. Mafini

PROJECT TITLE: Supply Chain strategy, flexibility and performance FMCG industry.

Decision: Approved

Ethics Reference Number: FRECMS-18032020-030

Student number: 214030776

Dear Mr S.R. Ngomane

Thank you for submitting the above-mentioned Masters project for ethical consideration. The application was detailed and provided useful information. You may commence with your data collection. This clearance is valid for three years from the date of this letter. Please also note the following:

The Ethics Reference number, as stated above, should be used in all correspondence regarding this research project.

As the primary researcher you undertake to:

- *Only follow the procedures for which approval has been given.*
- *Inform the Faculty Research Ethics Committee (FREC) of any significant deviations that may occur in the research project which directly influences what has been approved.*
- *Report any adverse events that might occur, within 14 days of the event, to the FREC. (Refer to the Ethical Guidelines as to what procedure you will need to follow in such an event).*
- *Submit annual progress reports to the FREC.*

Inform the FREC once the research project has reached completion and the findings have entered the public domain.

The FREC would like to take this opportunity to wish you well with your research project.

Kind Regards

Dr FE Mahomed
Faculty Research Ethics Committee Chair
Faculty of Management Sciences

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APPENDIX D: DECLARATION FOR LANGUAGE EDITING

8 Belle Ombre Road

Tamboerskloof

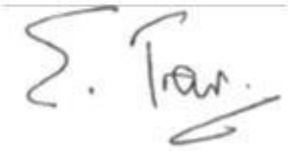
Cape Town

8001.

29 September 2022

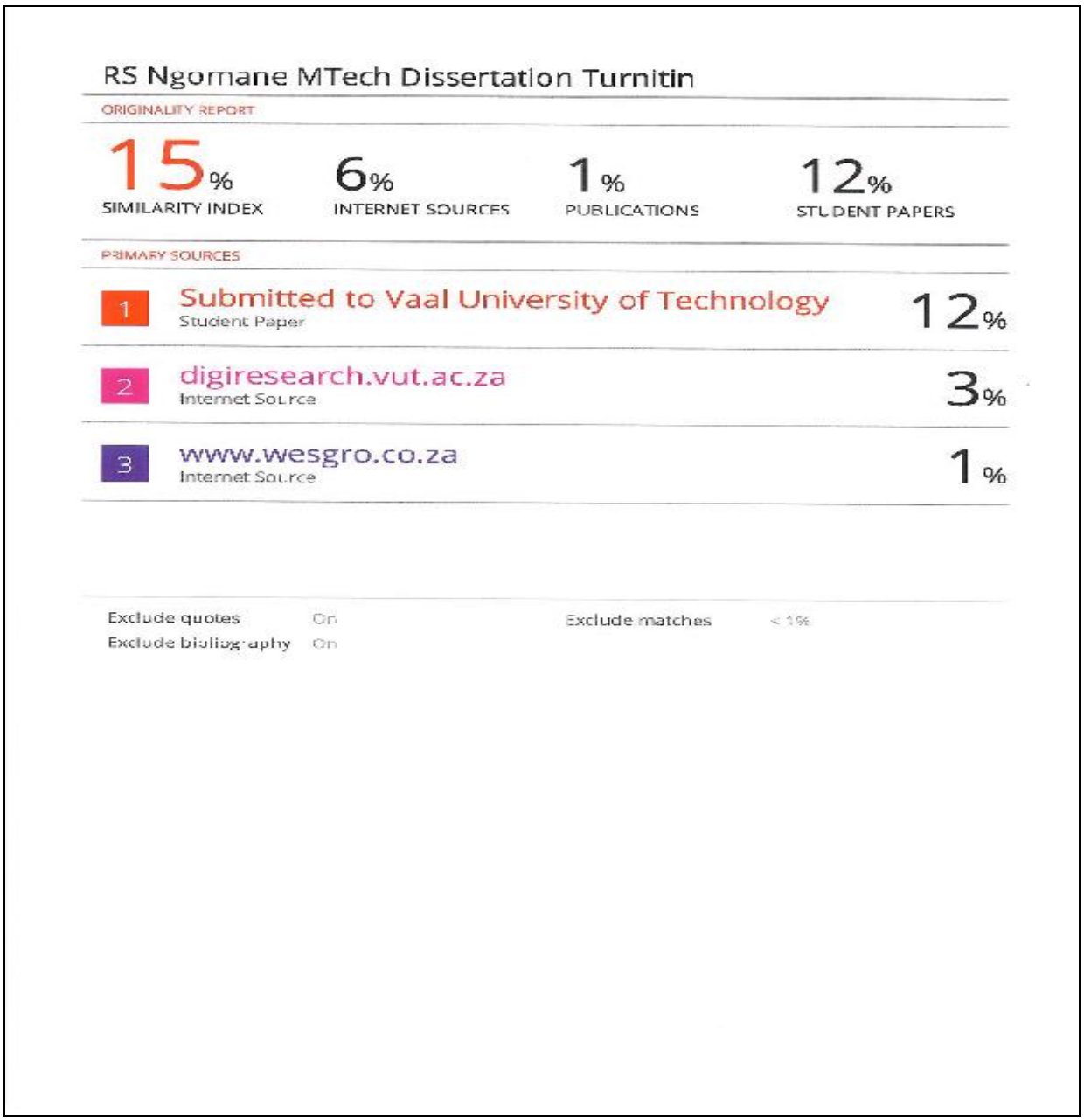
LANGUAGE EDITING

This is to certify that I language-edited the dissertation, "Supply chain strategy, flexibility and performance in the Gauteng Food-Moving Consumer Goods (FMCG) Industry", by Sikhulile Ngomane, for the MTech degree in Logistics, in the Faculty of Management Science, Vaal University of Technology.



Elizabeth Trew
Trew.eliz@gmail.com
021 424 6135
073 235 1147

APPENDIX E: TURNITIN REPORT



RS Ngomane MTech Dissertation Turnitin

ORIGINALITY REPORT

15%	6%	1%	12%
SIMILARITY INDEX	INTERNET SOURCES	PUBLICATIONS	STUDENT PAPERS

PRIMARY SOURCES

1	Submitted to Vaal University of Technology Student Paper	12%
2	digiresearch.vut.ac.za Internet Source	3%
3	www.wesgro.co.za Internet Source	1%

Exclude quotes	On	Exclude matches	< 1%
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