THE INFLUENCE OF SUPPLY CHAIN MANAGEMENT SYSTEMS ON AGRICULTURAL BUSINESSES IN VHEMBE DISTRICT OF LIMPOPO PROVINCE

by

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DECLARATION

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I, Phathutshedzo David Lavhelani, hereby declare that the research thesis titled "The influence of supply chain management systems on agricultural businesses in Vhembe District of Limpopo Province", submitted in fulfilment of the requirements for the doctoral degree in the Department of Business Management at the University of Venda, is my own work in design and execution, and that all reference material contained herein has been duly acknowledged.

19/08/ 2023

SIGNATURE **DATE**

DEDICATION

I dedicate this thesis to my parents, Mr N.P. Lavhelani and Dr N.P. Lavhelani, for challenging me in undertaking my PhD study, and your prayers and morale support that you gave me through this journey. To my daughter, Kharendwe Lavhelani, my younger brother Mr Riphuluse Lavhelani, and my sisters, Funanani Lavhelani and Vhulenda Lavhelani, the Almighty God give you all the strength to reach an even higher level than the one I have achieved this far. To my cousins, Thilivhali Mukosi, Thifhelimbilu Rambuwani, Livhuwani Rambuwani and Nduvho Mukosi, may you use the document as a source of encouragement and inspiration in the pursuit of your academic studies.

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ABSTRACT

Documented studies show that supply chain management systems (SCMS) that are in place in the province of Limpopo, focused more on agricultural business. Against this background, this study seeks to explore the influence of SCMS on agricultural businesses in the Vhembe District of Limpopo. The aim of this study is to identify existing SCMS used by agricultural businesses in Vhembe District, identify factors affecting agricultural businesses in Vhembe District, and establish policies supporting agricultural businesses, as well as examine frameworks used to monitor and evaluate agricultural profit. Supply chain management systems optimise the flow of goods, services, and information across the entire supply chain. By automating processes, streamlining operations, and reducing manual errors, these systems enhance overall efficiency. However, supply chain systems have a direct impact on customer satisfaction. Timely and accurate delivery, product availability, and responsive customer service are all influenced by the effectiveness of the supply chain. However, there is a lack of comprehensive understanding regarding the impact and potential benefits of supply chain management systems specifically tailored for agricultural businesses in Vhembe District. The study takes a qualitative research approach, coupled with an exploratory research design. The research study makes use of face-to-face, in-depth interviews. An interview guide with open-ended questions was used during the interviews. The study used the interpretivist research paradigm to achieve the study objectives. Primary data was utilised to gather information regarding agricultural business practices in the Vhembe District. The collected data was analysed using ATLAS.ti. The findings of this study showed that proper packaging is also being adopted as a marketing strategy by these businesses, which effectively positions their products in the market and improves their competitive edge. A Vhembe District agri-supply chain systems model and direction for future research was made, while conclusions of the study were drawn. The study contributes towards developing effective SCMS in the agricultural sector, that has accommodated all farmers in the Vhembe District. The researcher used a small but adequate sample to pursue the objectives of the study. The implications of this study are far greater, as they extend to farmers, investors, the municipality, researchers and the public as a whole.

Keywords:

Supply chain; supply chain management systems; agriculture; developmental local government; agricultural business; agri-business and policy.

LIST OF ACRONYMS AND ABBREVIATIONS

ASC	Agricultural supply chain
B2B	Business to business
B2C	Business to customer
CLM	Council of Logistics Management
CRDP	Comprehensive Rural Development Programme
CRM	Customer Relationship Management
DBSA	Development Bank of Southern Africa
FPM	Fresh produce market
GDP	Gross domestic product
GEAR	Growth employment and redistribution
ICT	Information commmunications technology
IoT	Internet of Things
IT	Information technology
JIT	Just-in-time
KPI	Key performance indicators
LED	Local Economic Development
MFMA	Municipal Finance Management Act
PM	Performance measurement
QDA	Qualitative data analysis
R & D	Research and development
RBV	Resource-based view
RQ	Research questions
SC	Supply chain
SCM	Supply chain management
SCMS	Supply chain management systems

SCOR	Supply chain operations reference
SCP	Structure-conduct-performance
SCPM	Supply chain performance measurement
SSA	Sub-Saharan Africa
SSATP	Sub-Saharan Africa Transport Policy
SSSC	Social sustainable supply chain
SRM	Supplier relationship management
TPB	Theory of planned behaviour
TQM	Total quality management
URT	United Republic of Tanzania
VDM	Vhembe District Municipality

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CHAPTER 1

INTRODUCTION AND BACKGROUND

1.1 INTRODUCTION

This section of the thesis focuses on the orientation of the study, which explores the influence of supply chain management systems (SCMS) on agricultural businesses in Vhembe District Municipality (VDM) of Limpopo Province in South Africa. The role of production and supply chain management (SCM) is increasing worldwide, due to growing consumer concerns over food safety and quality, together with the demand for large volumes of consistent and reliable products. Supply chain management is the management of linkage and interactions within an organisation, interdependent companies and small business entities, comprising suppliers of raw materials, procurement, manufacturing processes, logistics, advertisements and other associated systems that stimulate the onward and reverse flow of materials services, investments and information from producer to final consumer (Chiromo et al., 2015). The key objectives of SCM are to optimise the produced overall value, and to search for revenue sources (Mgonja et al., 2013), cost quality improvement (Bajor & Babić, 2014), shortening time to order (Chen et al., 2019), and faster speed to market. These show that SCM increases profitability through efficient processes, and achieves customer satisfaction. The concept of agri-business and SCM has been under development, as a more effective and efficient management system is required for the production planning, physical collection of primary produce from fields and homesteads, processing and storage at various levels, handling, packaging and distribution of the final product (Raidimi & Kabiti, 2017).

In the agri-business supply chain (SC), many stakeholders such as farmers, vendors or agents, wholesalers, rural retailers and suppliers, as well as transporters, are involved (Bosona & Gebresenbet, 2013). Hence, SCMS are important for agri-business at all levels, because information flow and management of production are essential to maintain the quality of production throughout the chain. Agri-business SCs and networks which tend to be primarily characterised by autonomy and independence of actors, are now rapidly moving towards globally interconnected systems, with a large variety of complex relationships.

Supply chain management systems play an important role in providing access to markets for producers in the local, regional or export markets through information-sharing systems and SC collaborative databases. The following section of this thesis provides a detailed background to the study, highlights the research problem, and formulates the aim and objectives of the study as well as the research questions. Furthermore, the significance, delimitations and scope of the study are highlighted, and a preliminary literature review and methodology section are provided.

1.2 BACKGROUND TO THE STUDY

This section outlines the context in which the problem has been identified, and exposes the need for conducting this study. Vhembe District Municipality's economy is largely based on agriculture, agri-business, mining, forestry, whole-sale and retail. The area can maximise social development and grow its economy (Pfunzo, 2017). The implementation of agricultural businesses has been lacking because government was only focusing on small farmers and they did not reach all the farmers, and this was caused by the SC systems that were implemented (Pfunzo, 2017). Therefore, to mitigate the situation, this study extended to medium size and large scale, to accommodate all farming spectra. Lin (2014) asserts that the objective of SCMS is to be efficient and cost-effective through collaborative efforts across the entire system.

The role of SCMS is to produce products that conform to customers' require-ments. Lin (2014) states that over time, and the key driving force for moving from material management to SCMS, was information technology (IT). The intermediary's wholesalers and retailers also play crucial roles in ensuring that the goods get to the targeted consumers. This study explores the influence of SCMS on agricultural businesses in the Vhembe District. The current researcher sees the need to conduct extensive research in the agricultural sector, because it is important to know how SCMS operate in this sector.

1.3 PROBLEM STATEMENT

The contribution of agri-business to economic development can be realised if farmers are linked to high-value markets in the agricultural supply chain (SC) and

can benefit from these lucrative markets. In recent times, there has been a great demand for high-value agricultural products, along with more stringent food safety and quality requirements, and the emergence of supply chain management (SCM) integration (Global Footprint Network, 2012). In times such as this, people are faced with the Coronavirus (COVID-19), which is impacting the SC of the agricultural sector, due to the increase in food demand. Considering this, long procurement processes caused by a lack of understanding of SCM procedures, and a lack of commitment to set processes and timelines, often result in delays. All these are obstacles to potentially accessing growing markets for the farmers within the Vhembe District Municipality.

There are further challenges that have been identified by other researchers, which include the following: poor planning, especially long-term planning; lack of cooperation and coordination of services among sub-departments within municipalities; political intervention, resulting quite often in implementing projects that were not planned, or delaying procurement of service providers; and, late registration of projects, that can also be linked to poor planning (Smith et al., 2008; Baloyi, 2010; Oke et al., 2017). Given the current challenges of COVID-19, the Institute of Supply Chain Management reported that many companies are experiencing SC disruptions in one way or another, due to Coronavirus-related transportation restrictions (Wang et al., 2020). However, there is a lack of comprehensive understanding regarding the impact and potential benefits of supply chain management systems specifically tailored for agricultural businesses in Vhembe District. Traditional agricultural supply chains often suffer from challenges such as limited visibility, inefficient coordination, fragmented information flow, and high transaction costs. Sharma and Vrat (2017) examined the relationship between supply chain management practices and firm performance in the agricultural sector. It investigated the impact of practices such as inventory management, logistics, and information sharing on the operational and financial performance of agricultural businesses. Such challenges therefore pose a massive threat to many agri-suppliers, as they cannot cross the bridge between their suppliers and customers; hence, the need for research projects such as these.

1.4 AIM

The broad aim of this study is to explore the influence of SCMS on agricultural businesses in the Vhembe District of Limpopo, South Africa.

1.5 OBJECTIVES OF THE STUDY

To realise the abovementioned aim, the following research objectives were pursued:

- To assess the state of supply chain management in Vhembe District Municipality.
- To examine the influence of supply chain management systems on agricultural businesses in the Vhembe District.
- To identify factors that enable and hinder the success of agricultural business in the Vhembe District.
- To recommend policies and strategies that support agricultural businesses within the district.

1.6 RESEARCH QUESTIONS

The research intended to answer the following questions:

- What is the current state of supply chain management in Vhembe District Municipality?
- What is the influence of supply chain management systems on agricultural businesses in the Vhembe District?
- Which factors enable and hinder the success of agricultural business in the Vhembe District?
- Which policies can be put in place to support agricultural businesses within the district?

1.7 SIGNIFICANCE AND RATIONALE OF THE STUDY

With the increasing commercialisation of agriculture worldwide, agri-business is increasingly dominated by large agri-business firms with strong networks, while the influence of farmers is declining (Khapayi,Van Niekerk & Celliers 2018). The

trend, in the evolution of procurement systems, is towards large central procuring systems receiving fresh produce from a limited number of preferred suppliers, and is creating barriers for farmers who do not have growers' programme contracts with retailers (Milford, Lien & Reed 2021). For some farmers to supply supermarkets or wholesalers, they need a certain size of production, high-quality products, a certain size and type of product, and consistency in quality and supply requirements which they find difficult to meet consistently (Milford et al., 2021). Farmers are now faced with new challenges that include the consistent supply of products of consistently high quality, knowledge of acceptable agricultural practices, capacity to comply with market and regulatory requirements, new issues of conformity assessment, and traceability (Humphrey & Michida, 2021). This setup poses major challenges for producers, especially some farmers with ineffective supply chain management systems. As a result, some of these farmers are still excluded from participating fully in the agricultural supply chain (SC), and are not linked to high-value markets.

Farmers can only have market power if they can improve their SCMS by integrating all the networks, which should be established with the help of the government. The study therefore set out to explore the influence of SCMS on agri-business in the Vhembe District. The study identified the factors affecting agri-business in the Vhembe District Municipality (VDM), to ensure that relevant knowledge and skills are deployed to agri-businesses, and to ensure effectiveness in the provision of quality produce through an effective supply chain. The Vhembe District community at large therefore stands to benefit from the study. The study also adds to the existing literature of the country on the SCMS of agri-business, to assist other researchers with information that could be useful for future use. The findings and recommendations of this study are useful for policymakers and other stakeholders in their attempts to improve the farmers' distribution of agricultural produce to high-value markets in the agri-business chain. The current study provides a current agri-supply chain framework useful to farmers. The framework exposed the SC systems that are suitable for small-scale farmers, and can contribute to their long-term planning and operational performance. The findings and recommendations of this study are useful for policymakers and other stakeholders (i.e., farmers' associations, agricultural cooperatives, agricultural extension services, food processing companies, agri-

cultural input suppliers, logistics and transportation providers, market research agencies, retailers and wholesalers, financial institutions) in their attempts to improve the farmers' distribution of agricultural produce to high-value markets in the agri-business chain. The framework exposed the SC systems that are suitable for small-scale farmers and can contribute to their long-term planning and operational performance.

1.8 DELIMITATION OF THE STUDY

According to Johnson (2020), delimitation details are what the researcher covers in the research. This study concentrated on the SCMS of agri-business in the Vhembe District of Limpopo Province. The population of the study was delimited to VDM agri-business farmers, who were drawn from all four local municipalities within the district: Thulamela, Collins Chabane, Musina and Makhado. The researcher made it a point that only information from the identified areas of the study was used.

1.9 OPERATIONAL TERMS

Concepts should be defined in order to avoid vagueness, because if terms are used without definition, indistinctness transpires (Heyns et al., 2003). The study is therefore underpinned by the terms below.

1.9.1 Supply chain management (SCM)

Supply chain management can be defined as the planning and management of all activities involved in sourcing and procurement, conversion, as well as all logistics management activities, which include coordination and collaboration with channel partners – which can be suppliers, intermediaries, third party service providers and customers (Verdouw et al., 2013). In concurrence, Lotfi et al. (2013) define SCM as a chain of organisations that may be involved in different processes and activities to produce goods and services for ultimate consumers, both upstream and downstream. It involves the active streamlining of a business's supply-side activities to maximise customer value and gain a competitive advantage in the marketplace (Lotfi et al., 2013). This study therefore adopts the tenet that agricultural businesses must manage their SC in order to verify the

inflow and the outflow of information, goods and services that the organisations are delivering, from the point of origin to the point of consumption.

1.9.2 Supply chain management systems (SCMS)

Supply chain management systems rely on the information and communication technologies (ICT) that deal with the handling of transactions, performing of communication, development of management insight and exchange of information, from the source to the end users (Backstrom, 2017). Supply chain management systems can also support information required for the timely provision of goods and services in a manner that is clear and robust enough to trust. It is noted that SCMS improve supply chain transparency, security, durability and process integrity (Abeyratne & Monfared, 2016; Sadouskaya, 2017). Therefore, SCMS encourage other factors which are implementing information, such as cost reduction and increase in customer satisfaction (Kumar et al., 2012). In this study, agricultural businesses have the prerogative of monitoring and controlling their operations daily, in order to obtain the performance desired from their supply chain. This makes it important that volatile organisations such as agricultural businesses support the systems that are used in the SC, as all businesses are now moving to the Fourth Industrial Revolution.

1.9.3 Supply chain performance measurement (SCPM)

Supply chain performance measurement may be perceived as the feedback on operations which are geared towards customer satisfaction, as well as strategic decisions and objectives within the SC (Olugu & Wong, 2009). Chin et al. (2011) define SCPM as the process of quantifying the effectiveness and efficiency of action within supply chains. SCPM can also be regarded as a tool for managing competitive advantage (Deshpande, 2012). It creates an understanding of SC processes, guides collaboration efforts, and optimises SC excellence (Fawcett et al., 2007). As indicated by Gunasekaran and Kobu (2007), SCPM in this study is essential to measure the right things at the right time in a supply chain, so that timely action can be taken.

1.9.4 Agri-business

Agri-business is the business of agricultural production. Within the agricultural industry, agri-business refers to the range of activities and disciplines encompassed by modern food production (Grambow & Korck, 2018). The term is a portmanteau of agriculture and business, and was coined in 1957 by John David and Ray Goldberg. It includes agrichemicals, breeding, crop production, distribution, farm machinery, processing and seed supply, as well as marketing and retail sales (Vorst et al., 2013). All agents of the food and fibre value chain, and those institutions that influence it, are part of the agri-business system (Baloyi, 2010).

1.9.5 Farmer

According to Kremen et al. (2012), a farmer is any person interested in practising truncated ecological agriculture, but not currently securely established in a farming career in South Africa. Farmers are designed to supply ecosystem services such as soil fertility and pest management, rather than relying on external inputs for those services. A farmer is a person engaged in agriculture, growing living organisms for food or raw materials (Kremen et al., 2012). The term usually applies to people who do some combination of raising field crops, orchards, vineyards, or livestock. A farmer might own the farmed land, or work as a labourer on land owned by others, but in advanced economies a farmer is a farm owner, while employees of the farm are known as farm workers (Kremen et al., 2012). Farmers play a vital role in agricultural business, because they are responsible for daily operations in the business.

1.9.6 Profitability

Shah and Shin (2007) stated that profitability is the rate of return on investment which is driven by the decision of management about working capital. Profitability is also referred to as the rate of return for particular investments (Menicucci & Paolucci, 2016). Be that as it may, it is important to note that an imbalance of current assets and liabilities affects the rate of return. Profitability is the basic purpose of managing working capital, to control the current financial resources of a firm in a way that a balance is created between profitability and risk of

insolvency (Karaduman et al., 2010). The main aim of every business is to get the maximum profit. Agricultural businesses must always review their revenues to determine if they have invested in the right business. Getting profit makes the businesses grow, and creates more opportunities in the economy.

1.10 PRELIMINARY LITERATURE REVIEW

Lucas et al. (2001) referred to the review of related literature as a "scholarship review" on the grounds that the literature being examined belongs to other scholars. A literature review provides the reader with a theory base of works previously published by other scholars that relate to the researcher's study. A literature review shows that the researcher is aware of what is going on in the field, how the researcher's work fits in with what has already been researched, that the researcher's work is significant, and that the research leads to new knowledge (Van Henten et al., 2012). This section covers the systematic literature review of the study. The theoretical aspects of SCMS to be used in this study are illustrated below, and encompass theoretical segments explored by earlier researchers. The study made use of a triangulated theoretical framework, due to its adoption of more than one theory to solve a single research problem (Angen, 2000).

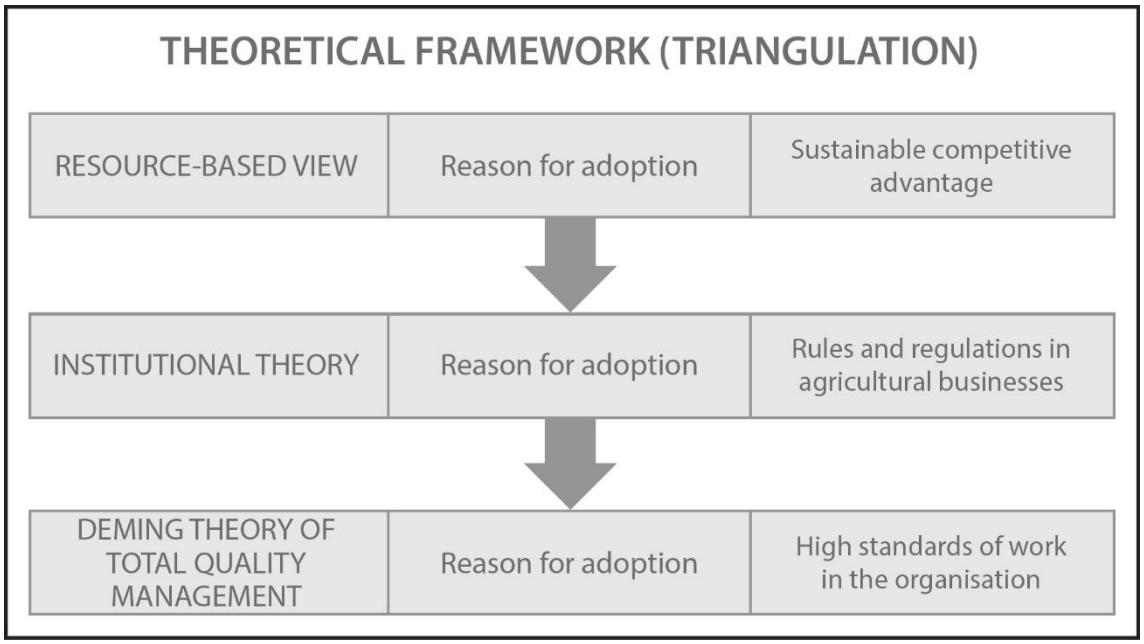

Figure 1.1: Theoretical framework (triangulation) (**Source:** Own)

1.10.1 Resource-based view (RBV)

The resource-based view (RBV) of the firm draws attention to the firm's internal environment as a driver for competitive advantage, and emphasises the resources that firms have to develop in order to compete in the environment. This theory has its roots in organisational economics, where theories of profit and competition associated with the writings of Wernerfelt (1984) and Kor and Mahoney (2004) focused on the internal resources of the firm as the major determinant of competitive success (Menicucci & Paolucci, 2016). Looking at resources, a firm's success is due to joint resources and capabilities which an enterprise owns, and which makes it different from its competitors (Kaol, 2020). The theory assumes that the higher the amount of resources an organisation has over competitors, the more competitive it would become; however, it fails to take into account the effects of diseconomies of scale and diminishing marginal returns (Menicucci & Paolucci, 2016).

During the early strategy development phase of strategic thinking, the focus was on the internal factors of the firm (Wang et al., 2014). Researchers such as Mahoney and Pandian (1992) and Chandler and Hanks (1994) made important contributions towards developing the RBV of strategy. From the 1980s onwards, according to Wang et al. (2014), the focus of inquiry changed from the structure of the industry – for example, the Structure-Conduct-Performance-Measurement (SCPM) paradigm and the Michael Porter's Five Competitive Forces Model, to the firm's internal structure, with resources and capabilities (the key elements of the RBV).

Since then, the RBV has emerged as a popular theory of competitive advantage (Furrer et al., 2008). The term 'resource-based view' was coined much later by Wernerfelt (1984), who viewed the firm as a bundle of assets or resources which are tied semi-permanently to the firm. Prahalad and Hamel (1994) established the notion of core competencies, which focus attention on a critical category of resource (a firm's capabilities). Barney et al. (2001) also argued that the resources of a firm are its primary source of competitive advantage. Agri-businesses need to have effective SCM in order to gain a competitive advantage, thus gaining dominance in the market. Hence, this theory is used as a cornerstone to explore the influence of SCMS on agri-business.

1.10.2 Institutional theory

Institutional theory offers a theoretical insight in which researchers can identify and examine influences that promote survival and legitimacy of organisational practices, including factors such as culture, social environment, regulation (including the legal environment), tradition and history, as well as economic incentives, while acknowledging that resources are also important (Barrett & Brunton-Smith, 2014; Hirsch, 1975; Rosenbaum et al., 1999). Validity here refers to the adoption of SCMS as being proper and appropriate (DiMaggio & Powell, 1983). Institutional theory is traditionally concerned with how groups and organisations better secure their positions and legitimacy by conforming to the rules (such as regulatory structures, governmental agencies, laws, courts, professions, scripts and other societal and cultural practices that exert conformance pressures) and norms of the institutional environment and systems (DiMaggio & Powell, 1983; Meyer & Rowan, 2006; Scott, 2008). According to institutional theory, external social, political and economic pressures influence firms' strategies and organisational decision-making, as firms seek to adopt legitimate practices, or legitimise their practices in the view of other stakeholders (Jennings & Zandbergen, 1995; North, 1990).

Institutional theory can be used to explain how changes in technological advancements and regulations affect decisions regarding small-scale farming businesses and supply chains (Ball & Craig, 2010) and environmental management (Tate et al., 2014). For example, Delmas and Toffel (2004) drew on institutional theory to examine how different organisational strategies lead to the adoption of supply chain management systems. There are key drivers in instigating core competencies in the markets (Clark & Lengnick-Hall, 2012) and government regulations (Rivera, 2004). This study therefore borrows from institutional theory, as it can define the systems, rules and regulations that affect agricultural businesses. Institutional theory explains the way the SC- designed systems can influence small-scale farmers or agricultural businesses.

1.10.3 Deming's theory of total quality management

The theory of Martínez-Lorente et al. (1998) rested upon fourteen points of management anchored on the system of profound knowledge, and the Shewart Cycle (Plan-Do-Check-Act) (Khan, 2010). Total quality management (TQM) is a

quality improvement body of methodologies that are customer-based and service oriented. To achieve SC competitiveness, not only the lean practices need to be considered, but the fourteen points proposed by Deming are also essential (Curkovic & Pagell, 1999). According to the theory, not only should the quality of products and processes be improved, but the quality of all activities in the SC should also be continuously enhanced to generate a competitive advantage (Khan, 2010). The contemporary quality management philosophy has been strongly influenced by the thoughts of Martínez-Lorente et al. (1998), Deming's (1986) fourteen points, Dotchin and Oakland's (1992) trilogy and ten steps, Crosby's fourteen steps to quality improvement – as identified by Brock et al. (1992), and Feigenbaum's (1983) approach of total quality control; these are essential elements of a quality strategy (Manzouri et al., 2013). Deming's theory rests on fourteen points of management, identified as the system of profound knowledge (Koskela et al., 2019). The framework of Deming's system of profound knowledge consists of the following points, as shown in Table 1.1, below:

Table 1.1: 14 principles of the Deming theory of TQM

1	Create constancy of purpose toward improvement of product and service, with the aim of becoming competitive, staying in business and providing jobs.
2	Adopt the new philosophy. Western management must awaken to the challenge, must learn their responsibilities, and take on leadership for change.
3	Cease dependence on mass inspection. Build quality into the product from the start.
4	End the practice of awarding business on the basis of price tag alone. Instead, minimise total cost. Move towards a single supplier for any item, based on a long-term relationship of loyalty and trust.
5	Improve constantly and forever the system of production and service to improve quality and reduce waste.
6	Institute training and retraining.
7	Institute leadership. The aim of supervision should be to lead and help people to do a better job.
8	Drive out fear so that everyone may work effectively for the company.
9	Break down barriers between departments. People in research, design, sales and production must work as a team, to foresee and solve problems of production.

cont'd/…

10	(a) Eliminate slogans, exhortations and targets for the workforce, as they do not necessarily achieve their aims. (b) Eliminate management by objective. Eliminate management by numbers, numeric goals. Substitute leadership.
11	Eliminate numerical quotas in order to take account of quality and methods, rather than just numbers.
12	(a) Remove barriers that rob the hourly worker of his or her right to pride of workmanship. The responsibility of supervisors must be changed from sheer numbers to quality. (b) Remove barriers that rob people in management and in engineering of their right to pride of workmanship. This means, inter alia, abolishment of the annual or merit rating and of management by objective.
13	Institute a vigorous program of education and re-training for both the management and the workforce.
14	Take action to accomplish the transformation. Management and workforce must work together.

(**Source:** Deming, 1986, p. 23)

The holistic approach to quality management is vital for SC competitiveness and performance; hence, Deming's theory of TQM is used in this study as a cornerstone to understand the impact of SCMS on agri-business within the Vhembe District Municipality.

1.11 DEFINITION AND DESCRIPTION OF SUPPLY CHAIN MANAGEMENT

Supply chain (SC) is a sequence of (decision-making and execution) processes and (material, information and money) flows that aim to meet final customer requirements, that take place within and between different stages along a continuum, from production to final consumption (Vanichchinchai, 2014). The SC not only includes the producer and its suppliers, but also, depending on the logistic flows, transporters, warehouses, retailers and consumers themselves (Selviaridis & Norrman, 2014). In a broader sense, SCs include new product development, marketing, operations, distribution, finance and customer service. Agri-business plays a crucial function in economic transformation, through the development of agri-based industries and provision of employment and income(s) (Katua, 2014; Olaoye, 2014). Agri-business investments accelerate agricultural expansion through the establishment of new markets and the development of a vibrant input supply sector.

Agri-business SCs and networks, which tended to be primarily characterised by autonomy and independence of actors, are now rapidly moving towards globally interconnected systems with a large variety of complex relationships (Gómez-Cedeño et al., 2015). With respect to this, both local and international markets are facing robust demand that will continue as domestic demand increases. Growing demand from both local and international markets, fierce competition and dynamics at the market in today's business environment, are influencing farmers and businesses to engage in connected activities. Tarafdar and Qrunfleh (2017) state that adopting an integrated move towards an SCM relationship is a great path to conforming to the changing needs of the customer. For farmers or agri-businesses to remain focused, and sustain competitive advantage and performance goals at both local and international markets, the most successful approach is through SCM (Kwamega et al., 2018). Supply chain management is defined as the coordination of production, inventory location and transportation among the participants in a supply chain to achieve the best mix of responsiveness and efficiency for the market being served (Li et al., 2015; Nkondo, 2012). Furthermore, Yusuf and Shehu (2017) define SCM as the integrated planning, implementation, coordination and control of all business processes and activities necessary to produce and deliver, as efficiently as possible, products that satisfy market requirements.

Agri-business firms adopt SCM strategies to minimise cost by leveraging production and distribution activities to the enterprise suppliers, and to fulfil customer requests by delivering standardised products that meet customer satisfaction (Chopra et al., 2013; Kwamega et al., 2018). There are many benefits of SCM to any organisation; for instance, the effectual management of an SC is imperative to establish and withstand competitive advantage in products and services of the firms (Gunasekaran et al., 2017). In addition, SCM practices have affirmative control on the performance of the organisation and its sustainability. This confirms the need to enforce SCM strategies, and its integration, among agri-business firms (Gómez-Cedeño et al., 2018).

1.12 AGRI-SUPPLY CHAIN IN SUB-SAHARAN AFRICA

In the sub-Saharan setting, Livingston et al. (2011) note that small-scale farmers in dispensed flexible binds are exposed to a bigger number of business dangers

and lower returns than those working in incorporated markets (reasonable exchange cocoa, claim to fame espresso) where dangers are all the more generally shared among SC members.

The result is that smallholder farmers generally remain constrained by their capacity to manage their risk-return trade-offs, which curbs their ability to exchange stable crop production for intensified agriculture. Harvey et al. (2014) studied the vulnerability of smallholder farmers to agricultural risks and climate change in Madagascar. Madagascan farmers were found to be particularly vulnerable to any shocks to their agricultural system, owing to their high dependence on agriculture for their livelihoods, chronic food insecurity, physical isolation, and lack of access to formal safety nets. Unless well managed, risks in agriculture slow development and hinder poverty reduction.

The South African small-farming segment is monetarily critical, and contributes 25% of the gross estimation of the nation's farming economy. The principal cultivating items delivered in South Africa incorporate potatoes, tomatoes, onions, green maize and pumpkin. Little cultivating in South Africa has been expanding by and large, with a 2.7% yearly development in creation, over recent years. This development has followed populace development, but on the other hand is ascribable to, individually, a 19% and 7% expansion in the per capita utilisation of potatoes and different vegetables during the previous ten years (Department of Agriculture …, 2014).

Fresh produce in South Africa is distributed through the following channels: fresh produce markets (FPMs), export channels, and direct sales to wholesalers, retailers, hawkers, processors, institutional buyers, and consumers. A portion is also held back for producers' own consumption and for seed for the coming seasons. The distribution channel that is used to market fresh produce is largely influenced by the nature of the fresh produce. A large proportion of fresh produce is distributed through FPMs. Statistics released by the Department of Agriculture, Forestry and Fisheries show that 48% of fresh produce in South Africa was distributed through FPMs in 2011, with direct sales and own consumption accounting for 42% of the fresh produce distributed, while processors and exports accounted for 7% and 3% of the fresh produce sold in South Africa, respectively (Venter, 2018).

1.13 INTEGRATED AGRI-SUPPLY CHAIN MANAGEMENT

Supply chains are principally concerned with the flow of products and information between SC member organisations, which is procurement of materials, transformation of materials into finished products, and distribution of those products to end customers (Alfalla-Luque et al., 2013). Today's information-driven, integrated SCs are enabling organisations to reduce inventory and costs, add product value, extend resources, accelerate time to market, and retain customers (Truong et al., 2017). The real measure of SC success is how well activities coordinate across the SC to create value for consumers while increasing the profitability of every link in the supply chain (Chatzoglou et al., 2015). In essence, SCM is the integrated process of producing value for the end user or ultimate consumer. The SCs of different agricultural commodities in South Africa, however, are fraught with challenges stemming from the inherent problems of the agricultural sector (Ong'ayo, 2017). The agri-supply chain system of the country is determined by different issues such as dominance of small/marginal farmers, fragmented SCs, absence of scale economies, low level of processing/ value addition and inadequacy of marketing infrastructure (Fernandes et al., 2019).

Early processing-based SCM success included improved relationships between warehousing and transportation within companies, as a result of reduced inventory and better response time to customer requests for products and services (Chen et al., 2009; Danese & Romano, 2011). Supply chain management then entered a logistics stage where other functional areas within companies joined forces to incorporate manufacturing, procurement, transportation, distribution and marketing, to effectively compete in the marketplace (Flynn et al., 2010). This stage was aided by the use of telecommunications, electronic data interface, and other technological advances that made the transfer of information more transparent across the functional areas between companies (He et al., 2014). Hence, it is imperative in today's market environment to understand supply chain management systems (SCMS) in order to improve the supply chain of agri-businesses.

1.14 SUPPLY CHAIN MANAGEMENT SYSTEMS

According to Yusuf and Shehu (2017), SCMS is the management of linkage of interactions within an organisation, interdependent companies and small business entities comprising suppliers of raw materials, procurement, manufacturing processes, logistics, advertisement, and other associated systems, that stimulates the onward and inverse flow of materials services, investments and information from the producer to final consumer, with the aim of adding value, increasing profitability through efficient processes, and achieving customer satisfaction.

In other words, SCMS refers to the general process of procuring raw materials from the suppliers, processing raw material into finished goods, and ensuring that the goods get to the final consumers (Kakhki & Gargeya, 2019). For example, suppliers provide raw materials to the factory, the factory transforms the raw material into finished goods, and then the marketing and sales unit ensures that the goods reach the final consumers. The middlemen wholesalers and retailers also play a crucial role in ensuring that the goods reach the targeted consumers (Sindhuja, 2014). Previous researchers, for example, have suggested that the traditional topics and areas of research should be re-examined, in order to improve the body of knowledge of SCMS (Kakhki & Gargeya, 2019; Lee, 2015; Silvestro & Lustrato, 2014; Zhang & Huo, 2012). The objective of SCMS is to increase the profitability of the organisation and improve responsiveness of customer satisfaction (Yusuf & Shehu, 2017). In general, SCMS are all about procuring raw materials from the supplier, which is the source of origin, and make sure that goods flow in the SC system in a more efficient and effective way, to reach the end user on time. For instance, a supplier provides goods to the warehouse using transportation systems (Sindhuja, 2014; Zhang et al., 2013). For SCMS to be effective, supply chain personnel need to understand the components of the systems.

1.14.1 Supply chain management systems components

There are five basic components of SCMS, as suggested by Yusuf and Shehu (2017). These are: plan, source, make, deliver and return. These components are highlighted below:

- **Plan**

  Agri-business needs to have an effective strategy on how to properly manage the limited resources, in order to achieve customer loyalty, retention, and preference for their goods and services (Bai & Sarkis, 2010). According to Popa (2013), delivery planning provides organisations with the necessary information for customers to order.

- **Source**

  Organisations must be able to manufacture products, and they also need to be cautious when choosing suppliers; therefore, the need to develop a set of pricing and distribution system in the SC is important. This also treats the importance of acquisitions, supplier selection, transaction management and monitoring performance (Adesanya et al., 2020).

- **Make**

  The factory process should always have schedules of activities that are required for production, packaging, testing and delivery; however, it is the responsibility of the manufacturing manager to oversee the entire process involved. Companies' products are made to stock or to order (Yusuf & Shehu, 2017).

- **Deliver**

  This refers to logistics involved in the supply chain management. Companies ensure the effectively deliver of orders. The distribution channel is expected to be efficient, and a network of warehouses has to be on a developed dimension (Kumar et al., 2018).

- **Return**

  Reverse flow of product must be properly designed; the process should also be flexible and responsible for what has been returned. A reverse logistics mechanism also shows the return flows adequately, which provides the information needed to programme the products and quantities that are the subject of the return-specific actions, and honouring of the replacement orders (Minculete & Olar, 2018).

- **Local economic development**

  The World Bank (2015) describes local economy as the mechanism by which partners from the state, industry and non-governmental sector work together to build better conditions for economic development and for creating jobs. The main aim of this is to improve life quality for everyone. Local economic development (LED) is a mechanism which brings different partners to work together, and harnesses local capital for sustainable economic development in the local environment.

1.15 REGULATORY FRAMEWORK GOVERNING SUPPLY CHAIN MANAGEMENT

According to Bhagat and Bolton (2008), there are various legislative frameworks governing procurement in South Africa, namely, the Constitution of the Republic of South Africa 108 of 1996 (section 217), the Preferential Procurement Policy Framework Act (PPPFA), which has been enacted to provide a framework for the implementation of such policies, the Public Finance Management Act (PFMA) which regulates financial management in the national, provincial and local level of government, the Municipal Finance Management Act (MFMA), which aims at securing sound and sustainable management of the financial affairs of municipalities and other institutions in the local government, the Broad-Based Black Economic Empowerment Act (B-BBEE) and Treasury regulations. The public procurement legislation and policy were introduced to define and enforce the procedure that is to produce an economic and efficient result, while respecting the public nature of the process, and the duty of fairness to the suppliers. Public procurement procedures must be designed to generate maximum competition (Ambe & Badenhorst-Weiss, 2012).

The SCM policy and procedure manual was applied in this study in cases where the government is the market, within the ambit of the abovementioned frameworks governing procurement in South Africa. The South African Cabinet adopted an SCM policy in 2003 to replace outdated procurement and provisioning practices. The aim was to implement an SCM function across all spheres of government, which would be an integral part of financial management and would conform to international best practices (Ambe, 2009). The SCM policy framework aimed to do the following: promote uniformity and consistency in the application

of SCM processes throughout government; facilitate the standardisation and uniform interpretation of government's preferential procurement legislation and policies; and, complete the cycle of financial management reforms introduced by the PFMA by devolving full responsibility and accountability for SCM-related functions, in addition to financial management functions, to accounting officers and authorities (Migiro & Ambe, 2008).

Supply chain management is built upon ensuring value for money, open and effective competition, ethics and fair dealing, accountability and reporting, and equity (Van Greunen et al., 2010; Yu et al., 2010). Ensuring that these values are achieved is the goal of uniformity in procurement processes, good governance and economic development (Ambe & Badenhorst-Weiss, 2012). It is within this background that this study seeks to adopt an SCM regulatory framework to explore the influence of SCMS on agri-businesses in Vhembe District Municipality of Limpopo.

1.16 REVIEW OF PRIOR EMPIRICAL STUDIES ON SCM

Several studies have been conducted globally on supply chain management systems. Most of these studies focused on the impact of SCMS on firm performance (Sindhuja, 2014), corporate financial performance (Lee, 2015), supply chain risk (Yusuf & Shehu, 2017) and economic performance (Silvestro & Lustrato, 2014), to name a few. Table 1.2, below, shows that 53% of the studies were conducted in Asian countries, while 33% of the studies were conducted in Europe, and 13% in the United States of America:

Table 1.2: Summary of prior studies

No.	Author	Year	Country	Quantitative/ Qualitative	Method of data collec-tion	Unit of analysis	Key informants
1	Danese & Romano	2011	Italy	Quantitative	Survey	Organisation	Plant Managers & HR Managers
2	Inda, Abu & Rosman	2012	Malaysia	Quantitative	Survey	Organisation	Managers
3	Huo & Baofeeng	2012	China	Quantitative	Survey	Organisation	SC Managers, CEO/President, Directors

cont'd/…

4	Zhao, Huo, Sun & Zhao	2013	China	Quantitative	Survey	Organisation	CEO/Senior Managers
5	Vanichchinchai & Assadej	2013	Thailand	Quantitative	Survey	Organisation	Managing Directors/ President/CEO
6	Zhang & Huo	2013	China	Quantitative	Survey	Organisation	Manufacturers
7	Zhihong & Sarkis	2013	USA	Quantitative	Survey	Organisation	Managers
8	Hwang & Min	2013	USA	Quantitative	Survey	Organisation	Managers & Directors
9	Silvestre & Lustrato	2013	Italy	Qualitative	Case study	Organisation	Managers
10	Laosirihong, Adebanjo & Tan	2013	Thailand	Quantitative	Survey	Organisation	Managers
11	Gómez, Farrero, Guitart & Matute	2014	Spain	Quantitative	Survey	Organisation	Senior Manager, President, CEO, Managers & Directors
12	Selviaridis & Norrman	2014	Sweden	Qualitative	Case study	Organisation	Managers
13	Lee	2014	South Korea	Quantitative	Survey	Organisation	Supervisors, Managers & Labourers
14	Sindhuja	2014	India	Quantitative	Survey	Organisation	Managers
15	Skipworth, Godsell, Wong, Saghiri & Julien	2015	UK	Quantitative	Survey	Organisation	FAME data base manufac-turers

(**Source:** Own)

The literature review found that 87% of the studies were quantitative, and only 13% of the studies employed a qualitative research method. It can be observed that minimal studies were conducted in the Middle East and Africa regions. Although Africa has a rich history of agricultural activities, studies on agri-business are lacking. This is not to say that there were no prior studies on SCMS in those regions.

1.17 RESEARCH METHODOLOGY

This section focuses on the proposed philosophical foundations, research design and methodology that were used to explore the research problem of the study. Concepts relating to paradigm, design, methodology, population, sampling, instrument and data collection strategy, as well as data analysis, are detailed.

1.17.1 Study area

The study was conducted in Vhembe District Municipality in Limpopo. The district comprises four local municipalities: Musina, Collins Chabane, Thulamela and Makhado. Existing literature proves that few studies have been done in this area, in terms of studies that explicitly focus on agri-business, hence the need for more detailed studies to bridge the gap. Vhembe District Municipality is found in the northern part of Limpopo, separated from Zimbabwe by the Limpopo River which passes through the border (Makhuvha, 2022). Improved SCMS can effectively enhance socio-economic development and job creation within these areas. The area is rich in agriculture, which is more concentrated in the western part of Thohoyandou. Musina and Makhado local municipalities have been identified as special economic zones because of agricultural plantations and natural heritage such as Mapungubwe, Fundudzi and Dzata Ruins (Limpopo Department…, 2017).

Vhembe District Municipality has the opportunity to grow its economy, as it is rich in agriculture; therefore, SCM is vital to the success of agricultural initiatives. To illustrate the Vhembe District demarcation, Figure 1.2 presents the VDM map:

Figure 1.2: Map of Vhembe District Municipality (**Source:** Chauke et al., 2015)

1.17.2 Research paradigm

Research is guided by a "set of beliefs about the world and how it should be understood and studied to guide action", which are collectively known as a paradigm (Lincoln & Denzin (2003) as cited in Sithole, 2013). Creswell and Poth (2016) outline that a paradigm is the fundamental model or frame of reference used to organise observations and reasoning. The researcher should understand the complex world of the lived experience from the point of view of those who live in it. The researcher needs to have adequate dialogue, interaction and considerable contextual factors, in order to construct a meaningful reality about SCMS in agricultural businesses (Saunders et al., 2007). This study followed an interpretive paradigm, since it is concerned with understanding the world as it is from the subjective experiences of individuals, using meaning-oriented methodologies such as interviewing or participant observation, that rely on a subjective relationship between researcher and subject (Thomas, 2018).

Interpretivism is a trend of research approach, and it supports the use of qualitative methods for data collection. There is a tight connection between the interpretivist paradigm and qualitative methodology, as one is a methodological approach and the other is a means of collecting data (Ha-Vikström, 2018). Focusing on the above paradigm, the primary data that gives clarity on the influence of SCMS on agri-business, was gathered. The collected data was in the form of qualitative interviews, conducted mainly with agri-business or farmers in the Vhembe District Municipality.

1.17.3 Research design

According to Van Asselt et al. (1996) and Babbie et al. (2007), research design is "a pre-condition for any study, and must be formulated before the commencement of the actual study". Maxfield and Babbie (2017) define the research design as an overall strategy or detailed outline of how the research will be conducted. A research design typically includes how data is to be collected, what instruments are to be employed, and how the instruments are to be used (Healy & Malhotra, 2010). It can also be an expressed or unexpressed logical sketch, where the empirical data relates to the research purpose, which enables researchers to draw conclusions (Hubbard et al., 2009). This study followed an exploratory

research design, which is used to provide insight and understanding, since the information needed is defined only loosely, and the research process is flexible and unstructured (Babbie, 2013).

1.17.4 Research methodology

Saunders and Lewis (2012) define research strategy as the overall plan employed by the researcher in order to gather primary data and answer the research questions. The most common research strategies employed in qualitative and quantitative research include surveys, interviews, grounded theory, ethnography, action research, archival research, case study and experiments, among others (Eaton & Crossman, 2018). This study relied on a qualitative research approach to explore the influence of SCMS on the profitability of agricultural business, so that the findings would be generalised to the agricultural businesses of Vhembe District. The researcher decided to make the study largely qualitative, as it is more descriptive in nature. The qualitative method is embedded in the philosophy of empiricism and opens the opportunity to flexibility and an unstructured approach in the collection of data (Rubin & Babbie, 2011). The approach places less emphasis on generalisations, as it communicates the findings in a descriptive and narrative manner (Rubin & Babbie, 2011). The study sought description and narration of feelings, perceptions and experiences.

1.17.5 Population of the study

Wiid and Diggines (2010) defined population as a group of entities with a common set of characteristics. It is suggested by McDaniel et al. (2017) that at the inception of the sampling procedure, the researcher needs to clearly define the target population by responding to the question, “Who do we want to investigate?”. When defining the target population, elements such as geographical boundaries, time and units are included (Wiid & Diggines, 2010). Informed by the objective of this study, the target population was to the VDM agri-businesses, both small- and large-scale farmers from all four local municipalities within VDM, namely Thulamela, Collins Chabane, Musina and Makhado. Sixteen (16) participants which were interviewed.

1.17.5.1 Sampling

Sampling is the process by which the researcher specifies and selects the sample elements that form part of the study, from the population (Gupta et al., 2011). It is the act of taking a small group of people or objects from a larger population to represent that population (Healy & Malhotra, 2010). The sample of this study comprised sixteen (16) participants who were interviewed. However, the researcher specifically made use of snowballing (referrals) and convenience sampling (making use of participants who are accessible) to get the appropriate sample size of the study. In terms of snowballing, the researcher benefited through referrals on the basis that farmers within the district knew each other; this was helpful to the researcher, since the researcher is not locally based. On the other hand, convenience sampling was selected on the grounds that not all the farmers were accessible out of all those to whom the researcher would have referred. The researcher made use of the available and easily accessible sample willing to respond, and relevant for this research. The researcher sought participants who were knowledgeable and had more information about the subject matter.

The study therefore made use of adequate participants from Vhembe District Municipality. Participants selected for interviews per municipality were drawn from each agri-business, farmers and other stockholders such as Lima, the Department of Agriculture, NTK Shayandima and Farm City Thohoyandou, who work closely with farmers. The reason for using the abovementioned farmers was that they possessed information required to fulfill the requirements of this inquiry. Writers such as Beeson et al. (2019) write that in cases where the sample is small, if the study has not yet been conducted on a large scale, a small sample will suffice. It is hoped that this study sample has sufficed, since SCMS in agriculture have not been extensively studied. Sample distribution covered the following clusters under Vhembe District: Makhado, Collins Chabane, Thulamela and Musina Local Municipality.

1.17.6 Data collection procedures

Cruz-Gonzalez et al. (2009) defined data as the information the researcher collects for the purposes of the study. The information plays a vital role in the

study, as it enables researchers to come up with valid reports. The current researcher ensured that the data collected was simple, accurate and understandable. In this study, a qualitative data collection research method was followed. The research study made use of face-to-face, in-depth interviews. Structured, open-ended questions were provided to collect relevant information through interviews. The type of data used is as follows:

Zikmund et al. (2013a) define primary data as data collected for the first time, in order to address a specific challenge. In this study, the researcher made use of in-depth interviews to collect data from selected participants from all four local municipalities in Vhembe District Municipality. The main objective of interviews, when collecting data from the participants, is to understand the participants' points of view, rather than making conclusions about behaviour (Babin & Zikmund, 2015b). The researcher therefore had a set of predetermined questions on an interview schedule which was written to guide the interviewee. Questions in the interview schedule were formulated to provoke thoughts from the selected participants, using open-ended questions. Face-to-face and online interviews were conducted to facilitate in-depth discussions and allow for nuanced understanding of the participants' perspectives.

1.18 DATA ANALYSIS

Qualitative data analysis (QDA) is the range of processes and procedures whereby one moves from the qualitative data that has been collected, to some form of explanation, understanding or interpretation of the people and situations one is investigating (Pandolfi et al., 2018). Maxfield and Babbie (2014) explain qualitative data analysis as a method of analysing data without converting it into a numeric format. Moreover, Creswell (2015) argues that the researcher may analyse the interview conducted, writing memos that may ultimately be included as a narrative in the final report. Nyirangondo (2020) proposes the following types of qualitative data analysis:

- **Content analysis:** The process of categorising verbal or behavioural data for classification, summarisation and tabulation. This type of analysis can be done at two levels: (a) descriptive – when the researcher tries to highlight the patterns and characteristics of the data, and (b) interpretative – when the

researcher tries to investigate, in depth, the meaning and implication of the data.

- **Narrative analysis:** When the researcher transcribes and reformulates the data from different experiences, interviews and observations in order to analyse and reflect upon them.
- **Discourse analysis:** A method of analysing naturally occurring speech (spoken interaction) and all types of written text.
- **Framework analysis:** A qualitative research method that provides a structured approach to analysing data collected from interviews, focus groups, or other textual sources. It involves several steps that help organise, categorise, and interpret the data in a systematic manner.
- **Grounded theory:** Aims to generate theories or explanations that are grounded in the data collected from the research participants.

This study made use of ATLAS.ti software (Version 8) for data analysis. This is a Scientific Software Development and is a useful qualitative data analysis (QDA) tool. It is very flexible and user-friendly. The product enables researchers to assign codes or labels to text, sounds, pictures or video, to search these codes for patterns, and to construct classifications of codes that reflect stable models of the conceptual structure of the underlying data (Lewis, 2004). Even though there are numerous other QDAs available, ATLAS.ti was selected for the purposes of this study, mainly for two reasons: firstly, easy access to training and support for the programme; and secondly, in comparison with other qualitative software, ATLAS.ti is more cost effective and within the financial budget of the research (Chakuzira, 2019).

Creswell (2014) asserts that computer analysis software assists in analysing data, because using a hand-coding technique is a time-consuming procedure. ATLAS.ti enabled the researcher to simplify and classify gathered data electronically. Following codes emerging from ATLAS.ti, the data was further analysed using thematic content analysis, which enabled the researcher to develop themes emanating from the assigned classification of codes.

The following section provides an exposition of the different ATLAS.ti phases:

PHASE 1: Attitude of openness

Owing to the notion that the researcher chose to conduct a qualitative study, the data collecting phase began with the researcher maintaining an open mind, ensuring that the emergent codes were retrieved from the interview (Friese, 2019). To create the primary document, all the material gathered from the interviews was transcribed and entered in ATLAS.ti (Friese, 2019). The Primary Document Manager application can concurrently store and analyse several documents, which are temporarily saved in the Primary Document Manager (Friese, 2019). Additionally, the main document manager permits the establishment of Primary Document Families, which aided in the organisation of data for this study (Friese, 2019).

PHASE 2: Constant comparison and open coding

This phase involves creating multiple categories by comparing data on a constant basis, a process known as open coding (Friese, 2019). In addition, because it includes comparing instances to cases, and then comparing the emerging data to new cases during the data gathering phase, this approach saturated the whole research process (Friese, 2019). The procedure was carried out by ATLAS.ti, using the Code Manager (Friese, 2019). At this phase, a researcher assigns codes or creates codes from the available data through open coding – a function that can be performed through the code manager (Friese, 2019).

PHASE 3: Core category and selective coding

The researcher developed core codes, based on the information provided by the participants, which is a category that holds all other categories together, by continuing the aforementioned method of constant comparison (Friese, 2019). When the core codes are discovered, the researcher begins selective coding (Friese, 2019). Selective coding enables the researcher to compare input data to the core codes with more precision than when the categories are initially created (Friese, 2019). Only factors relevant to the core codes were evaluated in this selective coding procedure, to produce better categories (Friese, 2019).

PHASE 4: Building new theory

The revised categories are compared to ideas, in this phase, to construct a new theory (Friese, 2019). The relationship between the various categories was examined through a theoretical coding process aided by the creation of theoretical memos that expound on the theoretical codes (Friese, 2019). The theoretical writing phase concludes the analysis phase, bringing all the specifics of the practical theory together in an overarching conceptual synthesis (Friese, 2019).

1.19 CRITERIA OF QUALITY MEASUREMENTS

This section discusses reliability and validity, that are used to measure the accuracy of the data collected. Creswell (2014) asserts that in order to check the accuracy of the findings, the researcher should use reliability and validity. Reliability is a measurement method that would yield the same result, for the same data, even when it has been collected repeatedly (Maxfield & Babbie, 2014). Validity is defined as the extent to which an empirical measure adequately reflects the real meaning of the concept under consideration (Maxfield & Babbie, 2014).

1.19.1 Qualitative validity process

Creswell (2014) recommends several qualitative validity procedures:

- Triangulation is defined as using different data sources of information, examining the evidence from the sources, and using it to build a coherent justification for the themes.
- Member checking means using the final report of the findings and taking it back to the participants, to ensure that the participants feel that they are truthful.
- Use a rich, thick description to convey the findings; set a description that puts the reader into the setting, and give them a subject to discuss when sharing the experience – for example, creating themes and codes.
- Clarify the bias the researcher brings to the study. This is an open and honest narrative created from the self-reflection of the researcher; this has resonated very well with readers, and helps them to understand the report.

- Present negative or discrepant information that runs counter to the themes. This is when the researcher brings in the contradictory story that forms part of the evidence that has built the theme, and the report is more realistic and more valid.
- "Spend prolonged time in the field" means that the researcher spent more time on site, which helped the researcher to gain a deeper understanding of the site and the people; therefore, this study has lent credibility to the narrative report.
- Use peer debriefing to enhance the accuracy of the account. During this process the researcher uses people who evaluate and ask questions, so that the report would resound with people other than the researcher.
- Use an external auditor to review the entire project. An auditor is someone different from the peer debriefing, who is not familiar with the project or the researcher. He can provide an evaluation report through a process of re-search or the conclusion of the study.

In order to check the truthfulness and validity of the findings in this study, the researcher used the following four (4) validity strategies:

- The researcher used a rich, thick description to convey the findings during the creation of the themes and codes, so that the result could be more truthful, and richer.
- In order to clarify the bias a researcher brings to the study, a narrative was done by the researcher by interpreting the findings.
- The researcher presents negative and discrepant information; in this case the researcher presented negative situations, which were proclaimed by the participants on the findings.
- The researcher spent a prolonged time in the agri-business environment, where he collected the data, to gain a better understanding of the environ-ment and its SCM processes.

1.19.2 Qualitative reliability assessment

Creswell (2014) suggests several qualitative reliability procedures:

- Check the transcripts to make sure that they do not contain obvious mistakes made during the transcription.
- Make sure that there is no drift in the definition of the codes – a shift in the meaning of the codes during the process of coding.
- The researcher needs to coordinate communication among the coders by regular, documented meetings, and by sharing their analysis.
- Cross-check the codes developed by different researchers, by comparing results that are independently derived.

To check the reliability of the findings, the researcher used the following reliability strategy processes:

- The researcher read and re-read the transcripts to ensure that they did not contain mistakes made during the transcription.
- The researcher and co-coder ensured that there is no drifting in the definition of the code – that is, a shift in the meaning of the codes during the coding process.
- The participants were encouraged to maintain trustworthiness.
- During the coding process, the researcher communicated regularly with the co-coder.

1.20 ETHICAL CONSIDERATIONS

Mouton et al. (2006) defined ethics as the process associated with morality that deals with matters of both right and wrong, and conforms to the given standards of conduct. The researcher has to adhere to the general agreements about what proper and improper ethics are, in conducting the research. Monette et al. (2008) defined ethics as the responsibility of the researchers towards the candidates or participants in the research, the sponsors of the research, and the beneficiaries of the research. The researcher strictly adhered to the following ethical principles when collecting and analysing data:

1.20.1 Permission to conduct study

To collect the data, the researcher acquired a recommendation letter, as well as an ethical clearance certificate, from the University of Venda research ethics

committee, and approval to be granted permission to conduct the research, from the Vhembe District Municipality, which he presented to the participants.

1.20.2 Informed consent

The researcher received the necessary permission from the participants, after they had been thoroughly and truthfully informed about the purpose of the study. This implies that the researcher did not pose questions to the participants without their willingness and clear understanding of what they were doing and what they needed to expect and not to expect (Rubin & Babbie, 2011).The researcher therefore provided the participants with sufficient information, and did not deviate from the truth about the study, or hide any information about it.

1.20.3 Voluntary participation

Rubin and Babbie (2011) defined voluntary participation as the right which provides that one should be engaged out of one's own, without being pushed or forced. No one is supposed to be forced to participate, but needs to volunteer, for the researcher to obtain in-depth information. Participants were freely engaged to air their views, as the researcher was considerate of their rights. Participants have the right to know that they are being researched, the right to be informed about the nature of the research, as well as ensuring voluntary participation.

1.20.4 Anonymity and confidentiality

The researcher ensured that data collected from the participants was kept strictly confidential. The researcher made sure that no one outside the research team had access to the data. De Vos and Segers (2013) define privacy as to keep to oneself that which is normally not intended for others to observe or analyse. The researcher at all times adhered to the principle of confidentiality to protect participants. Confidentiality is a very serious ethical requirement in most of research (Wiles et al., 2008). Information gathered should always be handled with care, and not be accessed by the wrong people. The names and contacts of people are deleted immediately after use, or at the completion of the study by the researcher.

1.20.5 Avoidance of harm

Researchers should never cause any physical or mental harm to the participants. Harm may be caused by revelation of information that would embarrass or endanger the participants' home life, friendships or job. The researcher made sure that sensitive information was analysed in such a way that it caused no harm to anyone. Babbie et al. (2007) asserted that everything people do in life can possibly harm someone, and therefore researchers should weigh the risks against the importance and possible benefits of the research projects. The researcher made sure that participants were treated with the respect and dignity that they deserved. If participants are erroneously hurt by a researcher, the researcher should make it a point that an apology and redress are granted.

1.21 STRUCTURE OF THE THESIS

Summary of each chapter:

Chapter 1: Introduction and background of the study

The chapter provided the introduction, background, problem statement, aim and objectives of the study, the research questions, justification of the study, delimitations of the study, operational definitions, and the structure of the thesis.

Chapter 2: Literature review

This chapter reviews the supply chain management systems (SCMS) in the agri-businesses of the Vhembe District in the Limpopo Province of South Africa. The focus is on the demand and supply of agricultural produce, the supply chain of this produce, and the benefits of agricultural activities to both economic growth and social development, including employment. The legislative framework guiding agricultural activities and policies are provided in this chapter. A comprehensive literature review on SCMS and related concepts is also set out. The benefits of effective SCMS, as well as barriers to, and reasons for, the implementation of effective SCMS in agri-business, are presented.

Chapter 3: Research design and methodology

Details regarding the methodology and research design used in this study are covered in this chapter. The following concepts are included: research para-

digms, sampling process, data collection, data analysis, validity and reliability assessments and ethical considerations.

Chapter 4: Data presentation. analysis and interpretation

Data analysis and interpretation of results are discussed in this chapter.

Chapter 5: Discussion of results

A discussion of the empirical findings is held in this chapter.

Chapter 6: Findings, conclusion and recommendations

This chapter presents the research findings, together with the conclusion and recommendations relating to the research problems of the study. All the reasons for the decisions, including suggestions for future research, are given.

1.22 CHAPTER SUMMARY

This study explored the influence of SCMS on agricultural business in the Vhembe District of Limpopo. The researcher highlighted the problem statement, and seeks to pursue the objectives of the study through Deming's Theory of Total Quality Management, and institutional theory, as theoretical lenses. The preliminary literature review of the study focused on great proponents of SCM, and both conceptual and empirical concepts of the study were detailed. A qualitative methodology was used by the Interpretivist school of thought. The Interpretivist philosophy that makes use of the qualitative method, and was consequently adopted in this study. A qualitative approach was used to collect data through in-depth interviews conducted with participants. The researcher used qualitative data analysis (ATLAS.ti software and thematic content analysis) in order to analyse the collected data. The next section will be discussing the literature review of this study.

CHAPTER 2

SUPPLY CHAIN MANAGEMENT SYSTEMS LITERATURE REVIEW

2.1 INTRODUCTION

The previous chapter focuses on the orientation of the study, which explores the influence of supply chain management systems (SCMS) on agricultural businesses in Vhembe District Municipality (VDM) of Limpopo Province in South Africa. This chapter discusses the operational theories concerning the specified objectives of the current study. Thereafter, literature with regard to an overview of SCM is presented, citing its definitions and the business functions that follow SC systems and procedures. The chapter then further discusses SCMS, whereby a conceptualisation of the systems is explored, citing relevant literature that supports the topic. The components of SCMS are also presented, with sub-elements such as SC integrity, transparency and performance being explored in detail.

The chapter then seeks to explore the legislative framework that is currently being used to govern the systems and procedures that are implemented by organisations, particularly in the agricultural sector, with key elements being highlighted to which organisations must adhere. In addition to the legislative framework, previous SCMS are discussed, with special attention being given to the objectives and recommendations suggested for those studies. The chapter will then discuss the SCMS of the agri-businesses in the Vhembe District, with a focus on the structure and success factors influencing these SCMS in the district. The last section of the chapter reviews previous SCM studies that were conducted in the agri-business sector.

2.2 OVERVIEW AND CONCEPTUALISATION OF SUPPLY CHAIN MANAGEMENT

This section gives an overview and conceptualisation of supply chain management. Firstly, definitions are presented, giving a detailed analysis of the terminology being used in the SCM field. Thereafter, a brief description of SCM

in Africa is discussed, and then narrowed down to SCM in South Africa. The section discusses the SCM business functions and how they contribute to the main economic sectors such as agriculture.

2.2.1 Overview of supply chain management

The term ‘supply chain management’ (SCM) first appeared in print about thirty-five years ago (Oliver & Webber, 1982). As SCM evolved, disagreement abounded as to whether SCM was a strategy, a process, a business philosophy or just another term for logistics (Gibson et al., 2005; Mentzer et al., 2001). The term ‘supply chain management’, while more recent than ‘logistics’, is often seen as a wider concept. In 1998, the Council of Logistics Management determined that the two terms were not synonymous, and modified its definition of logistics as a subset of supply chain management. Very often, they are integrated as a single discipline (Lambert et al., 1998). There have been recent scholarly efforts to create consensus around the definitions of the terms (Gibson et al., 2005; Mentzer et al., 2001; Stock & Boyer, 2009), and to define key constructs in the discipline.

Supply chain management is a vital component in driving the growth and performance of any organisation. Interest in the theory of logistics and SCM has progressively improved since the 1980s, when businesses saw the tremendous benefits of collaborative interactions within and beyond their enterprise (Muogboh & Ojadi, 2018). Hence, with the world gradually evolving into a global economy, Africa is playing an increasing role, both as a major supplier of commodities and a huge consumer market for products from other parts of the world. Despite the important role played by Africa in global SCs, the continent is beset by huge infrastructural deficiencies and other challenging business conditions (Ruch, 2020). Hence, it has become necessary for organisations to understand logistics and SCM practices in Africa, and adopt more responsive and flexible approaches to SC design and implementation (Avasthy et al., 2015; De Grandis & Pinshaw, 2010). The next section discusses SCM processes within the African continent.

2.2.2 Supply chain management in Africa

For organisations that operate in Africa, or have business dealings, or intend to establish a footprint in Africa, SCM has become a strategic competitive priority to understand the current state of logistics in Africa. Despite numerous challenges, logistics network design plays a significant role in enabling trade and commerce in Africa. An ideal logistics network refers to the design of efficient and cost-effective manufacturing and/or distribution facilities, with an optimal number of warehouses, manufacturing plants, site locations and transportation systems to deliver goods and services, in order to create a value-driven system that aligns supply and demand connections.

According to the United Republic of Tanzania (URT) (2011), Africa's trade amounts to about US$805 billion – which is 2.9% of international trade. Despite the minimal role Africa plays in global trade, measured in terms of export and import, foreign trade represents more than 50% of many sub-Saharan African (SSA) nations' GDP, which implies greater reliance on import rather than export (Schmieg, 2016). However, SSA was able to increase its export capability from £94 billion to £424 billion from 2000 to 2013 (Schmieg, 2015). In 2015, due to a decline in oil price, fear of the Ebola crisis, domestic and political turmoil and a few other factors, Africa experienced around a 30% decline in dollar price, which is around a 40% decline in its exports (URT, 2011). International trade performance in Southern Africa, North Africa and East Africa is higher than that of West and Central Africa, partly due to port inefficiencies and landlocked issues in some African countries (URT, 2011). Logistics and SCM play a critical role in facilitating regional and international trade in Africa. Performance measures have been identified which enable the discipline to operate effectively. These are discussed in section 2.2.2.1.

2.2.2.1 Supply chain management performance measures

Africa is faced with varied and continually evolving SC challenges, such that even experienced companies with long and good track records are forced to find new, creative ways to manage the logistics and SC processes (Ruch, 2020). Logistics infrastructure differs considerably across the African sub-regions (Avasthy et al., 2015). According to Avasthy et al. (2015), the airfreight centres of Addis Ababa (Ethiopia), Nairobi (Kenya), and Johannesburg (South Africa) have relatively

good air links with East and South Africa, providing adequate capacity to meet present demand in those regions. Airfreight size in West Africa is still insufficient, although there are recent developments in Angola and Nigeria that could deliver additional cargo increases in a few years, thus enabling those metropolises to function as flight centres for West African nations. Malawi, in Southern Africa, is also faced with landlocked challenges, making it difficult to transport goods and services to fragmented localities (Hanif & Kaluwa, 2016). The East African region is said to have limited spacious wholesale outlets in some areas, and most stores often run out of stock due to small storage capacity (Hanif & Kaluwa, 2016).

The next section discusses SCM functions and systems.

2.3 SUPPLY CHAIN MANAGEMENT FUNCTIONS

This section discusses the functions that are enablers to the processes and operations of supply chain management. Thereafter, the section will analyse the system components, with special attention being given to the components and the conceptualisation of these aspects. The next section will discuss the SCM business functions.

2.3.1 Supply chain management business functions

Supply chain business functions, following Marchesini and Alcântara (2016), are the different processes in which businesses provide products to customers, with the expectation of some form of value to be achieved. Lambert et al. (2008) provided a discussion on the important role which SCM plays in acquiring the advantages that organisations enjoy, by applying the eight key logistics business processes. The involvement of the key business processes in organisations therefore directly influences the efficiency and effectiveness of these business operations (Singh & Kumari, 2022). However, the businesses that adopt these business functions are always faced with challenging aspects, such as failure to meet customers' needs at the lowest possible cost. Figure 2.1, below, illustrates the eight key business processes, identified by the Global Supply Chain Forum model (Naslund & Williamson, 2010) that organisations apply to their SCM functions:

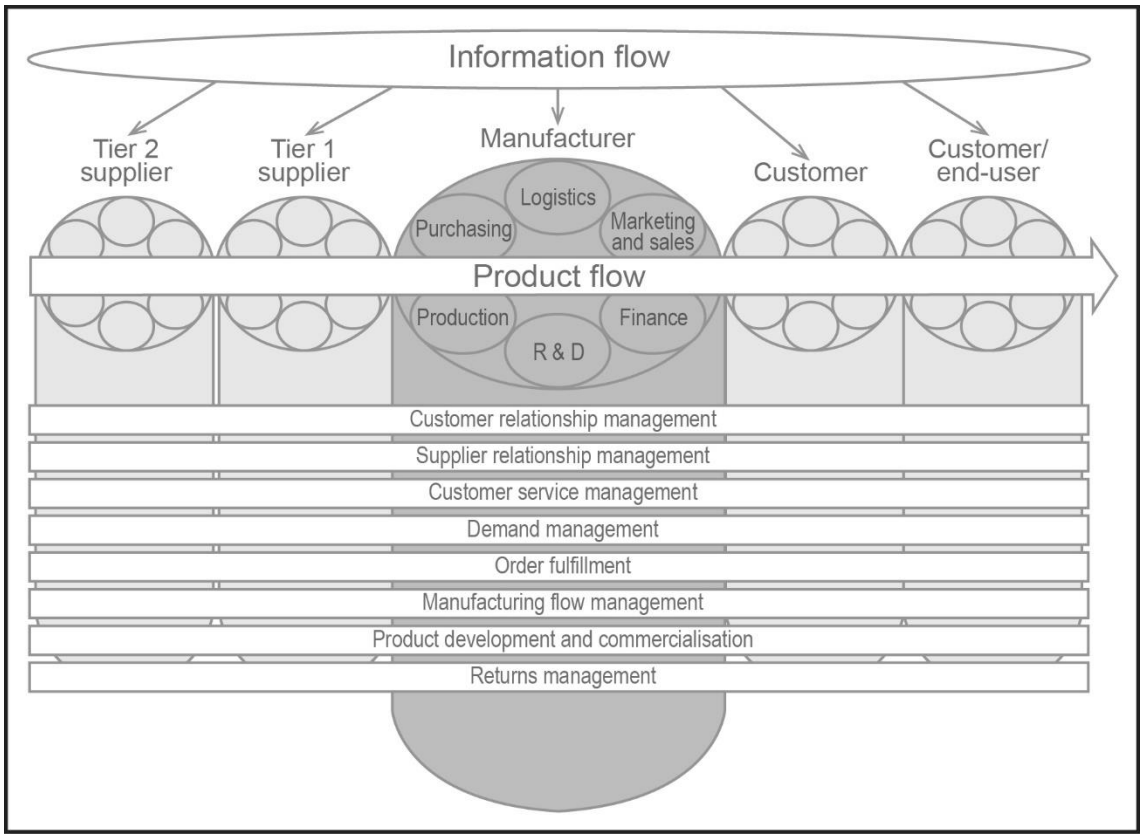

Figure 2.1: Global supply chain forum model (**Source:** Naslund & Williamson, 2010)

Figure 2.1 above indicates the different logistics processes and how they link to the SCM networks in organisations. A clear indication of information flow is highlighted in the diagram, showing how first-tier and second-tier suppliers communicate with the manufacturer, the customer and the end user. Support activities such as marketing and sales, research and development, finance and production are depicted, linking them with product and information flow and the different stages of production. The eight business processes are discussed in depth from section 2.3.1.1 to section 2.3.1.8 in this study.

2.3.1.1 Customer relationship management

Customer relationship management (CRM) has been described by Ghazian et al. (2016) as the SC business function that provides customers with value through achieving both tangible and intangible benefits by creating a link with its targeted customers. Furthermore, the relationship that is attained develops a strategic link between those customers and the organisation, which leads to that firm attaining a competitive advantage in that business environment. The importance of CRM revolves around its ability to analyse data about the historical trends of customers

with a firm, which helps the firm absorb its customer base, leading to improved sales growth margins (Soltani et al., 2018). Improved sales growth margins may therefore position the organisation's level of competence to be more acceptable to other business entities.

2.3.1.2 Supplier relationship management

Supplier relationship management (SRM) is a term that has been widely used by scholars to describe elements of supply chain management. According to Lii and Kuo (2016), supplier relationship management (SRM) can be described as a network in which buyers and suppliers jostle for competitive advantage in the business environment, through exhausting the available resources as a result of the formation of organisational consortiums (Tseng, 2014). Supplier relationship management plays an important role in ensuring that the organisation responds to dynamic and unpredictable changes occurring in the business environment (Zhang & Cao, 2018). These changing global trends, such as regional or international and reduced product life cycles, have thus made the operational capabilities of supplier relationships become strategic assets in organisations.

2.3.1.3 Customer service management

Customer service management (CSM) has been defined by Scheidt and Chung (2019) as the process of aligning SC functions with different customer requirements in the delivery of a service through relationship networking of the various parties involved in the process. Customer service management is divided into two main categories of customer service behaviour: (a) the prescribed role service behaviour, which focuses on behaviours expected from employees when addressing customer needs (Teng, 2019), and (b) the extra-role service behaviour, which describes the discretion employees use when serving customers at a workplace (Lyu et al., 2016). These behaviours are usually referred to as service-oriented organisational citizenship behaviours, resulting in better customer service level compliance by other businesses.

2.3.1.4 Demand management

Demand management has been highlighted by various authors as a term that is linked to SCM business functions. According to Lysons and Farrington (2012),

the term ‘demand management’ is defined as a way in which SC business practices are properly centered according to the requirements of the customers. The process involves the ability of the players involved to distribute goods, using multiple roles that are provided by a manufacturer that collects orders from first-tier suppliers of the manufacturer’s orders. This facilitates efficient and effective distribution through the relevant networks and channels that are required for demand management processes.

2.3.1.5 Order fulfilment

Ishfaq and Bajwa (2019) describe order fulfilment as a process that enables the required operations when designing an SC network, enabling an organisation to meet consumer expectations at the lowest operational cost. Thus, the process enables a flexible flow of materials from the various sections in the manufacturing process, with the minimum of disruptions achieved. The most important components of this process address aspects such as advanced and complex collaborations between organisations and the suppliers that provide support networks as well as the customers (Gibson et al., 2015). Complex collaborations thus entail a need for synchronisation of procedures between organisations and suppliers, such as the nature and specifications of goods that are needed, in order for correct order fulfilment processes to take place.

2.3.1.6 Manufacturing flow management

The flow of goods and services can be established through relevant channels in the supply chain. According to Szwejczewski et al. (2016), manufacturing flow management can be defined as a process in which SC activities needed for implementing finished products in a manufacturing plant, are carefully directed towards an efficient distribution network through the manufacturing resource planning processes. The process has been of great importance, as it promotes other processes including lean manufacturing and just-in-time (JIT). Fullerton et al. (2014) highlight that manufacturing flow management systems supports lean manufacturing by delivering the finished products in the right quality and quantity, in the right place and at the right time. In line with this, a sound flow of goods, with the support of lean systems, facilitates the efficient implementation processes of the organisations’ planning operations.

2.3.1.7 Product development and commercialisation

Product development and commercialisation have been defined by Cui and Wu (2016) as the SC business function that coordinates suppliers and customers in the development of the product, to reduce the throughput time of that product on the market. Hence, in collaborative product development, organisations integrate with expert players to access new technologies and knowledge. The success factors of product development and commercialisation include supplier integration practices, long-term collaboration, as well as JIT practices (Melander & Lakemond, 2015). The role of suppliers in this business function therefore revolves around crafting new systems for product developers, as organisations rely on sound ideas from product-developing companies.

2.3.1.8 Returns management

Returns management plays an important role in identifying the different functions of SCM processes. According to Jaaron and Backhouse (2016), the term 'return management' in the SC can be defined as the reverse flow of products and materials from the end user to the point of the manufacturer. The process ensures that organisations work towards eliminating defects, and design products that support the conformance in which they should serve. Singh et al. (2013) indicate that integrating forward logistics operations with reverse logistics processes provides an important indicator for reducing costs, and also optimal usage of organisational resources. In this way, the overall relationship between the manufacturer and end user of products is closely monitored.

2.3.2 Supply chain management systems

Supply chain management systems (SCMS), including block-chain technology (Venkatesh et al., 2020), electronic data interchange, extranets, electronic commerce and radio frequency identification technologies (Curtin et al., 2007), improve channel efficiency and performance by linking the channel partner's business processes to automatically distribute information among SC partners (Robey et al., 2008). Many SCMS are mandated by an 'initiating-partner' that requires the assimilation, defined as the purchase and deployment of technological components and the consistent utilisation of information created by the

technology of a ‘target-partner’ (Seggie et al., 2006). Value from the SCMS is optimised when both SC partners adopt, deploy and utilise the technology.

Investing in SCMS technology has been shown to improve supply chain efficiency and performance. Research also shows that considerable SCMS investments do not always lead to improved organisational performance (Aral & Weill, 2007; Rai et al., 2009). Some suggest that this productivity paradox is the result of an ‘assimilation gap’, where the target partner’s organisational usage of technology lags far behind the acquisition of its adoption of the physical components (Chatterjee et al., 2002). Research supports the notion of an assimilation gap, and shows that no associations exist between the intensity of the physical investment in IT and firm performance (Taylor & Deitz, 2020), except when considering IT usage (Richey et al., 2010). Understanding the target partner’s gap between the adoption and usage of the technology is important in the SCMS assimilation, where the performance outcomes for the individual firms are dependent on the adoption and routinisation behaviours of both channel partners (Chatterjee et al., 2002; Fichman & Kemerer, 1997; Rai et al., 2009). In addressing the SCMS, several authors have aligned SCMS with practices that are being used in industries, particularly the agri-business and environmental sectors. The five key components that fall under SCMS comprise plan, source, deliver, make and return. These five components have been discussed extensively from section 2.3.2.1 to section 2.3.2.5.

2.3.2.1 Supply chain planning

The strategic role of procurement can only be realised when included in the corporate strategic planning process and implementation at the same level as other functional areas (Mrope, 2018). Planning activities in procurement are vital, as the organisation can aggregate its requirements, avoid emergency procurement wherever possible, and integrate its planned expenditures with the organisational budget (URT, 2011). The importance of procurement planning as a strategic function has to be well considered by all members in each section within an organisation. Procurement planning in public procuring entities calls the attention of all user departments to be involved in the planning process (URT, 2011). In this aspect, the involvement of key stakeholders, who are the interested personnel, is vital in the planning process (Mori et al., 2014).

Procurement planning is the purchasing process of the right quantity of products from suitable suppliers in time and with minimum costs (Farhat et al., 2017). It is the function associated with the purchasing of goods and services from various external sources of supply. This process may involve three major steps: defining the items that are needed to be procured, defining the process for acquisition of the needed inputs, and preparing a schedule of the time frames for delivery or execution purposes (Apiyo & Mburu, 2014). Through this activity an organisation can obtain many benefits, including being able to get its supplies timely for various purposes.

2.3.2.2 Supply chain sourcing

Smeltzer et al. (2003) defined strategic sourcing as a comprehensive process of acquiring inputs, as well as managing supplier relations, by achieving the organisation's long-term objectives. Narasimhan and Das (1999) viewed strategic sourcing as the use of supplier capabilities in the process of design and manufacturing to achieve strategic objectives. Strategic sourcing has been shown to have a significant impact on several aspects of firm performance. For instance, Carr et al. (2002) empirically showed that strategic purchasing has a positive impact on a firm's financial performance. Strategic purchasing contributes to cultivating effective communication and long-term relationships between suppliers and buyers, and they are antecedents of financial performance (Chen et al., 2004). Purchasing integration through strategic sourcing promotes better buyer-supplier relationships and supplier development (Narasimhan & Das, 2001). To achieve successful strategic sourcing, firms need to maintain good relationships with suppliers, and seek to achieve their long-term goals.

In conjunction with strategic sourcing, there has also been a major technological transformation in purchasing, by way of e-business technologies, which can provide organisations with a wide range of benefits such as savings in transaction costs, inventory reduction and the establishment of communication networks between buyers and suppliers (Deeter-Schmelz et al., 2001). Johnson and Whang (2002) categorised various forms of e-business technology into three types: e-commerce, e-procurement and e-collaboration. E-procurement refers to the use of e-business technologies in purchasing (Presutti, 2003). Many firms are currently considering adopting both strategic sourcing and e-procurement initiatives to

improve performance. Despite the presence of a growing body of knowledge on the impact of strategic sourcing and e-procurement independently, there has been little or no research to date on how they jointly affect the firm's performance. This study investigates the combined impact of strategic sourcing and e-procurement as a firm's capability in performance, based on the theory of dynamic capabilities.

2.3.2.3 Supply chain delivery performance

Performance measurement is of particular relevance, with increasing complexities of SCs, and various conditions affecting SCs, such as globalisation, advances in manufacturing processes and shortened product life cycles (Mondragon et al., 2011). The complexity of SCs increases performance. This helps increase the speed of factors affecting SC practices in aspects such as globalisation, competition and collaboration among many supply chains. At the same time, maintaining sustainable levels of performance measures under the current levels of competition and the flux of dynamic conditions, including uncertainty and stochastic demand, is a challenging task for decision-makers at all levels of an organisation. Supply-and-demand uncertainties are common issues across a range of SCs and industries. In recent times, the fuzziness (uncertainty) of various decision data has been considered, and incorporated into various decision support systems and models, such as the following: modelling for selection of appropriate suppliers in complex situations (Ordoobadi, 2009), making decisions about SC performance (Ganga & Carpinetti, 2011), evaluating the performance of global third-party logistics service providers (Kumar & Singh, 2012), and modelling for engineering asset condition monitoring (Lau & Dwight, 2011).

2.3.2.4 Supply chain make to order

Supply chain make-to-order (MTO) processes are associated with the demand mechanisms that occur within a supply chain. The demand chain refers to the demand information process of the customers, and the SC refers to the material or service flow and the related information from the suppliers (Hilletofth, 2011). Demand chain management aims at understanding the behaviour of customers and markets, managing demand processes and creating new demand, whereas

SCM focuses on improving the efficiency of the production and logistics processes (Hilletofth & Lättilä, 2012). As the demand and supply chains affect each other (Walters, 2006), they should be coordinated, and information shared in both directions. The combination is called demand-supply chain management (Hilletofth, 2011), to coordinate the demand creation and fulfilment processes across inter-organisational boundaries (Hilletofth, 2011).

2.3.2.5 Reverse logistics

'Reverse logistics' (RL) is a relatively new term (Mangla et al., 2016). It focuses on waste management and product recovery, and has immense potential for increasing profit (Stindt et al., 2017). Reverse logistics includes all logistics activities that enable the returns of used products to recapture value or implement proper disposal. Repair, recycling, reuse, re-manufacturing and refurbishing are some of the basic processes in RL for which manufacturers are responsible to perform in the reverse flow (Prajapati et al., 2019). Managing RL is a complex operation, due to the diverse range of activities vis-a-vis forward logistics (Pokharel & Mutha, 2009). Forward logistics concerns material flow from raw material to the product, and from the supplier to the final consumer, while RL concerns the flow of used materials and products from the final consumer to manufacturers and suppliers (Govindan & Soleimani, 2017; Hansen et al., 2018). The complexity of RL arises from the quality of returned products, low standardisation and more manual processes, while forward logistics activities are more standardised with higher-quality products (Hansen et al., 2018; Jaaron & Backhouse, 2016). However, RL can potentially improve forward logistics performance (Govindan & Soleimani, 2017; Hansen et al., 2018).

2.3.3 Supply chain management practices

Li et al. (2006) define supply chain practice as a set of activities undertaken in an organisation to promote effective management. Implementing the SC enables companies to eliminate waste, create a synergetic effect, and effectively compete in the global marketplace. The main supply chain goal is to develop intra- and inter-organisational partnerships through information sharing and coordination, in order to exploit individual benefits of SC partners. The application of SC practice has the effect of developing good business relationships with customers and

suppliers. Customers directly inform companies about their preferences, and, with the support of suppliers, these companies vary the products produced to meet their customers` requirements. There is no unique model as to how to apply SC practice in companies. Each firm needs to tailor these practices to its business needs, and in this process, it is possible to use different modes of SC practice.

2.3.3.1 Supplier partnerships

Any firm may establish a short-term supplier partnership, with the focus on reduction of distribution costs and information sharing minimised (Vasiljević et al., 2018). The focus is also on developing a strategic supplier partnership, and to establish this in the long term, along with a reduction in the total costs of both parties; information sharing is performed to reach a mutual goal (Svahn & Westerlund, 2009). As long-term cooperation is based on partnerships, both companies benefit. Also, a key principle is to develop these relationships. Supplier partnerships encourage a firm to exploit its strategic and operational capability and achieve cost reduction.

2.3.3.2 Customer relationships

Customer relationships are an essential element of a supply chain (Chavez et al., 2014). No firm can operate without customers. Positive customer relationships are crucial for the growth of the firm, and they are an essential element for establishing and maintaining links in the supply chain (Tzokas et al., 2015). Mutual trust is the first requirement of a successful partnership. The level of trust between a firm and its customers affects the efficiency of mutual planning, which improves the enterprise's business (Li & Lin, 2006). A firm with long-term customer relationships will achieve high-performance levels by utilising customer information, which reduces costs and expedites delivery (Ling-Yee, 2011). Unexpected changes may force the firm to develop the ability to adapt to a new environment. Enterprises need to accept adjustments and use different strategies, as changes in the environment can be very frequent and rapid (Srinivasan et al., 2011).

2.3.3.3 Quality of information sharing

One of the most important aspects of a partnership is information sharing. When sharing information, it is crucial to identify the quality of such information. Ghosh and Fedorowicz (2008) concluded that, over time, information sharing builds a relationship that supports confidence between companies, suppliers and consumers. Sharing information within an SC depends on the information being shared, the method of sharing, and the party it is being shared with (Chen et al., 2011). The information must include some of the following aspects: ease of use, accuracy, timeliness, sufficiency, reliability and credibility. When assessing information quality, a domain for information sharing between partners, and the level of meeting the needs of companies for that information, are identified (Zhou et al., 2014). Companies need to use the information as a strategic tool which ensures that materials and products within the SC are delivered on time and in good condition (Li et al., 2006).

Information-sharing effectiveness plays an important role both before and after a disruption in a supply chain (Kamalahmadi & Parast, 2016). Information sharing includes real-time, two-way data exchanges on different aspects of operations management (inventory levels, order status, delivery schedules, etc.) as well as forecasts and plans with SC partners. These have a significant impact on the performance of a supply chain (Lee et al., 2011). Sharing information effectively, each SC member receives accurate and timely information. This is useful for making timely production, inventory management, packaging and logistics management decisions for improving the efficiency and effectiveness of the SC (Li & Lin, 2006). Effective information sharing would help restore the SC to its original or better condition after a disruptive event.

Effective information sharing is for improving the SC performance (Baihaqi & Sohal, 2013). An organisation provides rapid access to the required information to improve the SC efficiency and effectiveness and to meet customer needs by taking relevant data and sharing it with parties within the SC (Li & Lin, 2006). In a highly uncertain environment with changing markets, organisations tend to build strategic partnerships with their SC members to share information, increase organisational flexibility, and reduce the risk associated with the uncertainty (Li & Lin, 2006). Several other studies show that cooperative information sharing

among SC members improves the competitiveness and effectiveness of SCs (Sezen, 2008). As pointed out earlier, however, extensive information sharing along the SC suffers information leakage. This impacts information-sharing effectiveness, which affects the supply chain relationship (SCR). While information leakage has a downside effect, it is mediated by information-sharing effectiveness to indirectly influence the SC relationship. Information sharing is adversely affected by information leakage and subsequently impacts the SC relationship.

2.4 THEORETICAL FRAMEWORK OF THE STUDY

This section discusses the three theories that were adopted for use in this study. They include the resource-based view, Institutional, and Deming's (TQM) theory. Section 2.4.1 discusses the resource-based view theory concerning SCM systems.

2.4.1 Resource-based view theory

David Ricardo's study in the 19th century has provided an initial glimpse of the foundation of the resource-based view (RBV) theory (Wan et al., 2010). The authors viewed that Edith Penrose provided significant insights on the RBV by investigating a link existing between firms' resources and their growth. Thus, a conclusive summary that was provided posited that a firm's internal and external growth can be achieved through effective exploitation of its core resources (Newbert, 2007). Another similar view is that of Wernerfelt (1984), which states that an organisation's resources and capabilities are key factors that define its profitability. The author's work is regarded to have had a significant bearing on the theory, which was subsequently further expanded into a relevant and successful theory through work undertaken by Lippman and Rumelt (1982) and Barney (1986). The latter provided a framework of the key principles and dimensions of resources and competitive advantage in his study in 1991 (Kozlenkova et al., 2014). According to Habbershon and Williams (1999), the RBV resides in the heterogeneity of a firm, which is the immobile, inimitable and intangible range of resources within an organisation, which defines its competitiveness and performance appraisal. Drawn from Helfat and Peteraf's (2003) assertion of the core point of the RBV theory, it could be viewed that businesses have their distinct

and unique set of resources (tangible and intangible) which can enable them, if managed effectively, to achieve and sustain great levels of competetiveness and profitability in the long-term (Almarri & Gardiner, 2014).

The RBV has been widely implemented in several empirical investigations, notably in marketing, with a specific focus on marketing strategy (Fang et al., 2011; Ramaswami et al., 2009; Slotegraaf & Dickson, 2004), international marketing (Capron & Hulland, 1999; Ruiz-Ortega & García-Villaverde, 2008), marketing innovation (Dutta et al., 1999; Srinivasan et al., 2002) and in the supply chain (Ghapanchi et al., 2014). Given this body of literature, one could therefore acknowledge that this concept, a major theory able to assist businesses to understand the relative importance of their resources, is a vital element in achieving sustainable competitive advantage.

The RBV plays a major role in enabling firms to assess and determine, with great accuracy, key and important internal resources that are crucial in enabling businesses to achieve long-lasting success in their respective industries. This merit was further extended to emphasise the attribute that highlights the importance that organisations' resources have in contributing to their growth and profitability (Almarri & Gardiner, 2014). One of the most patent demerits of this theory, however, resides in its inability to offer sound measurement of intangible resources that an organisation may have along with its tangible ones. The lack of such measurement casts further doubt on the reliability that this framework can have to consistently provide sound and comprehensive findings, ideal to substantiate its relevance (Barney et al., 2001). Agri-businesses recognise the significance of establishing effective supply chain management (SCM) practices to attain a competitive advantage, ultimately securing a dominant position in the market. Consequently, SCM theory is regarded as a pivotal framework for investigating the impact of SCM systems on the performance and success of agri-business enterprises

2.4.2 Institutional theory

The Institutional theory was adopted to link SC and agri-business within value chains. This theory offers a theoretical insight into what researchers can identify, and examines influences that promote survival and legitimacy of organisational

practices, including factors such as culture, social environment, regulation (including the legal environment), tradition and history, as well as economic incentives, while acknowledging that resources are also important (Barrett & Brunton-Smith, 2014; Hirsch, 1975; Rosenbaum et al., 1999). Validity also refers to the adoption of SCMS as being proper and appropriate (DiMaggio & Powell, 1983).

The Institutional theory is traditionally concerned with how groups and organisations better secure their positions and legitimacy by conforming to the rules (such as regulatory structures, governmental agencies, laws, courts, professions, scripts and other societal and cultural practices that exert conformance pressures) and norms of the institutional environment and systems (DiMaggio & Powell, 1983; Meyer & Rowan, 2006; Scott, 2008). According to the Institutional theory, external social, political and economic pressures influence firms' strategies and organisational decision-making as firms seek to adopt legitimate practices or legitimise their practices in the view of other stakeholders (Jennings & Zandbergen, 1995; North, 1990).

The institutional theory is a tool that enables technological advancements and regulations, affects decisions regarding small-scale farming businesses and SCs (Ball & Craig, 2010) and environmental management (Tate et al., 2014). For example, Delmas and Toffel (2004) drew on the Institutional theory to examine how different organisational strategies lead to the adoption of supply chain management systems. Key drivers in instigating core competencies in the market are Clark and Lengnick-Hall (2012) and government regulations (Rivera, 2004). This study therefore borrowed from the Institutional theory, as it can define the systems, rules and regulations that affect agricultural businesses. The Institutional theory details a comprehensive roadmap towards the activities that are undertaken by farmers and agricultural experts. The incorporation of Institutional theory in this study is crucial as it offers a framework for understanding the systems, rules, and regulations that influence agricultural businesses. Institutional theory provides valuable insights into the social, political, and economic structures that shape the behaviour of farmers and agricultural experts within agricultural systems. By examining the institutional context in which agribusinesses operate, researchers can gain a comprehensive understanding of the

factors that shape decision-making, resource allocation, and strategic choices within the agricultural sector.

2.4.3 Deming's theory of total quality management

According to Lee et al. (2010), TQM refers to an operational strategy designed to enhance the level of quality management within an organisation. It has been described as a management approach aimed at gathering organisational resources, in order to increase and improve customer satisfaction (Das et al., 2011). In addition, Vanichchinchai and Igel (2011) stated that TQM is a key activity that capacitates firms in their quest to achieve adequate competitive advantage. Hung et al. (2011) regarded TQM as a determinant of organisational learning, innovative performance and firm competitiveness. Similarly, a study by Zu et al. (2010) ascertained that fourteen strategies which are being employed to implement TQM strategies result in better performance outcomes in terms of robust supplier management, customer focus, process management and continuous management. This illustrates the influence of TQM in contributing to the growth of performance.

With regard to TQM's relation to the current study, the Deming theory was utilised. The Deming management method, a phrase coined by Rungtusanatham et al. (2003) to encompass the breadth of Deming's TQM approach, is best known as a prescriptive set of 14 points. Complementing these 14 points in the Deming management method are "seven deadly diseases" that impede organisational performance, and numerous "obstacles" that prevent the attainment of organisational quality (Deming, 1986). (See the list of the 14 points, the "seven deadly diseases," and the "obstacles"). The 14 points in the Deming management method are stated as imperative statements or "commands", and are intended to serve as principles of intra-organisational and inter-organisational behaviour (Anderson et al., 1994). Deming (1986) formulated the following 14 points that may be used to overcome inefficiency:

- Create constancy of purpose toward improvement of product and service to become competitive and to stay in business, and to provide jobs.

- Adopt the new philosophy. We are in a new economic age. Western management must awaken to the challenge, must learn their responsibilities, and take on the leadership of change.
- Cease dependency on mass inspection to improve quality. Eliminate the need for inspection on a mass basis by building quality into the product in the first place.
- End the practice of awarding business based on price tag alone. Instead, minimize total cost. Move toward a single supplier for any one item, on a long-term relationship of loyalty and trust.
- Improve constantly and forever the system of production and service, to improve quality and productivity, and thus constantly decrease costs.
- Institute training on the job.
- Institute leadership. The aim of supervision should be to help people and machines and gadgets to do a better job. Supervision of management needs an overhaul, as well as supervision of production workers.
- Drive out fear, so that everyone may work effectively for the firm.
- Break down barriers between departments. People in research, design, sales and production must work as a team, to foresee problems of production and use that may be encountered with the product or service.
- Eliminate slogans, exhortations, and targets for the workforce asking for zero defects and new levels of productivity. Such exhortations only create adversarial relationships, as the bulk of the causes of low quality and low productivity belong to the system and thus lie beyond the power of the workforce.
- Eliminate work standards (quotas) on the factory floor. Substitute leadership and eliminate management by objective. Eliminate management by numbers and numeric goals.
- Remove barriers that rob the hourly worker of his [or her] right to pride of workmanship. The responsibility of supervisors must be changed from sheer numbers to quality, and remove barriers that rob people in management and engineering of their right to pride of workmanship. This means, inter alia, abolishment of the annual or merit rating and management by objective.
- Institute a vigorous program of education and self-improvement.

- Put everyone in the firm to work to accomplish the transformation. The transformation is everybody's job.

The 14 principles proposed by Deming provide the cure for the "seven deadly diseases", and help organisations overcome the obstacles that are aligned in producing and delivering high-quality products and services. Though the 14 points first appeared in printed form in Deming (1986), they had been envisioned as early as the 1940s (Miyagawa & Yoshida, 2010), and were developed and crystallised over four decades. During these 40 years, Deming's consulting experiences with firms in Japan and the United States led him to derive generalisations that eventually became the 14 points, the "seven deadly diseases," and the "obstacles" presented earlier (Miyagawa & Yoshida, 2010; Waldman, 1993). A diagram depicting the Deming theory is depicted in Figure 2.2, below:

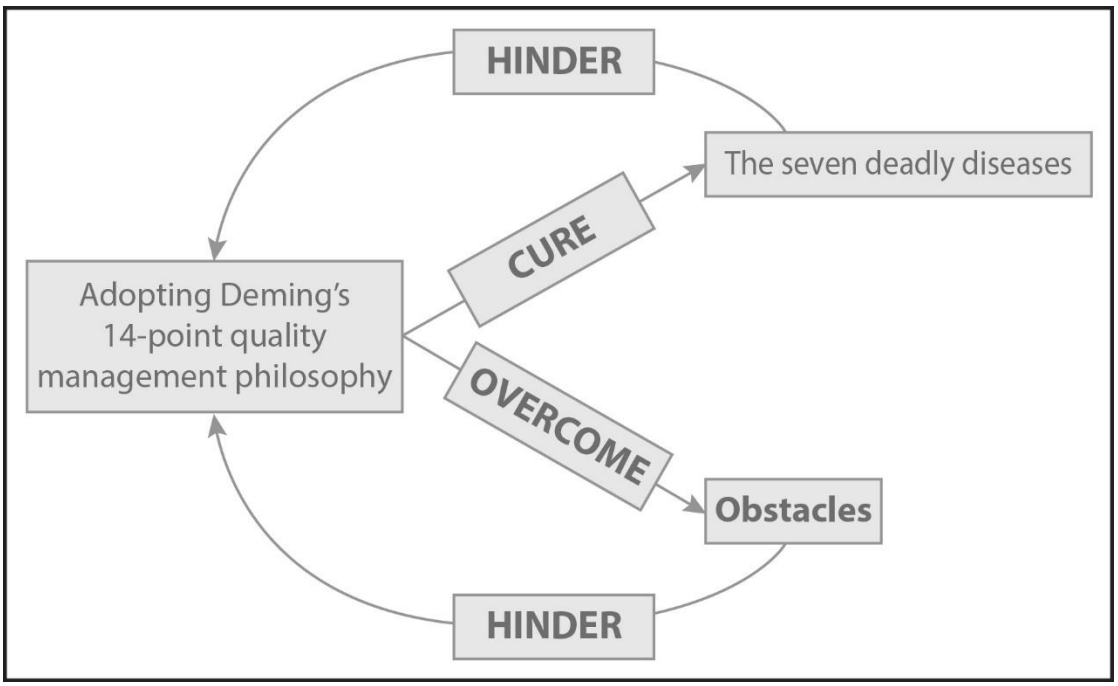

Figure 2.2: Deming's 14 points, seven deadly diseases, and obstacles **(Source:** Deming, 1986)

Suggested in the 14 points are numerous practices to be performed in managing variability (Anderson et al., 1991), some of which are methodological (i.e., control charting) while others are behavioural (i.e., use of teams) in nature (Anderson et al., 1994). These methodological and behavioural practices cut across organisational levels from the individual to the group, to the entire organisation, to the entire system in which an organisation is embedded. Additionally, their implementation have simultaneous effects on traditionally separate functional

areas of management responsibilities (Baillie, 1986; Gartner & Naughton, 1988), including personnel management, strategic management, shop-floor control and purchasing. Deming's theory of Total Quality Management (TQM) is employed as a fundamental framework in this study to explore the influence of Supply Chain Management Systems (SCMS) on agri-businesses within the Vhembe District Municipality. By incorporating this theory the researchers aim to understand how SCMS practices impact the performance and success of agri-businesses operating within the municipality.

2.5 LEGISLATIVE FRAMEWORK OF SUPPLY CHAIN MANAGEMENT SYSTEMS IN AFRICA

This section discusses the laws and regulations that govern the logistics and SCM industry on the African continent. Special attention is given to the regulatory environment and the implementation of policies by organisations and various sectors in Africa.

2.5.1 Regulatory environment of supply chain management in Africa

The regulatory environment in some parts of Africa is not very helpful. These regulations relate to transportation services, business practices, customs processes, governance and logistics infrastructure. Runji (2015) conducted transport policy reviews of six countries – Ethiopia, Benin, Burkina Faso, Gabon, Ghana and Zambia, which covered a cross-section of sub-Saharan Africa. The policy reviews and considerations focused on the following sectors: road, rail, port and maritime and corridor/transit traffic. Runji (2015) observes that some progress made in the transport sector in the past two decades can be attributed to the policy changes made at that time. In most SSA countries, there seems to be a significant policy shift from public sector managed logistics infrastructure to private sector managed infrastructure. Across most of the SSA countries, this shift could be observed in the form of privatisation of concession of seaports, airports, railways and road networks. This private sector involvement has generally led to logistics improvement in most cases. There were a few exceptions where the privatisation expectations were not met; however, some identified and unaddressed limitations were traced to poor monitoring and evaluation, and the lack of skills.

2.5.2 Policy implementation of supply chain management systems in Africa

Policy implementation of SCM processes in Africa has been challenged by climate change and rapid urbanisation, information and communication technology issues (Runji, 2015). According to the Sub-Saharan Africa Transport Policy (SSATP) (Runji, 2015; SSATP, 2012), programes, real integration, connectivity and cohesion in the African transport scheme can only materialise if all roadblocks to domestic and international merchandise and travellers, that hamper the progress of intra-African trade, are removed, and the issue of bribery and extortion stopped. For example, import restrictions in Nigeria seem to encourage cross-border smuggling between Benin and Nigeria (Runji, 2015). Through the Regional Economic Communities (RECs) and the Transport Coordination Committee (TCC), SSATP could perform a supporting role to promote and implement policy modifications and coordination at continental, regional and country levels (SSATP, 2012). To achieve full integration, three objectives were identified by SSATP in fostering strong policy pillars in trade and transport systems as depicted in Figure 2.3 below:

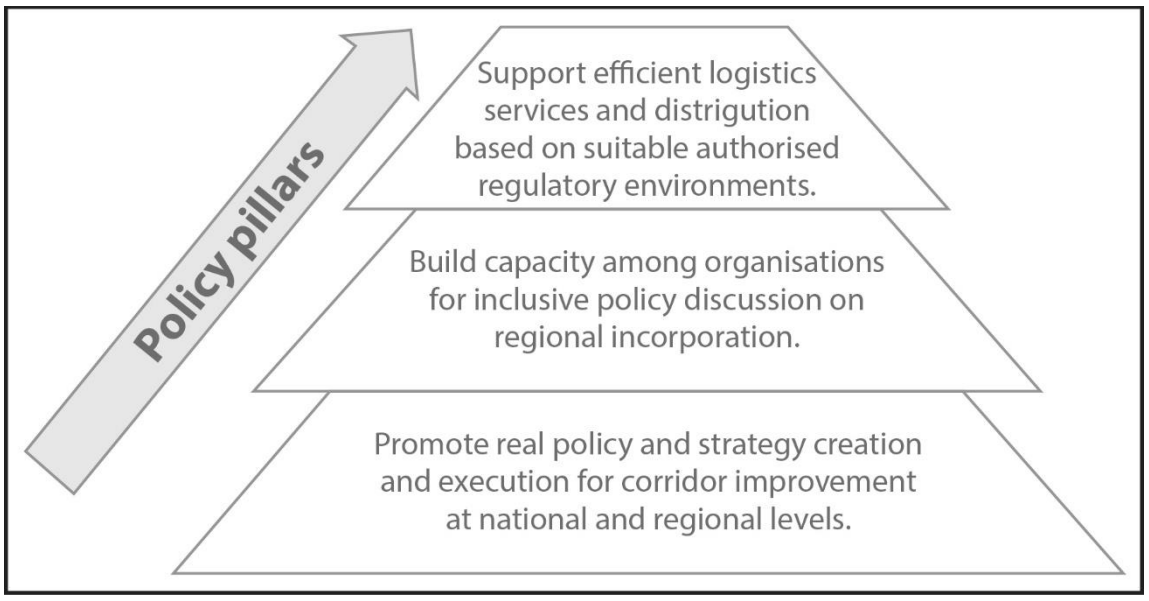

Figure 2.3: Policy pillars of trade and transport systems (**Source:** SSATP, 2012)

Figure 2.3 depicts the pillars that are aligned with policy implementation by African countries. The figure indicates three levels of hierarchy detailing the capacity and strategies that organisations must put in place within their SCM systems. However, policy uncertainties appear to be another challenge in most

SSA countries, especially the low-ranked countries in the World Bank LPI study. It is not uncommon for governments in the region to alter policies that impact logistics. For instance, over the last two decades, there has been a series of cross-border restrictions between Benin and Nigeria. These policy changes have a way of disrupting well-organised and functional SCs in Africa.

2.5.3 Agricultural policy in perspective

The existing agricultural policy approach, such as land restitution, redistribution and tenure reform, remains indefinite in South Africa (Greyling et al., 2015). There is therefore a distinct gap in knowledge and awareness of the plan's implementation process of government's agricultural policies and programmes. South African agriculture is sustained by frameworks of policies that cut across agricultural institutions, distinct labour patterns, natural resources and technology, and extension support services (Khapayi & Celliers, 2016). In South Africa, there is an array of agricultural policies and programmes that existed post-independence. The existing agricultural policy approach – land restitution, redistribution and tenure reform, is saddled with daunting challenges (Phokele & Sylvester, 2015). These challenges are responding to an impending crisis of national food insecurity. It is necessary for the South African government to urgently address these problems, to allow agriculture to move from its current state to a robust level of commercialisation (Olaniyi et al., 2021). A feasible and harmonised policy is help for effective implementation. Furthermore, policy reform is required to ensure that agriculture gives rise to sustained production.

2.5.4 South African agricultural policy environment

The genesis of the land policy started with the National Party that won the election in 1948 in South Africa, and thereafter passed the Prevention of Illegal Squatting Act of 1951 (Bourblanc & Anseeuw, 2019). The primary aim was to fulfil the party's pledge as caretaker for the security of property and peaceful lives of white folks, and to stop and control illegal squatting on public or private land. In achieving this so-called laudable objective, it then became a crime to move in or remain on land, buildings or structures without legitimate reasons (Ntombela et al., 2018). The Act of 1951 firstly allowed a court of law to order the eviction of those people considered to be squatters, and approved the pulling down of any

building or structures on land without the permission of the owner. Secondly, it banned the collection of fees for illegal squatting and gave local authorities the right to emergency camps, and made it a criminal offence for any obstruction of police for the order or directives issued by the courts (Bernstein, 2013).

The dictatorial nature of these provisions allowed owners to evict the so-called illegal occupiers, and consequently stretched “the scope of evictions based on the stronger right to possession” under the apartheid land law (Cochet et al., 2015). The revindication concept (action whereby the owner of the land can recover it from a person who is deemed to have unlawfully taken control) boosted the power, according to the police, to evict people under the guise of health, safety and public interest (Schmitz et al., 2015). As apparent from recounted and unreported incidents of evictions, land annexations made many South Africans continue to be landless or with insecure land rights. Land deprivation in South Africa created undesirable consequences, such as allocation of the majority to the most infertile land, unfair sharing of land, and ownership mostly in favour of minority groups, and dislocation of the social and economic structures of the native people concerning land use (Luvhengo et al., 2015). Ostensibly, state intervention in agricultural land reached a climax in 1980, with a swarm of laws, ordinances, statutes and regulations on all facets of agriculture (Jooste et al., 2013).

Agricultural policy in the 1980s was largely determined by the 1983 Constitution and about “white” commercial agriculture, by the 1984 Agricultural Policy White Paper. The objective was to guide the development of agriculture to ensure that factors of production would be used optimally for economic, political and social development and stability, while also contributing to enhancing an economically sound farming community (Jooste et al., 2013). In South Africa, an agricultural policy started with government subsidies to farmers, typically in the form of drought relief, as well as industry subsidies to the wheat, maize and dairy industries, among others. Numerous changes that affected agricultural policy include the lifting of labour controls in the mid-1980s (Lahiff et al., 2012).

2.5.5 Objectives of South African agriculture policy

According to Van Zyl et al. (2000), There are six primary objectives for agriculture and land policy in South Africa, as follows:

- To organise the already segregated land tenure system into a comprehensive four-tier system while still refining the customary and legal tenure.
- To garantee that every South African has the opportunity to access land with the secure right to fulfil their basic requirement of housing and agricultural production.
- To allow a well-defined property right that is supported by the judicial system.
- To enable safe and protected land tenure for South African residents who are non-citizens to engage in appropriate and permitted investment which promotes livelihood, food security and improved agro-industrial growth.
- To allow actual land use planning and regulation that encourages ideal land use.
- To promote better administration of urban land, for sustained infrastructure and development.

2.5.6 Principles of South African agricultural policy

The principles of agricultural policy in South Africa were informed by the Comprehensive Rural Development Programme (CRDP), modified into three strategies: integrated and comprehensive agriculture, improved land programme, and planned investment in cost-effective infrastructure development that would assist rural communities (Maponya & Mpandeli, 2012a). There was a conscious link between land issues and agriculture as the basis for the quest for a cost-effective agrarian structure. The basic principles that underlined the agricultural policy were the following: de-racialisation of the rural economic systems for collective and sustained growth; impartial and equitable land allocation across gender and race; and, firm production of agricultural produce for guaranteed food security (Maponya & Mpandeli, 2012b).

2.5.7 Redesigning agricultural policy

Agriculture has witnessed the most important policy changes in the past decade, with the removal of agricultural markets and liberalisation of trade (Lubinga,

2017). Previous agricultural reforms vigorously pursued many objectives – precisely, the widening of access to agriculture, poverty alleviation, and enhancing food security (Seleti & Tlhompho, 2014). The multiplicity of objectives and policies were the backdrop to the dualistic agricultural environment of South Africa, where white commercial agriculture co-existed with black subsistence agriculture (Department of Agriculture …, 2016).

2.5.8 The agricultural policy framework

The agricultural policy framework in South Africa is underpinned by the White Paper on Agriculture (1995) which highlighted the following policy objectives, and which was also confirmed in the Strategic Plan for South Africa:

- To prepare and develop an effective, internationally competitive agricultural sector.
- To contribute primarily to the objectives of the Growth, Employment and Redistribution (GEAR) approach, designed at achieving economic growth and poverty reduction.
- To give support to the development of subsistence and medium-sized farms with commercial farms.
- To conserve the endowed agricultural natural resources.

2.6 AGRI-BUSINESS IN VHEMBE DISTRICT OF LIMPOPO PROVINCE

This section discusses agri-business and its supply chain processes in the Vhembe District in Limpopo. The section further seeks to achieve the research objective that addresses the state of SCM in VDM, and, together with the research question, addresses the similar research objective.

The agri-business in the Vhembe District plays a crucial role in contributing to the agricultural sector of South Africa. To understand the agricultural sector in the Vhembe District, it is imperative to provide an overview of Limpopo agriculture. Firstly, Limpopo covers an area of 12.46 million hectares, which accounts for 10.2 per cent of the total land area of South Africa (Nesamvuni et al., 2017).

In addition, Limpopo is endowed with abundant agricultural resources, and it is one of the country's prime agricultural regions, noted for the production of fruit and vegetables, cereals, tea and sugar (Nesamvuni et al., 2017). In addition, there are four distinct climate regions in the province: the Lowveld regions (arid and semi-arid), the Middle veld; the Highveld, a semi-arid region; and the Escarpment region, having a sub-humid climate with rainfall above 700mm per annum (Tshikolomo et al., 2012). This varied climate allows the province to produce a wide variety of agricultural products, ranging from tropical fruits such as bananas and mangoes, to cereals such as maize and wheat, and vegetables such as tomatoes, onions and potatoes (Sihlobo, 2020).

2.6.1 Contribution of agriculture to the economy of Limpopo Province

Limpopo comprises 90 per cent of the population classified as rural, and agriculture plays a key role in the economic growth and development of the province (Statistics South Africa (Stats SA), 2020). Provincially, agriculture contributes to the economy through the following, as stated by the Stats SA report:

- Provision of employment for the economically active population at comercial farm level, and smallholder farm level.
- A major source of income to a large section of the provincial population (this includes commercial farm income, smallholder farm income and other agri-business-related income).
- Provision of food to the population, thus ensuring household food security for the bulk of the population.
- A major source of foreign exchange earnings for some farmers exporting their produce such as citrus, avocados and pineapples to foreign countries.
- Agriculture also contributes to the provincial macroeconomy in the form of its gross geographical product (GGP).
- Agriculture provides some raw materials for the manufacturing businesses in the province, such as those for agro-processing businesses in particular. Here are also linkages between agriculture and other sectors of the economy such as trade, manufacturing, communication, financial services, and the public or community service sector.

From the above contributors, agriculture was estimated to have contributed 17.7% of the GDP of the province in 2014. Furthermore, a comprehensive report by the Development Bank of Southern Africa (Sihlobo, 2020) suggests that agriculture was second only to government (public or community services), which enlisted it to make the highest contribution in that period (Tshikolomo et al., 2012). In terms of employment, agriculture employed 19.5% of the economically active population (in the commercial farming sub-sector), and a further 28% in the informal or subsistence smallholder farming sub-sector, thus making agriculture the most important provider of employment in the province (Sihlobo, 2020).

Agriculture has been identified as one of the three pillars of the economic development strategy for Limpopo. In actualising the role of agri-business in the province, the provincial executive council directed that studies be commissioned to provide useful managerial information to guide investment decisions to government and private investors interested in the Limpopo agricultural sector (Tshikolomo et al., 2012). These authors further identified the challenges affecting this sector, which directly influence the critical issues that are supposed to be tabled as a matter of urgency, and the lack of adequate managerial and strategic information relating to some of the listed issues. There are challenges affecting the agricultural sector, which are directly influenced by the critical issues that are supposed to be tabled as a matter of urgency, relating to the lack of adequate managerial and strategic information based on the issues listed below. The critical issues identified include the following:

- Strategic interventions are required from the government in areas of competitive advantage, to stimulate the agricultural and rural economy.
- Kind linkages and partnerships are needed in the strategic areas.
- The potential size of the total industry considering the pre-production, production and post-production elements of the industry.
- Strategic and niche commodities that would contribute to national and international export, which could be a focus of the industry, if identified.
- Natural resource base potential, level, and patterns of resources' use.
- The current size and the performance of the industry, which was not accurately quantified, particularly the performance and contribution of the smallholder farmers.

- Long procurement process due to lack of supply chain management systems.

The critical key issues stated also signify that a sample of each district's output should indicate and address the key challenges (Nesamvuni et al., 2017).

2.6.2 Supply chain management in the agri-business of Vhembe District of Limpopo Province

This section seeks to address the research objective of examining the influence of SCMS on agricultural businesses in the Vhembe District. The research question involving SCMS is also addressed in this particular section of the literature review.

In Limpopo, the participation of small-scale farmers in commercial agriculture is still a major concern, since the majority are excluded from supplying high-value markets due to several challenges (Mukwevho & Anim, 2014). According to Baloyi (2010), high-value markets in Limpopo are normally located in the shopping malls, while most small-scale vegetable farmers supplying agricultural produce to these stores are located in the rural areas, far from town. This leads to the distance from the farm to the town being a major problem, limiting small-scale farmers from marketing their fresh produce to retailers. Most of the literature relating to the smallholder agricultural market (Balgah & Buchenrieder, 2011) reiterates that the problem of market access is linked to constraints such as price risk and uncertainty, difficulties of contract enforcement, insufficient numbers of middlemen, the cost of putting small dispersed quantities of products together, and the inability to meet standards. Other problems relating to physical market access are physical infrastructure, including roads, market facilities, power and electricity. In rural areas, for example, smallholders are often geographically dispersed, roads and communications are poor, and the volumes of business are insufficient to encourage private sector service provision.

2.6.2.1 Value chain of agricultural sector in Vhembe District

In Limpopo, the agricultural sector is an important source of employment for rural people, and it plays a significant role in the reduction of poverty and food insecurity (Baloyi, 2010). Due to its employment abilities and its reputation as a source of income for smallholder farmers, farmworkers and street vendors/

hawkers, agriculture is an engine of economic growth. Machethe (2004) also revealed that agriculture is one of the greatest contributors to household income in the province, although smallholder farmers' lack of participation in commercial agriculture is a major cause for concern. The majority of the smallholder farmers are mostly excluded from high-value markets, due to several socio-economic and institutional challenges.

Commercial farmers in the province mostly sell their products through formal markets (such as fresh produce markets and supermarkets) by formal contract agreements; however, most smallholder farmers sell their products through informal markets (such as street vendors/hawkers and door-to-door sellers). The number of African leafy vegetables (ALV) species in Africa is far greater than exotic ones, and they are environmentally adapted to the area better than the introduced exotic vegetables of low-cost/quality nutrition for many households in rural and urban areas (Chweya & Eyzaguirre, 1999). Despite their nutritional benefits, ALVs remain underutilised crops in Limpopo (Van Jaarsveld et al., 2014). The authors further identified characteristics of the value chain in Vhembe District.

2.6.2.2 Value chain of small-scale farmers in the Vhembe District

The ability of small-scale farmers to contribute to economic growth continues to be locked. This is attributed to the fact that most small-scale farmers in South Africa sell their farm produce locally, with only a slight amount being exported. In general, small-scale farmers sell their products exclusively in local markets and occasionally sell in international markets through market intermediaries. The main difficulties hindering small-scale agricultural growth are closely related to a lack of marketing knowledge and opportunities. This calls for market-oriented interventions (Van Jaarsveld et al., 2014). Several challenges face small-scale farmers in market participation. For most African small-scale farmers, markets are difficult to access.

Neugart et al. (2017) define a small-scale farmer as one whose scale of operation is too small to attract the provision of the services that they need to be able to significantly increase their productivity. In this study, the small-scale farmer is defined as one who is involved in small-scale farming, usually involving house-

holds producing agricultural products on a relatively small plot of land (less than 5 ha), which is more labour intensive and results in small amounts of products being produced for the markets. There are typically two types of agricultural output markets for small-scale farmers in South Africa, namely the formal market and the informal market. The formal market comprises Johannesburg's fresh produce market and supermarket chains, with Shoprite, Pick 'n Pay, Spar, and Checkers being the four largest supermarket chains in South Africa. According to Baiphethi and Jacobs (2009), informal markets are common across the food value chains in which the majority of small-scale farmers participate. In the informal market, relatives, friends, street vendors, hawkers and neighbours use small-scale farmers as their source of supply to meet their demand for fresh produce. However, this study is concerned with participation by small-scale farmers in the formal market only.

On the other hand, the Johannesburg Fresh Produce Market (JFPM) is the largest agricultural fresh produce market in Southern Africa. The market is an important formal market for small-scale farmers in Limpopo and the rest of the country. For example, the market conducts training programmes for extension officers to capacitate them to improve transmission market information (such as prices, packaging, quality, storage and delivery times, market agents, etc.) to farmers in their localities. In addition, the market often undertakes open days for small-scale farmers and informal traders to visit the market facilities for their better understanding of the operations of the market and how they can use the market for their benefit (Baiphethi & Jacobs, 2009). In general, supermarkets focus on supplying niche products of relatively high value to a targeted group of customers. In Limpopo, supermarket chains often depend on small-scale farmers in their locality for the supply of fresh produce demanded by their customers (Baiphethi & Jacobs, 2009). Louw et al. (2007) reported that small-scale farmers supply up to 30 per cent of their produce to Spar, one of the largest supermarkets in Limpopo.

2.6.2.3 Market provision of agri-business in the Vhembe District

According to Kherallah and Kirsten (2002), the problem of market participation is linked to farmers' inability to meet market standards, low volumes of produce, wide dispersion of producers, presence of middlemen, and perceived low prices

in the formal tomato market. On the other hand, Delgado (1998) indicated that formal market participation is a problem for small-scale farmers in rural areas, because of a wide range of barriers and constraints. These barriers include lack of assets (for example, tenure and collateral), market information, appropriate training, limited access to services necessary for crop production, and the high costs involved in production and marketing (Machethe, 2004).

A study by Mthembu (2008) identified factors that cause small-scale farmers to have difficulties in acquiring the market. The results of the study revealed that lack of access to land for farming, limited access to productive land, lack of provision of, and access to, water, lack of access to markets illiteracy and related problems, minimal access to financial assistance, high transaction costs, poor infrastructure such as roads, and minimal access to co-operatives and marketing organisations hinder small-scale farmers from acquiring markets for their produce. The study further revealed that small-scale farmers are located far away from the markets and have poor access to infrastructure – which compromises supply chain networks.

Numerous small-scale farmers in the study area produce tomatoes, but fail to participate in profitable markets for their produce. As such, they are often forced to sell to potential buyers at whatever price those buyers dictate, due to several factors related to participation in agricultural output supply chains. Recommendations derived from general small-scale farmers cannot provide a policy response to accommodate the special needs of tomato producers, since they are a unique unit of analysis. It is on this basis that this study strives to identify those factors that affect small-scale farmers who are producing tomatoes to participate in output markets (Mthembu, 2008). Identification of those factors could assist policymakers to formulate policies that would increase small-scale farmers' participation in formal agricultural output markets.

2.6.2.4 Ecological intensification in Vhembe District's supply chain processes

Ecological intensification is being recognised for enhancing ecosystem services and improving crop yields in supply chains (Bommarco et al., 2018). A recent review shows a predominance of win-win situations from ecologically intensified

cropping, compared to conventional farming, particularly in terms of maintaining or increasing yields and public goods (Garbach et al., 2017). Whether deliberately or not, much of African smallholder agriculture has remained rather 'ecological'. Basic supportive and regulatory ecological processes, steered through local indigenous knowledge, still form the backbone of smallholder agriculture in many places (Tittonell & Giller, 2013). Although there are many ecological intensification options associated with yield gains, African smallholder farmers are resource-constrained, and face important trade-offs in resource allocation, due to the interconnectedness of farming systems (Tittonell et al., 2009).

Smallholder farmers are unable to benefit from the potential yield gains emanating from the options, because they come with varying costs and socio-economic impacts, and require conducive environments for their uptake (Harris & Orr, 2014; Tittonell & Giller, 2013). These pressures shape farmers' decision-making in accepting and using particular agricultural technologies, as they may have both short and long-term consequences on farm livelihoods in Vhembe District. Thus, the implementation of ecological intensification options requires engaging with farmers and other stakeholders to understand trade-offs and synergies that arise among them. Smallholder farmers are heterogeneous (Vanlauwe et al., 2016); they operate under various agro-ecological, socio-economic and market conditions (Caron et al., 2014). This makes it crucial to generate more information on the feasibility and viability of these options at the farm scale. As such, this brings the relevance of an effective SC system to combat these socio-economic challenges.

2.6.2.5 Benefits associated with Vhembe District's supply chain process

The current section explores the research object that seeks to identify factors that enable and hinder the success of agricultural business in the Vhembe District. The 'what' research question on the success factors and the challenges is also presented in this section of the literature review chapter.

The potential costs and benefits of protected areas to the Vhembe District are well documented, and several SC systems are involved. Some of the benefits identified by Sebola (2018) include employment opportunities, small business development, and the discounted entrance fee in the Vhembe District of Limpopo.

Binswanger-Mkhize (2014) also indicates that there are opportunities and benefits associated with the agri-business sector, including its contribution to the rural economy through job creation and income generation from different enterprises in which rural people engage. According to Wale and Chipfupa (2018), the majority of SCs in the Vhembe District have been converted from livestock farms, after it became more economically viable to keep and use wildlife for commercial purposes. The study compiled by Stats SA (2020) found that, in 2014, ranchers were able to generate an estimated amount of R4.3 billion from live sales, and compounding an efficient supply chain network has thus been achieved. Some of the success factors of SCMS in the Vhembe District area are highlighted below:

- **Financial profitability**

  Aliber (2019) reveals that the financial returns of agri-business SCs in areas of Vhembe District exceed those of extensive commercial agriculture production, and provide a significant number of employment opportunities. The study by Cousins (2016) on the returns of and allocation of resources in the agri-business sector, has found that SCs in Vhembe District can increase the national income, since the province of Limpopo has a substantial and generally healthy procurement and financial primary balance. However, an increase in national income depends on the ability of the province to ensure that SC systems' utilisation activities are fully developed in spatial and temporal patterns that maximise their economic contributions. The author used different models, including the Municipal Financial Management Act (MFMA), to achieve these findings. Such findings purport that a well-run SC portfolio increases the financial gains of farmers, investors, wholesalers and end users involved in the SC networks in the Vhembe District.

- **Forward linkages**

  Forward linkages provide extensive relief to struggling SC networks on agri-businesses in the Vhembe District (Global Africa Network, 2020). Some of the relief measures that are provided by the forward linkages include cross-functional logistics teams that can be commissioned to address cross-docking related problems when agricultural produce is transported from a warehouse to a distribution centre. Such solutions to logistics bottlenecks and

access to value-added services create room for accessibility, and can assist in supplying good quality agricultural produce to first-tier SC networks in Vhembe District – such as Nyuymunika Trading Ltd, Royal Africa Production, Alphagric Ltd, Nyaleti, Lim Fruits, Genadeplaas Boedery and Boschveld Feeds (Tshikolomo et al., 2012). These buying agencies will now make an effort for further integration of the SC and cost reduction in the procurement process, in bringing about both market and pricing efficiencies in the market channel. The integration of logistics and business services will help in delivering benefits to all the players of the SC in the Vhembe District Municipality.

2.6.3 Challenges in Vhembe District's supply chain processes

The Vhembe District has been impacted by several SC processes that have affected product targets and the output of such processes. Firstly, the SC processes in the district involve the farmer (first-tier supplier), transportation, warehousing, distribution and customers (end users have all encountered major bottlenecks within the value chain of these processes (Sihlobo, 2020). Vhembe District has employed several SC professionals in their agri-business processes, but several challenges have since affected the growth and success factors of a value chain which can bring change to the community of Vhembe District. The next subsection discusses these SCM-related challenges affecting the district of Vhembe District.

2.6.3.1 Lack of cold chain logistics facilities

The facilitation of cold chain facilities is a crucial component within the agri-business and supply chain network processes. The District of Vhembe has encountered several problems concerning implement systems that could ensure these facilities operate effectively. Firstly, the presence of integrated cold chain infrastructure has been relatively low for horticulture products in Vhembe District (Chauke et al., 2015). This is because there is very little use of refrigerated trucks, even in the case of highly perishable products such as tomatoes, vegetables and dairy milk that require delivery efficiency from one stage of the supply chain to the next. In addition to the existing cold stores, in the horticulture crops such as apples, oranges, chillies, turmeric and tamarind, such crops have very limited

access to the much-desired cold stores that are near consumption centres such as the Pick ‘n Pay Hyper, Shoprite supermarkets and Food Lovers Market (Chauke et al., 2015).

Many of the cold stores have outdated technologies, and hence have low energy efficiency which disrupts the lead time from the different tier suppliers involved in the SC network. Furthermore, the availability of trained human resources for technical operations and administration in cold stores in the Vhembe District, has remained inadequate. Such shortages of trained personnel to operate such highly sensitive machinery disrupts the quality of goods that are delivered to distribution centres (Tshitangoni & Francis, 2015). As a result, with new cold stores coming up in good numbers, the agri-business sector in the Vhembe District is having challenges in recruiting and retaining the right-skilled human resources.

2.6.3.2 Long and multi-layered supply chains

The multi-layered SCs are effectively a growing challenge in Limpopo, and particularly the Vhembe District (Ncube, 2018). These multi-layered challenges have emanated from producing and meeting fresh market requirements. Another growing concern has been the inability of the processing industry to meet large numbers of small farmers, as they are unable to effect a better price in the wholesale markets. Inefficiencies in wholesale markets coupled with small farm size have resulted in a long chain of intermediaries, multiple handling, losses in quality and an increase in the gap between producer and consumer prices (Ncube, 2018). Additionally, transportation was then a major factor as an enabler that works to nullify the discrepancies which would have been created with the different tier SC networks.

A typical example of such inconsistencies in Vhembe District includes the Makonde farm of Vhembe District which is situated in the jurisdiction of Thulamela Municipality which has an SC network leading to Thohoyandou 30 km from its location (Sihlobo, 2020). Since there are no wholesale markets between the suppliers (Makonde) and the retailers in Thohoyandou, multi-layering of pricing occurs to cover the huge gap of an exposed SC network. Exorbitant pricing of these agricultural products therefore results in increased overhead costs, which in turn would affect the end user of this SC network. As a result, these

intermediaries and system inefficiencies consume a disproportionate share of consumer prices (Sihlobo, 2020). Moreover, a large number of small retailers, each handling small quantities, create high overheads, leading to high margins on produce, and making the consumer pay for the inefficiencies in the marketing chain.

2.6.3.3 Poor packaging practices

Packaging is one of the most crucial business system elements mandatory in modern SC processes. A poor design of packaging in any SC compromises the quality of goods and services provided. The agri-business sector in the Vhembe District has also encountered several challenges in terms of packaging of produce from the farmer to the end user (Global Africa Network, 2020). The stages of packaging of components in the agri-business sector in Vhembe District have been compromised due to poor planning and implementation of design components needed for the product to maintain a high quality when delivered. Most of the transportation of the produce to the units is done without proper packaging and buffer/insulation, leading to high losses in the form of wastage. Wastage that emanates from poor packaging may result in such SCs destroying the ecological components of such environments (Agri-business South Africa, 2018). Typically, in the market yards, the produce is dumped on the ground for weighment and price negotiation. Some sorting and grading are done manually in the market yards before dumping into the transporting vehicle, again for further transportation. Such handling causes higher wastage.

2.6.3.4 Lack of adequate training

South Africa's agricultural sector in Limpopo is failing to produce a new crop of farmers and agriculturalists, with fewer youngsters being drawn to study agri-culture as a career. In addition, a lack of training among unskilled and semi-skilled farmers is preventing the sector from growing smallholder farmers to become semi/commercial farmers within the SC process (agri-business South Africa, 2020). According to Louw et al. (2007), a shortage of skills will affect SCs, especially in areas of concern such as contract buying, packaging technology, cold chain management, energy efficiency, quality, and safety in the value chain.

Failure to provide adequate training to farmers and personnel involved in the SC process of Vhembe District will lead to buffer shocks (inventory), lead time inefficiency, tender irregularities and a compromised agricultural network (Sihlobo, 2020). Therefore, this will result in high supplier turnover, procurement of crime syndicates and lack of trust in SC systems by shareholders. According to Zijp (2001), smallholder farmer training can contribute to the productivity, technology and management gap with agri-business SC processes. This will go a long way to increase the speed of technology transfer, increasing farmers' knowledge and SC systems in Vhembe District.

2.6.3.5 COVID-19 implications

In South Africa, food insecurity, impacting mostly the urban poor, was aggravated by the government's lockdown measures to slow down the spread of COVID-19, but with severe consequences for livelihoods (Sihlobo, 2020). South Africa, recently at Stage 2, is phasing the reopening of the nation with Stage 1 being closest to the 'new normal' and which might not be attained until the end of the year or beyond. Before the COVID-19 crisis, supply chains, local food production, food imports and food availability at national level have been adequate in South Africa. However, South Africa has one of the highest levels of income inequality in the world, with more than half the population moderately to severely food insecure (Stats SA, 2019). The COVID-19 pandemic has exposed and further exacerbated the systems of injustice and disrupted the supply chain of the sources of livelihood in the majority of South African households. The Vhembe District has been hit hard, as SC networks of agricultural products have been severely affected.

The full or partial closure of the economy has affected the logistics and transportation services sector. For instance, the delivery targets that have been aligned for produce to be transported from Limpopo to Gauteng wholesalers and retailers have been disrupted due to COVID-19 procedures and protocols such as quarantine for truck drivers, and less interaction of SC personnel in the adjudication of contracts on which businesses and investors rely (Sihlobo, 2020). Not only do many of these individuals now face unemployment, but they no longer benefit from government packages such as access to their unemployment insurance funds (UIF), since such processes have been dormant due to the

current pandemic. Thus, a disturbance of these SC networks will take time to recover, since some investors would have disengaged and invested in countries that have effective SC systems. Furthermore, securing contracts, already a challenge for South African farmers in VhembeDistrict before COVID-19, seems almost impossible during the COVID-19 crisis (Sihlobo, 2020). As a result, the SC industry will be affected, particularly in smaller areas such as Vhembe District.

2.7 PREVIOUS SUPPLY CHAIN MANAGEMENT STUDIES IN THE AGRI-BUSINESS SECTOR

The agri-business industry plays a major role in contributing to the economy of South Africa. Within the sector, numerous studies have been conducted that focused on the agri-business industry, but unique studies have managed to focus on the agricultural industry, with special attention to SCM systems. A review of the previous SCM studies in the agri-business sector will be presented in section 2.7.1.

2.7.1 Interpretation of previous supply chain management studies in agri-business

A study conducted by Routroy and Behera (2017) focused on agricultural SCs, with special attention being directed to a systematic review of literature and implications for future research. The study aimed at reviewing the agricultural supply chain (ASC) literature, along with its several dimensions such as the scope, objectives, wastages, drivers, obstacles and outcome. The study revealed that inventory policy, demand forecasting and ASC integration were found to be important areas of the agricultural supply chain. The study also found out that the role of government plays an important part in the agricultural supply chain. As it is a labour-intensive sector, and generates a great deal of employment in developing countries such as India, the government has to identify core areas for investing efforts and capital.

Yadav et al. (2020) centred their attention on the development of an Internet of Things (IoT) based data-driven agriculture supply chain performance measurement (SCPM) framework. In this study, performance measurement (PM) of any SC was considered a prerequisite for improving its competitiveness and sus-

tainability. Furthermore, the study revealed that a framework for SCPM for the agricultural supply chain (ASC) based on the IoT should be developed. Moreover, the study provided an emphasis on the role of IoT in data collection and communication (SC visibility) based on the supply chain operation reference (SCOR) model. Findings from the study revealed that flexibility and responsiveness have been reported as the two most important key performance indicators (KPI) in an IoT-based SCPM framework for ASC towards achieving sustainability.

A study carried out in Vietnam by Lang et al. (2021) focused on the social capital in agri-business, intending to investigate an SC perspective during the COVID-19 crisis. The purpose of this study was to mainly analyse the use of social capital as a resource to diversify agri-business, to get more customers and improve the agricultural supply chain. This study was also conducted to develop a comprehensive measurement of social capital, and examine its effect on the intention to diversify agri-business. Literature from the study found that the theory of planned behaviour (TPB) and resource-based view (RBV) are used from an SC perspective. The study showed that there are significant causal relationships among social capital, motives, TPB determinants and the intention to diversify agri-businesses in light of SC perspectives.

Fu et al. (2016) conducted quantitative research centred on managing social responsibility in Chinese agricultural SCs through the “firm farmers” model. The study explored the growing awareness of, and concern about, social and environmental issues, with attention being directed to the increasing number of companies integrating their SCs and building an alliance of “firm farmers”. The study also aimed at identifying factors that influence the integration of the agricultural SC, and exploring the relationship between these factors and quality performance. The findings from the study indicated that SC integration has positive effects on quality performance. Moreover, farmers’ normative relationship commitment to the firm is positively related to SC integration. The research paper also indicated that farmers’ instrumental relationship commitment to the companies does not significantly affect the degree of integration between farmers and companies. Furthermore, results from the research paper indicated that trust has positive influences on the two types of relationship commitment and SC integration.

Agyemang et al. (2020) conducted research that focuses on determining and evaluating socially sustainable SC criteria in the agri-sector of developing countries, with special emphasis on the West African cashew industry. The purpose of the study was to investigate the role of SMEs that dominate the sector's SC in developing countries. The results from the study indicated that food safety, labour and work conditions, traceability, and child and forced/prison labour emerge in order of importance as a pathway for implementation of socially sustainable supply chain management (SSSC). The study also provides an insight into achieving SSSC among various manufacturing SMEs and understanding their assessed SSSC performance. The study suggests that agri-cultural sector SMEs that implement SSSC practices through social compliance or collaborations, are more aware of the implementation challenges.

A quantitative research study undertaken in Nigeria by Oladokun et al. (2015) analysed the problems facing the agricultural sector in Nigeria, and the prospect of Muzara'ah's SC model. The results from the study indicate that there is a human resource challenge, as the institutions do not have the expertise to apply Muzara'ah's SC model. The results further indicate that there is an unwillingness of the financial institutions to adopt the model, due to the risk factor. The majority of past studies therefore identified financial problems as the main obstacle, due to the scarcity of funds, for the farmers to embark on the modern agricultural system. In addition to finance, logistics-related problems and inappropriate government policies were also being identified.

Barua et al. (2021) conducted a study that focused on sustainable management of agricultural products' value chain in response to climate change for the South-Eastern coast of Bangladesh. The purpose of this study was to assess the sustainable value chain approaches for marketing channel development opportunities for agricultural products in coastal Bangladesh, in order to combat climate change through an approach of community-based adaptation options. In this study's findings, the major emphasis was on the difference in the institutional circumstances of the end markets of the agricultural products connected to the different categories of harmonisation and control of the facilitating environment throughout the supply chains. Furthermore, the study indicated that the national and local networks improve the value chain in terms of the value addition of the

agriculture products, technology improvement, market access and profitability of the products. Therefore, strengthening the weak financial structure, focusing more on formal financial systems, and resolving sociocultural and climate change induced hazard concerns were identified as the major concerns in the development of value chains in the developing countries.

2.8 CHAPTER SUMMARY

The chapter discussed seven major elements in the agri-business sector in the Vhembe District of Limpopo. The first section analysed theories in which the SC systems and agri-businesses are relevant. The section revealed that the three theories identified, namely the resource-based view (RBV), the institutional theory, and Deming's theory of TQM are linked to SCM systems in the agri-business sector. Thereafter, the chapter presented an overview of the SCM network, and how the discipline has evolved within the African continent. Crucial elements such as the oversight of other supporting disciplines, were a major concern regarding the application of SC systems in Africa. The chapter also discussed the SCM functions and how they contribute towards running a successful business entity. The section stated that eight business functions are critical for SCM functions to be carried out effectively.

The other section indicated the legislative framework that governs SCM processes in South Africa. Key elements surrounding the policy mechanisms were highlighted, and were used to analyse the agricultural laws that farmers used in an attempt to commercialise their outputs from their farms to the end user. The chapter then focused on the SCMS that agri-businesses in the District of Vhembe operate. The characteristics, classifications and challenges of the SCMS in the district were explored. The challenges revealed that the COVID-19 pandemic has had a major impact on SC disruptions, with a major emphasis on the manufacturer and end-user processes. The chapter then revealed previous SC studies in the agri-business sector. The purpose, findings and implications of these studies were discussed, indicating the synergies of these studies with the current study.

The next chapter explores the research methodology of the study.

CHAPTER 3

RESEARCH METHODOLOGY

3.1 CHAPTER OVERVIEW

The preceding chapter discussed the literature of agri-business in the SCM industry of Vhembe District in Limpopo Province. This chapter highlights the philosophical underpinnings of methodological concepts that are incorporated within the study. In the first section of the chapter, the research paradigm is presented, analysing the different types, followed by a justification of the paradigm selected for the study. Thereafter, the research design is discussed, giving an account of the relevance of the design methodology in qualitative studies. A research methodology section is presented, with a key aspect such as the types of methodologies, and an argument for the methodology selected for this study. The chapter then discusses the population and sampling criteria, with special attention to how participants were selected in the study and the motivation for the preferred sampling techniques. Data collection and measurement instruments are then discussed, showing how qualitative research methods use these tools to attain reliable results. In conclusion, the chapter discusses ethical considerations adopted in this study, and their importance to both the researcher and the participants of a research study.

3.2 RESEARCH APPROACH

The field of research has three broad categories. These include qualitative, quantitative and mixed methods approaches. Qualitative research methodology refers to the subjective analysis and interpretation of wording and meaning over the quantification of objective analysis and data collection of social components (Zou et al., 2014). The qualitative research approach is an effective method to represent participants' real-time views and perceptions of a certain social fact (Ponterotto, 2005).

The qualitative method rests on the interpretive paradigm, and is premised on describing relationships between research objects and the environment in which the research is conducted (McCusker & Gunaydin, 2015). In contrast to quanti-

tative methods, the qualitative approach uses the inductive approach to ascribe meaning to data generated from research objects (Wiid & Diggines, 2011). According to Bryman and Bell (2015), the inductive approach attempts to conclude generated data through detailed intuitive analysis to generate new knowledge.

The main advantage claimed by a qualitative study over a quantitative one is that it permits the "phenomenon of interest to unfold naturally" (Patton, 2001). Additionally, the qualitative study provides a "thick" description of the phenomenon under study (Borrego et al., 2009) by providing a detailed understanding of the relationships between research objects and their natural settings (Mello & Flint, 2009). This view resonates with the affirmation by Golafshani (2003) that the overriding objective of a qualitative study is to understand the lived experiences of the research objects. In contrast, the quantitative method is an objective, statistical-based approach to research (data analysis and collection), which encompasses the adoption of deductive reasoning to ground the research with an appropriate theory (Bryman & Bell, 2015). This method is most appropriate when assessing the beliefs and attitudes of participants towards particular research patterns or phenomena (Muijs, 2010). Furthermore, a mixed method is more of an integrative approach, which combines both qualitative and quantitative methodologies (Zou et al., 2014). The essence of this methodology hinges on the assumption that the combination is more of a complementary one, as the loopholes in both approaches are compensated for by the other's strong points (Neuman, 2011).

The current study adopted the qualitative approach. Largely, qualitative research focuses on exploring and describing new areas of study where little is known, and understanding people's beliefs from their perspectives. In this study, the researcher was interested in understanding agri-businesses in the Vhembe District of Limpopo Province, and built a theory from the data collected. Qualitative researchers are more concerned with subjectivity, where they gain access to the natural setting of the participant to gain an insider's experiences (Gough et al., 2012). This enables a researcher to experience the subjective dimensions of the phenomenon under study. To observe some of the issues raised, the researcher interviewed the participants in their natural settings. Qualitative research

does not seek to generalise the findings beyond the context in which the study has been made. It seeks instead to understand the behaviour, experiences and beliefs in that context.

3.3 RESEARCH PARADIGM

Different authors have described the meaning of research paradigms in different ways. According to Bell et al. (2022), a research paradigm refers to norms, value judgments, standards, perspectives, positions, myths, philosophies and processes that are directed at people's activities. Håkansson (2013) highlights that research paradigms are regarded as the basis of a research project and the nature of rationales of projects with regard to validity and suitability. Within the field of research, different philosophies have been identified, including positivism, interpretivism (Hofer & Bendixen, 2012), post-positivism (Henderson et al., 2011) and phenomenology (Becker et al., 2012).

Positivism is referred to in different ways. According to Lien et al. (2014), positivism can be described as an objective research approach that directs its emphasis to the objectivity of genuine components of life. In addition to its direct emphasis on factual beliefs, positivism further calls for scientific methods that may be used to understand real-life problems (Leavy, 2017). In contrast, post-positivism refers to a paradigm that directs its attention to determining the correct meaning of an occurrence or real-life aspects which may be aligned to social backgrounds (Babbie, 2013). Håkansson (2013) posits that post-positivism integrates theories and practical data analyses of facts, designed for creating social components in society. Phenomenology is a philosophy that entails a proper understanding of life experience and engagements (Babbie, 2013). Several researchers have highlighted that phenomenological research is centred mainly on reliability and validity when it comes to evaluating a human being's understanding of their life experiences (Lien et al., 2014).

Phenomenology focuses more on qualitative research studies, as indicated by Gallagher (2012), who highlights that this paradigm directs its attention to observing individuals' perceptions on a specific matter. To conclude on the different research philosophies, interpretivism may be regarded as a paradigm that directs its attention to analysing the contrasts of individuals and elements related to

social factors and science (Bryman & Bell, 2015). Furthermore, the philosophy highlights a detailed understanding of subjective behaviours that may be indicated by certain individuals in social phenomena.

3.3.1 Justification of the research paradigm

This study followed an interpretivism paradigm, since it is concerned with understanding the world as it is from subjective experiences of individuals, using meaning-oriented methodologies, such as interviewing or participant observation, that rely on a subjective relationship between researcher and subject (Thomas, 2018). Interpretivism is a trend of research approach, i.e., it is a philosophical approach or research paradigm that focuses on understanding and interpreting human behaviour and social phenomena. It is particularly prevalent in social sciences, humanities, and qualitative research methods for data collection. There is a tight connection between the interpretivism paradigm and qualitative methodology, as one is a methodological approach, and the other is a means of collecting data (Ha-Vikström, 2018). The author further elaborates that interpretivism is a method that sees the social world as something that can only be produced and reproduced daily by people. Thus, the data that is collected for the study was produced by the participants themselves. The paradigm also allowed the researcher to develop new knowledge on SC processes within the agri-business sector, and its influence on agricultural developments in Limpopo Province.

Interpretivism rejects the notion that research is value-free, since the researcher's interpretation is also socially constructed, reflecting their motives and beliefs. Human interests not only channel one's thinking, but also impact on how the world is investigated, and how knowledge is constructed. Focusing on the above paradigm, the primary data that gives clarity on the influence of SCMS on agri-business, was gathered. The data collected was in the form of qualitative interviews conducted mainly with agri-businesses or farmers in the VDM of Limpopo Province.

3.4 RESEARCH DESIGN

A research design is defined as a set of philosophical assumptions, methods and procedures that are used in an attempt to provide insights into a research problem (Creswell, 2009:5). The research design is defined as a blueprint that specifies the methods and procedures employed for data collection and analysis in a study (Guba, 2010; Raju et al., 2021). The primary objective of the research design is to provide an outline of the research process, and to facilitate the assessment of the study in terms of its reliability and validity (Wiid & Diggines, 2010). The research design also directs the researcher in the selection of suitable methods of data collection and data analysis (Welman et al., 2011).

3.4.1 Case study

The qualitative case study is an approach to research that facilitates the exploration of a phenomenon within its context, using a variety of data sources. This ensures that the issue is not explored through one lens, but rather a variety of lenses, which allows for multiple facets of the phenomenon to be revealed and understood. According to Ridoutt et al. (2009), a case study is an in-depth exploration, from multiple perspectives, of the complexity and uniqueness of a particular project, policy, institution, programme or system in real life. Choice of the method, then, does not define a case study; rather, It is the analytical eclecticism that is essential (Thomas, 2018). Flyvbjerg (2011) held a similar opinion, saying that if one decides to use a case study in one's research, this does not mean the selection of a method, but rather a selection of what will be explored. A case study is about determining what the investigated case may be; it is not about defining populations and selecting appropriate samples (Sagadin, 1991). A case study is usually a study of a single case or a small number of cases. The idea of representative sampling and statistical generalisations to a wider population should be rejected, and analytical induction should be chosen instead.

3.4.2 Descriptive research design

Qualitative descriptive research generates data that describes the 'who', 'what', and 'where' of events or experiences, from a subjective perspective (Kim et al., 2017). From a philosophical perspective, this research approach is best aligned

with constructionism and critical theories that use interpretative and naturalistic methods (Lincoln et al., 2017). These philosophical perspectives represent the view that reality exists within various contexts that are dynamic, and perceived differently, depending on the subject; therefore, the reality is multiple and subjective (Lincoln et al., 2011). In qualitative descriptive research, this translates into researchers being concerned with understanding the individual human experience in its unique context. This type of inquiry requires flexible research processes that are inductive and dynamic, but do not transform the data beyond recognition from the phenomenon being studied (Ritchie et al., 2013).

Descriptive qualitative research has also been aligned with interpretivism (Neergaard et al., 2009), where decisions are made about how the research should be conducted, based on the aims or objectives and context of the study (Ritchie et al., 2013). The researcher is not aligned to one particular view of knowledge generation or one particular methodology. Instead, they look to the concepts or phenomena being studied to guide decision-making in the research process, facilitating the selection of the most appropriate methods to answer the research question (Bishop, 2015).

Perhaps linked to the practical application of interpretivism to research – that is, applying the best methods to answer the research question, is the classification of qualitative descriptive research by Sandelowski and Barroso (2003) into a “distributed residual category”. This recognises and incorporates uncertainty about the phenomena being studied and the research methods used to study them. For researchers, it permits the use of one or more different types of inquiry, which is essential when acknowledging and exploring different realities and subjective experiences concerning phenomena (Long et al., 2018). Clarity, in terms of the rationale for the phenomenon being studied and the methods used by the researcher, emerges from the qualitative descriptive approach, because the data gathered continues to remain close to the phenomenon throughout the study (Sandelowski & Barroso, 2010). For this to happen, a flexible approach is required, and this is evident in the practice of ‘borrowing’ elements of other qualitative methodologies such as grounded theory, phenomenology and ethnography (Vaismoradi et al., 2013). This supports the use of the descriptive

qualitative research design to support the factors influencing agri-business in the Vhembe District Municipality.

3.5 RESEARCH METHODOLOGY

A research method is a strategy used to build a study to gather and analyse data in a methodical way (Polit & Beck, 2008). The qualitative (phenomenological or interpretivist) and quantitative (positivist) research methodologies are both generally accepted. Antwi and Hamza (2015) state that the epistemology and ontology paradigms, as well as the research questions, determine the best acceptable method for a certain study.

A qualitative research approach was suitable for this study, since it used the interpretivist research paradigm. Since the qualitative technique is the most appropriate for this research, it was used in this study. Additionally, the researcher becomes the primary instrument for data gathering in qualitative research, through textual analysis, behaviour observation or informant interviews (Creswell, 2017). In this instance, the researcher became the key research tool by recording field notes and examining the textual data in gathering primary data.

Getting to know the participants better and engaging with them in their natural environment helps the researcher grasp the socially created meanings. According to Bryman and Bell (2015), qualitative researchers are more interested in subjectivity when they have access to the participants' natural environments to get a first-hand perspective. This permits the researcher to become familiar with the subjective aspects of the phenomena under study. The researcher conducted in-person interviews with the participants, in order to note some of the concerns highlighted.

The qualitative research approach also differs from the quantitative research technique in that it is fluid and unstructured. Instead of focusing only on measuring replies, its goal is to examine the diversity of participants' perspectives on the issue being studied. The findings of qualitative research are not intended to be generalised outside the study's specific context. Instead, they aim to comprehend that context's behaviour, experiences and beliefs (Bryman & Bell, 2015; Creswell, 2017).

3.6 EMPIRICAL RESEARCH

The empirical research approach of this study encompasses the sampling design, the formulation of the measurement items in the form of a structured research interview guide, and the data collection approach and analysis procedures. The next subsections discuss these respective topics.

3.6.1 Sampling design

Sampling design refers to a plan for the numerical description of trends, attitudes or opinions of a population by studying a sample of that population (Freeborn et al., 2011). It encompasses the research population, sampling frame, sample size and sampling method (Feldmann, 2014). These four design techniques are elaborated on in the next section.

3.6.1.1 Research population

A research population consists of a subset of the population and a body of people or an assortment of objects under contemplation for statistical purposes (De Grandis & Pinshaw, 2010). The research population for this study was restricted to the VDM agri-businesses, both small- and large-scale farmers, from all four local municipalities within VDM, namely: Thulamela, Collins Chabane, Musina and Makhado. Supply chain management professionals can be categorised under different divisions, and may include all the executive management, board of directors and qualified personnel that may be in the capacity to link their job description to SCM roles and responsibilities. Sixteen (16) participants were interviewed in this study.

3.6.1.2 Sampling approach

A sampling approach or technique may be described as a manner in which participants ensure that the level of analysis is made simple to the intended population (Zikmund et al., 2013a). There are two sampling procedures, namely probability and non-probability. Probability sampling methods consist of simple random, stratified, systematic and cluster sampling techniques (Zikmund et al., 2013b). In contrast, Wretman (2010) referred to non-probability sampling as a judgment-based approach of selecting a sample from a convenient basis. Exam-

ples of non-probability sampling approaches include convenience, judgment, snowballing and quota. These techniques are also defined as follows:

- **Convenience sampling:** In this technique, participants of a study are conveniently selected by their accessibility and proximity to the researcher (Robinson, 2014).

- **Judgement sampling:** This is regarded as closely related to convenience sampling, in that the sample is chosen based on the researcher's expert knowledge and understanding of the population (Robinson, 2014).

- **Snowball sampling:** This is more of a referral approach, in that a random sample of participants is selected and interviewed. After that, subsequent groups are chosen depending on their identification by the interviewed group (Malhotra & Birks, 2007).

- **Quota sampling:** This is regarded as a two-phase judgement technique in which a population is subdivided into specific groups or quotas. Sample elements are then judgementally or conveniently selected by the researcher (Robinson, 2014).

The current study adopted two non-probability sampling methods, namely convenience and snowball sampling. With regard to convenience sampling, which focuses on the accessibility and proximity of the researcher, this type of sampling was chosen since the researcher is situated close to the area where the interviews of participants had to be conducted. This type of non-probability sampling enabled the researcher to gain access to most participants who have full knowledge of the SCM processes within the Vhembe District. The current study also adopted the snowball sampling method, as it is used in the referral approach of the participants to be selected for this particular study. This type of sampling technique was chosen to ensure that the selected participants would also give valuable insights on other specialists within the agri-business industry who would ensure the credibility of the information and related questions regarding the current study.

3.7 DATA COLLECTION METHODS

The data analysis encompasses two data strands from qualitative and quantitative surveys. This study employed the approaches used for qualitative data analysis.

3.7.1 Procedures for data collection

Interviews with key players within the SC industry in the VDM were conducted. All these interviews were prearranged, and took place in a relevant location (agri-businesses within the Vhembe District). All interviews were both recorded and written up. This study used primary data collection. Primary data is the data originally collected for a specific study (O'Leary, 2013). This includes all survey results and interview transcriptions made by the researcher.

Data was collected by means of semi-structured and in-depth interviews. Semi-structured interviews served as the primary method of data collection because there is deeper engagement, which allows participants to share their experiences adequately (Stenfors-Hayes et al., 2013). Using open-ended questions and probes, the interviewee can elucidate their relationship with their experience of the phenomenon, helping the researcher to understand the meaning of the interviewee's experience. DiCicco-Bloom and Crabtree (2006) argued that to understand the meaning one ascribes to the experience, requires the person to share deep social and personal matters relating to the phenomenon. This is only possible through in-depth interviews, which was the preferred method for data collection in this qualitative study.

Due to the COVID-19 pandemic, the process of conducting interviews was subject to the health and procedural protocols as aligned to the Disaster Management Act 52 of 2002 (Gantley, 2020). Since the Coronavirus pandemic limits contact engagement among people, the interviews were conducted telephonically and through virtual platforms such as Zoom, Skype and Microsoft Teams. Although online interviews could have limited the degree of engagement with the participants of the study, this new digital era created multiple opportunities for the interviewer to demonstrate other useful tools on the interview questions, while simultaneously presenting the same questions to the

participants. Thus, reliable and valid results were then aligned to the themes and sub-themes of the interview guide.

3.7.2 Research participants

This research study followed a guide with regard to the number of participants involved in the study. The researcher made use of in-depth interviews to collect data from selected participants from all four local municipalities in the Vhembe District Municipality.

3.8 DATA ANALYSIS PROCEDURES

Qualitative data analysis is a method of analysing data without converting it into a numeric format. The study employed semi-structured interviewing, since this is a flexible method that is suitable for several data analysis methods – for example, discourse analysis, grounded theory and interpretive phenomenology. Having collected and transcribed the data, the researcher then used ATLAS.ti (Version 8) software for data analysis, being assisted by an outsourced data analyst. The method used to analyse the interviews was computer-assisted qualitative data analysis (CAQDAS) which was then made useful by employing the ATLAS.ti software programme. The ATLAS.ti programme was used as an effective tool in loading, analysing and retrieving the collected data. It enabled the researcher to link elements to themes, and produce reliable data (Gorgolewski et al., 2017).

3.8.1 Data analysis process

The process of analysis, which began during data collection, followed the steps outlined under section 3.8.2 as described by Sjöström and Dahlgren (2002). Each transcript was read several times for familiarisation. As the data accumulated, the familiarisation process involved reading the data as separate groups of participants, farmers, supply chain managers, demand planners and agri-business municipal officers. This separation allowed the focus to be given, firstly, to individuals within each group, then each group, and finally the whole data set, giving attention to the combined experience. Furthermore, notions about the data started to materialise, and portions of related data were coded. The researcher

took time off the data analysis process to ensure that each time the data was analysed, attention was given to different aspects of the data.

3.8.2 Stages of the data analysis process

The research was gathered by means of pre-scheduled interviews with the proposed participants. The interviews were semi-structured, to allow for flexibility of thought and direction of information produced (Creswell, 2009). These interviews took place in an environment that the participants were familiar with, and in which they felt comfortable. The level of confidentiality of the interviews and the data received from participants, was stated at the beginning of the interview, so that there would be no concerns during the interviews, and the participants would be able to talk as freely as possible. Five stages were sequentially followed to collect data in this study. These stages included the following:

3.8.2.1 Stage 1: Reading of transcribed notes

First, the qualitative data analysis involves the process of reading through the transcribed notes and listening to the recorded interview tapes to become familiar with the data. According to Braun and Clarke (2006), this stage enhances the ability of the researcher to capture all the key aspects raised in the interview. In addition, it allows the researcher to ascertain the general sense of the data in terms of depth and credibility.

3.8.2.2 Stage 2: Open coding

After sifting through the data, the second stage includes the inductive form of open coding. Open coding refers to the process of clustering interview transcripts that appear to pertain to similar ideas, into categories and sub-categories (Glesne, 2011; Lawrence & Tar, 2013).

3.8.2.3 Stage 3: Theme creation

Thirdly, the creation of themes and sub-themes follow open coding. According to Leininger (1985), theme creation is the process of “bringing together components or fragments of ideas or experiences, which often are meaningless when viewed alone”. It can be deduced from the quotation that theme creation involves making

sense of the data in line with the research objectives. In this study, the thematic analysis was undertaken to create themes from the interview transcripts. Thematic analysis is defined as a meticulous process of identifying, analysing and reporting themes that emerge from a qualitative study (Braun & Clarke, 2006). Thematic analysis was utilised because it is regarded by Braun and Clarke (2006) as "a foundational method for qualitative analysis." The major advantage of thematic analysis is that it is a logical process that allows the researcher to scrutinise interview transcripts comprehensively, and glean all possible themes (Glesne, 2016).

3.8.2.4 Stage 4: Theme refinement

The fourth stage involves theme refinement (Braun & Clarke, 2006). Also known as axial coding (Lawrence & Tar, 2013), theme refinement involves a detailed analysis of themes and sub-themes to search for possible relationships among them (Chen et al., 2012). Theme refinement follows a two-step process. Firstly, the themes and sub-themes are reviewed to verify whether the identified themes are supported by interview transcripts. Secondly, the themes are re-analysed to check for the relationships between themes and sub-themes (Braun & Clarke, 2006). In instances where themes and sub-themes are related, they are further collapsed to form one dominant theme (Chen et al., 2012).

3.8.2.5 Stage 5: Theme mapping

The fifth stage involves mapping the themes that emanated from the analysis. The mapping process took the form of naming and defining, precisely, the themes revealed in the analysis of the data. This step aimed to identify the essence of each theme, and to determine the aspects of the data captured by each theme (Braun & Clarke, 2006). The data was analysed using an iterative and recursive process, to ensure that all information relating to the study was aptly captured (Creswell, 2009). In the final phase, the identified themes were related to the research questions, and conclusions were inferred based on the themes generated. The stages followed in interview analysis in this study are outlined in Figure 3.1 below:

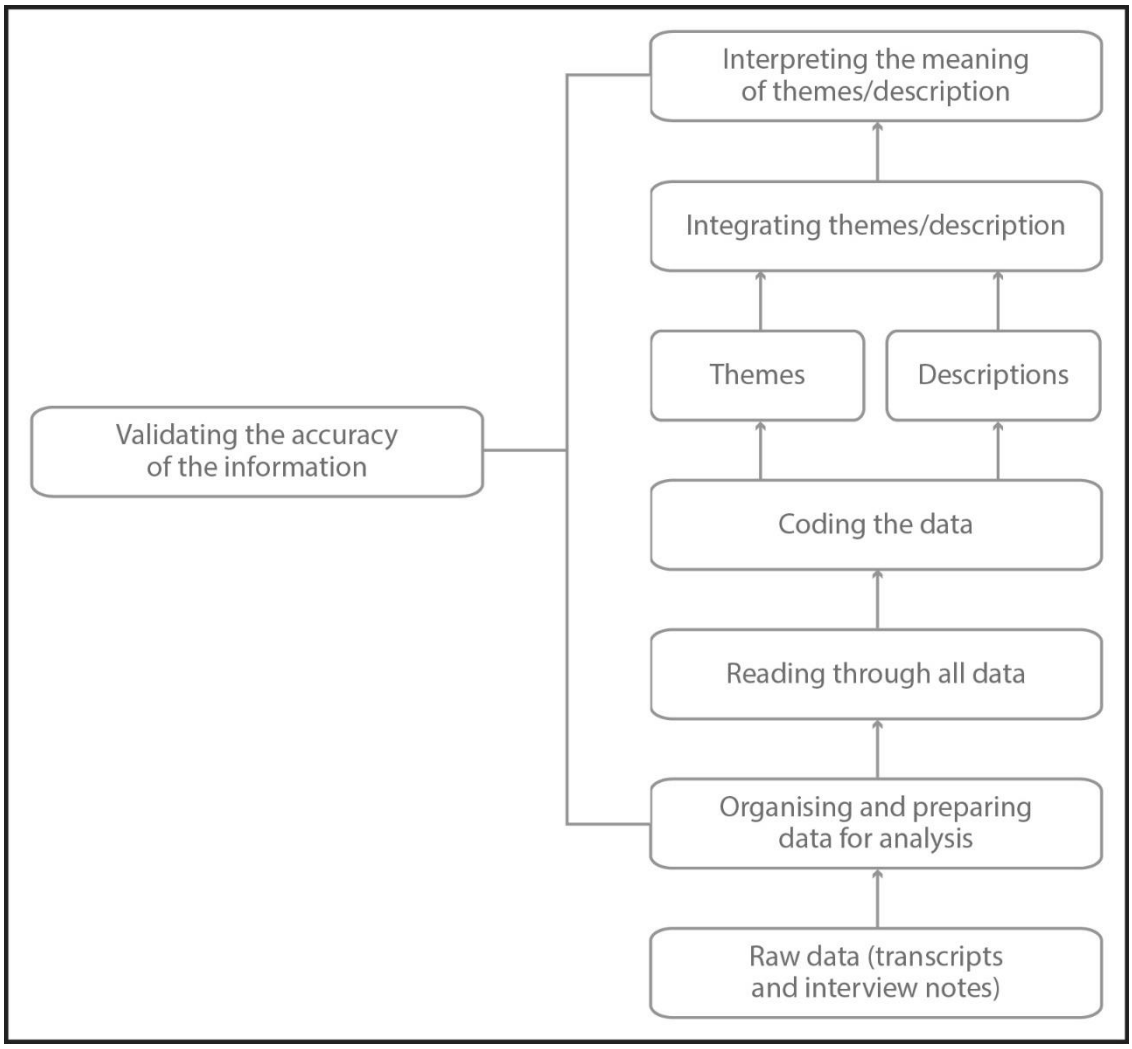

Figure 3.1: Stages in interview analysis (**Source:** Braun & Clarke, 2006)

Figure 3.1 above illustrates the different stages implemented by the researcher to collect data from the selected participants. The diagram depicts the importance of sequential stages followed to attain conclusive results fit for the purposes of this study.

3.8.3 Importance of interview themes to research objectives of the study

The themes and sub-themes addressed the research objectives listed in the study. Firstly, the themes ensured that the questions posed to participants were about SCM processes in the agri-business sector. This entails that the usefulness of such factors to the provision and success of the SC process was centred on economic growth and community development. Secondly, the sub-themes ensured that data collected for this study was of a high quality; hence it can be

transferred to other sources of knowledge such as peer-reviewed journals. The sub-themes of this study created an opportunity for mapping that could be used to answer the research questions such as the factors that enable and hinder the success of agricultural businesses in the Vhembe District Municipality.

3.8.4 Reliability and validity

The following subsections discuss the reliability and validity criteria used in the qualitative research method.

3.8.4.1 Reliability of the study

In a qualitative study, the "researcher is the instrument" (Patton, 2002), and should capture the lived experiences of the participants in a manner that ensures the reliability and credibility of the data (Onwuegbuzie & Johnson, 2006). Acknowledging the role of the researcher as the research instrument in a qualitative study, Creswell (2009) contends that reliability and validity are enhanced by the integrity of data collection and analysis procedures. The following procedures, as suggested by Creswell (2009), were employed to enhance reliability.

The interview transcripts were checked to assess the integrity of the transcription process. To enhance the checking process, the researcher saved all the interview transcripts that had been generated during the study, and then subjected them to peer auditing, as suggested by Bryman and Bell (2011). The themes generated from the data analysis stage were assessed in line with the research objectives. The assessment of themes was conducted following Lincoln and Guba's (1985) approach of negative case analysis, whereby recoding of the transcripts that did not fit into the thematic map, was done. Negative case analysis resulted in changes to the definition and categorisation of themes.

In addition, the themes that emerged from in-depth interviews were cross-checked independently by members of the research team. This was done by the researcher and two research professors who established consensus on the content of the transcripts emerging from the in-depth interviews, as well as the themes that emerged from the analysis. This was important, to reduce bias and subjectivity in the data analysis.

3.8.4.2 Validity of the study

In a qualitative study, validity measures the trustworthiness of the data from the perspective of the researcher, the participants and the audience of the study (Creswell, 2009). Following an interpretivist paradigm, validity assesses the degree of accuracy associated with the lived experience of participants (Smith, 2002). In terms of validity, the following strategies, as suggested by Creswell (2009), were applied:

- **Member checking**

  Member checks imply subjecting data categories, interpretations and conclusions to the participants, to allow them to authenticate their views (Bryman & Bell, 2011; Yoshida & James, 2011). Member checking is based on the premise that if participants can recognise research findings as depicting their own experiences, then credibility is demonstrated (Lincoln & Guba, 1985). The researcher sent out the summarised transcripts to five participants who were easily accessible, to confirm and validate the researcher's perceptions of their views. The participants confirmed the summarised transcripts and the subsequent themes to be a true reflection of the views they had expressed during the interviews.

  To enhance validity, peer debriefing was also conducted. This was done by enlisting the assistance of two experts for an inquiry audit of the interviewing process and analysis of the interview transcripts. The inquiry audit took the form of detailed analysis by two experts in the School of Management Sciences (Department of Business Management), of the interview protocol, the interview guide and the transcripts that emerged from the interview. A table indicating the sub-categories, categories and themes were developed for inter-rater reliability, and it allowed for credibility checks of the themes and sub-themes that emerged from in-depth interviews (Vagharseyyedin et al., 2011).

- **Bracketing**

  The concept of bracketing was employed to enhance the objectivity of the data collection and analysis process. Parahoo (1997) defined bracketing as "suspension of the researcher's preconceptions, prejudices, and beliefs so

that they do not interfere with or influence the participants' experience". Bracketing was observed throughout the interviewing and data analysis stage. Bracketing takes the form of reflectivity, whereby the researcher clarifies the inherent bias that has the potential of threatening the tenets of objectivity (Creswell, 2009).

During the interviews, the researcher remained focused on the participants' views and experiences, which shaped the findings of the qualitative study. Through intuiting (Polit et al., 2001), the researcher also tried, as far as possible, to capture the lived experiences of participants. By employing the concept of intuiting, the researcher suspended preconceived ideas on the research topic, remained open-minded during the data collection process, avoided criticism of participants' opinions, and paid attention to how the phenomenon under investigation was described and unfolding. According to Bryman and Bell (2011), bracketing enhances conformability, which refers to objectiveness and the absence of bias in a study. In addition to bracketing, the concept of thick description was employed to enhance validity. The thick description was enhanced by transcribing interview notes and recordings of all interviews in a manner that accurately captured the views raised by participants during the interviews. According to Creswell (2009), a rich presentation of qualitative data enhances validity.

3.8.5 Approaches to ensure reliability and validity

Polonsky et al. (2011) argued that although the instrument construction stands out as being important for data credibility purposes, in qualitative research the researcher is the main instrument. What this means is that when quantitative researchers speak of research validity and reliability, they normally refer to credible research, whereas qualitative researchers believe that –

> the credibility of qualitative research depends on the ability and effort of the researcher. In this sense, reliability and validity in qualitative research are not treated separately, but are rather considered to fall in the definitions of dependability, credibility, transferability and con-firmability (Polonsky et al., 2011).

3.8.5.1 Credibility

Credibility, as described by McMillan and Schumacher (2010), is the extent to which the results approximate reality, and are judged to be accurate and reasonable. To ensure the credibility of the results, the interpretations were cross-checked against raw data that had been collected. Furthermore, the findings of the study were made available to the research participants, to confirm whether the findings accurately represented their views. The credibility of the findings was also ensured through triangulation and the research interviews conducted were supplemented by primary data collection and analysis. Triangulation of the findings was ensured using different methods of data collection – in particular, virtual online conferences and audio (telephone) interviews. Triangulation involves using multiple sources of data, different methods of data collection, and using many researchers to interpret the data (Denzin, 1978).

3.8.5.2 Transferability

Transferability is concerned with transmitting or generalising the results of a study to another context (Pallant, 2020). Malina et al. (2011) posited that since the findings of a qualitative project are specific to a small number of environments and individuals, it is difficult to demonstrate that the findings and conclusions apply to other situations and populations. Transferability was achieved when the researcher provided sufficient information about the self (the researcher as an instrument) and the research context, processes, participants and researcher-participant relationships, to enable the reader to decide how the findings were transferred.

3.8.5.3 Dependability

Glesne (2016) refers to the term ‘dependability’ as how carefully the researcher has selected data collection instruments and research sites to suit the research questions and the objectives of the study. Dependability also has to do with the fact that if the study would be repeated in the same context with the same methods and with the same participants, similar results would be obtained (Glesne, 2016). The researcher used a qualitative research method that is applied on the research instrument that was used to suit all the research objectives and questions of the study. The researcher kept records of all that happened

during the data collection. Thus, the researcher observed all the behaviours of the participants and voice records of the interviews with the consent of participants.

3.8.5.4 Conformability

According to Ehlers and Lazenby (2011), conformability is the process of ensuring that the data findings truly represent the views, perspectives or meanings of the participants, rather than the views and understanding of the researcher. The authors further explained that this is the single most important way of ruling out the possibility of misinterpreting the meaning of what participants say and do, and the perspective they have on what is going on, as well as an important way of identifying one's own biases and misunderstandings of what one has observed as a researcher. The concept of conformability in qualitative research is a way of ensuring that the study findings are the result of the experiences and ideas of the participants, rather than the characteristics and preferences of the researcher. Throughout the data gathering process, the researcher made sure that every participant could listen to the audio-taped text, for them to be able to make comments and cross-check the accuracy of their captured views.

3.9 ETHICAL CONSIDERATIONS

The term 'ethics' in scientific research refers to the norms or standards that guide the research process (Kumar, 2019). In research, ethical concerns can be scrutinised as they relate to participants, researchers and sponsoring organisations. Likewise, the participants, the researcher and the sponsoring organisations all have ethical issues, which should be considered when formulating a research project. In determining the level of professionalism, a researcher should always demonstrate respect in terms of all interactions with participants, including avoiding judging and discrediting them, as well as ensuring that their views are devotedly recorded and given due consideration in the assessment process (Kumar, 2019). An important dimension of this respect relates to ensuring the protection of participants with weakened autonomy, and those who are marginalised or susceptible. In this study, five ethical research principles were considered, namely informed consent, no harm to respondents, avoidance of

undue intrusion, voluntary participation and the absence of coercion. These principles are discussed from section 3.9.1 to section 3.9.4.

3.9.1 Informed consent

Informed consent is the provision of adequate information and declaration to individuals participating in the research on the consequences of the research processes and their aftermath (Kumar, 2014). This is carried out to enable potential respondents to make fully informed decisions, free of any pressure and coercion. Participation should be the voluntary choice of the respondents, and should be based on sufficient information and an adequate understanding of the research and the consequences of their participation. This implies that the researcher must disclose all relevant information and any possible risks of participation, especially any issues around what should happen to the data obtained. In the present study, the participants were provided with a cover letter detailing the aims of the study. Furthermore, a consent form was attached to the interview guide, to ensure the voluntary participation of respondents.

3.9.2 Protection of respondents

Fundamentally, no harm comes to the respondents as a result of their participation in the research (Babbie, 2013). This indicates not only that respondents must not be exposed to pain or danger in the course of the research (such as in psychological experiments or medical trials), but also that there are no adverse consequences to a person as a result of their participation. The researcher did his utmost to protect participants from any harm, and to ensure, under the principle of informed consent, that the participant was fully appraised of all possible risks in participation (Cohen, 2013). Sometimes, participation in social research can necessarily cause a respondent to reflect on personal issues, bringing about emotional distress. In this study, the researcher's obligation was to ensure that the research interaction was not completed until resolution of any possible emotional distress that may have arisen, and that there would be recourse to follow up with assistance or counselling.

3.9.3 Voluntary participation and confidentiality

As implied by the principle of informed consent, participation must be voluntary and not subject to any coercion or threat of harm for non-participation (Ritchie et al., 2013). In contrast, non-coercion is not taken to mean that there were no payments for participation; however, any such payments should be commensurate with the amount of time and normal income expectations of the respondents, and should not be excessive such that it would constitute a bribe or inappropriate inducement. In this study, the participants were assured that attending to the questions, which were conducted in the form of interviews with several agri-businesses in Vhembe District, were solely voluntary, as the credentials of managers and professional employees, such as their signatures, were optional. In addition, confidentiality and anonymity were maintained, as participants were not expected to indicate their names anywhere on the interview guide.

3.9.4 The right to withdraw

Consistent with the principle of voluntary participation, participants were aware that they could withdraw at any time, and have any of their data already recorded removed from the analysis, where this was possible (Sarantakos, 2005). In this study, participants could withdraw from the study at any stage. The contact details of the researcher were indicated on the interview guide, so that the participants' contributions could be withdrawn from the study if they so wished.

3.10 CHAPTER SUMMARY

This chapter discussed seven sections of methodology that were relevant to the current study. The first section discussed the different paradigms, with special attention to the approaches that fell under qualitative research. A justification of the interpretivist paradigm was given, and the importance of it to the research at hand. The chapter then discussed the different types of research designs, giving an account of the relevance of these techniques in research methodology. In this section, the exploratory research design was selected, as it provided insight into, and understanding of, the information needed, as defined by the research processes. Thereafter, the chapter explored the research approach that was followed in this study. A conclusive qualitative research approach was selected

in this study. The chapter then discussed empirical design, in which the sampling design was analysed, and justification of the chosen sampling technique provided. The chapter then explored the data preparation and analysis procedures, giving the various steps taken for the data to be collected, and how participants adhered to the sequential processes of data analysis. The chapter then discussed ethical considerations, giving an account of the four major processes followed for the research to be ethical.

The next chapter reports on the results that emanated from the study.

CHAPTER 4

DATA ANALYSIS AND INTERPRETATION

4.1 INTRODUCTION

The preceding chapter highlights the philosophical underpinnings of methodological concepts that are incorporated within the study. Data was collected from the agri-businesses in Vhembe District. The collected data was transcribed using Microsoft Word, and analysed through thematic framework analysis using ATLAS.ti. The data was coded using open coding, using the code manager on ATLAS.ti. List coding and open coding were performed. The codes were finalised using constant comparison. The results that emanated from the analysis of data are presented in this chapter.

4.2 DEMOGRAPHICS OF PARTICIPANTS

The demographics of the participants who took part in this study are shown in Table 4.1 below:

Table 4.1: Demographics of participants

Participant	Gender	Highest qualification	Occupation/ department	Years in agricultural sector
1	Female	Matric	Community member	5
2	Male	Postgraduate degree	Community member	15
3	Male	Postgraduate degree	Community Development Worker	15
4	Male	Bachelor's degree	Community Development Worker	10
5	Male	Matric	Community member	5
6	Male	Matric	Community member	16
7	Female	Matric	Community member	17
8	Female	Bachelor's degree	Community Development Worker	16
9	Female	Postgraduate diploma	Community Development Worker	18

cont'd/…

10	Female	Matric	Community member	16
11	Male	Matric	Community member	18
12	Male	Diploma	Community member	5
13	Male	Matric	Ward Councillor	17
14	Male	Matric	Community member	4
15	Female	Diploma	Community member	18
16	Male	Diploma	Community development worker	16

(**Source:** Own)

As indicated in Table 4.1, the 16 final participants represented all levels of the community. With regards to demographic responses, ten were male participants and six were females. The results further indicate that all participants had more than five years of experience within the agribusiness supply chain industry. However, in terms of qualification, the results show that eight participants' highest qualification is matric, two participants have postgraduate degrees, two participants have bachelor degrees, three participants have a diploma and one participant has a postgraduate diploma in the agricultural sector. Ten participants' occupations are community members, five are community development workers and one is a ward councillor.

4.3 THEMATIC ANALYSIS

The study aimed at exploring the influence of SCMS on agricultural businesses in Vhembe District of Limpopo. This section provides a discourse on the results that emanated from the analysis of data. The major theme, sub-themes, and objectives of this study, that were revealed by the data analysis, are expounded in the following section.

4.3.1 State of supply chain management

This study also focused on assessing the state of supply chain management. The results that emanated from the analysis of data indicated that the state is business to business, and also business-to-customer oriented. These are discussed in this section.

4.3.1.1 Business to business (B2B)

The results revealed that the state of the SCM is mainly business to business (B2B) oriented. This was evidenced in the views of participants 7, 8, 10, 11, 12 and 13, as shown in the following excerpts:

> *"Our customers normally come here at Tshipata to buy our products, however during the time of beans after harvesting we take them to another area such as Gogogo and Niani to a person who sell on my behalf, and we will then split the profit made."* (P7)

> *"We also take our products to the Johannesburg markets, through having an agent we are able to make business calls and tell them what we have currently."* (P8)

> *"After we have harvested, we will then look for a market or take our products to Levubu then from Levubu to Johannesburg markets."* (P10)

> *"After packaging that is where I take my products to my transport and then they will take the products to the Johannesburg market where the products are then distributed and sold."* (P12)

> *"Sometimes customers with vehicles will normally come and purchase in bulk the resell."* (P13)

The participants indicated that they normally send their products to markets in Johannesburg through an agent who will be selling their products on their behalf. The participants further indicated that they also send their products to other local businesses who will sell on their behalf, and they share the profits. Additionally, the participants stated that they sell to other local businesses who purchase the products from their farms, in bulk, for resale. This depicts an SC that is managed with a B2B concentration or orientation.

4.3.1.2 Business to customer (B2C)

The results also showed that the SC among agricultural businesses is managed on a business to customer (B2C) focus or orientation. Participants 5, 7, 9, 11 and 13 shared their views regarding this aspect, as shown in the following extracts:

"It depends on the demand, for instance, we have people from Giyani who likes sweet potato. So, they come and purchase directly from our farm." (P5)

"Sometimes we just call the customers for instance we have planted corn and sweet potatoes. Customers will then come and buy the products directly in our farms. Sometimes we would take our products and deliver them to Malamulele and Musina if we don't have customers here at Tshipata, this usually happen if most people planted same product in one season, we then go out and sell." (P7)

"My customers come at my house to purchase my plants." (P9)

"In terms of my poultry business I normally deliver my products or eggs directly to my customers around Vhembe. However local customers come directly to the market and purchase products." (P11)

"When after we harvest, we contact our customers so that they can come and buy." (P13)

In terms of B2C focus, the participants indicated that they normally deliver their products directly to their customers. The participants further indicated that the customers also purchase the products directly from them at their local markets. The participants indicated that they at times sell the products from their homes where the customers come and buy directly from them. This evidence from the participants signifies a B2C-oriented SC management.

A summary of the current state of the SCM is shown in Figure 4.1 below:

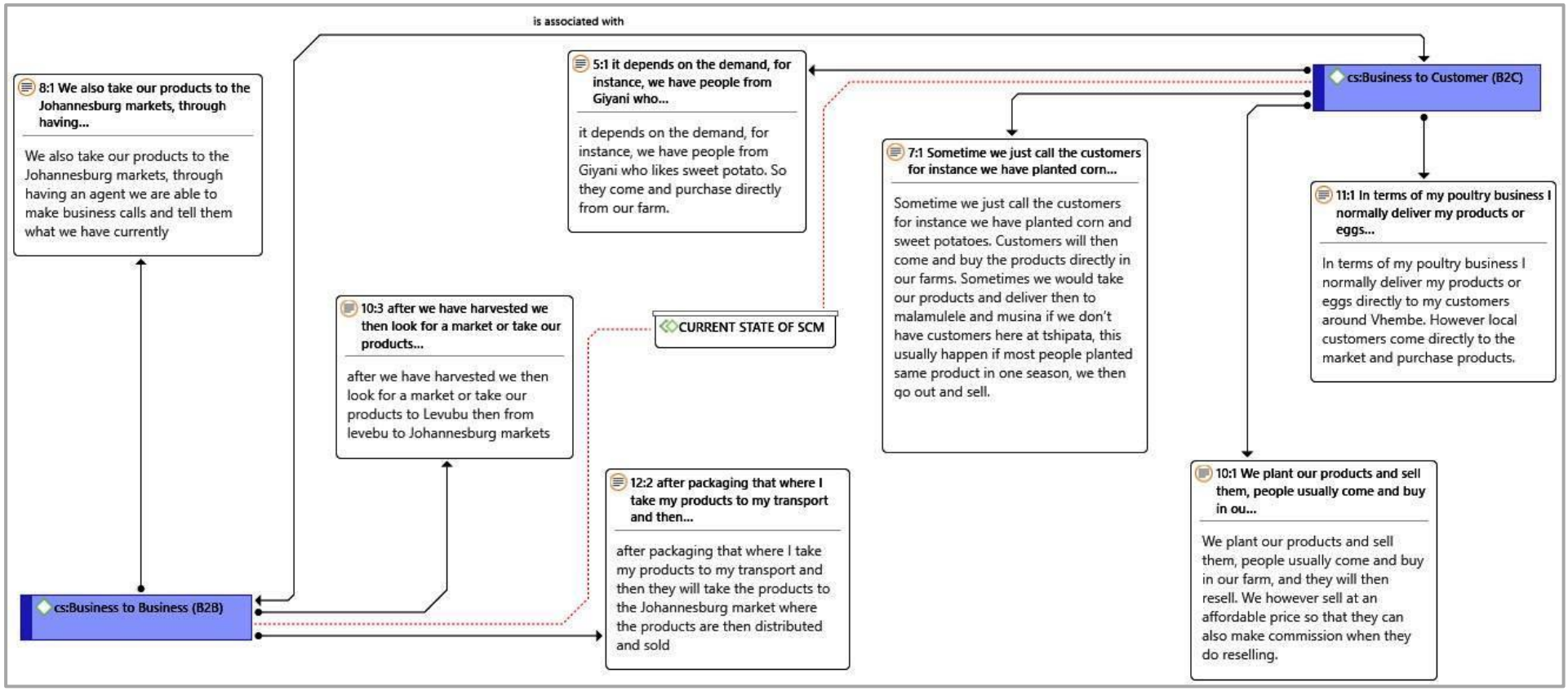

Figure 4.1: State of supply chain management network (**Source:** Own, using ATLAS.ti)

4.3.2 Influence of SCMS on agricultural business

The current research also focused on examining the influence of SCMS on agricultural businesses in Vhembe District. This section presents the results that emanated from the analysis of data pertaining such influence. After constant comparison, the sub-themes that emanated from the analysis are improved profitability, SC reliability, sustainable operations and improved communication. These are expounded as follows:

4.3.2.1 Improved profitability

Improved profitability was revealed to be one of the influences that the SCMS have on the agricultural businesses. This was evidenced by the views of participants 6, 8, 10 and 15, as shown in the following quotations:

> *"… haa! Profit is much better more especially if you have planted your products and still be able to get R1000 is much better because for you to make large amount of profit is not that easy it might depend on how and what you have planted."* (P6)

> *"Yes, I am making profit. The profit we make is directed by the freshness of our products which means that one need to have proper compost and maintain the plants. So even if I make less profit I know where I have lacked."* (P8)

> *"But when planting mealie meal, we are able to make sufficient profit of up R5000 per sale in one day."* (P10)

> *"The system we are using it allows us to make profit because after sales we are able to make profit and it allows us to continue with our farming processes."* (P15)

Considering the above evidence, the participants in this study posited that their current SC systems are enabling them to make a profit. This is evidenced by the participants stating that after sales they can make profit, and it allows them to continue with their farming processes. The participants also indicated that the SCMS enable them to monitor the areas where they are lacking, and take corrective action accordingly – which ultimately results in their efforts yielding

considerable profits. This means that the SCMS are enabling the agricultural businesses to operate profitably – which enhances their sustainability.

4.3.2.2 Supply chain reliability

The results also revealed that the SCMS are resulting in SC reliability. With regard to SC reliability, the views of participants 6, 8 and 11 are shown in the following extracts:

> *"… yes, our business is effective because even when transporting our products to Johannesburg they arrive on time and once the agent gets our products he calls to confirm the order, moreover our products reach the market still fresh."* (P6)

> *"Yes, our products arrive on time and still fresh, no complain from the agent since delivery take place immediately after harvest."* (P8)

> *"I always deliver my products on time to my customers. And my customers are satisfied with my service."* (P11)

The participants informed that through the effectiveness of the SCMS, their perishable products are able to reach further markets such as those in Johannesburg, while they are still fresh. The participants also indicated that their products not only arrive at the markets fresh, but also they arrive in time, which also boosts their relations with their market agents. The participants further stated that owing to the SCMS, their products reach the customers in time, which also results in improved customer satisfaction. Hence, the SCMS are resulting in SC reliability among the agricultural businesses.

4.3.2.3 Sustainable operations

Sustainable operations emanated from the data analysis as another influence that SCMS have on agricultural businesses. This was evidenced by the sentiments shared by participants 3, 8 and 15, as shown in the following excerpts:

> *"With my farming being substantial I cannot say that the turnover that I am making deserve any banking or what. the good thing about subsistence is that the business can run on its own without using personal*

money. What I can say is that my business can maintain itself and also me." (P3)

"… there are plenty of success factors in my business reason being I am to satisfy my needs even when the year-end I can tell that I have really gained a lot." (P8)

"Yes, the process is effective because we are able to record our information and refer to when we want to know how much we have spent and earned during the selling and production process. We are also able to see our loss and profit again we are able to the drawbacks. Everything is going well with the current system." (P15)

The participants indicated that, owing to the SCMS, they are able to operate smoothly and satisfy their customers. The participants also postulated that through these systems, they are able to effectively record their business operation's information. They further indicated that through these systems, their bookkeeping capabilities are enhanced, and sustainability of operations made possible. This implies that the SCMS are enabling the agricultural businesses to operate sustainably.

4.3.2.4 Improved communication

Improved communication was also noted to be another influence that the SCMS have on the agricultural businesses. Participant 14 indicated that through the adoption of communication technology systems, communication with agents and other businesses in their SC is made easy. This implies that the systems have enhanced the manner of communication of the farmers, which ultimately enhances the flow of business operations and the sustainability thereof. Improved communications as an influence of SCMS are evidenced by the view of Participant 14, as shown in the following extract:

"I use this skill of IT system, so when we do our things we make sure that we record our data properly, for instance when we say we are marketing phones, laptops are the main source, it is really impossible for someone to say they do not use IT in their business so internet is the best weapon

because it communicates fast, I can even send staff to someone who is in cape town through whatever which is technology." (P14)

A summary of the influence of SCMS on agricultural businesses is shown in Figure 4.2 below:

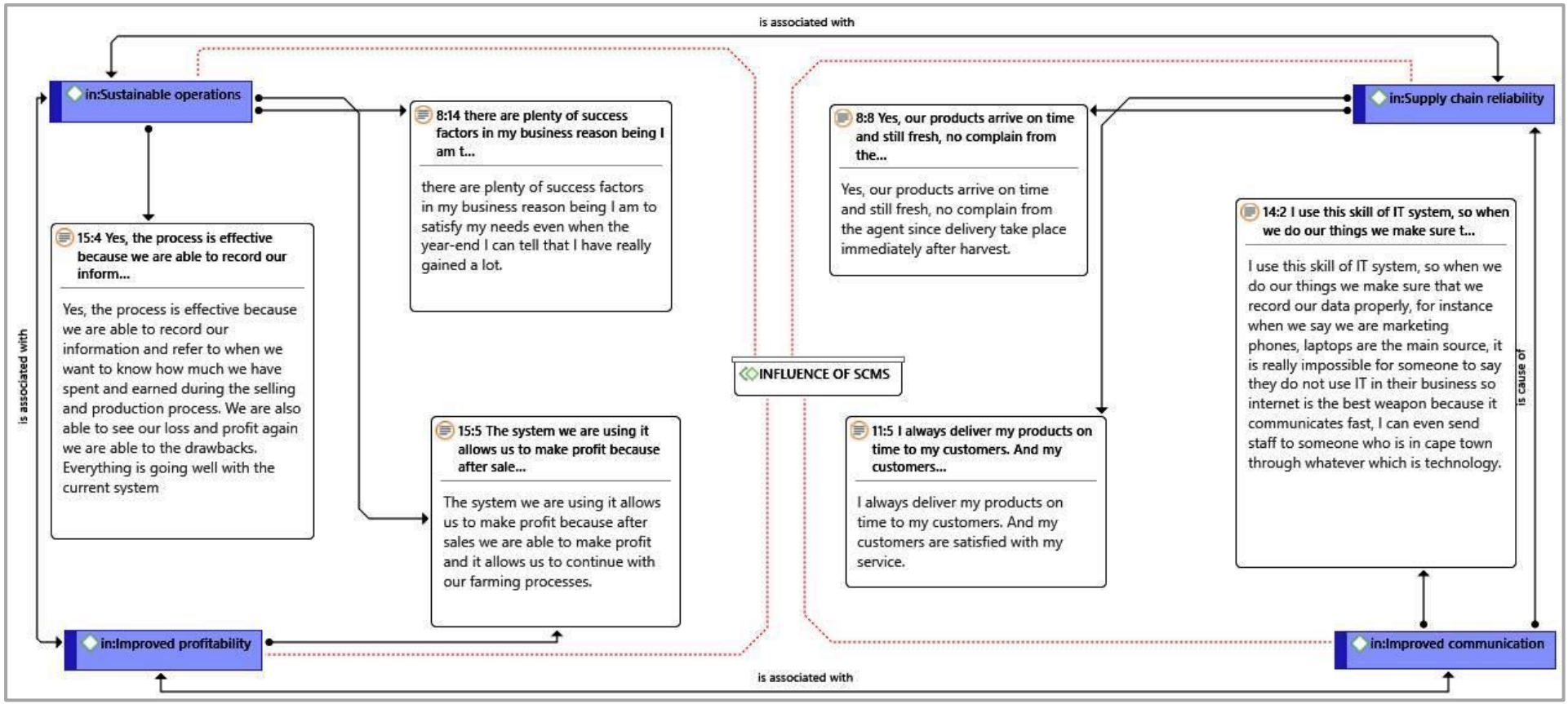

Figure 4.2: Influence of SCMS on agricultural business network (**Source:** Own)

4.3.3 Enabling factors of agricultural business success

This study also focused on unravelling the factors that enable the success of agricultural businesses. The enabling factors that were revealed from the analysis are farmers' collaboration, quality product provision, proper packaging and information sharing. These are discussed in the following section, below.

4.3.3.1 Farmers' collaboration

The results revealed that farmers' collaboration is one of the factors enabling the success of the agricultural businesses. This was evidenced by the views of participants 8, 10, 11, 13, 14 and 15, as shown in the following excerpts:

"I have a lot of networks, for instance in our area farmers meet to discuss about the setting of prices of which we also make decision upon. We also advice each other in terms of working hard and developing our self's, so that we can be able to make enough profit rather that to plant for a loss." (P8)

> *"As farmers we are able to engage with each other regarding the issue of price set and adjustments. We also have meeting on our own where we address several issues affecting us, from the meeting more information is shared, and changes are made."* (P10)

> *"For networking purposes, we normally go and meet at mulimisini with other farmers, it is unfortunate that we cannot use social media platforms such as WhatsApp since most of our farmers are elderly people. We address issues such as how can we develop our business products, issues such as tractors, compost and any other related issue regarding our farm business. We also make discussions on how we can get the market for our products."* (P11)

> *"After a short period of time we normally we normally meet as a committee for instance once per month addressing issues such as how can we get fertilizers, changing the current farming process, how to also destroy pests that affect the growth of our plants."* (P13)

> *"As farmers we have our own WhatsApp group where we communicate and do all the kind of networking so what I can tell you is that marketing*

is the best weapon ever when doing business, so whenever we do our meetings all we do we make sure that we connect, network and market so communication is the best. So, if we are networking 10 in the meeting amongst ourselves, we will all need different things, you might find that one person has 100 friends or people around him whilst others have 30 so it makes things easier in terms of doing business." (P14)

"We normally have group meetings here locally where all the farmers meet and we discuss several issues such how can we get fertilizers; how do we sell and the issue of farming procedures. The solution will relate to how can people work with tractors and where can we find them." (P15)

Based on the above evidence, the participants indicated that they advise each other in terms of commitment and developing themselves and their businesses towards enhancing their profitability. The participants further indicated that through these meetings or gatherings, they can establish networks that ensure that their businesses remain a going concern. The participants also indicated that these meetings provide a platform for addressing issues such as how they can get fertilisers, enhancing farming processes, and developing ways in which they can address the pests that affects their plant growth. The participants indicated that such engagement and collaboration provide the basis for success in their operations.

4.3.3.2 Quality product provision

Quality product provision was established as another factor that enhances the success of the agricultural businesses. This was based on the views of participants 1, 6 and 8, as shown in the following excerpts:

"Yes, my customers are satisfied because I deliver A grade products and I give them the one's which are not in good standards, this helps me to retain the customers.so giving them free products becomes a way of marketing myself so that they keep coming back." (P1)

"Any products which the customers need is mostly available in the farm where in the customers get fresh products, it is very rare for us to have rejects." (P6)

> *"For instance, if it is about the seed, we will go all out to get the right seed. We do not go against those who oppose or complain since they give advice and knowledge on what we should do in order to produce more quality products."* (P8)

The participants indicated that they offer quality products, or "A" grade products, which fosters the satisfaction of the customers and ultimately boosts their image – and sales as well. The participants also indicated that they do not normally get rejects, and they deliver their products while they are still fresh – which has a positive impact on operations. This means that the provision of quality products by the farmers results in improved operations and the success thereof.

4.3.3.3 Proper packaging

Proper packaging is one of the factors that has been established as resulting in the success of the agricultural businesses. This is evidenced by the views of participants 8, 12 and 14, as shown in the following excerpts:

> *"We use boxes to package our products, this is based on what the agent wants, agent will tell us maybe on WhatsApp on how he/she wants the package system to be done. I normally package chills and green beans on packaging boxes."* (P8)

> *"Firstly, we harvest our crop products in crates for packaging and in terms of packaging we have different types of packaging such as boxes or you can use sack."* (P12)

> *"So, terms of packaging our products some we use boxes, some we rap using plastics, so it depends on the product we have using the raping machines."* (P14)

The participants indicated that they package their products in appropriate packages that would also be appealing in the market. The participants further indicated that they also have wrapping machines that facilitate the packaging, although the packaging is dependent on the product type. Packaging the product in a proper manner results in the farmers' products being appealing to customers or in the market, which also contributes to the success of the products in the market or enhances their competitive edge.

4.3.3.4 Information sharing

The results additionally revealed that information sharing is one of the factors that is contributing to the success of the agricultural businesses. This is evidenced by the views of participants 6, 8 and 12, as shown in the following excerpts:

> *"It works in that way because there's some information that you will need to get through asking, for example when planting maize meal, you will have to know that there are various seeds that are planted in each season, so we get this in information through advising each other."* (P6)

> *"We also have specialist farmers from the Department of Agriculture who come in our area to motivate us on doing farming business."* (P8)

> *"Find someone then go to their farm and ask them how they do it, they take contacts and afterwards continue communicating and finding out on how to proceed if we are stuck then assist each other."* (P12)

With regard to information sharing, the participants submitted that through the farmers' engagement, they are able to share vital information regarding farming, which ensures that they plant the appropriate seeds. The participants also indicated that they have specialist farmers who motivate them in doing farming business, and this enables them to gain information regarding advancing their farming efforts. This means that through information sharing, the success of the agricultural businesses is enabled.

A summary of the factors that enable the success of agricultural businesses is shown in Figure 4.3 below:

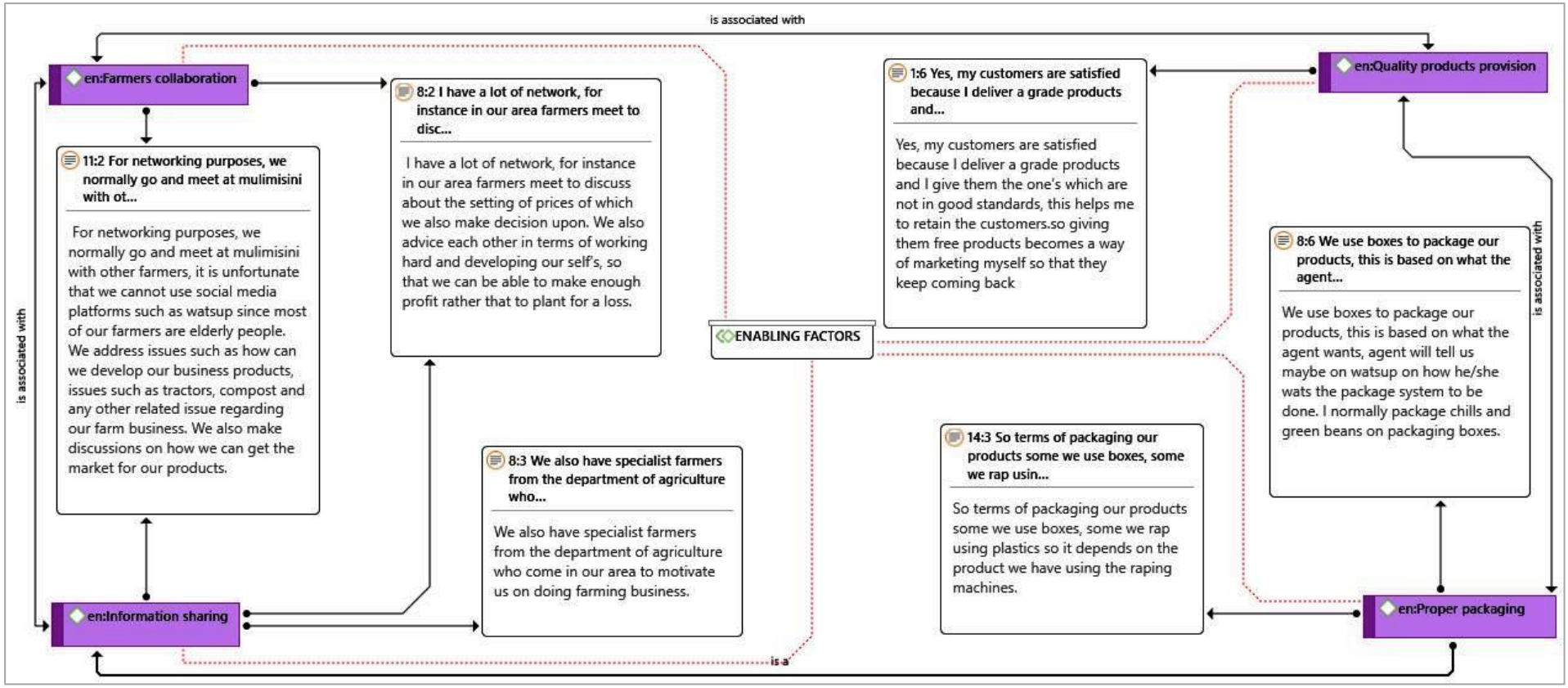

Figure 4.3: Enabling factors of agricultural business success (**Source:** Own, using ATLAS.ti)

4.3.4 Hindering factors of agricultural business success

The study also explored factors which hinder the success of agricultural businesses. The results showed that these factors are competition, inadequate resources, market proximity, water crisis/shortage, poor infrastructure, inadequate department support, lack of farmers' collaboration and technological lagging. These factors are discussed in the following section.

4.3.4.1 Competition

The results showed that competition is one of the factors hindering the success of agricultural businesses. This was evidenced by the views of participants 1, 6 and 10, as shown in the following extracts:

> *"Sometimes when you supply the products, you can come across some challenges of competing with other agricultural businesses, you may find that I am not the only one who have planted the macadamia nuts, you may find that there are several people who are currently busy planting."* (P1)

> *"What we normally experience in the farm is that if we all plant more or less the same thing, we then find it hard to get the market or more customers. For instance, if we all plant sweet potatoes it means that we will all face challenges where in one might even sell at the price of R50 per crate when we have all decided on R120 per crate, it means that customers will go to the one selling at the lower price than others."* (P6)

> *"We are not making enough profit because, we sometimes find it hard to get customers and this is due to the reason that more farmers plant one and the same thing."* (P10)

In terms of competition, the participants indicated that they face a challenge in competing with other agricultural businesses, as there are more farmers or businesses supplying the same product. The participants further indicated that price reduction also occurs among the farmers, and this results in customers favouring products sold at lower prices. This results in the businesses making considerable losses, which affects the sustainability of their operations and their ability to recoup the costs that they have incurred.

4.3.4.2 Inadequate resources

Inadequate resources was established to be another factor hindering the success of the agricultural businesses. Inadequate resources as a hindering factor was evidenced by the views of participants 2, 7 and 8, as shown in the following excerpts:

> *"We even don't have refrigerators since they require to operate in the warehouse with extensive amount of electricity such which can cost you up to an estimated amount of R100 000."* (P2)

> *"Another thing is shortage of tractors; the government has only given us one tractor of which it is not usable considering the fact that we have a lot of farmers with different hectare. This leads us to following a queue of which a season might even surpass before one gets an opportunity to use that particular tractor. For instance, now is the season for beans but because we have one tractor you might find that we have to start late due to waiting for the tractor."* (P7)

> *"Challenges that we normally face here in our farms are the issues of lack of tractors, since we only have one which a lot of farmers depend upon, so this limitation delays our process."* (P8)

> *"We also face lack of availability of tractors which delays our production process."* (P10)

Based on the above evidence, the participants indicated that they lack resources such as refrigerators, as they require to operate in warehouses, and attract an electricity bill that they are not able to afford. The participants further indicated that resources such as tractors are a major concern. This is so, because the government provides only one tractor among many farmers, which results in the planting season passing while they are still in the queue to access the tractor. This means that the lack of resources such as refrigerators, finance and tractors have a detrimental impact on the operations of the farmers, and hinder their success prospects.

4.3.4.3 Market proximity

Market proximity is another factor that has been found to hinder the success of agricultural businesses. The participants indicated that they face challenges when sending their products to distant markets such as Pretoria and Johannesburg, as some of their products reach there no longer fresh. The participants further indicated that when the products reach the market no longer fresh, the pricing of the product is affected, as they are often forced to sell the products at lower prices just to break even. The participants further indicated that they also face challenges, for instance in failure to fully supply their products to large markets, which often results in them concentrating on local markets – which may not be sufficient, compared to the products they were supplying. This means that market proximity is a factor hindering the success of the agricultural businesses. This was evidenced by the views shared by participants 2, 10 and 13, as shown in the following extracts:

> *"So, some products when we harvest them we need to immediately send them to the market, so due to long distance from the farm they may spend the whole day still being under packaging and from there to Joburg is a long distance it can take up to two days to reach the market, of which some of the products may reach there without the freshness. And that is out of my control since I do not have my own transport to take the products to Joburg or Pretoria. For instance, last week I sent red chillis this Monday the agent told me that your chillis look dry whereas when you cut them, they are fresh, and this is only due to late arrival in the market. Once they look no longer fresh the price goes down. the agent might say 4kg boxes costing R60 to R80., I sell them at a low price of R30 or R20."* (P2)

> *"We sometimes feel like there is no business in crop farming because of lack of market."* (P10)

> *"The challenge that we have is that we are not fully able to take our products to large markets, we also plant for local customers."* (P13)

4.3.4.4 Water crisis/shortage

Water crisis or shortage is another challenge that has been established to be hindering the success of agricultural businesses. Water crisis or shortage as a hindering factor was evidenced by the views of participants 7, 8, 9, 10 and 13, as shown in the following extracts:

> *"Another challenge is that especially during winter we fight against each other for water, because we have a time frame or schedule of who is supposed to use the water and when, but you find that other farmers were rushed to use water even when it is really not their term. Water crises make it difficult for us to plant during winter."* (P7)

> *"We also have water crises especially during the months of august and September."* (P8)

> *"The most challenge that I experience is the issue of water."* (P9)

> *"Shortage of water is our biggest problem."* (P10)

> *"Another problem is that we do not have enough water, actually we do not have a reservoir."* (P13)

The participants indicated that water shortage is another issue affecting their operations. The participants posited that the water use schedule is often breached by other farmers who use the water, despite it not being their turn. Apart from the issue of the schedule, the participants indicated that water shortage is the biggest problem affecting their operations; hence, water shortage is detrimental to the success of their businesses.

4.3.4.5 Poor infrastructure

Poor infrastructure was noted to be another factor hindering the success of the agricultural businesses. This was indicated by the views of participants 1, 7 and 11, as shown in the following extracts:

> *"In terms of effectiveness I don't deliver the products on time, sometimes I have some challenges of transporting my products because where I am currently located, we do not have proper roads, for instance in rainy days*

it becomes difficult to transport the products because of the damaged road." (P1)

"Our road to the farm area is very damaged at least it should be fixed." (P7)

"Lack of electricity in the poultry farm and it is extremely expensive to get a transformer, we have trying to apply but the cost amount is R50 000." (P11)

The participants indicated that they face the challenge of roads, as these roads are damaged. They have some challenges in transporting their products, as they currently do not have proper roads, and on rainy days it becomes difficult for them to transport their products. The participants further indicated that they lack electricity, and it is expensive for them to get a transformer, which affects their efforts. This means that the lack of an enabling infrastructure, or poor infrastructure, is a hindering factor in the efforts of the agricultural businesses.

4.3.4.6 Inadequate department support

Inadequate department support was noted to be another factor affecting the success of the farmers. This was evidenced by the views of participants 4 and 6, as shown in the following extracts:

"The support from the Department of Agriculture is not really focusing on people doing mass production because they really focus on small scale farming. Considering the provision of pre-take of agreements because, for instance if one is given 10 bags of compost or manure while the same products that I produce do not have a market or I have nowhere to sell them, so it becomes a waste since I was not able to recover anything from the products that I have used the compost on." (P4)

"You know this is of production inputs from agriculture or I can say the support from agriculture is not so reliable because you can even apply and never get anything because ever since I started, I have never been funded or get anything but am always applying for input assistance." (P16)

The participants indicated that the support they are receiving from the Department of Agriculture is inadequate, as the department often focuses on small-scale farming, and neglects mass production, which also affects their growth and ultimate profitability. The participants also indicated that support from the department is also not reliable, especially within the input assistance, as they are always applying for, but not receiving, the intended assistance.

4.3.4.7 Lack of farmers' collaboration

Lack of farmers' collaboration is another factor affecting the agricultural businesses' success. This was evidenced by the views of participants 4 and 7, as shown in the following excerpts:

> *"Another issue can be collaborations with other farmers whereby if it is coordinated well, we can plant together to meet a particular demand, so currently without collaboration the prices of products become unpredictable. For example, let's say you are planting cabbage and expect to sell at a price of R10 or and you find that there is also someone selling at a ridiculous low price of R5, so this is because there is no collaboration and corporation among each other."* (P4)

> *"Sometimes we as farmers we fight against each other; this normally happens in occasions where a seller is reducing a price, whereas as a group we have agreed on a specific selling price. You might find that the price agreed upon is R150, but one seller reduce to R120 obviously, the buyer was choosing the cheapest one."* (P7)

The participants indicated that they face lack of collaboration among other farmers. This is so, because some of the farmers often sell the products at very low prices, as opposed to the agreed prices. This lack of collaboration impedes the effectiveness of the operations of the farmers and their profitability. It implies that lack of collaboration among farmers is a factor hindering the success of the agricultural businesses.

4.3.4.8 Technological lagging

Technological lagging was established to be another factor hindering the success of the agricultural businesses. This was evidenced by the views of participants 8, 10, 11, 13 and 15, as shown in the following extracts:

"But there is still lack of technological advancement in the system we are using." (P8)

"We currently have not yet any advance technology uses such as machinery we work on our own." (P10)

"so, we are basically still using the old rather not advanced system." (P11)

"because of lack of technology we are unable to move forward with time for instance our beans are sold in baskets and cup scale rather than plastic package." (P13)

"We do not have much of technological involvement however we use watering drips, and we also use tractors. In terms of recording our stock we normally use handbooks." (P15)

Considering the above evidence, the participants stated that there is still a lack of technological updatedness or advancement among the farmers, as, for instance, the machinery they use is their own, but not up to date technologically. The participants also indicated that lack of technologically advanced equipment, for instance for packaging, results in failure to properly package the products, which adversely affects the image and sales of the products. Lagging in technology has been established to be another factor hindering the success of the agricultural businesses.

A summary of the factors hindering the success of agricultural businesses is shown in Figure 4.4 below:

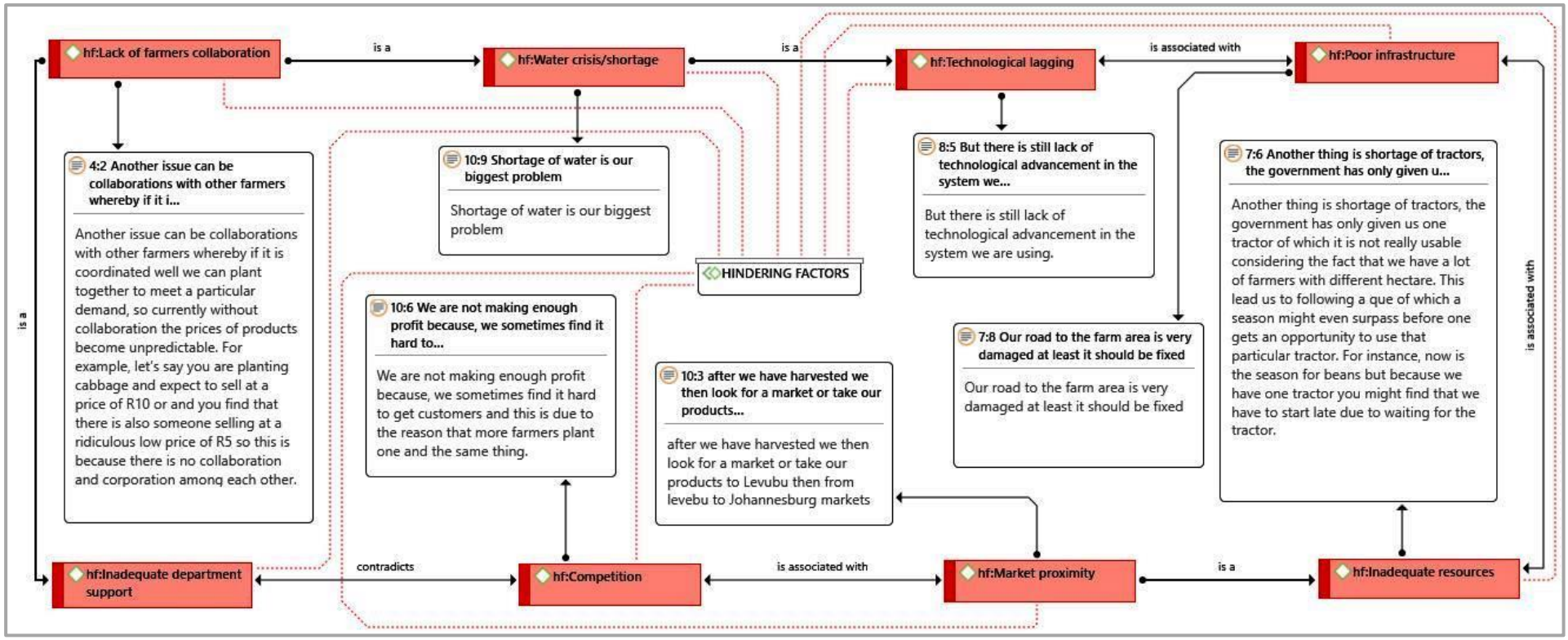

Figure 4.4: Hindering factors of agricultural business success (**Source:** Own, using ATLAS.ti)

4.3.5 Supporting policies/strategies of agricultural business

The study also focused on recommending policies and strategies that will support agricultural businesses. The strategies established from the data analysis are farmers' engagement and consultation, government support, specialised agriculture, and consideration by major retailers/institutions. These are explained in the following section.

4.3.5.1 Farmers' engagement and consultation

Farmers engagement and consultation was established to be one of the strategies that can be adopted towards supporting agricultural businesses. The participants indicated the significance of engagement and consultation, stating that it provides a premise for them to share views on self- and business development. The participants also indicated that such engagement and consultation would enable the farmers to keep up to date and make informed decisions on their businesses. This means that farmers' engagement and consultation is one of the strategies that can be adopted towards supporting agricultural businesses. Farmers' engagement and consultation as a strategy was evidenced by the views of participants 1, 6, 8, 11 and 15, as shown in the following extracts:

> *"For me not to fail I used to communicate with other farmers (specialist) for guidance, like if there are some bacteria I would ask on how to destroy the bacteria from my plants, they will advise on which kind of medication need to be bought."* (P1)

> *"It works in that way because there's some information that you will need to get through asking, for example when planting maize meal, you will have to know that there are various seeds that are planted in each season, so we get this in information through advising each other."* (P6)

> *"I have a lot of networks, for instance in our area farmers meet to discuss about the setting of prices of which we also make decision upon. We also advice each other in terms of working hard and developing our self's, so that we can be able to make enough profit rather that to plant for a loss."* (P8)

"For networking purposes, we normally go and meet at mulimisini with other farmers, it is unfortunate that we cannot use social media platforms such as WhatsApp since most of our farmers are elderly people. We address issues such as how can we develop our business products, issues such as tractors, compost and any other related issue regarding our farm business. We also make discussions on how we can get the market for our products." (P11)

"We normally have group meetings here locally where all the farmers meet, and we discuss several issues such how can we get fertilizers; how do we sell and the issue of farming procedures. The solution was related to how can people work with tractors and where can we find them." (P15)

4.3.5.2 Government support

Government support was established to be another strategy that can be adopted towards supporting the agricultural businesses. This was evidenced by the views of participants 7, 8 and 10, as shown in the following exerpts:

"I wish the government can provide us with more tractors, bacteria medicines and manure so that we should not have challenges when planting our products. They can also provide us with tools or resources such as Ax, wheelbarrow so that we can be able to carry our compost when we go to the farm, water sprays and boreholes since we really struggle a lot during winter." (P7)

"With the issue of water crises, we are fortunate to have a vast river in our area, if which if for instance we had people who can sponsor us with building a water dam, this helped to solve water crisis. I wish we could have more tractors in our areas since we have many farmers around. All farms combine cam reach a maximum of 109. The government can also fund us with the provision of manure." (P8)

"We would like to have a water dam next to the river so that we can be able to get water in our farming area." (P10)

The participants indicated that the form of support they can obtain from the government may be in the form of the provision of more tractors, bacteria medicines and manure, to alleviate the challenges they face during the planting period. The participants also indicated that the government could, additionally, provide tools such as wheelbarrows and axes towards simplifying operations. The participants also mentioned the need for assistance with the provision of water, in the form of the construction of a dam where water can be sourced by the farmers. This implies government support in the form of resources, and enabling infrastructure provision is another strategy that can be used to support the sustainability of their operations.

4.3.5.3 Specialised agriculture

The results also showed that specialised agriculture is another policy or strategy that can be used towards supporting agricultural businesses. This was evidenced by the views of Participant 1, as shown in the following extract:

> *"If possible, I think there should be an agreement between the agricultural businesses, for instance one can chose to only focus on planting tomatoes while someone focus on specific spinach, so that we cannot compete because if we are staying in the same business area and planting the very same thing, we will end up not supplying the products to the market for profit gain. We plant different things we even get the good market, even the price will be beneficial since the price will be very much scares." (P1)*

Based on the above evidence, the participant indicated that an agreement or consensus must be reached among farmers regarding differentiated farming or specialised farming. Such farming implies that the farmers can plant different products, rather than focusing on similar products, which results in saturating the market and reducing profits and sales. If farmers specialise in supplying certain products, and groups based on specialty, the market will be supplied with different products, and they can share the market accordingly, as well as improve their sales and, ultimately, profitability.

4.3.5.4 Consideration by major retailers/institutions

Consideration by major retailers is another strategy that can be adopted towards supporting agricultural businesses. Participant 4 indicated that new channels must be opened for small-scale farmers, to be able to supply the major retailers. The participants also indicated that large firms should also consider small-scale farmers, and come on board towards supporting the development of agricultural businesses. The participants indicated that various institutions can also be involved in supporting agricultural enterprise development institutions. This implies that if large retailers and bigger firms collaborate with farmers, they can provide support in terms of funding and information provision towards the effective operation of these enterprises. Consideration by major retailers and institutions, as a strategy, was evidenced by the sentiments shared by Participant 4, as shown in the following excerpt:

> *"In terms of opening channels, I think the industry on us, controllers, the major big firms should really consider small scale farmers like how we bring this guys on board and could be done through various institutions that support enterprise development institutions. There are major retailers such as spar, Shoprite are the people who consume a lot of agricultural produced products. Although some come through to local farmers but other are still slow and some of them, we are not even sure on how they get their products. But all in all, we really want the major local retailer sellers to be in touch with the small-scale farmers."* (P4)

A summary of the policies and strategies that could support agricultural businesses is shown in Figure 4.5 below:

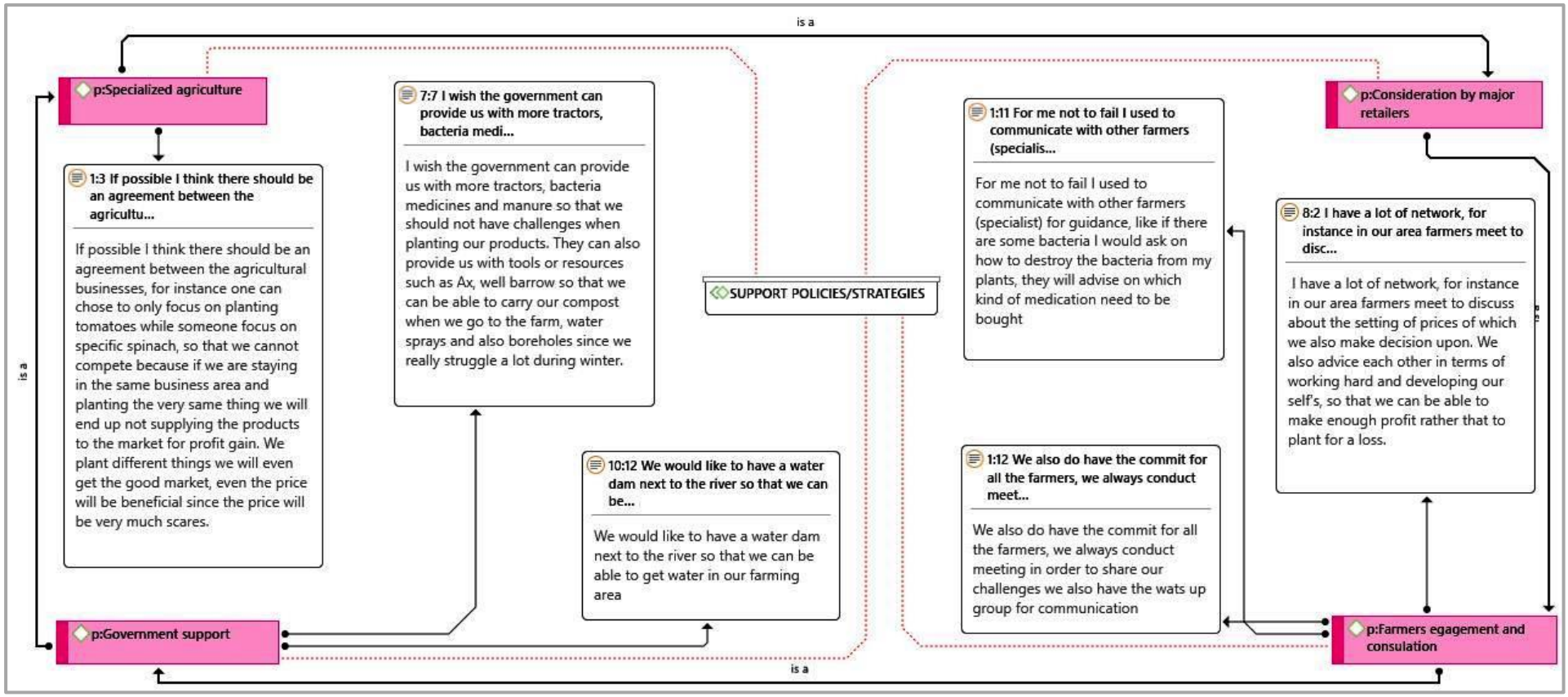

Figure 4.5: Supporting policies/strategies of agricultural business success (**Source:** Own, using ATLAS.ti)

4.4 CHAPTER SUMMARY

In summary, the results that emanated from the analysis of data were discussed in this chapter. The results were aligned with the research objectives. The chapter established the results relating to the state of SC management, the influence of SCMS on agricultural businesses, the factors that enable and hinder the success of agricultural businesses, and the policies and strategies that could support agricultural businesses. The next chapter, Chapter 5, provides a discussion of the results.

CHAPTER 5

DISCUSSION OF RESULTS

5.1 INTRODUCTION

The previous chapter provided an analysis and interpretation of data, in line with the research objectives. The themes that emanated from the analysis of the data are discussed in this chapter, to determine their concurrence or contradiction with previous researchers' findings. The study aimed at exploring the influence of SCMS on agricultural businesses in the Vhembe District of Limpopo.

5.2 STATE OF SUPPLY CHAIN MANAGEMENT

This study also focused on assessing the state of supply chain management. The results that emanated from the analysis of the data indicated that the state is B2B and B2C orientation.

5.2.1 Business to business (B2B)

The results revealed that the state of SCM among agricultural businesses is mainly B2B oriented. The results showed that the entrepreneurs often send their products to markets in Johannesburg through agents and, alternatively, to local businesses. Business to business as a state of SCM is supported by Kumar and Sharma (2021) and Black and Glaser-Segura (2020), who inform that B2B SC is one of the most prevalent SCM approaches that is contributing to the sustainability of enterprises.

5.2.2 Business to customer (B2C)

The results also showed that the SC among agricultural businesses is managed on a customer to customer (C2C) focus or orientation, as the agricultural businesses deliver their products directly to their customers. Corroborating this study's findings, Agrawal and Narain (2018) postulate that in SCM, B2C orientation provides the premise for ensuring that the business focuses on the end user, which entails meeting and satisfying the customer needs profitably. Hartley and Sawaya (2019) concur with the sentiments of Agrawal and Narain (2018),

implying that the B2C SC provides the basis for ensuring that businesses remain a going concern.

5.3 INFLUENCE OF SCMS ON AGRICULTURAL BUSINESS

Regarding the influence of SCMS on agricultural businesses in Vhembe District, the results showed that the influence is in terms of improved profitability, SC reliability, sustainable operations and improved communication. These are discussed below.

5.3.1 Improved profitability

Improved profitability was revealed to be one of the influences that the SCMS have on the agricultural businesses. The agricultural businesses' entrepreneurs stated that the current SC systems are enabling them to make a profit – which enhances sustainable operations. These findings align with Ghadge et al. (2020), who postulate that effective SCMS yield profitability benefits to the enterprise, and ensure that the business operates smoothly. Basheer et al. (2019) also posit that SC systems that are efficient and effective provide the premise for enhanced earnings or profitability within the businesses. This implies that Ghadge et al. (2020) and Basheer et al. (2019) concur with this study, which established that SCMS result in improved profitability.

5.3.2 Supply chain reliability

Gandhi et al. (2017) elucidate that continued focus on SCMS results in the time factor being addressed, and reliability in the SC as the ultimate yield. This study corresponds with the findings of Gandhi et al. (2017), as it was found that the SCMS are resulting in SC reliability, as, owing to the SCMS, products reach the customers in time, which also results in improved customer satisfaction.

5.3.3 Sustainable operations

Sustainable operations were found to be another influence that SCMS have on agricultural businesses, as, through these systems, their bookkeeping capabilities are enhanced, and sustainability of operations made possible. The findings agree with Ghadge et al. (2020) and Basheer et al. (2019), who postulate that

SCMS provide the premise for sustainability in operations. However, the findings also partially contradict those of Ghadge et al. (2020) and Basheer et al. (2019), as they state that the sustainability is profitability oriented, while this study also established that these systems go beyond profitability, as they guide the operations through enhancing the bookkeeping capabilities – an aspect which was not expounded by these authors.

5.3.4 Improved communication

The results also showed that improved communication is an influence that the SCMS have on the agricultural businesses, as, through the adoption of communication technology systems, the communication with agents and other businesses in the SC is made easy. This is supported by Gandhi et al. (2017) and Das (2018), who posit that the adoption of effective and efficient communication technologies that are enabled by transformation of supply management systems, provide the basis for improved communication and, consequently, improved operations and updatedness with changes in the supply chain.

5.4 ENABLING FACTORS OF AGRICULTURAL BUSINESS SUCCESS

The enabling factors that were revealed from the analysis are farmers' collaboration, quality product provision, proper packaging, and information sharing. These aspects are discussed in the following section.

5.4.1 Farmers' collaboration

The results revealed that farmers' collaboration is one of the factors that is enabling the success of the agricultural businesses, as, through meetings, the farmers can advise one another in terms of commitment and developing themselves and their businesses towards enhancing their profitability. Collaboration as a factor that results in success, is supported by Gold et al. (2020), who elucidate that collaboration provides the premise for businesses of all sizes to be able to address diverse societal and business aspects through dealing with the gaps that exist in both resources and knowledge.

5.4.2 Quality product provision

Quality product provision was established as another factor that enhances the success of the agricultural businesses, as the enterprises provide quality products which foster the satisfaction of customers and improve sales. Sun and Tyagi (2020) and Islamova and Zhilyaev (2017) concur with this study's findings, as they posit that the provision of quality products or services to the customers results in customer satisfaction, and contributes immensely to customer loyalty – which is integral to the success of the business.

5.4.3 Proper packaging

Proper packaging was also established as resulting in the success of the agricultural business, as packaging products in the appropriate packages that are also appealing in the market, was noted to be yielding positive results for these businesses. Aligning with this study's findings, Wyrwa and Barska (2017) postulate that creative and innovative packages attract customers in the market, and differentiate the product in the market from those of competitors. The authors added that this differentiation results in the basis for business competitiveness and, hence, success.

5.4.4 Information sharing

The results revealed that information sharing is also a factor that contributes to the success of the agricultural businesses. Through the farmers' engagement, they can share vital information regarding farming, which ensures that they plant the appropriate seeds. In line with the findings of this study, Gold et al. (2020) elucidate that an imperative yield of collaboration is information sharing, which addresses the gaps that exist in both resources and knowledge.

5.5 HINDERING FACTORS OF AGRICULTURAL BUSINESS SUCCESS

This research also explored factors that hinder the success of agricultural businesses. The results showed that these factors are competition, inadequate resources, market proximity, water crisis/shortage, poor infrastructure, inade-

quate department support, lack of farmers' collaboration and technological lagging. These are discussed in the following section.

5.5.1 Competition

The results showed that competition is one of the factors hindering the success of agricultural businesses, as there will be more farmers or businesses supplying the same product – which results in stiff competition, which at times results in price reduction to attract customers, leading to failure to recoup the initial costs. Dias et al. (2021) concur with this study's findings, elucidating that the looming increased competition among the agricultural businesses often presents challenges among small businesses, as they will not be having the capacity to compete with the bigger firms, or among the same-level firms, resulting in losses mainly among perishable products.

5.5.2 Inadequate resources

Inadequate resources were established to be another factor hindering the success of the agricultural businesses. Lack of resources such as refrigerators and tractors are a major concern. The lack of, or inadequate, resources as a challenge among agricultural businesses was also evidenced by Chapagain and Raizada (2017) who state that the lack of adequate resources threatens the overall operations of the farmers, and the yield thereof, in developing countries, as their effectiveness or productivity is highly dependent on the availability of resources.

5.5.3 Market proximity

Aligned with the findings of Gaffney et al. (2019), this study found that market proximity is another factor that hinders the success of agricultural businesses; distant markets lead to the products reaching the market no longer fresh, and the pricing of the product is affected – which leads to heavy losses. Chapagain and Raizada (2017) also concur with this study and Gaffney et al. (2019), postulating that, mostly in developing countries, the lack of proper resources such as refrigerated trucks among smallholder farmers results in major drawbacks, as their products reach the distant markets no longer fresh, and the quality is compromised.

5.5.4 Water crisis/shortage

Water crisis or shortage is another challenge that has been established to be hindering the success of agricultural businesses. In line with this study's findings, Ncube (2018) states that the livelihoods of the smallholder farmers were being negatively affected by the lack of/shortage of water, as their production is heavily dependent on the availability of water. Bakre and Dorasamy (2017) also concur with this study, as they maintain that water scarcity is a major factor threatening the efforts of the subsistence farmers.

5.5.5 Poor infrastructure

Poor infrastructure was noted to be another factor hindering the success of the agricultural businesses – for instance, the lack of proper roads, which presents challenges in transportation of the products. Chapagain and Raizada (2017) and Bakre and Dorasamy (2017) concur with this study's findings, postulating that the lack of support from the governmental institutions, in terms of infrastructure development, has resulted in the lack of proper infrastructure such as roads and electricity, which is detrimental to the success of the farmers.

5.5.6 Inadequate department support

Inadequate department support was noted to be another factor, as the department often focuses on small-scale farming, and neglects mass production – which also affects their growth and, ultimately, their profitability. These findings are supported by Ncube (2018) who states that the lack of institutional support has played a role in adversely affecting the productivity of farmers. Ncube further maintains that the lack of such support not only threatens the efforts of the farmers, but, rather, the food basket of the nation (Ncube, 2018).

5.5.7 Lack of farmers' collaboration

Lack of farmers' collaboration is another factor affecting the agricultural businesses' success, as some of the farmers often sell their products at very low prices, as opposed to the agreed prices. Gold et al. (2020) elucidate that collaboration provides the premise for businesses of all sizes to be able to address diverse societal and business aspects, through dealing with the gaps that exist in

both resources and knowledge, and its absence has associated predicaments, hence aligning with this study.

5.5.8 Technological lagging

Technological lagging was established to be another factor hindering the success of the agricultural businesses, as there is still a lack of technological updatedness or advancement among the farmers. Sinyolo (2020) elucidates that technology adoption in agriculture provides the basis for improving yields, and that lagging technologically results in reduced yield.

5.6 SUPPORTING POLICIES/STRATEGIES OF AGRICULTURAL BUSINESS SUCCESS

The study also focused on recommending policies and strategies that would support agricultural businesses. The strategies that were established from the data analysis are farmers' engagement and consultation, government support, specialised agriculture, and consideration by major retailers/institutions. These aspects are discussed below.

5.6.1 Farmers' engagement and consultation

Farmers' engagement and consultation were noted as a strategy that can be adopted towards supporting agricultural businesses. The results showed that engagement and consultation provide the premise for farmers to share views on self- and business development, which contributes to business success. This aligns with Gold et al. (2020), who elucidate that collaboration provides the premise for businesses of all sizes to be able to address diverse societal and business aspects through dealing with the gaps that exist in both resources and knowledge.

5.6.2 Government support

In line with Ncube (2018), the results also showed that government support is another strategy that can be adopted towards supporting the agricultural businesses, and may be in the form of provision of more tractors, bacteria medicines and manure, to alleviate the challenges faced during the planting period. The

results also align with Chapagain and Raizada (2017) who maintain that the provision of farmer-centric support by the government is essential towards ensuring smooth production and operation among farmers in developing countries.

5.6.3 Specialised agriculture

The results also showed that specialised agriculture is another policy or strategy that can be used towards supporting agricultural businesses, where an agreement or consensus may be reached among farmers towards differentiated or specialised farming. This aligns with Teh et al. (2017), who state that specialisation in farming contributes towards yielding positive results; however, the authors' focus was mainly on improved agriculture, not as a mechanism of addressing competition in markets.

5.6.4 Consideration by major retailers/institutions

The results also showed that consideration by major retailers is another strategy that could be adopted towards supporting agricultural businesses through opening of new channels for small-scale farmers to be able to supply the major retailers. Concurring with this study's findings, Naik and Suresh (2018) state that sourcing products from local farmers by major firms or retailers does not advance corporate citizenship mandates, but results in advancing the growth of local businesses and, ultimately, improved profitability.

5.7 CHAPTER SUMMARY

In summary, the results that emanated from the analysis of data were discussed in this chapter, in line with the research objectives. This chapter has provided a discourse on the results relating to the state of SCM, the influence of SCMS on agricultural businesses, the factors that enable and hinder the success of agricultural businesses, and the policies and strategies that can support agricultural businesses. The next chapter provides the conclusion, recommendations, model development, and directions for future research.

CHAPTER 6

CONCLUSION, MODEL, RECOMMENDATIONS AND DIRECTIONS FOR FUTURE RESEARCH

6.1 INTRODUCTION

Chapter 1 has clearly established that the broad aim of this study was to explore the influence of SCMS on agricultural businesses in the Vhembe District of Limpopo Province. The previous chapters presented an introduction and background to the study, the problem statement, aims and objectives, review of literature, research methodology, data analysis and interpretation, and discussion of the results. This chapter provides the conclusion of the research objectives, model development, recommendations and directions for future research.

6.2 CONCLUSION ON RESEARCH OBJECTIVES

As indicated in Chapter 1, the problem statement of this study is as follows:

The contribution of agri-business to economic development can be realised if farmers are linked to high-value markets in the agricultural supply chain in order to benefit from these lucrative markets. In recent times, there has been a high demand for high-value agricultural products, along with more stringent food safety and quality requirements and the emergence of SCM integration (Global Footprint Network, 2012). More especially in times like this, one is faced with the Coronavirus (henceforth, COVID-19), which is in a way impacting the supply chain of the agricultural sector, due to the increase in food demand. Considering this, long procurement processes caused by lack of understanding of supply chain management procedures, and lack of commitment to set processes and timelines, often result in delays. All these are obstacles to potentially accessing growing markets for the farmers within the Vhembe District Municipality.

Furthermore, there are other challenges that have been identified by other researchers, which include poor planning, especially long-term planning, lack of cooperation and coordination of services amongst sub-departments within municipalities, political intervention resulting quite often in implementing projects that

were not planned – or delaying procurement of service providers, and late registration of projects that can also be linked to poor planning have also been identified (Baloyi, 2010; Oke et al., 2017; Smith et al., 2008). Given the current challenges of COVID-19, the Institute of Supply Chain Management (ISCM) has reported that many companies are experiencing supply chain disruptions in one way or another, due to Coronavirus-related transportation restrictions (ISCM, 2020). Therefore, such challenges pose a massive threat to many agri-suppliers, as they cannot cross the bridge between their suppliers and customers, hence, the need for research projects such as these.

This paved the way for the formulation of the research objectives as follows:

Objective 1: To assess the state of supply chain management in Vhembe District Municipality.

Objective 2: To examine the influence of supply chain management systems on agriculture businesses in the Vhembe District.

Objective 3: To identify factors that enable and hinder the success of agricultural business in the Vhembe District.

Objective 4: To recommend policies and strategies that will support agricultural businesses within the district.

Subsequently, the research questions (RQ) were as follows:

RQ1: What is the current state of supply chain management in Vhembe District Municipality?

RQ2: What is the influence of supply chain management systems on agricultural businesses in Vhembe District?

RQ3: Which factors enable and hinder the success of agricultural business in Vhembe District?

RQ4: Which policies can be put in place to support agricultural businesses within the district?

This thesis now turns to providing conclusions on the research objectives of this study.

6.2.1 Conclusion on state of supply chain management

In terms of Objective 1, “To assess the state of supply chain management (SCM) in Vhembe District Municipality (VDM)”, this study found that the state of supply chain management is business to business (B2B) and business to customer (B2C) oriented. With regard to B2B oriented SCM, the findings revealed that the agri-businesses in the Vhembe District use agents who sell their products in city markets such as Gauteng. The findings also showed that these businesses also sell their products to local businesses for resale. This means that the B2B SC approach is being adopted by these entrepreneurs – hence, B2B concentrated supply chain management.

In addition, the findings also established that the agri-businesses are also using the B2C approach or orientation. Pertaining to this approach, the agri-businesses tend to supply or deliver their products directly to the customers, thus removing the middleman within the supply chain. The findings also indicated that some of the customers buy directly from the businesses at their place of operation – hence, depicting a B2C centric supply chain. This study found that the state of SCM among agri-businesses in Vhembe District falls into two categories: B2B and B2C centric. B2C companies sell their products or services directly to individual consumers. B2C consists of individual customers who purchase goods or services for personal use. On the other hand, B2B companies sell products or services to other businesses or organisations. In this study it has been found that a lot of businesses make profit when customers come and buy directly from them. B2B transactions often involve larger purchase volumes and higher average transaction values compared to B2C. This can result in higher revenue potential for B2B companies.

6.2.2 Conclusion on influence of SCMS on agricultural business

In terms of Objective 2, “To examine the influence of SCMS on agricultural businesses in the Vhembe District”, this thesis found that the influence of SCMS on agri-businesses is in the form of improved profitability, supply chain reliability, sustainable operations and improved communication. The findings showed that improved profitability is realised among agri-businesses, owing to the existing SCM systems. The findings showed that the SCMS enable the agri-businesses

to monitor the areas where they are lacking, and take corrective action accordingly, which subsequently results in their businesses yielding considerable profits. Hence, these systems are enabling the agri-businesses to operate profitably, enhancing the sustainability of the businesses.

Additionally, SC reliability was found to be another influence of SCMS on agri-businesses. The findings showed that, through their existing SCMS, the products of the agri-businesses not only arrive at the markets fresh, but they also arrive on time – which contributes in boosting their relations with their market agents and, consequently, improved customer satisfaction. Improved communication was revealed to be another influence that SCMS have on agri-business. This is owing to the adoption of communication technology systems, which results in their communication with agents and other businesses in their supply chain, being simplified and improved. This means that the improvement in communication results in improved operations, as communication with stakeholders is critical in every business and this holds true for agri-business. Hence, improved communication is yielded, owing to the SCM systems.

Moreover, sustainable operations were noted to be another influence that the SCMS have on agri-businesses in Vhembe District. The findings showed that, through the SCMS, the agri-entrepreneurs can effectively record their business operations information, and their bookkeeping capabilities are enhanced. Through improved record keeping and bookkeeping, monitoring business performance is made easier, and informed decisions can be made owing to information availability. This results in sustainability of operations being a reality for these businesses. This thesis has managed to illustrate that the SCMS are resulting in improved profitability, supply chain reliability, sustainable operations and improved communication among agri-businesses in the Vhembe District.

6.2.3 Conclusion on factors enabling and hindering success of agri-businesses

In terms of Objective 3, “To identify factors that enable and hinder the success of agricultural business in the Vhembe District”, this study found that the factors which enable the success of these businesses are farmers’ collaboration, quality product provision, proper packaging and information sharing. The findings also showed that factors which hinder the success of agri-businesses are compete-

tion, inadequate resources, market proximity, water crisis/shortage, poor infrastructure, inadequate department support, lack of farmers' collaboration and technological lagging.

Concerning the factors enabling the success of agri-businesses, farmers' collaboration was established to be contributing to the affluence of these ventures. The findings showed that through farmers' collaboration, the farmers/entrepreneurs have meetings where they advise one another in terms of commitment and developing themselves and their businesses, towards improving the profitability of their businesses. These meetings were also found to be providing a platform for networking, broadening the businesses' network, and ensuring a basis for improved operations and the success thereof. Quality product provision was found to be contributing to the success of these businesses. The findings indicated that the agri-businesses offer quality products or "A" grade products to its market, which improves the satisfaction of the customers, sales, and the image of the businesses. The quality provision orientation of these businesses has been found to be yielding positive results, as it is contributing to customer satisfaction and improved profitability.

Furthermore, proper packaging is another enabler of agri-business success. The findings revealed that the farmers package their products in a manner appealing to the market, aided by wrapping machines. The findings also showed that proper packaging is being adopted as a marketing strategy by these businesses, which effectively positions their products in the market and improves their competitive edge. This implies that proper packaging contributes immensely to the overall acceptance of the product in the market, and enables the businesses to attract customers and compete profitably.

Information sharing was established as another factor contributing to the success of these businesses. The findings showed that through farmers' engagement, vital information regarding farming can be shared among them. This is enhanced by the specialist farmers who motivate them in doing farming business, and enable them to obtain information regarding improving their farming initiatives and businesses. Hence, through information sharing, the knowledge base of the farmers is improved – which also contributes to making sound farming and business decisions. This research has found that the success of the agri-

businesses in Vhembe District is enabled by farmers' collaboration, quality product provision, proper packaging and information sharing, and these contribute to the advancement of the business efforts.

In terms of the factors hindering the success of the agri-businesses, this study has found that competition is another issue that is detrimental to the operation of these businesses. Within the competition context, the findings revealed that there are many farmers who supply the same product, which results in its saturation in the market. The saturation often leads to price reductions by farmers in order to have sales, which often results in their suffering considerable losses. Thus, competition has been marked to be a factor adversely affecting the efforts of these farmers, and hence hindering their success.

Inadequate resources are another factor found to be hindering the success of these businesses. The findings revealed that the agri-businesses lack the resources required to operate effectively and efficiently. These include warehouses, tractors and refrigerators, among others. The lack of such resources has a negative impact on the businesses, as it affects their productivity and, ultimately, their operations. Market proximity is another hindering factor evidenced when the farmers are selling their products in markets that are far from their business locations, such as Gauteng markets. This means that their markets are far away, and with limited resources their product at times reaches the market no longer fresh, forcing them to lower the prices of their products. The farmers end up focusing on local or nearby markets which will not be sufficient to supply all their products and make a profit. This threatens their profitability and the overall business sustainability.

Water crisis/shortage is also faced by the agri-businesses, adversely impacting their operations. The findings showed that the farmers often rely on a water use schedule which lacks proper monitoring and often leads to some farmers benefiting more than others. The schedule evidences the water shortages prevalent in the district, and has a negative impact on the operations of the farmers, as their farming activities are heavily dependent on water availability. Poor infrastructure is another factor that originates from lack of proper roads and electricity. The findings revealed that most of the roads are damaged, making it a mammoth task for the farmers to transport their goods to market. The lack of electricity is another

factor, as it is expensive for the farmers to have a transformer installed which meets their electricity needs or capacity. These infrastructural challenges are detrimental to the operation of these businesses.

In addition, inadequate department support, as a hindering factor, is owing to the Department of Agriculture having too much focus on small-scale farming, and neglecting mass production, affecting their growth and profitability. The findings also showed that the Department of Agriculture is not also reliable in the provision of inputs required by these businesses, which adversely impacts their efforts. Lack of farmers' collaboration as a factor was found to be emanating from the other farmers or agri-businesses failing to keep to the agreed prices, and often lowering prices as a way to outwit other businesses. This has been noted to be impacting the profitability of the businesses and their sustainability. Technological lagging is another hindering factor, where there is a lack of technological updatedness among the agri-businesses, and where there is a lack of technologically advanced machines which are a prerequisite for improved farming operations. The lack of such advanced technological machines often results in some farmers failing to properly package the products, which affects the image and competitiveness of the business. Hence, this study has found that the factors which hinder the success of agri-businesses are competition, inadequate resources, market proximity, water crisis/shortage, poor infrastructure, inadequate department support, lack of farmers' collaboration and technological lagging – all of which being detrimental to the efforts of the farmers.

6.2.4 Conclusion on supporting policies and strategies on agricultural business

In terms of Objective 4, "To recommend policies and strategies that would support agricultural businesses within the district", the strategies that were established are farmers' engagement and consultation, government support, specialised agriculture and consideration by major retailers/institutions. Farmers' engagement and consultation as a strategy provide the premise for farmers to share views on self- and business development, which enables them to keep up to date and make informed decisions on their businesses. With regard to government support, the findings showed that the support should be in the form of provision of more tractors, bacteria medicines, manure, wheelbarrows, axes, and provision

of water (construction of a dam). Hence the form of government support required is resource and enabling infrastructure provision towards ensuring sustainability of the agri-business operations.

In addition, specialised agriculture is another strategy where farmers reach a consensus on producing and supplying different products, or adopting a specialised farming approach which alleviates the challenge of saturating the market with the same product. This study showed that if farmers specialise in supplying certain products, and grouped based on specialty, the market would be supplied with different products, they could share the market accordingly, and improve their sales and ultimate profitability. Consideration by major retailers is another strategy where new channels must be opened for small-scale farmers to be able to supply the major retailers. Big firms should consider small-scale farmers and come on board towards supporting the development of the agricultural businesses. Various institutions can also be involved in supporting agricultural enterprise development institutions, establishing the premise for a multi-stakeholder approach towards effective results. This study has established that the strategies which would support agricultural businesses within the district are farmers' engagement and consultation, government support, specialised agriculture and consideration by major retailers/institutions.

6.3 VHEMBE DISTRICT AGRI-SCMS MODEL

This model was developed towards enhancing or contributing to the sustainability of agri-businesses. The model provides a simplified way of the influence of SCMS on the sustainability of agri-businesses. The model stipulates that SCMS have an influence on agri-businesses. It shows that the operations of the agri-businesses are influenced by the state of SCM, which is B2B and B2C oriented. The model also shows that agri-business operations are influenced by SCMS in the form of improved profitability, SC reliability, sustainable operations and improved communication. Further, the model denotes that the agri-business operations are enhanced by enabling factors such as farmers' collaboration, quality product provision, proper packaging and information sharing.

The model posits that the affluence or success of agri-businesses is adversely impacted by competition, inadequate resources, market proximity, water crisis/

shortage, poor infrastructure, inadequate department support, lack of farmers' collaboration and technological lagging. Towards addressing the impediments on the sustainability or viability of these businesses, this model shows that strategies which would support agricultural businesses are farmers' engagement and consultation, government support, specialised agriculture and consideration by major retailers/institutions. These strategies provide the basis for ensuring that these businesses remain a going concern and operate sustainably.

Vhembe District agri-SCMS model is shown in Figure 6.1 below:

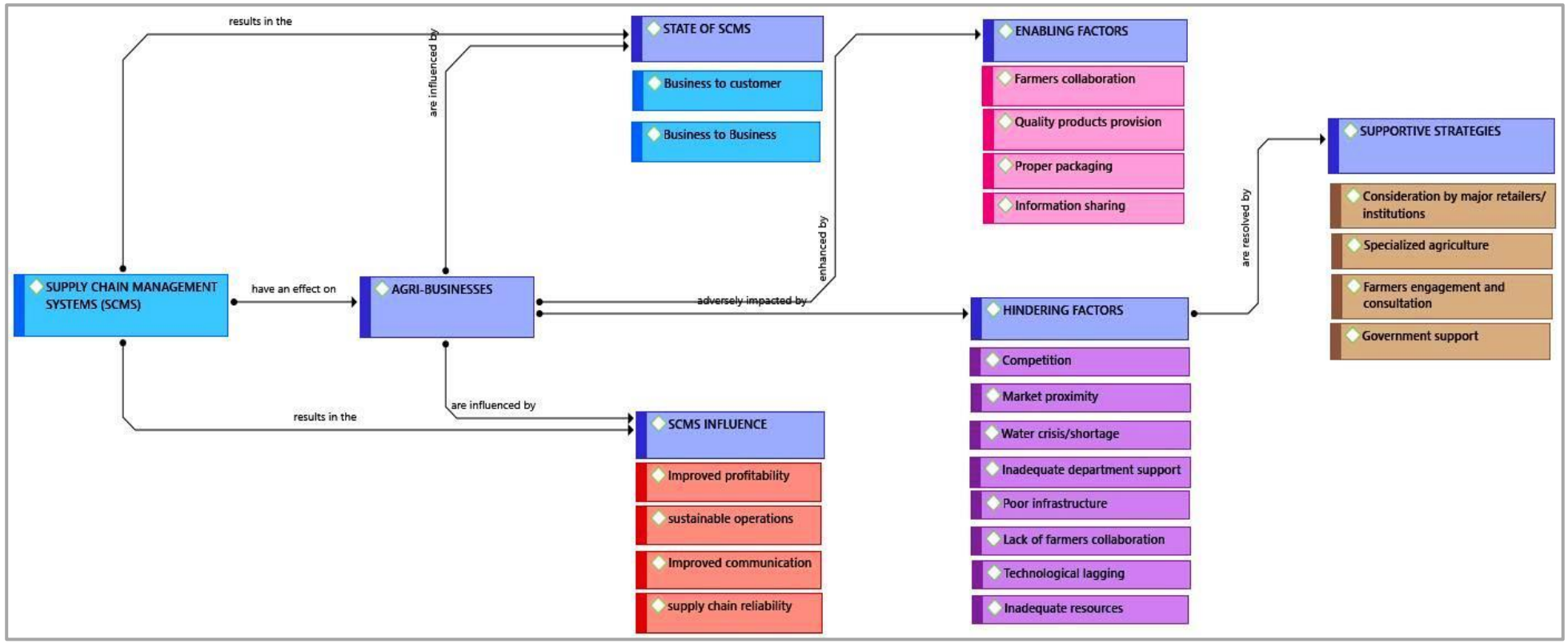

Figure 6.1: Vhembe District agri-SCMS model (**Source:** Own construct, using ATLAS.ti)

6.4 CONTRIBUTIONS OF THE STUDY TO THE BODY OF KNOWLEDGE

- From the gap found in the literature regarding supply chain management systems and agri-businesses in a rural context, this research has the probability to be the one that has identified the extent to which supply chain management systems influence agricultural businesses in Vhembe District, in the form of improved profitability, supply chain reliability, sustainable operations and improved communication. This thesis has also established the state of supply chain management in Vhembe District Municipality being business to business and business to customer oriented. This study has the potential to have identified a plethora of factors that enable the success of agricultural business in the Vhembe District. These are farmers' collaboration, quality product provision, proper packaging and information sharing. The research also unravelled the factors that hinder the success of agri-businesses. These are competition, inadequate resources, market proximity, water crisis/shortage, poor infrastructure, inadequate department support, lack of farmers' collaboration and technological lagging. This study also recommended strategies that would support agricultural businesses. These are farmers' engagement and consultation, government support, specialised agriculture and consideration by major retailers/institutions.

- The influence of supply chain management systems on agricultural businesses that has been identified and recorded in this study, provides the premise for future enquiry that could strengthen and augment the supply chain management systems and agri-business discourse for prospective and existing researchers, and for organisations both private and public.

- The model on the influence of SCMS on agri-businesses that this research has established paves the way towards comprehensively understanding the SCMS dictates, thereby improving agri-business operations and their sustainability.

6.5 IMPLICATIONS FOR THEORY

The researcher acknowledges the works of pioneers in operational excellence such Basheer et al. (2019), Agrawal and Narain (2018), Das (2018) and Gandhi

et al. (2019) in contributing vastly, regarding SCMS dictates. However, the issue that needed to be addressed in the academic discourse is the influence of supply chain management systems on agricultural businesses in a rural-based district or context. This research significantly enhances the theoretical discussions surrounding the impact of Supply Chain Management Systems (SCMS) on agri-businesses within the academic discourse.

The main theoretical contribution of this study is that of the influence of supply chain management systems on agricultural businesses. The researcher argues that he managed to establish that the experiences and influence of SCMS on the agri-businesses is not uniform, but rather varies across the businesses. The study has established the influence of supply chain management systems on agricultural businesses, as well as factors that enable and hinder the success of these businesses. This research has also unravelled a plethora of strategies that can be adopted to improve the operations of these businesses. It is also imperative to note that this research has managed to develop a model that can contribute towards the sustainability of these businesses.

6.6 LIMITATIONS OF THE STUDY AND DIRECTIONS FOR FUTURE RESEARCH

The limitation of this study is that it focused on a specific area; thus, the Vhembe District and its conclusions may not be generalisable to other contexts beyond the district, although generic conclusions may be derived from the research, albeit with caution. The study was also conducted using a qualitative methodology and a wider sample could not be reached, as compared to a quantitative methodology.

6.7 DIRECTIONS FOR FUTURE RESEARCH

A similar study may be conducted in other districts in South Africa, and beyond, towards gaining an in-depth understanding of the subject matter in other contexts. A quantitative study may also be done towards reaching a broader sample, to further understand the subject matter comprehensively.

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APPENDIX A

ETHICAL CLEARANCE FROM UNIVERSITY OF VENDA

ETHICS APPROVAL CERTIFICATE

RESEARCH AND INNOVATION
OFFICE OF THE DIRECTOR

NAME OF RESEARCHER/INVESTIGATOR:
Mr PD Lavhelani

STUDENT NO:
11633343

PROJECT TITLE: The role of discipline and its impact on learners' performance in secondary schools of Niani East Circuit in Vhembe District.

ETHICAL CLEARENCE NO: SMS/21/BMA/03/2210

SUPERVISORS/ CO-RESEARCHERS/ CO-INVESTIGATORS

NAME	INSTITUTION & DEPARTMENT	ROLE
Dr L.G Nkondo	University of Venda	Supervisor
Prof DR Thakhathi	University of Free State	Co - Supervisor
Mr PD Lavhelani	University of Venda	Investigator – Student

Type: **Doctoral Research**
Risk: **Straightforward research without ethical problems (Category 1)**
Approval Period: **October 2021 – October 2024**

The Research Ethics Social Sciences Committee (RESSC) hereby approves your project as indicated above.

General Conditions
While this ethics approval is subject to all declarations, undertakings and agreements incorporated and signed in the application form, please note the following.

- The project leader (principal investigator) must report in the prescribed format to the REC:
  - Annually (or as otherwise requested) on the progress of the project, and upon completion of the project
  - Within 48hrs in case of any adverse event (or any matter that interrupts sound ethical principles) during the course of the project.
  - Annually a number of projects may be randomly selected for an external audit.
- The approval applies strictly to the protocol as stipulated in the application form. Would any changes to the protocol be deemed necessary during the course of the project, the project leader must apply for approval of these changes at the REC. Would there be deviated from the project protocol without the necessary approval of such changes, the ethics approval is immediately and automatically forfeited.
- The date of approval indicates the first date that the project may be started. Would the project have to continue after the expiry date; a new application must be made to the REC and new approval received before or on the expiry date.
- In the interest of ethical responsibility, the REC retains the right to:
  - Request access to any information or data at any time during the course or after completion of the project,
  - To ask further questions; Seek additional information; Require further modification or monitor the conduct of your research or the informed consent process.
  - withdraw or postpone approval if:
  - Any unethical principles or practices of the project are revealed or suspected.
  - It becomes apparent that any relevant information was withheld from the REC or that information has been false or misrepresented.
  - The required annual report and reporting of adverse events was not done timely and accurately.
  - New institutional rules, national legislation or international conventions deem it necessary

ISSUED BY:
UNIVERSITY OF VENDA, RESEARCH ETHICS COMMITTEE
Date Considered: September 2021

Name of the RESSC Chairperson of the Committee: Prof Takalani Mashau

Signature:

UNIVERSITY OF VENDA
OFFICE OF THE DIRECTOR
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"A quality driven financially sustainable, rural-based Comprehensive University"

APPENDIX B

INTERVIEW GUIDE

INTERVIEW GUIDE

for the dissertation

THE INFLUENCE OF SUPPLY CHAIN MANAGEMENT SYSTEMS ON AGRICULTURAL BUSINESSES IN VHEMBE DISTRICT OF LIMPOPO PROVINCE

DEGREE: PhD BUSINESS MANAGEMENT

COMPILED BY: Phathutshedzo Lavhelani

My name is Phathutshedzo David Lavhelani, a research student at the University of Venda, registered for the Doctor of philosophy in Department of Business Management, School of Management sciences. The influence of supply chain management systems on agricultural businesses in Vhembe District of Limpopo province.

I am requesting your participation in this study. Any information you provide will be very helpful to the study and will be treated with the strictest confidence and anonymity. Please note that your participation is strictly voluntary, which implies that you can withdraw from the study for any reason personal to you. Participants will be allowed to discontinue if they feel uncomfortable, and they won't be held accountable for any consequences. The information from the participants will be kept private and confidential, and participants' names will not be disclosed. If participants are erroneously hurt by the researcher, the researcher will make it a point that apology and redress are granted.

Thank you for taking time to participate.

Yours sincerely

Phathutshedzo Lavhelani

Phathu91@gmail.com
071 4888 532

APPENDIX C

DATA COLLECTION TOOL

The researcher is a registered student for Doctor of Philosophy in Business Management, in the Department of Business Studies, School of Management Sciences, University of Venda. The study title is: The influence of supply chain management systems on agricultural businesses in Vhembe District of Limpopo Province. The aim of the questionnaire is to collect data that will be analysed, to draw conclusions on the topic.

Instruction: To answer, please write a cross (X) in the appropriate space or box.

SECTION A: Demographics

1. Gender of participants

Male	
Female	

2. Highest qualification

Grade 12	
Diploma or degree	
Postgraduate degree or diploma	
Other	

3. Occupation or department

Ward councillor	
Community development worker	
Traditional leader	
SANCO sub-regional structure member	
SANCO regional structure member	
Local municipality senior management level	
Local municipality middle management level	
Municipal manager	
Community member	

4. For how long have you been working in the agricultural sector?

Less than 1 year	
1 to 5 years	
6 to 10 years	
11 to 15 years	
15 years or above	

SECTION B: Questions pertaining to supply chain management systems knowledge

5. What is your understanding about supply chain management systems?
6. How do you apply your knowledge of supply chain management system in agricultural business?

SECTION C: Questions pertaining to supply chain management system application

7. What are the supply chain management systems that you have adopted or are currently using in your business?

SECTION D: Questions pertaining to the influence of supply chain management systems in agricultural businesses

8. What is the effectivity of your current supply chain management system in your agricultural business?
9. Following the supply chain management system that you have adopted, are you making revenues? Justify.

SECTION E: Questions pertaining to the success and hinderance of agricultural business

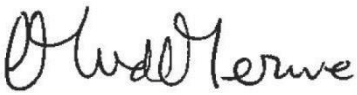
10. What are the factors hindering agricultural business?
11. What factors contributes to the success of your agricultural business?
12. What are some of the strategies that you have put in place to maintain the existing supply chain management system?

APPENDIX D

CERTIFICATE OF EDITING

2 December 2022

I, Marlette van der Merwe, hereby certify that the text and list of references of the doctoral thesis titled “The influence of supply chain management systems on agricultural businesses in Vhembe District of Limpopo Province”, by Phathutshedzo David Lavhelani, have been edited by me according to the 7th edition of theAPA referencing method.



Marlette van der Merwe

BA (English), HDipLib (UCT)