An investigation of the South African operating environment for agribusinesses

by

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Submitted in partial fulfillment of the requirements for the degree

MCom (Agricultural Economics)

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University of Pretoria

Pretoria

South Africa

December 2022

In honour of my parents,

Stephanus Lourens and René Smith

DECLARATION

I, Jade Smith, declare that this dissertation, which I hereby submit for the degree Master of Commerce (Agricultural Economics) at the University of Pretoria, is my own work and has not previously been submitted by me for a degree at this or any other tertiary institution.

SIGNATURE: 

DATE: 15 December 2022

ACKNOWLEDGEMENTS

Nelson Mandela once said, "*It always seems impossible until it's done*." Today, I am truly thankful and grateful for the opportunity of successfully completing this dissertation and master's programme. This has been a roller-coaster journey, facing many ups and downs, but I am glad to end off on a "high".

Firstly, I express my gratitude to the Department of Agricultural Economics, Extension and Rural Development at the University of Pretoria for creating a platform and environment to grow in the agricultural sector and for providing the opportunity for pursuing my master's degree.

Foremost, I acknowledge Dr Danie Jordaan for his guidance and support throughout the year. It was a privilege to work with you. Thank you for the endless opportunities, supervision, and support. Not only were you the supervisor of this dissertation, but also a mentor. My appreciation is also extended to Prof. André Louw: you have been my anchor. Thank you for your wisdom, kind heart, instant feedback, motivation, phone calls, and countless coffees, and also that your door was literally open, 24/7. There is not enough time in this world to express my gratitude towards you; a simple "thank you" will never be enough, it is truly an honour to be in your presence.

Personally, I want to recognise and a salute my parents. None of this would have been possible without your endless support and overwhelming love. I will forever be thankful.

"Don't judge each day by the harvest you reap but by the seeds that you plant."
– Robert Louis Stevenson.

ABSTRACT

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Businesses can no longer confine themselves to only focusing on the factors in the internal environment that are to a certain degree controllable. Constant changes within the operating environment expose businesses to operating within an unpredictable environment (uncontrollable factors). Two concepts explain the high unpredictability, namely VUCA (Volatility, Uncertainty, Complexity, and Ambiguity) and TUNA (Turbulence, Uncertainty, Novelty, and Ambiguity). The focus in this study is on the VUCA phenomenon.

The business environment is built on the phrase "survival of the fittest" – only businesses that can manage exposure to an unpredictable environment will be able to gain a competitive advantage and continue business operations in the future. This study investigates the operating environment for S83outh African agribusinesses using environmental scanning approaches to provide a granular view of the elements that constitute the environment for agribusinesses. Therefore, the theory of causality – what causes the things and why – is extremely important to consider when wishing to make informed strategic and operational decisions and ensuring that a competitive advantage can be achieved.

This study aims to answer two main questions. Firstly, why does the agricultural industry need to have the ability to prioritise the external factors of the agri-operating environment? Secondly, why is it crucial to stay on track with the improvements in policies, the trends in the

economy, the continuous upskilling, the latest advanced technology, rules and regulations, and financial factors?

Various events influence the activities in agriculture. The magnitude and nature of disruptive events vary from producer to producer, business to business, producer to business, and from province to province. Therefore, risks and uncertainties impact on the outcome of business activities, as these variables can change the priorities of a business, rapidly. Charles Darwin stated, "*It is not the strongest species that survive, nor the most intelligent, but the most responsive to change*" (Raoof, 2017). This dissertation builds on a PESTEL Analysis Framework that will consist of specific criteria to measure and determine the need for setting priorities to ultimately improve the agri-operating environment. Identifying external factors determines how producers and agribusinesses can position their operations, as well as the decision-making process, for the continuous growth and success in the agri-operating environment.

The study questionnaire was validated by several key informants with expertise in the agricultural environment of South Africa. Shortcomings in the data captured were observed and suggestions were made as to how the questionnaire could be improved to better establish the credibility of the data being captured. It was crucial to benchmark established priority reports that provided an outlook of the agricultural sector. The PESTEL Analysis Framework (which is developed into an annual report) will be compared with these reports, illustrating the differences as well as similarities that exist between reports.

It is recommended that the PESTEL Analysis Framework should be conducted annually for producers and agribusinesses in South Africa. The reason is that this report is unique, compared with established reports. Different groupings of the data can be arranged to investigate whether the overall top 15 essential priorities would differ when considering groupings such as identifying priorities for different role players within the agribusiness, comparing micro- and large-scale agribusinesses, and whether the geographic area would potentially change the priorities. The essence of the dissertation is that setting essential priorities would mitigate the exposure to disruptive events, businesses would be in the position to make better strategic and operational decisions, and that implementing change management tools as the PESTEL Analysis Framework could assist businesses to adapt to the changing VUCA agri-operating environment.

Keywords: agri-operating environment, agribusinesses, priorities, PESTEL, VUCA, strategic and operational decisions, risk and uncertainty.

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CHAPTER 1:
INTRODUCTION

1.1 BACKGROUND

Modernisation of the economy rapidly developed agriculture globally (Jayne, et al., 2010). The agricultural landscape has significantly changed as prominent factors have shaped the operating structures of agribusinesses on a global scale. The two forces of globalisation and technology impact on countless parts of the development in the agricultural landscape. Globalisation has created a platform to market products and/or services, not only to the local or neighbouring countries but also on a global scale. This defines an improvement in time, free trade and the spread of products, capital, transfer of knowledge and skills, information, and job opportunities across national borders (Velocity Global, 2022). Furthermore, the improvement in digital globalisation has led to businesses interacting within split-seconds and in real time, creating collaborative networks, and integrating operations (Luo, 2021). This has contributed to the development of implementing advanced technologies such as GPS, mobile apps, and drones that significantly improve the performance and sustainability of the agri-operating environment (Born, et al., 2021). The continuous business development and interconnectedness on the global, regional, and national levels place emphasis on planning, coordinating, adapting and implementing existing and/or new strategies, tools and frameworks that will ensure value is being created and captured for the agri-operating environment (Rachinger, et al., 2019).

This study seeks to illustrate how important it is for producers and agribusinesses to understand their internal businesses, as well as their operating environments, as the world continues to evolve rapidly and is becoming increasingly complex and hostile. According to Bernstein (2013), quoting Kallie Schoeman, a mega-scale farmer from South Africa, farming is a long-term investment and any producer or business in the agricultural operating environment must "*get bigger, get better, or get out*". This argues for the importance of investigating the need to set priorities within the agri-operating environment of South Africa.

To achieve long-lived goals of business operations and to simultaneously determine the nature of causality, the business must observe and implement a continuous environmental scan of the

operating environment. Using environmental scanning approaches provide a granular view of the elements that constitute the environment in which agribusinesses operate. An environmental scan focuses on the current and future state of the environment that guides a business to gather relevant information of the operating environment (Duan, et al., 2020). It further assists the business to gain a comprehensive overview by obtaining data from the operating environment, which enables a business to successfully manage the strategic and operational decision-making processes (Miles, 1997). To strengthen the environmental scan, a PESTEL Analysis Framework is constructed within this study, which allows a business to identify external factors within the operating environment.

1.2 RESEARCH PROBLEM

This study develops a systematic, quantified, country-level, multi-stakeholder baseline environmental scan for producers and agribusinesses. Businesses often tend to focus more on the internal (controllable) factors that impact on the business operations, such as human resources, production efficiency, marketing, corporate image, the organisational structure, brand equity, and task executions (Mageplaza, 2022). However, the external (uncontrollable) factors are equally important to take into consideration, as these factors have a profound influence on business operations (Pulka, et al., 2021).

Interrelationships exist between the (1) systematic environmental scan, (2) a well-developed strategic plan, (3) and the VUCA (volatile, uncertain, complex, and ambiguous) phenomenon. This forces producers and agribusinesses to pro-actively introduce tools and frameworks (which will be discussed in depth in the following chapters) to ensure the success of business operations, as well as the strategic and operational decision-making process.

Since the business environment is constantly developing, challenges arise in the agri-operating environment. The three specific problems are (Mikhno, et al., 2021):

1) Producers and agribusinesses do not always comprehensively understand the need to implement appropriate tools and frameworks to assist in making informed strategic and operational decisions that will potentially improve the ability to manage the exposure to external factors in the agri-operating environment more effectively.

2) Producers and agribusinesses largely base decisions on the internal, controllable factors where the business feels comfortable operating, instead of also focusing on and including the external factors that could tremendously impact on the business operations (Mageplaza, 2022).

3) There is no applicable platform for assessing and measuring the importance and urgency of the external factors, on a provincial basis, that influence the agri-operating environment in South Africa.

In South Africa, there is no clearly defined platform that supports producers and agribusinesses to identify and prioritise the external factors that influence their agri-operating environment, and which is based on specific role players within the business, the business turnover, size, magnitude, and geographic area (the nine provinces). Creating this platform will provide insight and enable businesses to interpret and adapt more effectively to changes and disruptive events occurring within the agri-operating environment (Lazenby & Ehlers, 2019b). Being exposed to the VUCA phenomenon requires agribusiness to establish priorities and trends to address the impacts of the external factors on the outcomes of the business operations.

1.2.1 The difference between a priority and trend

- **Definition of a priority**

A priority is seen as a condition that is treated first because the condition is ranked as important and urgent (Howes, 2022). Setting priorities will guide producers and agribusinesses in the appropriate direction to make informed strategic and operational decisions, based on the external factors identified as an essential priority (Borghetti, et al., 2020).

- **Definition of a trend**

A trend identifies the progress or movement over a specific time frame, such as weather patterns, prices, and production, that vary over a period. This means that historical data and statistical analysis of certain specific criteria or variables are mapped (Husnayain, et al., 2020). This supports producers and agribusinesses to extrapolate current trends and to identify and attempt to predict the future, based on historical trends (Chron Contributor, 2022).

Reports that identify priorities within the operating environment have previously been published. These reports, amongst others, are as follows:

- Agribusiness Outlook Report (AGRA, 2022)
- Annual World Economic Forum Global Risks report (WEF, 2022)
- Agbiz Agribusiness Confidence Index Report (Sihlobo, 2022)
- Global Competitiveness Report (WEF, 2020)
- Agribusiness Agenda (KPMG, 2021).

However, these reports capture priorities and/or trends on a global and regional level, and not on a national level. It is also important that producers and agribusinesses take cognisance of the global, regional and national level external factors which specifically impact their agri-operating environment.

1.3 RESEARCH OBJECTIVES

The overall objectives of this study would be addressed by constructing a PESTEL Analysis Framework that will characterise and formalise the essential priorities for the agri-operating environment in South Africa on a continuous basis.

The specific objectives were set out as follows:

I. This study sought to provide an understanding of how it would be beneficial for producers and agribusinesses to consider setting priorities within the agri-operating environment that would enhance the business operations.
II. This study endeavours to generate criteria and a PESTEL Analysis Framework that can define the top 15 essential agricultural priorities for each province in South Africa over a specific period or timeframe.
III. This study aims to contribute to the growth and sustainability of the agri-operating environment in South Africa by identifying and setting priorities for the external factors that influence the business operations.

IV. This study endeavours to facilitate the assessment of how the process of identifying and setting priorities could lead to improved strategic and operational decision-making by producers and agribusinesses.

These four objectives will be addressed in detail in the respective chapters of this study.

1.4 RESEARCH PROPOSITIONS

The premise of the three research propositions argues that producers and agribusinesses must react pro-actively to the external factors that influence their operating environment to enable the business to make strategic and operational decisions.

The following propositions will be addressed:

Proposition 1 – More attention must be given to the external environment, as producers and agribusinesses are exposed to and operate in a VUCA environment. The VUCA environment generates an acute challenge for businesses in managing their operations because of factors such as intergenerational handoffs, constant changing consumer preferences, and global demographic shifts, which add fuel to the VUCA 'fire' (Millar, et al., 2018). The reason for the shift towards focusing more on the external environment is attributable to businesses not having full control over these factors (MBA Knowledge Base, 2022). Agribusinesses need to orchestrate innovative structures that will assist them to manage and adapt to the related VUCA fire in the business world. The examination of this proposition is also a vital component of this study's conceptual framework for the external factors that impact on the business operations. This proposition is investigated in Chapter 2, which considers the continuous development of business operations.

Proposition 2 – The perceived priorities of the operating environments for different categories of agribusinesses vary significantly. Agribusinesses must identify and assess the factors that influence their business operations to construct priority-setting (Fleurence & Torgerson, 2004). Constructing priority setting will assist in organising the factors that are most urgent for the agribusiness and in allowing sound decisions to be implemented to reduce the cost of uncertainty (Indeed, 2022). Furthermore, the priorities will differ according to the geographic location. Priorities in Limpopo will differ when compared with the priorities in Eastern Cape,

Western Cape, and Kwa-Zulu Natal because of factors such as variations in rainfall, temperature, and droughts (van Niekerk, 2022). Another category is the size of the agribusiness, as a priority for a small business differs compared with that of a large business (Wilkinson, et al., 2021). This proposition is investigated partly in Chapter 3 and partly in Chapter 4, which provides a detailed discussion of the different categories of agribusinesses.

Proposition 3 – The operating environment for South African agribusinesses comprises a mosaic of PESTEL factors that vary in importance. The PESTEL Analysis Framework assists in analysing and identifying the external factors to ensure that an agribusiness can recognise risks and vulnerabilities within their external operating environment (Zhiyong, 2017). This framework represents six categories, namely Political, Economic, Social, Technological, Environmental, and Legal factors. Under each category there are various sub-categories that vary in importance for the agribusiness (Masih, et al., 2019). The PESTEL Analysis Framework is a vital tool that is used to gather and analyse the data based on the importance of each factor that influences the operations and strategic decisions of the agribusiness. This proposition is investigated partly in Chapter 3 and 4 and partly in Chapter 5, which provides a detailed discussion and assessment of the different sub-categories that can be seen as priorities for agribusinesses.

These propositions have been articulated to contextualise the arguments in this study. Each proposition will be discussed in the respective chapters of this study.

1.5 THE COMPETITIVE LANDSCAPE

The environment in which agribusinesses operate is ever-changing (Kohnova, et al., 2019). Worldwide, the competitive landscape has changed significantly, compared with previous years, and the way of doing business in the past does not guarantee the success of the business in the future (Graupner, et al., 2011). Daily, the competency of operating is growing fiercer, and agribusinesses need to alter their operations because of the volatility and uncertainty of the future (Lazenby & Ehlers, 2019b). It is imperative that self-directed learning is exercised, as more complexities arise for businesses in performing significantly within their competitive landscape. Tough (1971) describes self-directed learning as the “major, highly deliberate effort to gain certain knowledge and skill (or to change in some other way)”.

Moreover, the founder and chairman of the World Economic Forum, Klaus Schwab, defines the fourth industrial revolution as the movement of the digital domains. The development of the digital domain has moved from an "offline" to an "online" reality where businesses worldwide are connected through new advanced technologies (Xu, et al., 2018). Businesses that implement and manage new advanced technologies within their competitive landscape have a better chance of surviving in the volatile, uncertain future (Lazenby & Ehlers, 2019b). This survival is attributable to receiving more amounts of accurate and reliable information at a faster pace, where a greater depth of data can be collected and analysed, utilising artificial intelligence to one's advantage, as well as 3D printing and the use of the World Wide Web (Internet of Things) (Schendel, 1995).

1.5.1 IAD Framework

The accelerating uncertainty in the business environment motivates the need to adapt the business operations as changes occur (Gupta & Bose, 2019). This accentuates the importance of setting priorities to act and react to internal and external factors that influence the operating environment (Nguyena, et al., 2019). Businesses can incorporate the Institutional Analysis and Development (IAD) framework, which will support a business to accomplish their goals and specific outcomes (OCSDNet, 2022). The focus of this framework is to support the interaction of various explanatory factors that influence the business operations of the actors (producers and agribusinesses) and their ability to adapt to the "rules of the game" (McGinnis, 2011).

The action domain in the IAD framework has four factors that are intertwined, namely (1) institutions, (2) actors, (3) activities, and (4) outcomes. The institutions, actors and activities are affected by the environment in which the business operates. The relationship and interactions among these three factors lead to specific outcomes that further influence the environment (OCSDNet, 2022). This implies that the action domain is embedded into the environment, as seen in Figure 1-1 below. The environment has three factors, namely (1) physical infrastructure, (2) socioeconomics, and (3) policy and governance factors (Dorward & Omamo, 2009).

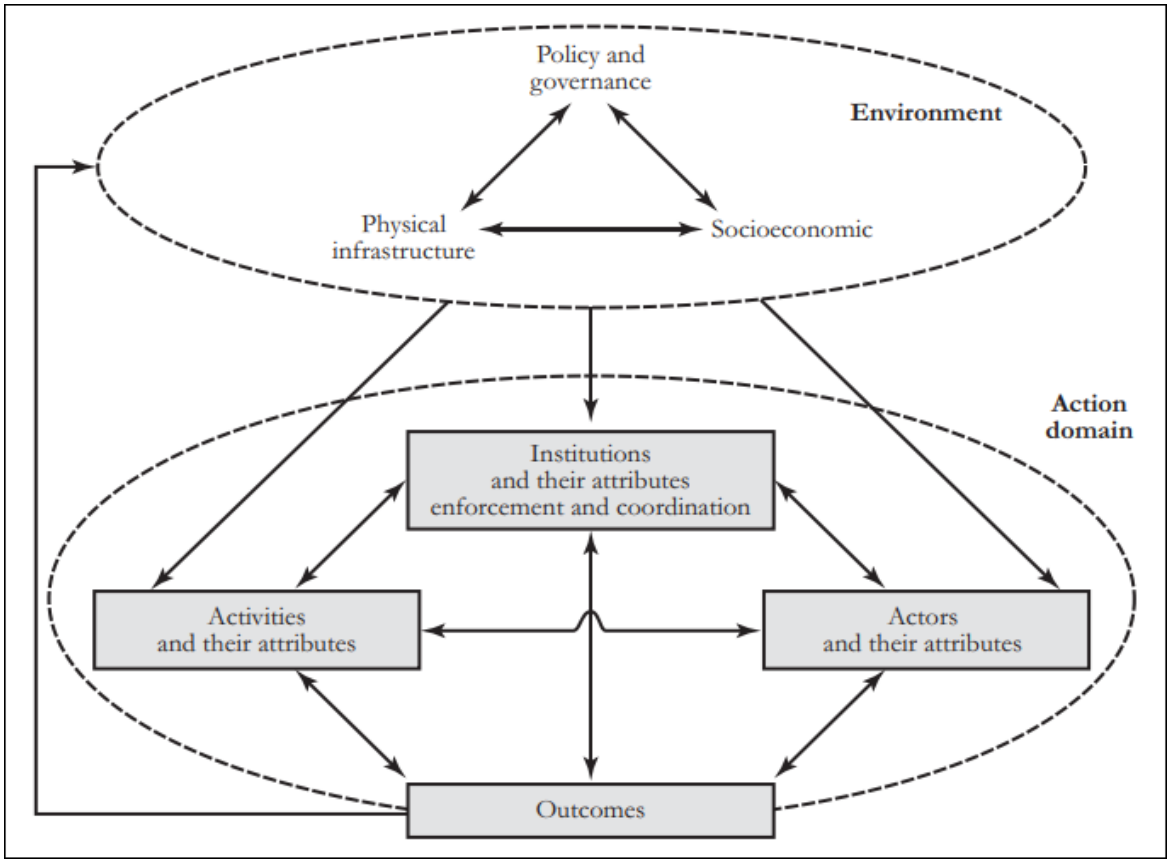

Figure 1-1: IAD Framework

Source: Dorward & Omamo (2009)

Figure 1-1 above illustrates the competitive landscape that producers and agribusinesses operate in. The unpredictable fourth industrial revolution (Xu, et al., 2018) led to the widely used phenomenon of the "VUCA environment", which is incorporated within the competitive landscape (Lazenby & Ehlers, 2019b).

1.5.2 The VUCA environment

Volatility – Volatility in statistical terms is quantified by the variance and standard deviation. A broad spread (wide variance) in the dataset creates uncertainty, the opposite is also true as a smaller spread (narrow variance) creates less uncertainty. This demonstrates that volatility measures the extent and magnitude of change (Mack & Khare, 2016). The unpredictability rising in the current business world shows how prominent it is for businesses to understand their exposure to volatility in the market (Almasi & Enke, 2014). Volatility is a substantial element of agriculture. Since 2006, food price volatility gained significant attention as the increase in the price for crude oil led to higher prices for agricultural commodities due to

biofuels used in agricultural production (Dahl, et al., 2020). The G20 Agricultural Ministers implemented the *"Action Plan on food price volatility and agriculture"* to effectively manage volatility in the agricultural sector (Ministerial Declaration, 2011).

Uncertainty – Businesses cannot accurately predict the future, as uncertainty exists in the market. Uncertainty is defined as having imperfect knowledge (Hardaker, 2015) and is linked with other terms such as imprecision, vagueness, indeterminacy, and ambiguity (Beven, 2018). Uncertainty also links with external factors, as managers cannot control these factors in the agricultural sector, such as the Russia-Ukraine war. Both Russia and Ukraine are net exporters of wheat. These disruptive actions led to a 60 percent price increase for wheat in Africa, as well as causing other global prices to soar (crude oil and sunflower oil) (Tasamba, 2022). Other external factors include climate change, fluctuations in the market, and policy changes (Mittenzwei, et al., 2017).

Complexity – The new competitive landscape requires businesses to develop an understanding of the ever-changing business environment. This can be challenging and complex, as various factors influence the decision-making and implementing process. Information is no longer confined within businesses, while technological advancements are rising, and the performances of businesses are non-negotiable (Tain, 2019). In the 21st century, businesses are operating globally and in open markets. This strengthens the pressure of competencies, flexibility, and adaptive structures (Bohórquez Arévalo & Espinosa, 2015). To manage complexities, self-organisation (also known as the self-directed learning) must be applied so that businesses can co-evolve through transitions (Mitleton-Kelly, 2011). Biodiversity is a major complexity that producers and agribusinesses face within the agricultural sector. Agriculture is the main driver that contributes to biodiversity loss that is attributable to the intensification of agricultural practices. This affects the ecosystem and species that play a significant role for agricultural production (Gonthier, 2014). Evelien M. de Olde argues that moral agricultural complexities can be overcome by implementing corporate social responsibilities (CSR) initiatives (de Olde & Valentinov, 2019).

Ambiguity – The term "ambiguity" can be described as representing an event that has multiple ways of being interpreted, which can result in a lack of clarity (Lazenby, 2018). While businesses in the past easily developed and executed their business plans, operating in the 21st

century is not as straightforward as it was in the past because of the ever-changing environment (Lazenby & Ehlers, 2019b).

This showcases the point that the VUCA environment impacts tremendously on the ever-changing business environment. The dynamic exploration of the VUCA phenomenon supports businesses to identify and react to the complex turmoil of the modern business world and to enable the businesses to position themselves within the new competitive landscape (Bartscht, 2015). Subsequently, the competitive landscape that illustrates the VUCA phenomenon and the IAD framework are valuable concepts that define the business operating environment. Producers and agribusinesses must be willing to adapt and allocate time to examine the external factors that influence the business operations and decision-making process.

1.6 OUTLINE

This dissertation comprises six chapters. The first chapter provides the background and outline for the study. The second chapter provides an overview of the literature related to the agri-operating environment, and of how the environment influences the business functions and performance on the global, regional, and national levels. The third chapter emphasises how disruptive events, risks, and uncertainties progressively impact on business operations. This chapter further builds on incorporating scenario planning that enables the implementation of change management arising from businesses being exposed to the VUCA environment. The PESTEL Analysis Framework is developed to allow a business to set priorities according to sub-categories identified within the framework – specifically focusing on agriculture. The fourth chapter provides a framework derived from Chapter 3 to capture how setting essential priorities could benefit producers and agribusiness in the agri-operating environment. The fifth chapter evaluates the data captured in Chapter 4 by reducing the external factors to the top 15 essential priorities as well as different groupings to consider whether priorities remain in the same position. The sixth and final chapter describes the shortcomings found in the data, comments on how the implementation of the PESTEL Analysis Framework differs as compared with other established priority reports, and provides recommendations for improving the need for setting priorities, as well as for further research.

CHAPTER 2:
THE IMPORTANCE OF THE BUSINESS OPERATING ENVIRONMENT

The continuous modification and review of internal factors and priorities are required in a constantly changing and turbulent external environment (Kennerley & Neely, 2003). Robert Duncan, author of "*Characteristics of Organizational Environments and Perceived Environmental Uncertainty*", has mentioned that the single most substantial influence on a business strategy comprises the inside and outside environments of the business (Duncan, 1972).

The primary purpose of this chapter is to review the importance and relevance of the internal and external environments and the causal effects on the business operating environment, as well as the business model that may be adopted. The domain for the theoretical framework is built on the four circles that determine why a business must prioritise their environment and to recognise the strong relationship that exists between the functions and performance of a business. Furthermore, this chapter will highlight the uniqueness and capital requirements of the agribusiness sector and why it is crucial to understand the agri-operating environment.

2.1 OPERATING ENVIRONMENT

Businesses would enjoy operating in an environment where a business could maintain the business plan, produce at an optimal level, with minimum costs, and have control over their entire business, with minimal changes (NDSU, 2022). This is theoretically the ideal environment to operate in, as the business establishes a level of security over their internal environment. To increase productivity, efficiency and effectiveness in the internal environment, the business must be willing to adapt and ensure a conducive working environment for their employees (Raziq & Maulabakhsh, 2015). Thomas H. Davenport wrote in his book, "*Working Knowledge: How organisations manage what they know*", that the heart of a business is determined on how it functions (Davenport & Prusak, 1998). This emphasises the importance of constantly improving and sustaining the internal (controllable) environment of the business (Deloitte, 2022). However, not only should endeavours be made by businesses to control their internal environment, but they should also explore ways to adapt to the external

(uncontrollable) environment (Surbhi, 2022). Determining these external factors can create both new opportunities and threats to the agri-operating environment (Wanjiru, et al., 2019).

2.1.1 Comparison between the internal and external environments

In Table 2-1 below, a comparison is made between the internal and external environments.

Table 2-1: Internal and external environments

COMPARISON	INTERNAL ENVIRONMENT	EXTERNAL ENVIRONMENT
Nature	Controllable factors	Uncontrollable factors
Consists of	Strengths and weaknesses	Opportunities and threats
Impacts on	The business only	All the businesses operating in this sector
Bearing on	The business functions, decisions, and strategies	The growth, expansion, reputation, and survival of the business
Predictability	Relative high level of predictability	High level of uncertainty

Source: Surbhi (2022)

2.2 INTERNAL ENVIRONMENT

Gaining internal control provides support to producers and agribusiness to ensure that their objectives, components, and organisational structure (variables of the internal relationship cube) are linked to improve the overall performance (Passett, et al., 2018). Figure 2-1 below depicts the direct relationship that is needed to ensure the success of the internal business environment. The columns in Figure 2-1 represent the *objectives*, namely the operations, reporting and compliance of the business. The rows represent the *components* that are needed to achieve the objectives of the business (COSO, 2013). Lastly, the *organisational structure* is represented on the right-hand side, which provides the different business units that the business can implement to fulfil their specific needs. A combination of the structures can be formed to strengthen the internal business operations. The different organisational structures, among various other structures, include the functional structure – grouped according to the specified function such as financial department, marketing department, and human resource department,

and divisional structure – and indicates the activities of the business performed in different geographical areas (Ahmady, et al., 2016).

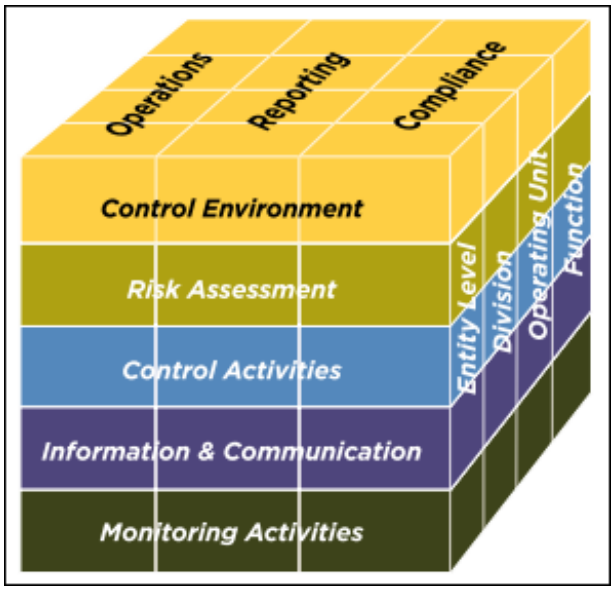

Figure 2-1: Internal relationship cube
Source: COSO (2013)

Furthermore, a study conducted by Bain & Company identified the point that 65% of 960 global executives argue that setting strategic direction provides a high level of satisfaction (Lazenby & Ehlers, 2019a). This is achieved through developing and incorporating a vision statement, strategic intent, and mission statement that could enable the success of functioning within a turbulent VUCA environment.

Vision statement – This focuses on the question "*what the business wants to become in the future*". This indicates a road map and view of the business in the future (Gulati, et al., 2016).

Strategic intent – The strategic intent provides agribusinesses with a sense of direction and purpose. It creates urgency by setting predominant, ambitious goals that stretch agribusinesses and focus on the achievement of long-term goals. It also represents the basis for resource allocation and drives strategic decision making (Mariadoss, et al., 2014). It can be challenging for agribusinesses to reach their goals, as well as ensuring the commitment by all the employees and their personal efforts. Therefore, it is important that the strategic intent should effectively pervade the entire workforce and that the workforce believes that the products or services could win.

Mission statement – This focuses on the question "*what is our business*". This statement is often derived from the vision or strategic intent, and has four focus areas, namely the purpose; the business's strategy in terms of the nature of the business; the behaviour standards and culture of the business; and the moral principles, beliefs and values (Lazenby & Ehlers, 2019b).

Furthermore, in line with strategic directions, is the ability to maintain stability within the business. This can be accomplished through coordination and interrelationships with employees, consumers, suppliers, and competitors, sharing relevant information and management style (Zinovieva, 2016). This emphasises the urgency among producers and agribusinesses to ensure that business operations, as well as strategic and operational decision-making processes, can be achieved at an optimal level.

2.2.1 Coordination of activities

Supply chain coordination and interdependencies connect each stage of the chain, and each actor is sequentially dependent on the performance of the previous actor. This ensures the effective flow of the products and payments from the point of origin, up to where the customers purchase the products (Arshinder & Deshmukh, 2008). The sharp increase in demand for purchasing goods and services from all over the world indicates the rapid transformations in supply chains. This transformation implies a shift from supplier-driven chains (push process) to buyer-driven chains (pull process), which is attributable to the increased availability of real time information, combined with advanced technologies (Rachinger, et al., 2019). This supports the need for producers and agribusiness to understand the agri-operating environment to better enable the businesses to respond to the transformation. Figure 2-2 below indicates the shift.

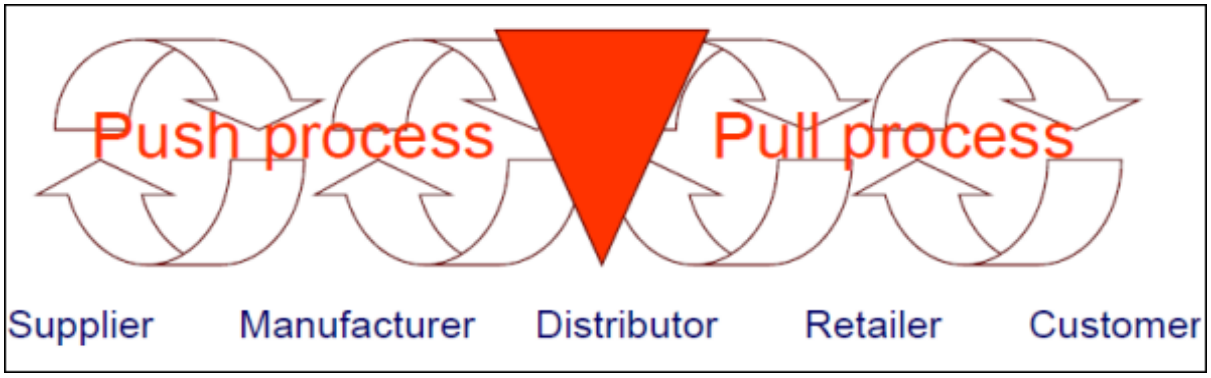

Figure 2-2: Push and pull process
Source: LEK 788 (2021)

2.2.2 Porter's Value Chain

The main purpose of a business is to generate an acceptable profit and return on assets through the sales of the products and services that the business provides (Osterwalder & Pigneur, 2011). Milton Friedman, a prominent American economist, claimed that businesses only have one specific social responsibility, "*to use its resources and engage in activities designed to increase its profits so long as it stays within the rules of the game, which is to say, engages in open and free competition, without deception or fraud*" (Friedman, 1982). However, the purpose of a business has shifted in the 21st century (Xu, et al., 2018). Businesses exist not only to generate a profit, but also to create value for their customers, as a business cannot function without any customers (Lim, 2022). This emphasises that society is the single, most significant part, as businesses aim to provide products and services that will benefit the society, essentially creating value for the customers (Hollensbe, et al., 2014).

Michael Porter developed the "value chain analysis" (VCA) concept that supports businesses to create value for customers (Flanagan, et al., 2018). The *value* refers to the amount that customers are willing to pay; the higher the values of products and services are, the higher the willingness to pay would be (Lazenby & Ehlers, 2020a). The main purpose of the VCA is to increase the value that is added to the products and services and to decrease business expenses to ultimately gain a competitive advantage (Simatupang, et al., 2017).

Moreover, the VCA is grouped into two categories, namely the primary and secondary activities. The primary activities involve the activities that are linked directly to the product

and services that are provided to the customers (Koc & Bozdag, 2017). The secondary activities support the primary activities throughout the process with various functions of the business (see Figure 2-3 below) (Flanagan, et al., 2018). This illustrates the point that the VCA comprises a series of activities that range from the supplier to the customer (Ruan, 2020).

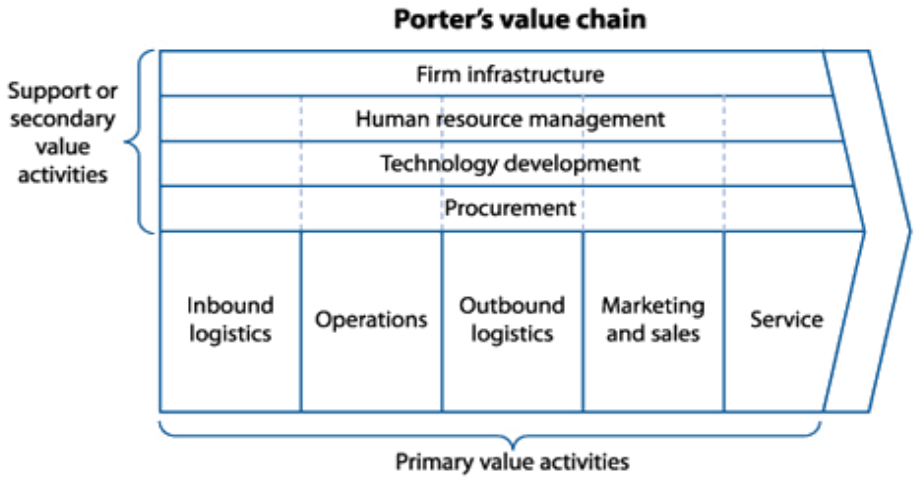

Figure 2-3: Value chain analysis

Source: Kaplan Financial (2022)

Both the primary and secondary activities are vital to implement to safeguard the success of the business. Both sets of activities are required in a business and are interdependent, as mentioned earlier. Along with considering Porter's VCA, businesses must decide to execute horizontal or vertical integration for creating value and pursuing their business operations. The difference between horizontal and vertical integration is discussed below.

Horizontal integration – This refers to achieving the goals set out between the people in the departments that work on the same level of managerial hierarchy (Heeringa, et al., 2020). This indicates that economic ties are formed to strengthen and align the business operations, such as joint inputs and sales (Mutura, et al., 2015).

Vertical integration – This is achieved through linking people at various hierarchical levels that merge into a single business operation to increase their market power (Mutura, et al., 2015). Vertical integration is sub-divided into backward and forward integration, which is discussed below.

- **Backward vertical integration** – This involves gaining increased control or ownership of the business' suppliers. This is normally implemented when the current supplier of a business is too costly, incapable of meeting the needs of the business, or unreliable when providing parts, materials, or components (Oshodi, 2022). For example, a bakery that buys the business of a wheat farm/processor.

- **Forward vertical integration –** This relates to gaining dominance over the retailer or distributors. This is achieved when a business cuts out the retailers and distributors and sells directly to the customers (Lin, 2014). For example, a producer selling his or her fruits directly to the local stores, rather than using a distribution centre.

Both horizontal and vertical integration can support the success of further growth. A business needs to decide which integration is best suited for its operations. Furthermore, Bulturbayevich and Ismatullayevich (2021) argue that implementing vertical integration would lead to modernisation, socio-economic development, and long-term growth, as well as improving quality standards to an international level.

Producers and agribusinesses need to address the factors in the internal environment. Without understanding the internal environment, the more challenging it will be to plan, respond, and implement strategic and operational decisions, and to set essential priorities within the external environment.

2.3 EXTERNAL ENVIRONMENT

A high level of interdependency exists between the internal and external environments. Figure 2-4 below indicates four circles within which producers and agribusiness operate to achieve business performance and growth. These circles include the organisation, market, industry, and operating environments (Olsen, 2016). The organisation is seen as the internal environment (inner circle), and the market, industry, and operating environment are seen as comprising the external environment (outside circles).

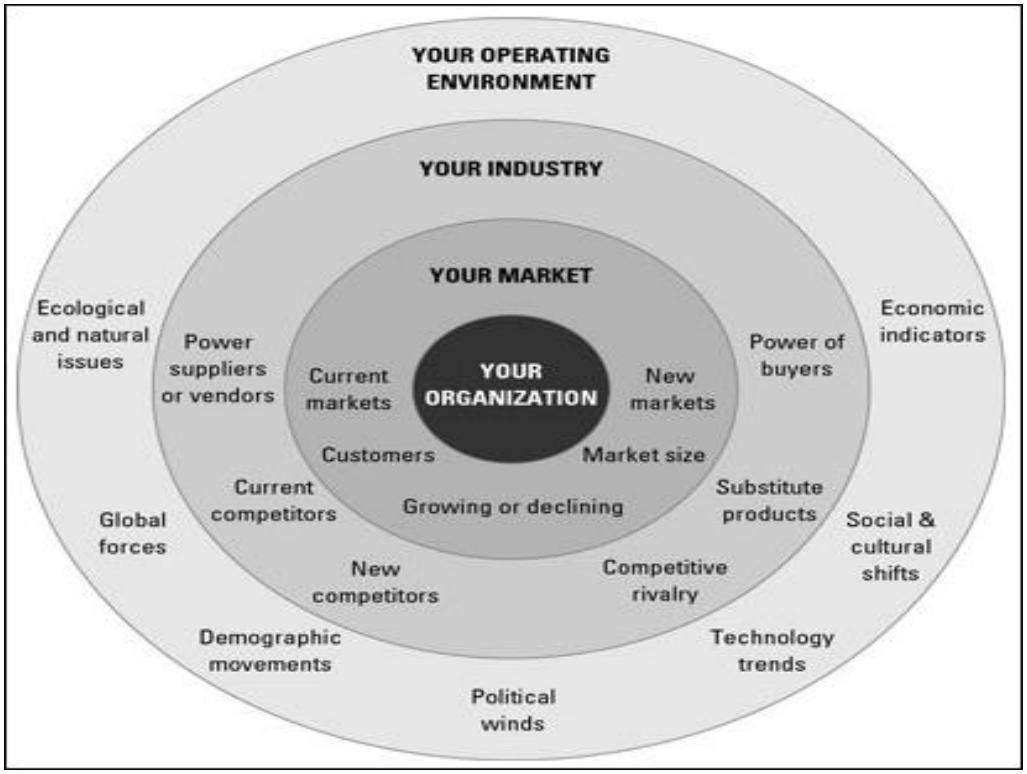

Figure 2-4: Operating Environment

Source: Olsen (2016)

2.3.1 Organisation

As mentioned above, the organisation is seen as the ideal environment for businesses, as the factors are controllable (Deloitte, 2022). These internal factors include the business model being adopted, financial management, human resources, marketing, business plan, and operations (Hove & Tarisai, 2013). This allows the business to focus on its strengths and weaknesses, and creates space to develop internally.

2.3.2 Market

In the existing setting, the external factors influence the quality, efficiency, sustainability, and feasibility of producers and agribusinesses (NDSU, 2022). Understanding the market environment is essential for adapting to any changes. Customers strive to fulfil their wants and needs. If their needs are not met, customers will turn to other businesses that can meet their demands and needs (O'Connell, et al., 2014). This ultimately illustrates the importance of

understanding the target market. Without having the knowledge of the customers and the target market, the business is doomed to failure (Kotler & Keller, 2016a).

Moreover, businesses need to understand the market, whether the business is operating in a niche or mass market. Charlene Walters, author of "*Own Your Other*" states that a niche market is a specialised market that differentiates the business products from competitors and places the business in the position to outrival the competition (Schooley, 2021). A mass market produces goods and services on a larger scale, and competition is tight, as substitute products exist (Coelho, et al., 2018). Therefore, to plan, adapt and react to any changes in the operating market; businesses need to have the correct knowledge of their market to pursue appropriate marketing strategies. Understanding the market is extremely important, as it directly influences the inner circle in which producers and agribusinesses operate.

Lastly, the implementation and application of a business life cycle (BLC) principle, and the stage where the business is positioned, will identify whether there is stagnation or growth. Consequently, this situation determines whether producers and agribusiness react properly to changes in their market. The four stages of the BLC comprise introduction, growth, maturity, and decline (Lazenby & Ehlers, 2020c).

2.3.3 Industry

The industry environment is rapidly evolving. Consumers require the best products and well-delivered services, and producers are constantly searching for new resources to improve their products to fulfil the needs of current and future consumers. Communication channels have improved tremendously, as individuals and businesses are able to communicate, worldwide, within split seconds (Kotler & Keller, 2016b), and the speed of development, information and intelligence has increased significantly during recent decades.

Michael Porter's five forces industry model supports businesses to analyse the competitive forces, namely "(1) bargaining power of suppliers (2) bargaining power of buyers (3) threat of new entrants (4) degree of rivalry among existing competitors (5) threat of substitute products or services" (Lazenby & Ehlers, 2020b). Under each force, there are components that businesses need to examine extensively to be able to grasp the impact of a component on how

attractive the industry is. This allows businesses to make strategic and operational decisions (de Bruin, 2016).

2.3.4 Operating environment

The disruptive changes in the operating environment influence the performance and success rate of producers and agribusinesses. To enable priority setting in the rapidly changing operating environment, flexibility, adaptability and change management tools should be incorporated into the business operations. The main reason to strive towards flexibility is attributable to the underlying factors that directly impact on the operating environment (Gupta & Bose, 2019). A global study on seed systems indicates that incorporating "regulatory flexibility" addresses the needs of producers, as this encompasses rules and guidelines to achieve long-term goals (Kuhlmann & Dey, 2021). Change management tools are discussed in Chapter 3.

Furthermore, the operating environment is exposed to multiple factors that constantly change owing to market volatility, fluctuations, and increased globalisation (Swartz & Kawajiri, 2019). Chapter 3 will explore these factors by implementing the PESTEL Analysis Framework. This framework can support producers and agribusinesses to set priorities according to the opportunities and threats identified within the environment (Surbhi, 2022). This could lead to business stability being obtained because of producers and agribusiness positioning a business timeously to respond to these external factors that influence their operating environment (Zinovieva, et al., 2016).

2.3.5 VUCA environment

Figure 2-4 above illustrates a distinct comparison that exists between the inner and outside circles (Udoagwu, 2021). However, another outside circle can be added to Figure 2-4, namely the "VUCA environment'. Businesses need to adapt their functions to tie in with the competitive landscape that the business operates in. Including this circle can be justified, as businesses operate in volatile, uncertain, complex, and ambiguous operating environments (Bartscht, 2015). Therefore, adding the VUCA environment circle creates a conceptual framework (see Figure 2-5 below), as a new model is created that businesses can use to identify

and manage the turbulent agri-operating environment. The action domain and environment (from the IAD Framework in Chapter 1) are concurrently influenced by the VUCA environment. Therefore, the conceptual framework builds on the IAD Framework to strengthen the importance of understanding the perceived operating environment.

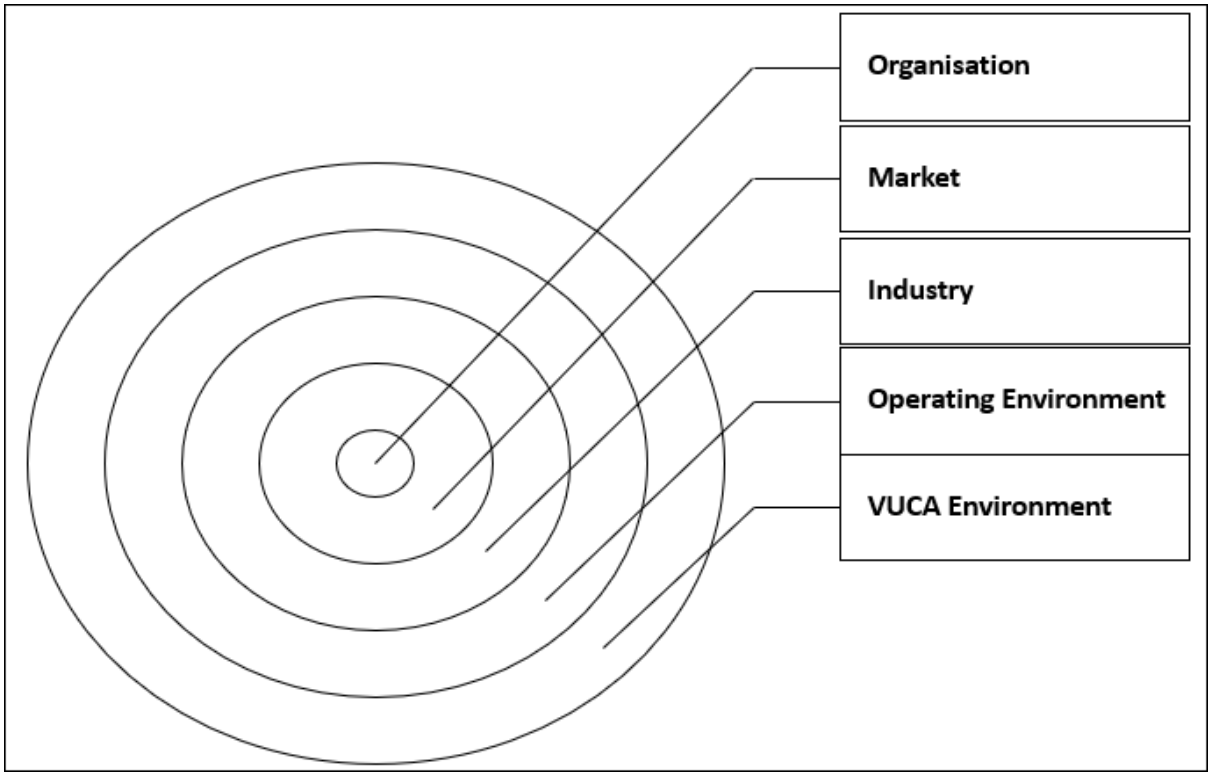

Figure 2-5: Conceptual framework of the operating environment
Source: Compiled by the Author

In conclusion, to successfully operate internally, a business must achieve the coordination of activities, ensure that value is added along the value chain, and strive towards achieving the vision, strategic intent, and mission of the business, as it would then be in the position to respond to and control these factors. If this is successful, the business can set priorities according to the external environment (market, industry, operating, and VUCA environment) that influences the functionality and performance of the internal environment, and ensure that consumer standards are met. The interrelated relationship between the internal and external environments places emphasis on self-directed learning (as discussed in Chapter 1) being implemented to gain knowledge and develop skills to pro-actively respond to the controllable and, to a certain point, the uncontrollable events.

2.4 THE RELATIONSHIP BETWEEN THE FUNCTIONS AND PERFORMANCE OF BUSINESSES WITHIN THE OPERATING ENVIRONMENT

A strong relationship exists between the ability of a business to function and the ability of a business to perform within the operating environment. This statement is justified through various case studies discussed below, and occurs at global, regional, and national levels.

2.4.1 Global level

Firstly, in Indonesia, the dairy cattle milk cooperatives statistically calculated that, for agribusinesses to function and perform outstandingly, a causal relationship is needed between organisational learning and job satisfaction. This causal relationship (see Figure 2-6 below) promotes market orientation and, ultimately, business achievement (Al Idrus, et al., 2018). The acronyms are as follows: organisational learning (OL), job satisfaction (JS), market orientation (MO), and business achievement (BA).

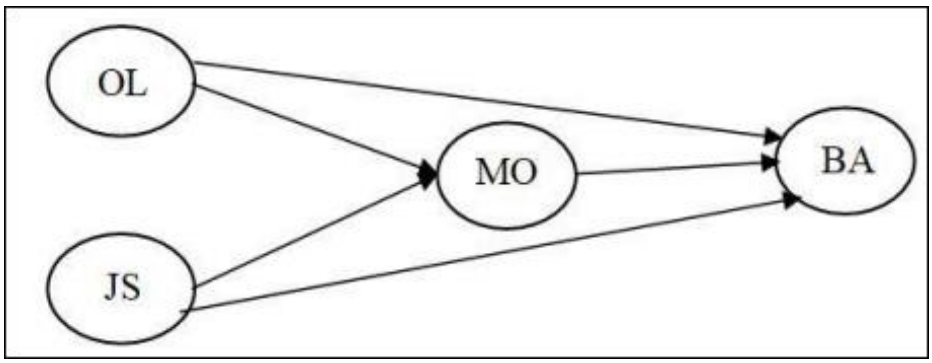

Figure 2-6: Causal relationship
Source: Al Idrus, et al. (2018)

Secondly, data items were gathered from 119 Romanian companies to determine the impacts of the forces that influence the operating environment. These forces include failures in the supply chain, cyber-attacks, hazardous events, loss of crucial employees, natural disasters such as floods, drought and earthquakes, mismanagement, and risks and uncertainties in the operating environment. The interviews concluded that a business continuity management plan is needed to ensure that businesses can function and perform continuously in the future (Paunescu, et al., 2018).

Thirdly, a study conducted in Singapore identified the point that the inability of a business to perform and execute activities is attributable to the manufacturers that neglected to include the environmental factors in their business functions (Ward, et al., 1995). This supports the need for setting priorities.

Fourthly, a questionnaire compiled on Nigerian companies (sample size of 150) concluded that the performance of a business is significantly influenced by the external environment (the outside circles) that disrupts the ability of the business to function effectively (Adeoye & Elegunde, 2012). This emphasises the implementation of tools and frameworks that enable a producer and agribusiness to prevent and respond to disruptive events.

Lastly, a study conducted on 207 manufacturing businesses in Australia (Prajogo, 2016) concluded that businesses tend to focus on their internal factors (such as management, human resources, and technological capabilities) because this environment is seen as the "comfort zone" of businesses (Oke, et al., 2013). However, innovation is needed in both the internal and external environments to ensure acceptable business performance (Prajogo, 2016). This confirms the point that producers and agribusinesses place greater emphasis on the internal factors than on the external factors owing to having more relevant information available – thus, they prefer working with the known internal environment, rather than the unknown, volatile, uncertain, complex, and ambiguous external environment (Corrocher & Zirulia, 2010).

The five case studies referred above were based on a global level. The case studies mentioned below are based on a regional level.

2.4.2 Regional level

Researchers in Namibia conducted a survey with the focus on the question "*Which key management practices (functions) and activities seem to influence the effectiveness (performance) of businesses in Namibia?*"

After interviewing 54 businesses, the data highlighted four key aspects of the ability of a business to *function* and to *perform* within the operating environment. These four key aspects are (1) political influences, (2) risks of expressing opinions, (3) scarcity of skills and

experience, and (4) the size of the economy and population (Ngwangwama, et al., 2019). Figure 2-7 below illustrates the key aspects that influence the operating environment in Namibia. These aspects are linked with the PESTEL Analysis Framework in Chapter 3.

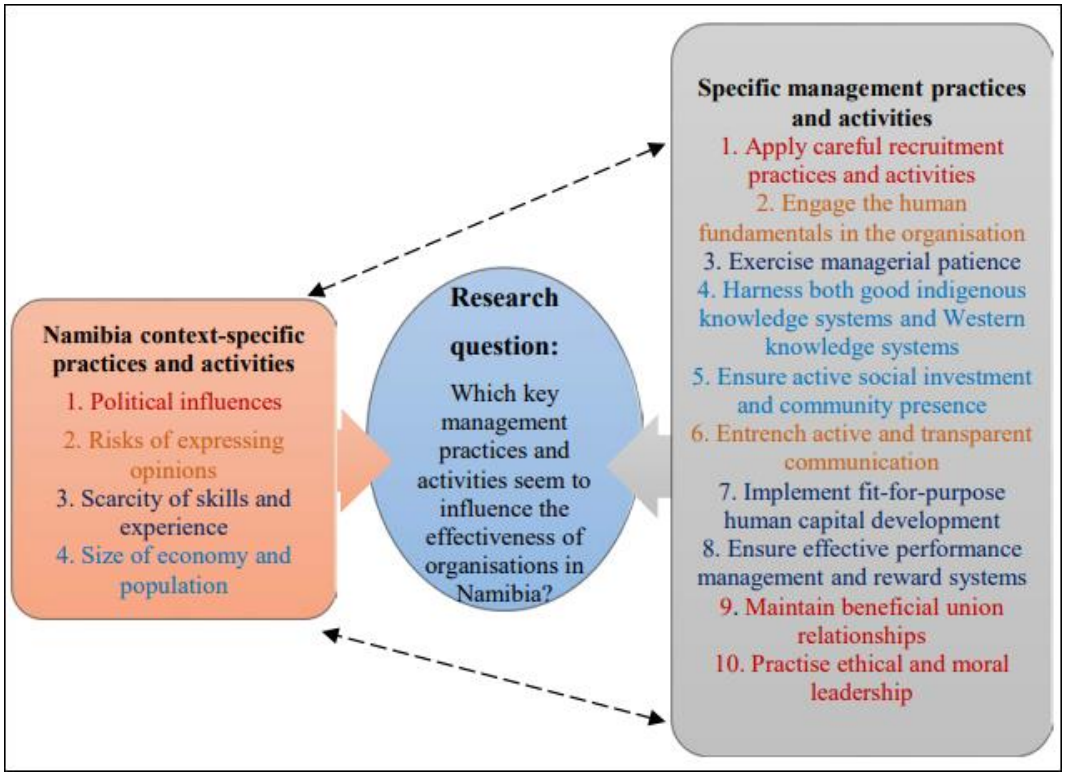

Figure 2-7: Key aspects influencing the operating environment

Source: Ngwangwama, et al. (2019)

Furthermore, the Micro- and Small- to Medium-size Enterprises (MSME) in Zimbabwe are struggling to perform in their operating environment. The survey of 50 MSME entrepreneurs concluded that the MSMEs are not registered, there is little to no infrastructure, and they are exposed to weather conditions such as rainfall and storms owing to working in the open (Marunda & Marunda, 2014). This leads to poor revenues because the internal and external operating environments are not conducive for the proper operation of the MSMEs.

Lastly, according to Zack et al. (2009), to achieve competitiveness and sustainability in a turbulent operating environment, a business must focus on the performance of the business. A research study of the Botswana Water Utilities Corporation concluded that the business performance was measured in terms of employee attraction, customer fulfilment, quality service, and employee retention (Mzwinila, et al., 2022). These factors form part of the non-

financial aspects. However, it is also important to consider the financial aspects, such as profit margins of the business and the return on investment(s) (Abusweilem & Abualoush, 2019).

2.4.3 National level

Following strategic planning practices comprises a fundamental part for any business, as this assists to give strategic direction, supports strategic decisions, guides the business operations, and supports the business to fulfil its functions and performance (Bryson, et al., 2018). The Gauteng province of South Africa concluded that the MSMEs under study (based on 200 questionnaires) needed to implement strategic planning practices to perform in their turbulent environment (Sandanda, et al., 2014). In addition, strategic planning will lead to improved strategic decisions being taken.

Moreover, the Sekhukhune district in the Limpopo province identified five factors that enable business performance and reduce the risk of failure, based on a study of 200 MSMEs. These factors comprise finance, product and service, business location, government support, and entrepreneurial characteristics (Garg & Phaahla, 2018). These factors are taken into consideration in Chapter 3 and partly in Chapter 4 when analysing the study questionnaire, which is based on the PESTEL Analysis Framework.

Beneke et al. (2016) argue that adaptability and competitiveness are two concepts that secure business survival in the operating environment. To function and perform within the VUCA environment, a business should understand its operating environment, industry, market, and inner circle (refer to Figure 2-5 above). This underpins the implementation of a framework that would prompt a business to adapt to changes within the internal and external environments, as factors at the global, regional, and national levels influence the business operations and the strategic and operational decision-making process.

2.5 OPERATING ENVIRONMENT OF SOUTH AFRICA

The cornerstone of South Africa's operating environment is founded on the transition of the constitutional democracy in 1994 (Suttner, 2014), followed by the term "rainbow nation", which is undertaken to describe the racial unity among various cultures, and the hope for a

bright future (Handa, 2022). However, in the existing setting, inequality, poverty and unemployment remain enormous challenges for the country. The National Development Plan (NDP) of 2011/12 strives to address and eliminate these challenges by 2030 (Cumming, et al., 2017).

The Gini Index represents the distribution of income, with zero being equal to perfect equality and 100 being equal to perfect inequality (Trading Economics, 2022). South Africa was reported as being at 63 in 2014 (World Bank, 2022), which ranks South Africa as one of the most unequal countries in the world (IMF, 2022). Despite these challenges, South Africa still provides a sophisticated operating environment for businesses on the global, regional, and national levels.

A PESTEL Analysis Framework will be incorporated by this study to establish the current issues in the agri-operating environment of South Africa. The 'PESTEL' acronym represents six categories, namely the Political, Economic, Social, Technological, Environmental, and Legal aspects of a country (Pan, et al., 2019). The PESTEL Analysis Framework is discussed in detail in Chapter 3.

Implementing the framework will be valuable for producers and agribusinesses at the global, regional, and national levels, as it enables strategic and operational decisions to be taken, based on the economic performance of the country. As a result, South Africa could continue to implement programmes to ensure the success of business functions and performance. These programmes include the Agriculture and Agro-processing Master Plan (AAMP) for 2030, which forms part of a priority plan that promotes sustainable growth in the agricultural sector (namc, 2022). Secondly, the Broad-based Black Economic Empowerment (BBBEE) programme, which aims to empower and uplift the South African economy by including previously disadvantaged people (FundingHub, 2022). This programme also includes AgriBEE, which promotes equitable access, participation, and employment of people from different backgrounds, specifically aimed at the agricultural sector (DAFF, 2022). Thirdly, the Department of Agriculture, Land Reform and Rural Development (DALRRD) aims to enhance access to land and development in the rural communities (GOV.ZA, 2022). Lastly, the National Development Plan (NDP) of 2030 (in 2011/12) aims to eliminate poverty and reduce inequality (NPC, 2022).

The factors mentioned above (among various others) all contribute to the state of the agri-operating environment. By understanding the agri-operating environment, sound priorities can be set to enable and improve strategic planning.

2.6 AGRI-OPERATING ENVIRONMENT

The agricultural sector must continue to manage their business operations, despite the instability caused by the VUCA environment. Producers and agribusinesses operate in the similar agri-operating environment; however, they have different needs – thus, emphasising the point that priorities may differ between the producers and agribusinesses. Producers plan their operations, which include the preparation for cropping, e.g. ploughing and planting of crops, soil preparation, pesticides, the growth period and safeguarding the yield and quality of the crop, the harvesting, and the storage of the crop (BYJU'S, 2022a). Agribusinesses need to position their operations to and assist their clients, as well as ensuring that the interests of their stakeholders are safeguarded (CFI Team, 2022).

An enabling environment, which includes policies, plays a significant role in making decisions on investing in the agribusiness sector. The agri-operating environment of South Africa, as compared with African countries such as Uganda, Kenya and Tanzania, has the best-defined rule of law in Africa (Nicolai & Vincent, 2018). This is seen in Chapter 4 when analysing the PESTEL Analysis Framework. An example of the rule of law includes the regulating of property rights. Along with property rights comes security of tenure, and shareholders would prefer to invest in South Africa, when compared with the African countries where property rights enforcements are costly, challenging to implement, and have a lack of creditworthiness because of mismanagement within government policies (Kraxberger, 2007). Accordingly, gaining an understanding of the operating environment provides producers and agribusinesses with knowledge to plan accordingly and achieve long-term goals.

2.6.1 Working capital turnover ratio

The nature of doing business in the agri-operating environment illustrates the point that profits can be generated from annual crops to perennial crops that produce more than once in a year (Žižlavský, 2014). The environment faces obstacles, such as weather conditions, pests, climate

change, foot and mouth disease, and droughts, that impact on production (Gaffneya, et al., 2019). Subsequently, the production periods vary between farming activities, which also leads to profits being generated within different timeframes. A producer who farms with commodities such as maize, wheat, soybeans, sorghum and cotton generates their profits within one production season of a year (James, et al., 2010), while a producer who farms with mangoes, lemons, oranges, grapes, macadamias, and pecans generates profits over a period of 10–25 years (Brar & Danyluk, 2018).

Capital is required for the continuity of performing the business activities (Pratama, et al., 2020). Efficiency ratios determine the degree of effectively allocating available resources. Agriculture is a long-term investment, with a relatively slow capital turnover ratio (Bernstein, 2013). Table 2-2 below indicates the differences between capital turnover ratio and working capital turnover ratio.

Table 2-2: Difference between efficiency ratios

Efficiency ratios (1) (2)	**Capital turnover ratio (1)**	**Working capital turnover ratio (2)**
Definition	Determines how effectively the capital is utilised in the business.	Determines how efficient the ratio is between the business turnover and working capital. The working capital in the denominator represents the current assets, minus current liabilities.
Formula	$\text{Capital Turnover Ratio} = \frac{\text{Gross production value}}{\text{Average total capital employed}}$	$\text{Working Capital Turnover Ratio} = \frac{\text{Net Sales}}{\text{Working Capital}}$
Explanation	A high ratio illustrates a higher operative use of capital.	A high ratio illustrates the efficient use and management of a business's short-term assets and liabilities.

Sources: Standard Bank (2017); Bintara (2020)

For this study, the focus will be placed on the working capital turnover ratio. Multiple case studies illustrate how important the understanding and implementation of the concept of working capital turnover ratio is within a business.

Firstly, a case study with a sample of 48 businesses' financial statements for the period between 2015 and 2018 indicated that the working capital ratio, inventory turnover, and operational cost ratio significantly impact on 16.5% of the business performance (Pratama, et al., 2020).

Secondly, a research study on 14 food and beverage businesses between the period of 2014 and 2018 concluded that working capital turnover ratio and fixed assets turnover concurrently affect the Return on Asset (ROA) (Puspita, et al., 2021). Lastly, a study of the period from 2016 to 2018 on consumer goods businesses on the Indonesia Stock Exchange (IDX) illustrates the point that working capital turnover has an extensive impact on the business performance, as well as on the results, with an R square value of 0.283 – indicating that 28.3% of the working capital ratio, leverage, and revenue growth affect the ROA (Pardanawati, 2021).

Furthermore, it is imperative to understand the financial concepts attributable to the nature of doing business and the working capital turnover ratio being lower within the agri-operating environment. However, in 2020, the agri-operating environment was the best-performing sector in terms of growth, which boasted a year-on-year growth rate of 13.1% (Standard Bank, 2022). This shows the resilience of the environment, as numerous industries were on the point of collapsing because of the COVID-19 pandemic (Peng & Simpson-Bell, 2022). The resilience of this industry shows the potential to yield great returns for both public and private investments.

2.7 SUMMARY

Chapter 2 has discussed the importance of shifting the focus from the internal to the external environment as businesses continue to accelerate business functions and performance in a dynamic, turbulent world. This theme is supported by the consequences of the VUCA phenomenon. To ensure the success of a business operating in a dynamic, turbulent world, the business needs to prioritise and recognise the fact that the agri-operating environment is not only influenced by the organisation itself, the market and the industry, but also by the VUCA environment, which significantly influences the future and continuity of the business.

A further key dimension of this chapter is the point that producers and agribusinesses have access to programmes to assist business development. However, the nature of the business is that it remains a long-term investment and is constantly exposed to the VUCA environment. Prioritising external factors would assist producers and agribusinesses to plan and adapt strategically and operationally according to the business's IAD framework, VCA, and VUCA phenomenon, as discussed in Chapter 1 and Chapter 2. Subsequently, the PESTEL Analysis

Framework, which is discussed in the following Chapters, will be implemented to identify the external factors and ultimately prioritise those factors to ensure that this facilitates the continuous growth and success of the agri-operating environment of South Africa.

Charles Darwin stated, "*It is not the strongest species that survive, nor the most intelligent, but the most responsive to change*" (Raoof, 2017).

CHAPTER 3:
IDENTIFYING HOW DISRUPTIONS, RISK AND UNCERTAINTY, SUPPORTS THE NEED FOR PRIORITY SETTING IN THE AGRI-OPERATING ENVIRONMENT

The agricultural sector has unique characteristics, as compared with other sectors, as the agri-operating environment is uncertain, owing to biological and climatic variables. It is therefore crucial to understand and evaluate the risks and uncertainties in the agricultural sector. Laura Girdžiūtė argues that "*The risk is perceived not only as an opportunity to lose, but also as an opportunity to win*" (Girdžiūtė, 2012).

This chapter determines the need for setting priorities. The magnitude and nature of disruptive events influence business activities and stakeholders in the value chain, from producers to agribusinesses, and from global, regional and to national levels (Mathur & Singh, 2005). Consequently, the impacts of risks and uncertainties can change the outcome and ranking of business priorities. This calls for the possible use of scenario planning as a tool when uncertainty is prevailing, which could enable a comprehensive understanding to be gained of different versions of the future and to adjust according to the influence of the external factors. Furthermore, this chapter provides the PESTEL Analysis Framework, which assists producers and agribusinesses to ultimately improve the agri-operating environment.

3.1 DISRUPTIONS IN THE OPERATING ENVIRONMENT

Critical changes could be applied if disruptive events occur, which could alter the priority setting within the agri-operating environment (McKibbin, et al., 2017). This leads to the question, "Why and when do priorities change?"

Following a static priority approach is useful when a business structure is limited to the performance of one component in the structure, e.g. the Marketing Department. However, businesses currently operate in a dynamic environment that deals with uncertainty and constant changes occurring in the environment. This obliges producers and agribusinesses to shift to a dynamic priority approach, which illustrates the fact that different departments in a business structure influence the outcome of the entire business operations (Cioană, 2009). George

Orwell concludes in his Animal Farm book that "*all animals are equal—but some are more equal than others*" (Orwell, 2009).

It is evident that some businesses respond more successfully to disruptive events than other businesses that face similar circumstances (Pettit, et al., 2015). What makes a business respond successfully is resilience (Linnenluecke, 2017) and priority setting, as discussed in Chapter 1. The term 'resilience' at a business level is described as the response rate, timeframe taken to recover, and the ability under difficult conditions to adapt business operations (Vogus & Sutcliffe, 2007). Resilience at an employee level is described as the ability of business employees to "bounce back" from hardships and unexpected events (Shin, et al., 2012).

3.2 PRIORITIES IN THE AGRI-OPERATING ENVIRONMENT

Prioritising allows producers and agribusinesses to focus on what is most important by ranking which activities and practices need immediate attention (Shepherd, et al., 2018). Figure 3-1 below illustrates a framework that targets and prioritises interventions in the agri-operating environment. The steps in the framework are set out, as follows (Notenbaert, et al., 2017):

Step 1: Identifying and diagnosing of potential options – identify the problems, opportunities, and potential solutions for producers and agribusinesses.

Step 2: Characterisation of options – examine the available types of support and sort the different options that producers and agribusinesses could implement and follow to achieve their specific outcomes.

Step 3: Identification of the recommendation domains – identify how suitable the chosen option is and whether it has had a favourable outcome.

Step 4: Ex-ante impact assessment – assess the impacts of the chosen option, which will strengthen future decisions that allow the business to compare and prioritise the potential impact (Samset & Christensen, 2017). This further links with the change management tools that can be implemented and which enable producers and agribusinesses to adjust to and learn from disruptive events.

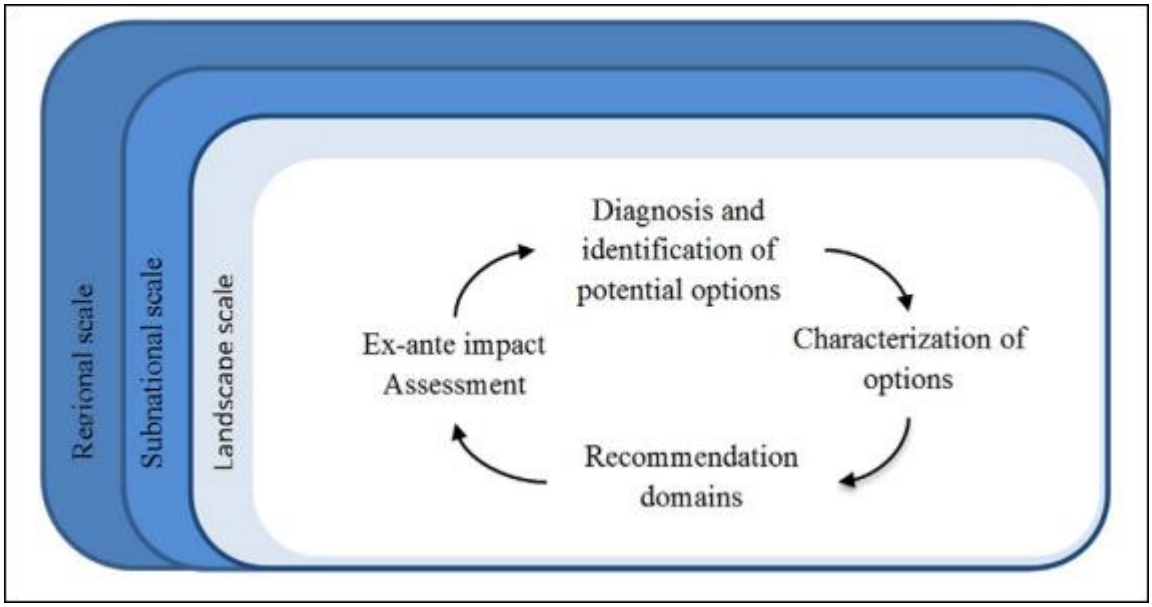

Figure 3-1: Four generic steps

Source: Notenbaert, et al. (2017)

3.3 RISK AND UNCERTAINTY IN THE AGRI-OPERATING ENVIRONMENT

The saying of "*having tomorrow's newspaper today*" is unfortunately not the reality. Worldwide, the future of the agri-operating environment is influenced by risk and uncertainties (Bonciani & Ricci, 2018). From a theoretical point of view, Knight made a fundamental separation in 1920 between these two concepts, which plays an essential role in terms of economic theory (Dibiasi & Iselin, 2021). These concepts are classified as "Knightian risk", which is measurable, as being the probability that a certain outcome is known (Amoroso, et al., 2017), and "Knightian uncertainty", which is unmeasurable, as imperfect knowledge exists of certain outcomes (Nishimura & Ozaki, 2007).

3.3.1 Risk in the agri-operating environment

A risk is seen as the business being exposed to a *proposition* or situation that is uncontrollable and that has an *indeterminate* outcome (Holton, 2004). The type of risks will differ, which contributes to the outcome of the turbulent agri-operating environment. These risks include environmental issues, changes in the agricultural policies, variability in prices and yield, social concerns, technological changes, and legal aspects (Kaan, 1998). In addition, Novickytė (2018) claims that producers and agribusinesses could apply risk management strategies and instruments. This application is influenced by a business's perception of the risk and socio-

economic background, such as the gender, age, income, community/business values, education, culture, and financial position. This results in different economic behaviours and strategic and operational decision-making processes occurring (Duong, et al., 2019).

Two methods manage risk while implementing strategies and instruments. Firstly, the *ex-ante measure* – where a business is a risk taker (Van Winsen, et al., 2016), as actions are taken before an event occurs, such as pest and disease management and crop insurance (which are all pro-active in nature). Secondly, the *ex-post measure* – where a business is risk averse, as it accepts consequences, and actions are taken after an event has occurred, such as using savings for supplementing daily livelihoods, emergency irrigation, and replanting (Tedesco, 2018), which are re-active in nature.

The strategies that can be used along with these two methods are depicted in Figure 3-2 below. Layer 1 represents businesses trying to mitigate risk. If the risk cannot be managed or retained, Layer 2 is implemented, where the risk is transferred to third parties. If the risk cannot be mitigated or transferred, then Layer 3 comes into play, where government mechanisms are implemented for coping with risk (Tedesco, 2018).

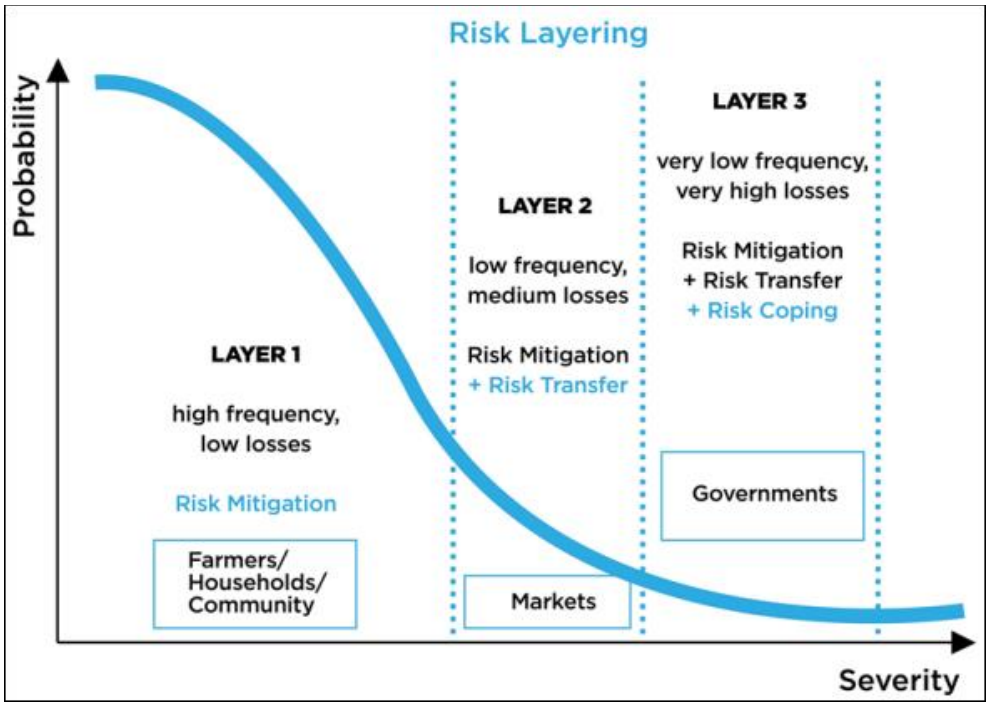

Figure 3-2: Risk management strategies and layering

Source: Tedesco (2018)

3.3.2 Risk management strategies

Historically, society faced multiple challenges that changed risk management strategies during and after a disruptive event. Financial crises include the 2008 housing bubble, the Chinese Stock Market Crash in 2015, the European Sovereign Debt Crisis, and the Russia-Ukraine war (IRC, 2022). Health crises include the 1918 Spanish influenza, the 2016 Ebola outbreak, and the 2020 COVID-19 pandemic (Sneha & Hens, 2020). These events significantly affected businesses, worldwide, as most events were unforeseeable, regardless of forecasts attempting to anticipate future risks based on historical events.

Subsequently, these types of events forced businesses to introduce and implement risk management strategies (Dunne, et al., 2021). Prioritising and managing risk can benefit producers and agribusinesses, as structures are established to proactively, rather than reactively, minimise the exposure and outline the fulfilment of pre-established action plans, if the risk were to occur. The four risk management strategies (avoid, transfer, mitigate, and accept) provide a structure to position the business to implement informed strategic and operational decisions, instead of focusing and basing decisions on what "comes to mind" (Ideagen, 2022). The four risk management strategies are set out as follows:

Avoid – The Cambridge Dictionary (2022) describes the term "avoid" as staying away from something, or not taking any action. The disadvantage is that a business can potentially forfeit an opportunity by avoiding a specific risk (Arshad & Ibrahim, 2019). For example, producers and agribusinesses trading commodities on the derivative market (SAFEX) can decide to close their position, if the risk is not worth the potential reward (JSE, 2013); thus, deliberately deciding to avoid the potential risk.

Transfer – Risks can be transferred to third parties who are willing to take or buy the risk. Provisions of protection against financial losses attributable to unforeseen circumstances are undertaken by insurance companies (CNA , 2016). For example, if a natural disaster occurs which impacts on its crops, the producer could protect the business against the financial loss incurred by taking out crop insurance in advance (Old Mutual, 2022). Crop insurance is sub-divided into two categories, (1) hail policy (also covering fire and excess rain) and (2) multi-peril policy (covering pests and disease, drought, and frost) (Insurance Information Institute, 2022). Other risk-transfer approaches include hedging against negative price movements and

buying options on the derivative market, which approaches protect the commodities against potential losses for the producer and agribusiness (JSE, 2013).

Mitigate – This action can be endeavoured at the producer level, which minimises the probability of risk occurring (Simplilearn Solutions, 2022). An agribusiness, such as AFGRI, Senwes, NWK, GWK, VKB, Kaap-Agri and Obaro, can mitigate risks through sound credit policy arrangements. The credit policy guides the terms of how the agribusiness will grant credit and collect unpaid debts from the clients (Rizwan, et al., 2019) Other activities used to mitigate risks include shortening the lead times in the production, diversification, acquiring better information, sharecropping instead of cash, recruiting experts to assist in decision-making process, and renting (Talluri, et al., 2013).

Accept – This illustrates the fact that producers and agribusinesses can adopt measures of self-insurance (partly retaining the risk), as the business does not rely solely on third parties such as insurance companies, but rather accepts the risk, placing the liability completely on the business (Vanem, 2012). Financial reserves can be used, which are funded from the previous years' profits. If the risk is minor, the advantage is that an agribusiness is in a better financial position owing to saving the costs that would otherwise have been paid to third parties (Kahan, 2013). However, disadvantages exist if an agribusiness incorrectly anticipates the impact of the risk. Therefore, the risk, in fact can cause a ripple effect on the business operations and its financial position.

3.3.3 Uncertainty in the agri-operating environment

In contrast to risk, uncertainty is experienced when producers and agribusinesses are completely unaware of the future. The COVID-19 pandemic is an example of uncertainty, as businesses had imperfect knowledge, e.g. of the possible liquidity challenges (Sneha & Hens, 2020), exposure to another variant, and whether the business operations would be negatively impacted on because of regulations and restrictions (KPMG, 2022). This means that there is no ex-ante measure that could be followed or any mathematical adjustments to be made, such as using probabilities to determine the impact of the event (Hamsa & Bellundagi, 2017). However, these two terms cannot be separated, purely because where a business is faced with uncertainty, there is risk.

Consequently**,** if risk and uncertainty are not identified and managed, an inability can arise to apply strategies to prevent or minimise any damages that might harm the business and even lead to failure (de Carvalho & Rabechini, 2015). These strategies can link with the concepts mentioned in Chapter 1 (IAD framework and VUCA phenomenon), which facts recommend the implementation of the PESTEL Analysis Framework, along with priority setting in the agri-operating environment. This would enable producers and agribusiness to implement ex-ante measures as well as minimise and manage disruptive events.

3.3.4 Scenario planning in the agri-operating environment

Scenario planning provides different versions of possible future outcomes. It determines the causality of the environment by observing and interpreting past events, the current situation the business faces, and the future state. It can be described as a conceptual description that is verbal or written of the predicted future outcomes (Abafat, et al., 2021). Therefore, scenario planning is useful when uncertainty for agribusinesses is significantly high, relative to the ability of management to forecast or to adapt (Gerlak, et al., 2021). It is an important tool for the agribusiness to use in light of unpleasant or costly occurrences in the past, and it is useful to use when producers and agribusinesses wish to develop a common vision, framework, or priorities, without stifling diversity (Lazenby, 2018).

Figure 3-3 below indicates the degree of uncertainty and the impacts thereof. There are three spheres to consider, namely (1) inevitable – meaning that it is bound to happen because the situation is unavoidable, (2) insignificant – not worth investigating because the impact would be very low, and (3) important – referring to a situation in which a business needs to build scenarios owing to uncertainty of the event occurring, which might have a tremendous impact on business operations.

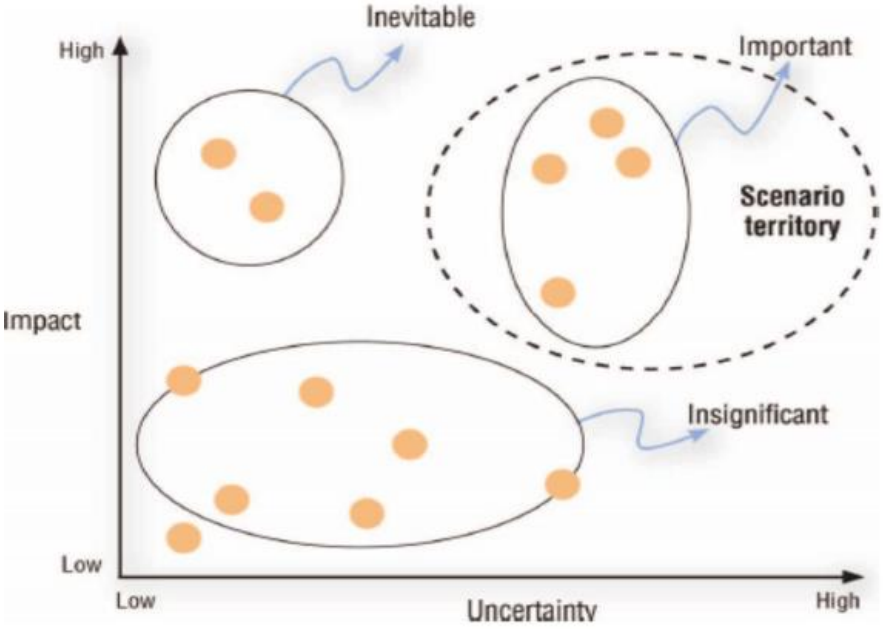

Figure 3-3: Scenario territory

Source: Lazenby (2018)

Furthermore, Figure 3-4 below illustrates the process of developing scenarios within business operations. It is evident that the scenario elements use the VUCA phenomenon and the PESTEL Analysis Framework. This validates the implementation of the framework, which enables priority setting within the agri-operating environment.

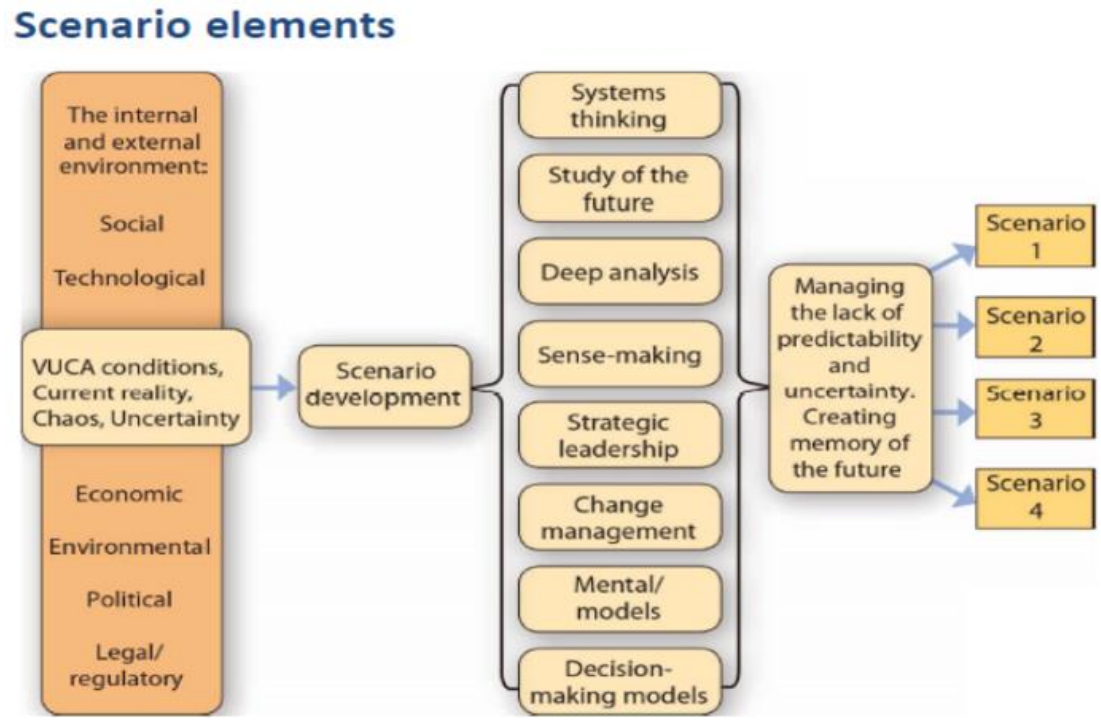

Figure 3-4: Scenario development

Source: Lazenby (2018)

3.3.5 'Unfreeze-change-refreeze' theory in the agri-operating environment

This theory follows three steps to affect the transition of a business in a way to react to possible changes within the operating environment (Hayes, 2022). The first step is known as the "unfreeze" stage, which determines and prepares the business to accept the predicted change – stating why the current business operations cannot continue because of a possible change that could occur. The second step is the "change" stage, where businesses resolve ambiguity and start implementing the change by accepting that the old business model/operations will not improve the business; therefore, shifting to a new operational level. The third step is the "refreeze" stage, which ensures that the change is being stabilised within the business and is incorporated into the day-to-day activities (Ogochi, 2018). However, the "refreeze" stage is not always feasible and can be short-lived because of the agri-operating environment being a "moving target". It is noteworthy to mention that the change does not happen instantaneously, although it is inevitable that it will happen. Subsequently, being exposed to the VUCA phenomenon, businesses constantly need to change their business operations.

A business, however, must be confident with the change to ensure sustainability in the business. Therefore, it is important that the entire business understands the reasoning for change management by having open communication channels and giving reminders as to why the change will be essential and beneficial. Implementing priorities would assist the business make informed strategic decisions that would drive the continuity of the business.

3.3.6 PDSA cycle in the agri-operating environment

The "Plan-Do-Study-Act" (PDSA) cycle is used when there is a need for implementing change. The first step is to plan or to predict what needs to change. Secondly, the to "do" stage occurs where the business conducts a review of what changes will be implemented. Thirdly, the "study" stage reviews whether the proposed changes would be successful for the business operations. Based on these reviews, the business can implement the "act" stage, where adjustments can be made for future learning and improvements within the cycle (Leis & Shojania, 2017). This indicates that the cycle can be reformulated and implemented more than once to ensure the success. The PDSA cycle links with setting priorities for an agribusiness. If a business can plan or predict the external factors that could potentially influence the business activities, then the priorities can be ranked to ensure that changes are implemented – illustrating

the "do" stage. These priorities can then be studied, based on the impact on the business, to enable the business to react in the same or different way according to the past events.

3.4 THE NEED FOR PRIORITISING IN FARMING AND AGRIBUSINESS

"*Modern agriculture is facing increasing integration and competitions in the world's economy, with high interconnections between supply chain actors, various interests of stakeholders, as well as numerous conflicts, scandals and public pressure relating to the environment, food safety and human standards*" (Levkivska & Levkovych, 2017). This statement is justified by various case studies that illustrate how priorities can lead to business success.

The VIKOR technique is used for "multi-criteria optimisation of complex factors" (Mardani, et al., 2016). The VIKOR acronym stands for "VlseKriterijumska Optimizacija I Kompromisno Resenje", which means "Multicriteria Optimization and Compromise Solution". Thus, it determines how management could prioritise business activities, based on the initial weights provided to each factor. This indicates the solution obtained from the priority (ranking) list (Sayadi, et al., 2009). A case study of online India fashion retailers used the VIKOR technique and identified that, out of seven categories, the weights of the "webstore-image" category were the highest. This emphasises the point that prioritising this category could lead to growth and success for the online Indian fashion retailers (Kaushika, et al., 2020)

Moreover, different techniques, apart from the VIKOR technique, can be used to set priorities in the agri-operating environment. Ukraine has in the past constructed a PEST-analysis that investigates the strategic priorities that influence agricultural development in the country. It is necessary to analyse the agricultural sector, environment, natural resources, and factors that affect the resources, before the implementation of strategic priorities at the regional and national levels (Kirieieva, et al., 2019). Figure 3-5 below illustrates the strategic priorities and performance indicators for agricultural development. The oval shapes represent the factors that are identified as the "strategic priorities of agricultural development". Each priority identified is then explained in detail, which is presented in the rectangular blocks.

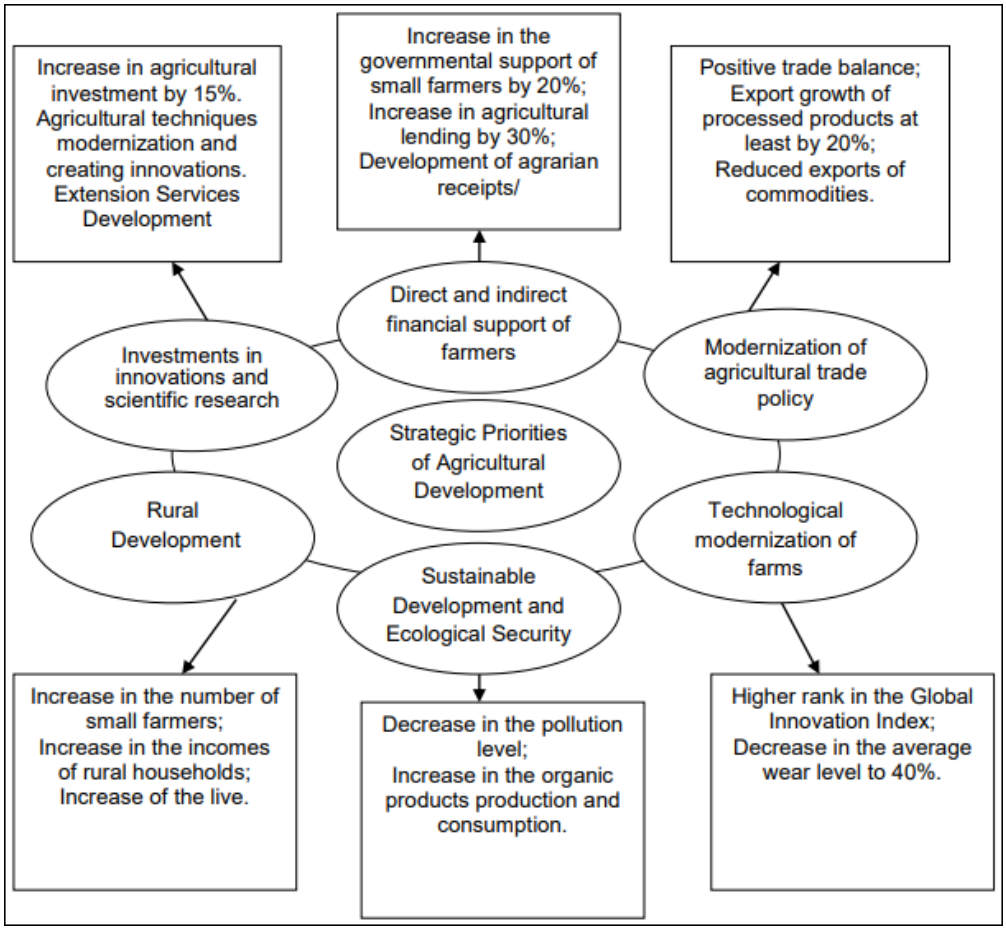

Figure 3-5: Strategic priorities and performance indicators

Source: Kirieieva, et al. (2019)

Another case study was conducted on how younger producers could implement improved strategic and operational decisions, while utilising the limited resources. This strengthens the need for prioritisation. The "fuzzy analytic hierarchy process" is a multi-criteria decision-making technique that analyses and assigns weights to estimate which indicators are seen as a priority. "*When it comes to establishing an agri-business firm, some skills need to be prioritised in order to pave the way for the other phases of the business for continual success in the enterprise*" (Ray, et al., 2022). Chapter 4 illustrates how weights are assigned to the essential priorities identified by producers and agribusinesses.

Moreover, a materiality analysis was conducted in two dairy case studies to successfully convince producers to adjust their management in such a way as to attain sustainable targets. The materiality analysis identifies, selects, prioritises, and reviews the material in a structured way. The analyses revealed that priorities change during the adjustment process, especially in dynamic business operations. The change can be minimised through following a sequential

approach of starting and implementing the high priority issues. Secondly, regional differentiation is unavoidable because of different agricultural production methods, demand region-specific analysis, cultural differences, geographic circumstances, and ultimately, the difference in weights allocated to the priorities (the materials identified). This approach is developed in Chapter 4 and partly in Chapter 5 to illustrate how priorities would differ according to the differentiation. Lastly, if priorities change during the RESET intervention, pillars can be applied to ensure that the prioritisation process can continue to be executed. Figure 3-6 below illustrates and explains the RESET pillars (Reijs, et al., 2021).

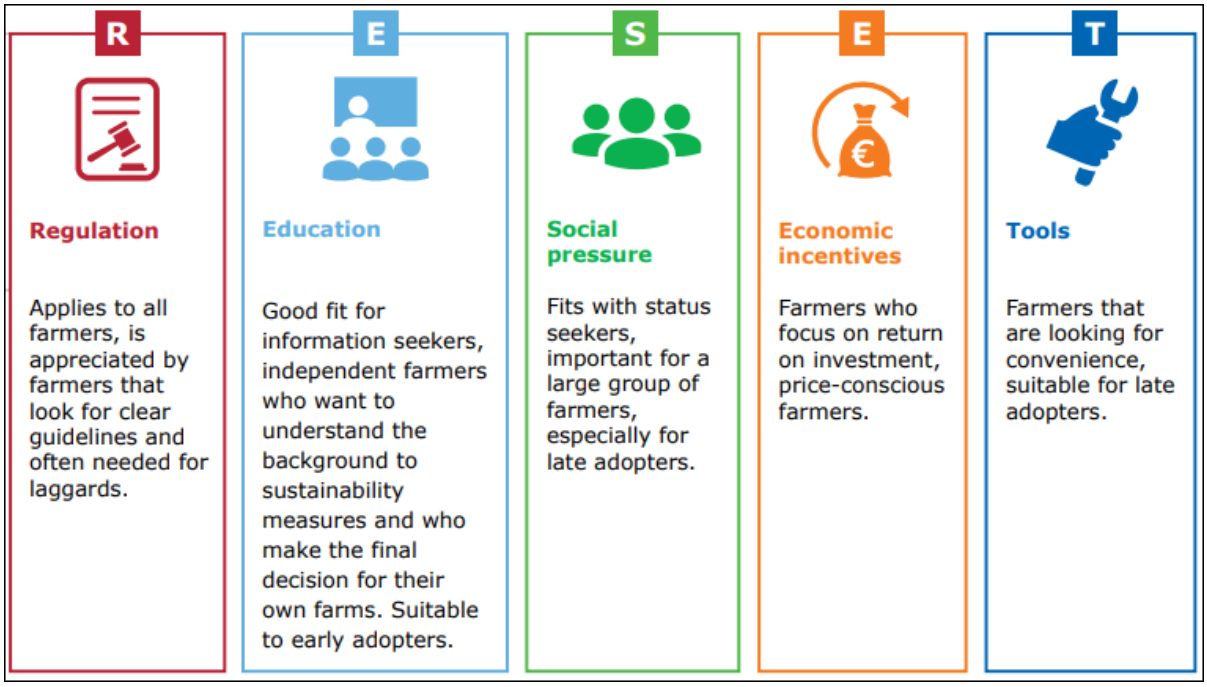

Figure 3-6: RESET intervention pillars

Source: Reijs, et al. (2021)

A case study conducted on the management actions taken to improve biodiversity and environmental outcomes has indicated that the actions, irrespective of the proportions, were achieved sooner when the actions were prioritised (MacLeod, 2019). This again illustrates the need for priority setting, as producers and agribusinesses might shift their focus, based on the priorities that impact on the agri-operating environment.

3.5 PESTEL ANALYSIS FRAMEWORK

It is critical to consider and reflect on external factors that influence and disrupt the agri-operating environment (Yüksel, 2012). Figure 2-4 in Chapter 2 illustrated the point that external factors are unique to every environment. The development of the PESTEL + F Analysis Framework provides an opportunity to prioritise business operations, as critical information empowers a business to foresee the circumstances and situations that might be encountered soon (Yüksel, 2012).

The PESTEL + F Analysis Framework analyses the impact of Political, Economic, Social, Technological, Environmental, Legal and Finance factors (Fosher, 2018) that a producer and agribusiness are exposed to. "*This analysis can be used as a strategic tool to improve the agricultural environment*" (Mihailova, 2020). Figure 3-7 below does not incorporate the Finance factors, but, owing to developments in the global arena in this field, the importance, development, and increased levels of capital requirements, strengthen the need to add Finance factors into this framework (Pratama, et al., 2020).

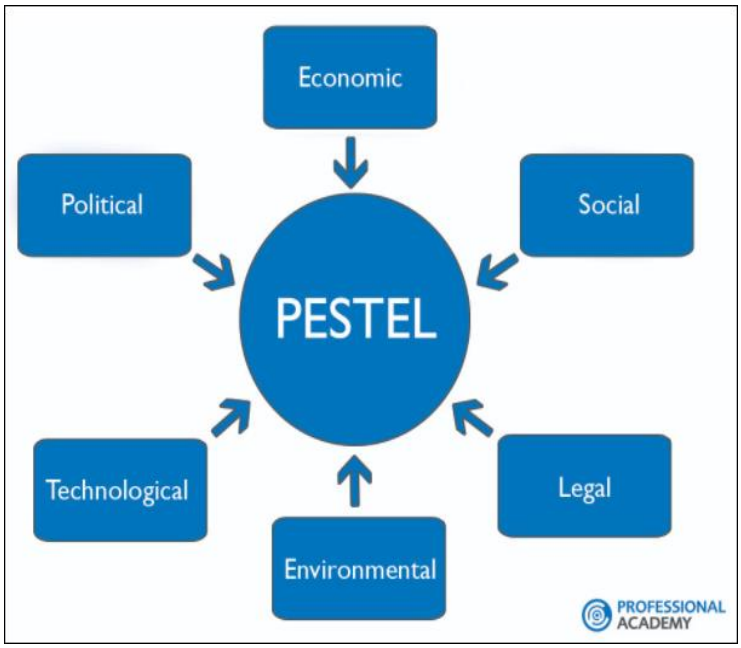

Figure 3-7: PESTEL analysis
Source: Professional Academy (2022)

Greater emphasis is being placed on a business's ability to gain access to the availability and conditions of finance. Accessibility is needed to ensure that the correct form of finance (i.e.

short-, medium- and long-term finance) is available for production and other farming purposes. The availability and conditions of finance determine the level of access to finance or loan funding, the financial structuring of the agribusiness, blended agricultural finance being leveraged, the ease of doing business, coping with high production and transport costs, increasing capital requirement costs, the availability of collateral and repayment capacity, and level of liquidity to operate the farming and agribusiness. Financial literacy is extremely important, as it underlines how financial decisions could be improved and implemented within the business (Grohmann, et al., 2018). The simultaneous improvements in technology and the fourth industrial revolution make finance more complex (Lusardi, 2019). Accordingly, gaining financial knowledge would assist producers and agribusinesses to implement informed financial decisions. Further information is provided in Chapter 4.

Using the PESTEL + F Analysis Framework is unique to every sector. This emphasises the point that under the seven categories, the sub-categories that are chosen will differ according to the environment in which the business operates. Table 3-1 below indicates an example of the different sub-categories chosen for different businesses. For illustrating the difference between different businesses, the Finance factors are omitted, but are included in the study questionnaire.

Table 3-1: Different sub-categories

Case study of a business in Ankara		**Analyses of the green building industry**	
Categories	**Sub-categories**	**Categories**	**Sub-categories**
Political	Political stability	**Political**	Tax policy
	Relations with European Union		Customs policy
Economic	Investment incentives	**Economic**	Average income per capita
	Current deficit		Real estate prices
Social	Level of education	**Social**	New customer needs
	Will to work of the people		Growth rate of population
Technology	New patents	**Technology**	Innovation possibilities
	Adaptation to new technologies		Presence of qualified construction contractors
Environmental	Transportation infrastructure	**Environmental**	Energy infrastructure and efficiency
	Public health		Geographic location
Legal	Consumer rights	**Legal**	Regulations on import
	Competition laws		Consumer related regulations

Sources: Yüksel (2012); Ulubeyli et al. (2019)

There is clear evidence that the PESTEL Analysis Framework can be implemented in various areas owing to different sub-categories being identified. After quantifying the external factors identified within the sub-categories, the priorities can then be determined. This illustrates the point that linking the PESTEL analysis and priorities concurrently, identifies which external factors influence business operations, directly or indirectly. This linkage can lead to better-informed strategic and operational decision-making to ensure the successive growth and sustainability of the agri-operating environment. It is also relevant to policy making.

A study in Bulgaria implemented the PESTEL Analysis Framework to analyse key factors impacting on the agri-operating environment. After an elimination process of identifying external factors that influence the environment, a further elimination was done to identify which categories carried higher priority. Legal and Environmental factors were given higher priority and needed to be treated first, according to the urgency required, as compared with the factors in the other categories (Political, Economic, Social, and Technological) (Mihailova, 2020). The study also indicated that the agri-operating environment of Bulgaria had implemented the PESTEL Analysis Framework because of the changes occurring at the national and regional levels (Mihailova, 2020). This supports the fact that a distinction must be made between regions, since the priorities, along with the PESTEL analysis, can differ according to the geographic indications.

Furthermore, interviews with key players in the wine industry and secondary data from wine businesses in North Macedonia, applied the PESTEL Analysis Framework. The results concluded that slow incorporation of new developed technologies as well as poor environmental standards (Saltamarski, 2020) influenced the decision-making process. It illustrated that Technological and Environmental factors need to be considered first, as a higher priority is assigned.

3.6 PESTEL + F ANALYSIS FRAMEWORK FOR SETTING PRIORITIES

Table 3-2 below illustrates a PESTEL + F Analysis Framework that is specifically generated for prioritising the external factors that influence the South African operating environment for producers and agribusinesses. The framework only mentions the factors, without illustrating examples of the factors identified. The completed framework can be seen under Annexure A.

Table 3-2: PESTEL + F Analysis Framework

Political	Economic
1) Political certainty in the country in terms of the agricultural sector. 2) Government programmes that offer real support to businesses. 3) Finalisation of the land reform and restitution process for the stability and growth of the agricultural sector. 4) Corruption and crime that your business is exposed to. 5) Addressing illegal migrant worker issues in the agricultural sector. 6) Poor service delivery that your business is affected by due to political infighting, factionalism, corruption, etc. 7) Coordination of smallholder farmer development and commercialisation in South Africa. 8) The consequences of the Russia-Ukraine war. 9) Reliance of your business operations on the performance of the Government. 10) Achieving government policy alignment and actual implementation across government levels and spheres to support business operations. 11) The public image and reputation of the agricultural and food sector should be enhanced and promoted to the general public.	1) Expansion of business footprint into other territories. 2) Adaptability of your business to a VUCA environment. 3) The development of export opportunities through trade agreements and business linkages with exporting objective. 4) The current state of the economy impacting on your business profitability. 5) Business dependence on the state of the regional economy. 6) Business dependence on the state of the global economy. 7) Rapid interest rate hikes in South Africa. 8) Business confidence for agribusinesses operating in South Africa. 9) Continued economic impact of COVID-19 regulations from 2020–2022. 10) Risks in your business. 11) The decline in disposable income and poor economic growth in South Africa. 12) Level of interdependency on other stakeholders in the supply chain. 13) High levels of unemployment, inequality, and poverty in the country. 14) High taxes and administered costs. 15) Impacts of electricity and water shortages. 16) Adding value in your business.
Social	**Technological**
1) Adding value in your business. 2) Crime and corruption in the country. 3) The socially cohesive role of the agricultural sector in South African society. 4) Availability of skilled and experienced Human Resources in the agricultural sector. 5) The integration and inclusion of small-scale and emerging farmers for the sustainability of the agricultural sector in South Africa. 6) Promoting agriculture as a career among the youth. 7) The agricultural sector achieving the goals of the National Development Plan (NDP) of 2011/2, which aims to eliminate poverty and reduce inequality by 2030.	1) Investment in advanced technologies to improve performance of your business. 2) Willingness to adapt to advanced technologies. 3) Planning and implementation of renewable energy solutions. 4) Leveraging off high-speed, high tech, communication networks. 5) Readiness for the fourth industrial revolution. 6) Investment in information and marketing platforms. 7) Having government programmes to support the funding of technological development in the agricultural sector. 8) Research institutes/universities for the development of technology and technological solutions in the agricultural sector. 9) Creating a single, open access data platform for the agricultural sector to share information and maximise the benefits of data-enabled decision making and big data. 10) Implementing effective mechanisms to improve the extension of best practices and new innovations to on-farm practices. 11) Enabling rural businesses and communities to access world-standard connectivity speeds to maximise the benefits of all digital technologies that become available in rural areas. 12) Accelerated investment in innovation and technology.

Environmental	Legal
1) The current state of infrastructure on your ability to run the business operations. 2) Pursuing a "Net Zero" Carbon strategy. 3) Having a climate change strategy for the agricultural sector to manage climate change in South Africa. 4) Recent disruptions and environmental damage in the country. 5) Strategy to cope with and manage environmental disasters that could increase in frequency and impact on the business. 6) Developing and implementing an environmental sustainability strategy for your business. 7) Exposure to agricultural pests and diseases that have a large impact on the sector. 8) Dependence on access to sufficient and high-quality water. 9) Implementation of "improved agricultural practices" in your business.	1) Broad-Based Black Economic Empowerment (BBBEE) for the agricultural sector in South Africa. 2) The implementation of BBBEE in your business. 3) Effective enforcement of current legislation to support the business operations in South Africa. 4) Ability of the business to adapt to new or changing laws and regulations regarding the agricultural and food sector. 5) Sufficient and efficient current trade agreements for the import of goods. 6) Sufficient and efficient current trade agreements for the export of goods. 7) More-efficient regulatory processes and compliance to requirements. 8) Mandating and enforcing minimum standards for health and safety practices for agricultural and food products, together with regular compliance reviews and significant consequences for those found to be in breach of the standards. 9) Ensuring standards and regulations for environmental protection to enhance South Africa's international reputation to produce sustainably produced food in agriculture, forestry and fisheries. 10) Collaborating with government around policy settings for biosecurity through Government Industry Agreements and accepting a share of cost for management and response to incursions. 11) Legal and ethical support of consumer warranties, protection, norms and rights as a responsibility of the whole food chain.
Finance	
1) Innovative and tailor-made financial products and tools suited to the agricultural production system. 2) Access to and affordability of risk management tools to support the continuity of the agricultural sector. 3) Declining profitability and competitiveness of Primary and Secondary businesses. 4) Rapidly increasing capital requirements and declining availability of collateral to operate in the agricultural value chain. 5) The ease of doing business, business linkage promotion and business development. 6) The need to secure external investment to meet capital, financing, and expansion requirements of the business. 7) Consolidation of businesses to achieve economies of scale.	

Source: Compiled by author

Experts have verified the contents of the PESTEL Framework, which portray the variables that influence the current state of the agri-operating environment in South Africa. The priorities were identified by using these factors in an electronic questionnaire, where respondents ranked each factor according to the degree of importance. This is explored further in Chapter 4.

3.7 SUMMARY

There is no doubt that businesses must aim to proactively understand and manage disruptive events. Knowing which external factors significantly influence the agri-operating environment enables a business to develop risk management strategies. This chapter has built on Chapter 2 and specifically sets the scene to implement the PESTEL + F Analysis Framework.

Moreover, it is evident that priorities and the PESTEL + F Analysis Framework work concurrently, which assists in identifying pivotal external factors. In addition, a business is constantly exposed to unfavourable consequences (uncertainties). The RESET intervention pillars can be applied to ensure the execution of the prioritisation process. Chapter 4 builds on Chapter 3, which explores the framework to strengthen the need for priority setting, which is useful for the strategic and operational decision-making process and management of the agri-operating environment.

CHAPTER 4:
ANALYSING THE PRIORITIES IN THE AGRI-OPERATING ENVIRONMENT

Within the agri-operating environment, the key focus is to understand the external factors and how these change the priority setting for producers and agribusinesses (Wieliczko & Floriańczyk, 2021).

The purpose of this chapter is to apply the PESTEL + F Analysis Framework. This chapter probes the notion that setting priorities that are identified through the framework is influenced by a set of pivotal external factors that impact on the agri-operating environment. Identifying the pivotal external factors will determine how producers and agribusinesses could position their strategic and operational decision-making process for achieving continuous growth and sustainability.

4.1 DATA MANAGEMENT PLAN

Data management plays a significant part in this study. Implementing a constructive plan to manage the data ensured that informed strategic and operational decisions and conclusions could be drawn from the data captured (Aubin, et al., 2020). The data was managed electronically via Survey Monkey (an electronic survey tool) and extracted to Excel to analyse and interpret the results.

Furthermore, the results were visually represented using histograms and radar charts with a short description. Radar charts illustrate multivariate data on a two-dimensional graph. Each angle represents a different variable, and the frequency of each variable is represented by the magnitude of the blue line. The higher the frequency, the larger the radius, indicating that the most important priorities are plotted further away from the centre. This will be illustrated throughout Chapter 4 and partly in Chapter 5.

4.2 ASSUMPTIONS AND STUDY LIMITATIONS

The use of the electronic questionnaire, data gathering, and subsequent analyses allowed determinations to be made concerning the growth and sustainability of the agri-operating

environment. This was enabled by the respondents providing their opinions on the open questions and by ranking the importance of the study statements provided in the questionnaire. Through this process, the assumption can be made that specific factors under the PESTEL + F Analysis Framework were ranked according to their relative importance. Thus, this indicated what factors should be treated as priority, not only to ensure that informed strategic and operational decisions could be made and implemented, but also to advance the prosperity for producers and agribusinesses.

The limitation of the study is that respondents could find the electronic questionnaire challenging to complete and they had the option to decline to complete it at any point in time. This could ultimately limit the success of being able to fully analyse the prioritisation of the pivot external factors that influence the agricultural operating environment.

4.3 ASSESSMENT OF FACTORS THAT DETERMINE PRIORITIES

The PESTEL + F Analysis Framework is a tool that analyses and determines the influences of external factors, and follows a filtering process to narrow down and prioritise the factors. This process assists to separate factors that are not that influential on the agri-operating environment (Ray, et al., 2022). Thus, the Framework only illustrates the prominent and essential factors that need immediate attention.

4.3.1 Methodology and data

To assess priority factors, the tailor-made PESTEL + F Analysis Framework followed a two-step process. Firstly, stakeholder consultation and secondly, a structured electronic questionnaire.

Step 1: Stakeholder consultation

Stakeholder consultation assists to identify, narrow down and prioritise external factors, as the stakeholders have distinct knowledge of the agri-operating environment (Strasser, 2017). The Delphi technique was used to assist in the stakeholder consultation. This technique collects the opinions and consensus from the experts that will assist to rank the major external factors that

impact on the priorities. The four characteristics that distinguish the Delphi technique from other techniques are: the (1) anonymity, (2) inputs from experts operating in the environment, (3) the statistical group response from experts, and (4) the controlled recapitulation of data feedback (Dufresne, 2022). In addition, the Delphi technique contributes in analysing risks that will assist in priority-setting as a result of the fivefold offering, which comprises (1) identification and quantification of the risks, (2) analyses of the views and perception of experts, (3) stimulation of a broad communication process, (4) identification of outlier opinions and factors that could potentially be removed, and (5) paving the way for the implementation of scenario planning and development (Markmann, et al., 2013). Twenty key informants, with expertise in the agricultural environment, were contacted and asked to evaluate the external factors as well as the degree of the priority of each of the factors identified. This evaluation followed a phased Delphi process as these twenty key informants had the opportunity to provide their inputs on the survey which was followed by a second phase of the survey which portrayed the inputs of the informants. The informants had a second opportunity to provide inputs of which the final electronic questionnaire was developed.

Step 2: Electronic questionnaire

The questionnaire, which is incorporated into the PESTEL + F Analysis Framework, indicates the external factors that are identified as being priorities in the agri-operating environment. Annexure B depicts the questionnaire which was mailed to respondents with expertise in the agri-operating environment. This questionnaire starts with a section where respondents are briefed on what the questionnaire entails. The respondents were requested to rate each of the external factors identified under each category in terms of the degree of importance and urgency (priority) in the agri-operating environment. A five-point Likert scale was used, namely “i) not a priority, ii) low priority, iii) neutral, iv) high priority, and v) essential priority”. If any challenges and or questions raised from completing the questionnaire, the respondents were provided with contact details to assist in completing the questionnaire. Additionally, an open section of the questionnaire offered the respondents the option to provide their inputs on any additional priorities that had not been captured in the questionnaire. The aim of the electronic questionnaire is to obtain data that would enable the identification of the top 15 priorities that impact on the agri-operating environment (see Annexure B for the Questionnaire).

Based on the respondents' replies, the initial questionnaire was analysed by filtering the data to reach a consensus. Only the external factors identified as being essential priorities were used and further reduced to the overall top 15 priorities that impact on the agri-operating environment in South Africa. In addition, different groupings were implemented to identify whether the priorities would differ (Reijs, et al., 2021). Table 4-1 below indicates what the practical filtering process involves.

Table 4-1: Practical filtering process

	Filtering process
I.	A physical count of the frequency of responses.
II.	Identifying the responses that were ranked as the most essential priorities.
III.	Rearrange the most essential priorities.
IV.	Evaluate the frequency of the most important priorities.
V.	Remove all the other responses that were not ranked as the most essential priorities.
VI.	Conduct an analysis on the remaining external factors to determine which factors are seen as the essential priorities in the agri-operating environment.

4.3.2 Target audience and sample

It is important to "target" the correct group of possible collaborators to ensure that the capturing and analysing of data is relevant to them, as having experience in the specific environment. In this study, respondents were selected based on their experience and knowledge in the agri-operating environment in South Africa. This provides direction and ultimately leads to better, knowledgeable responses (Santiago, et al., 2019).

Selecting the appropriate sampling method determines the accuracy of the data collected, which directly influences the results (Campbell, et al., 2020). Non-probability samples were implemented in this study because the respondents were not randomly selected. This means that specific respondents were selected to engage in this research study (Lamm & Lamm, 2019). This study focuses on two non-probability samples, namely the snowball sampling and purposive sampling approaches.

Snowball sampling is the process of selecting respondents to complete the questionnaire. These selected respondents then recommend other participants who fit the research criteria. This process was repeated to increase the number of respondents (Acharya, et al., 2013). The snowball sampling was combined with the purposive sampling approach, as the respondents have specific characteristics and knowledge that yield useful information (Parker, et al., 2019). Therefore, these two non-probability samples were used, based on the expertise of respondents operating in the agricultural environment.

This questionnaire was sent to 120 respondents in the agri-operating environment. Overall, 93 respondents completed the questionnaire **(**a response rate of 77%). There was a broad spectrum of respondents (see Figure 4-1 below), from board members, top management, middle management, general staff, entrepreneur not employed in business or not a producer, to agricultural consultants (producers). If a respondent did not fall into one of these categories, the respondent was able to comment and specify their position within the business. These results indicated a researcher, agricultural economist, nutritional technical adviser, and an agribusiness consultant. Subsequently, 38.03% of the respondents were producers – a reflection that there are more producers than agribusinesses in South Africa who responded.

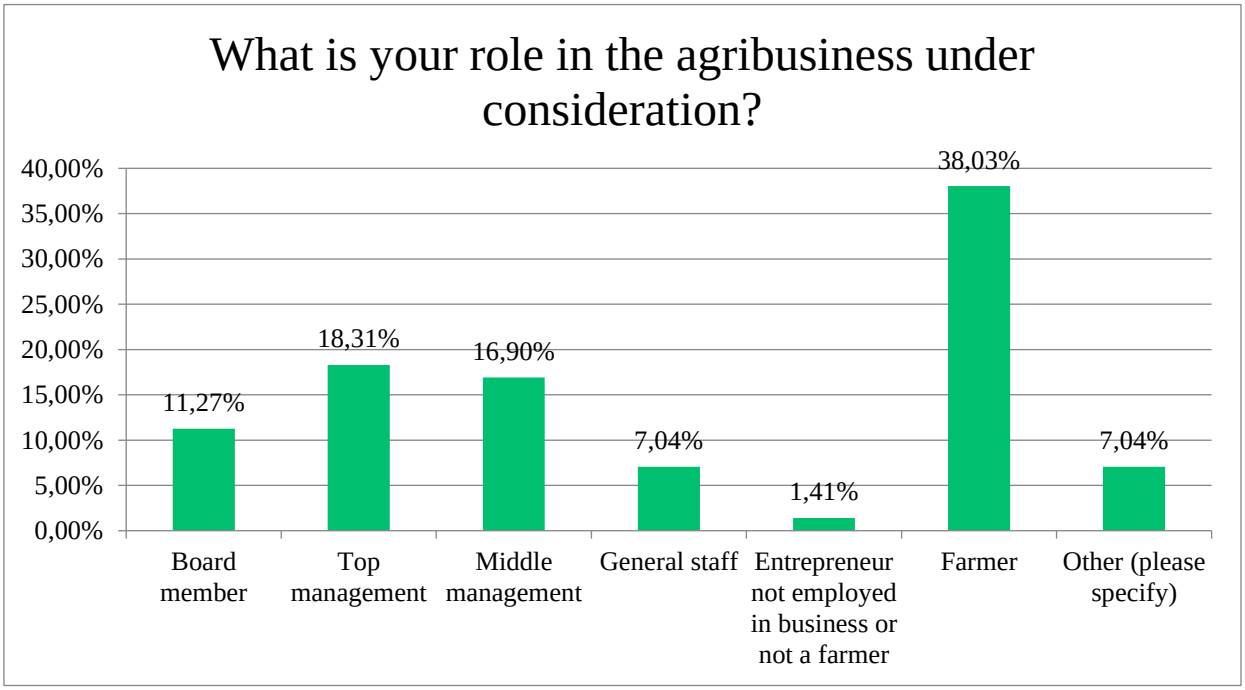

Figure 4-1: Spread of respondents

4.3.3 Result of open-ended questions

The respondents were asked to mention any other factor(s) that could potentially be seen as a priority that was not mentioned within the questionnaire, however, weights were not assigned nor statistically measured. However, these priorities are worth noting that could potentially be considered, investigated, and measured in future studies. This can lead to businesses making better-informed strategic and operational decisions about priorities and business operations. The findings of the open-ended questions indicated the following priorities (among others) that are recommended to be investigated further in the future:

1) Improvement in logistics.
2) On-the-job training opportunities.
3) Inter-African trade and cross-border efficiencies.
4) Proactive partnerships between commercial farmers and young, emerging farmers.
5) Safety and security of farms.
6) Leadership in agriculture at different levels.
7) Access to and feedback from government.
8) Improved public and private partnerships.
9) High level (private sector/local councils/government) coordination regarding infrastructure development/repair.
10) Net zero, carbon footprint and sustainability targets of large fast-moving consumer goods (FMCGs) & multi-national companies (MNCs).

4.3.4 Follow-up report

Figure 4-2 below indicates the percentage of respondents who would appreciate receiving a follow-up notification of the results obtained from the questionnaire, as well as the percentage of respondents who did not want to receive the information. Based on the percentages, almost 70% of the respondents would appreciate receiving notification of the results and information obtained. This emphasises the importance of future investigations into the agri-operating environment of South Africa.

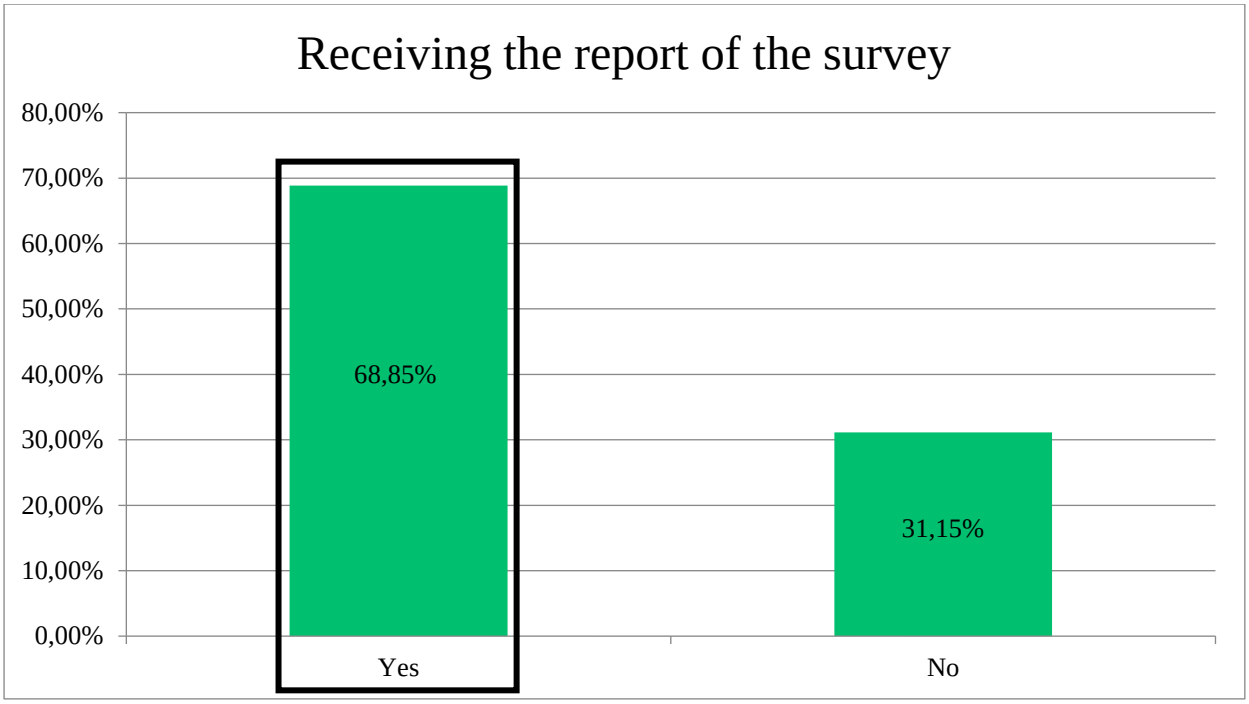

Figure 4-2: Response rate for report

4.3.5 Profile of agribusinesses

Respondents were asked to indicate the head office, as well as the regional and country footprints, of their agribusiness. Figure 4-3 below indicates that Gauteng (59%) was the province where most head offices were located. However, Figure 4-4 below indicates that the provincial and country footprints of the agribusinesses were spread over the entire country, neighbouring countries (such as Botswana, Eswatini, Namibia and Zimbabwe) and internationally (such as Australia, Kenya, Uganda, Angola and Ghana). Accordingly, this illustrates that the agricultural sector of South Africa is diverse, as business activities are not geographically located in one place.

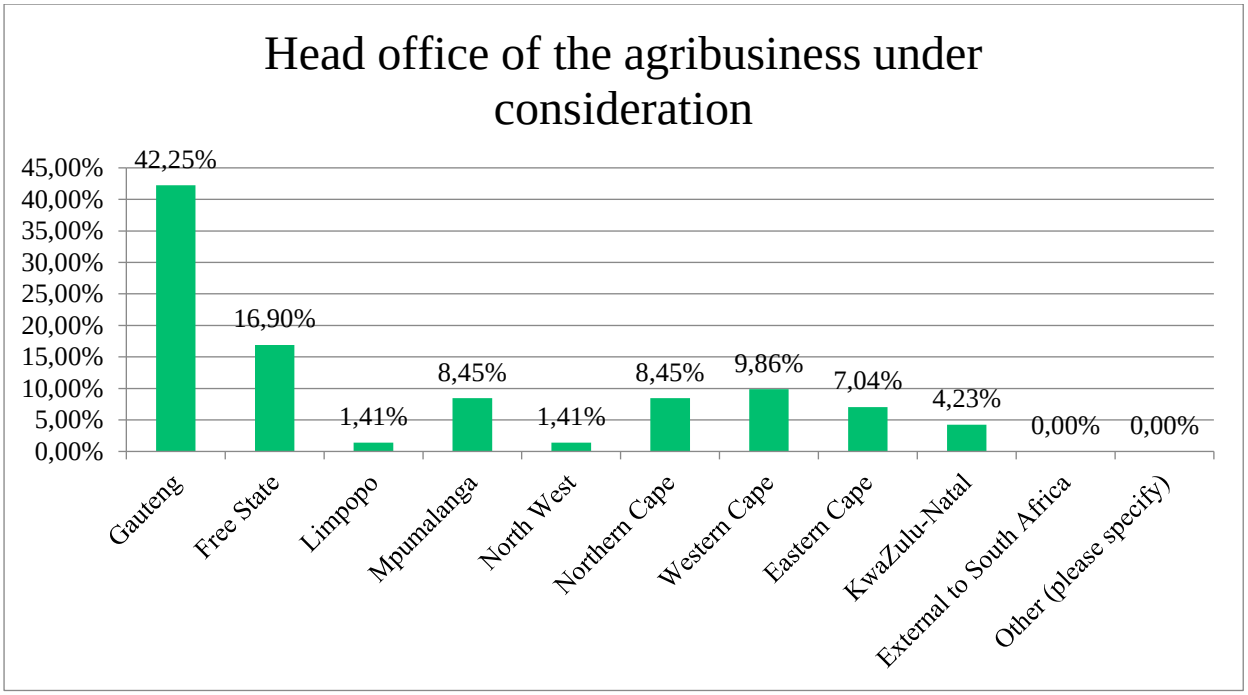

Figure 4-3: Head office

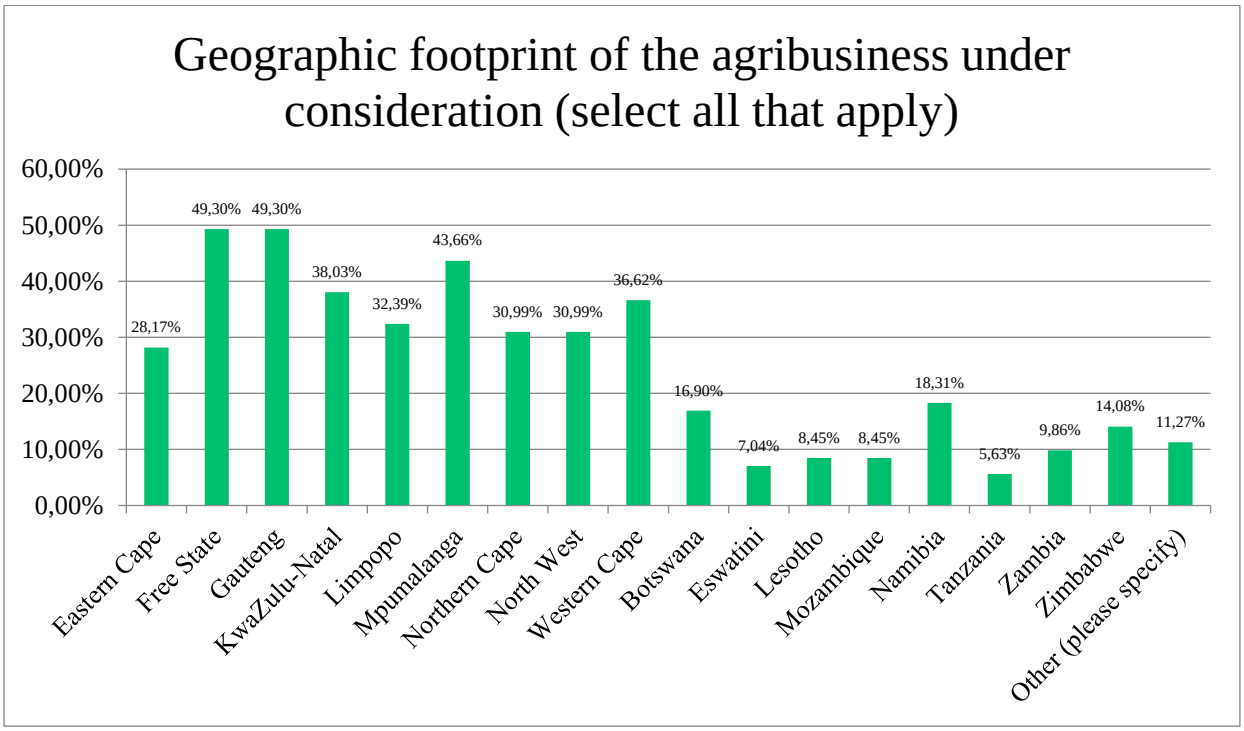

Figure 4-4: Geographic footprint of businesses

4.3.6 Sub-sector

Furthermore, respondents were asked to indicate in which sub-sector their agribusiness operates. More than one option could be selected, and the results illustrate a high concentration

in the red meat sub-sector. However, it is important to recognise that the priorities for agribusinesses will differ according to their sub-sectors because of aspects such as differences in production seasons and weather conditions (see Sub-section 2.6.1). Other sub-sectors included wine, tobacco, grapes, potatoes, and game. Figure 4-5 below indicates the different sub-sectors within which agribusiness operate.

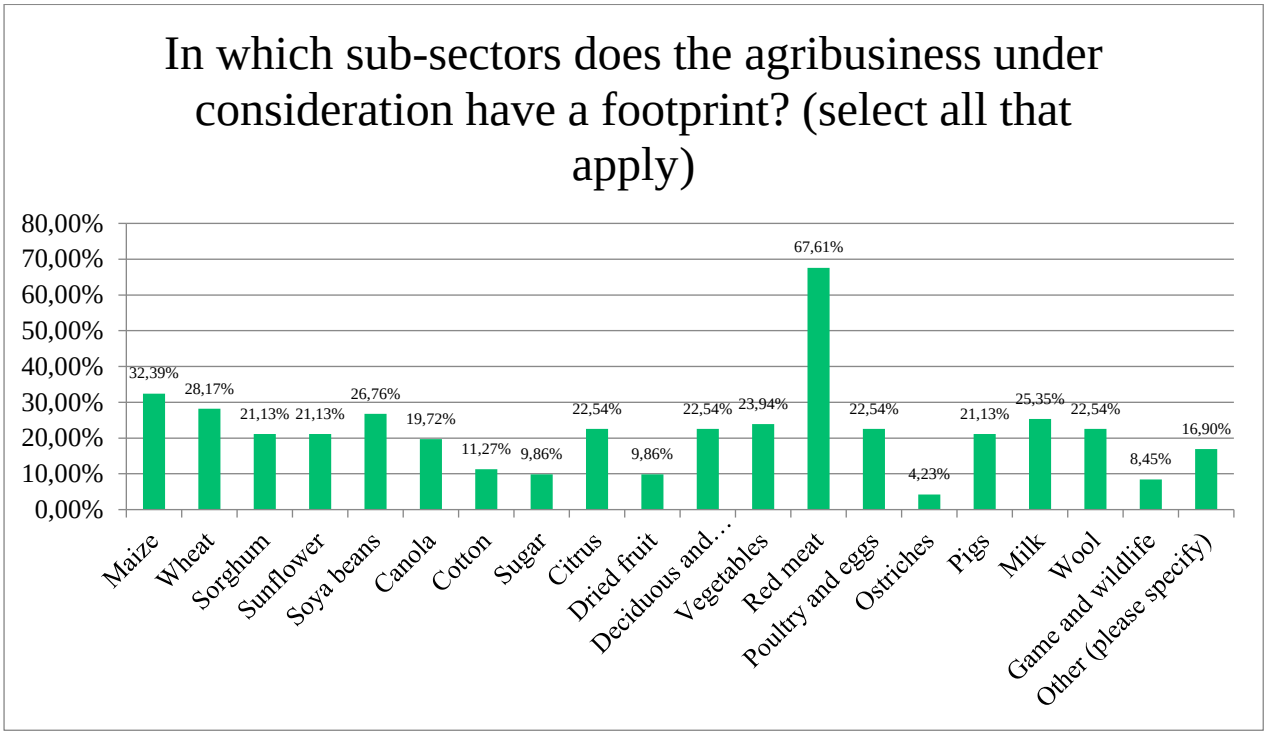

Figure 4-5: Sub-sectors

4.3.7 Workforce and business turnover

The workforce varies from only a few (1–10) employees to more than 250 employees. This illustrates a wide spread in the numbers of employees between micro-, small-, medium-, and large-scale agribusiness. Figure 4-6 below indicates the various workforces of the agribusinesses.

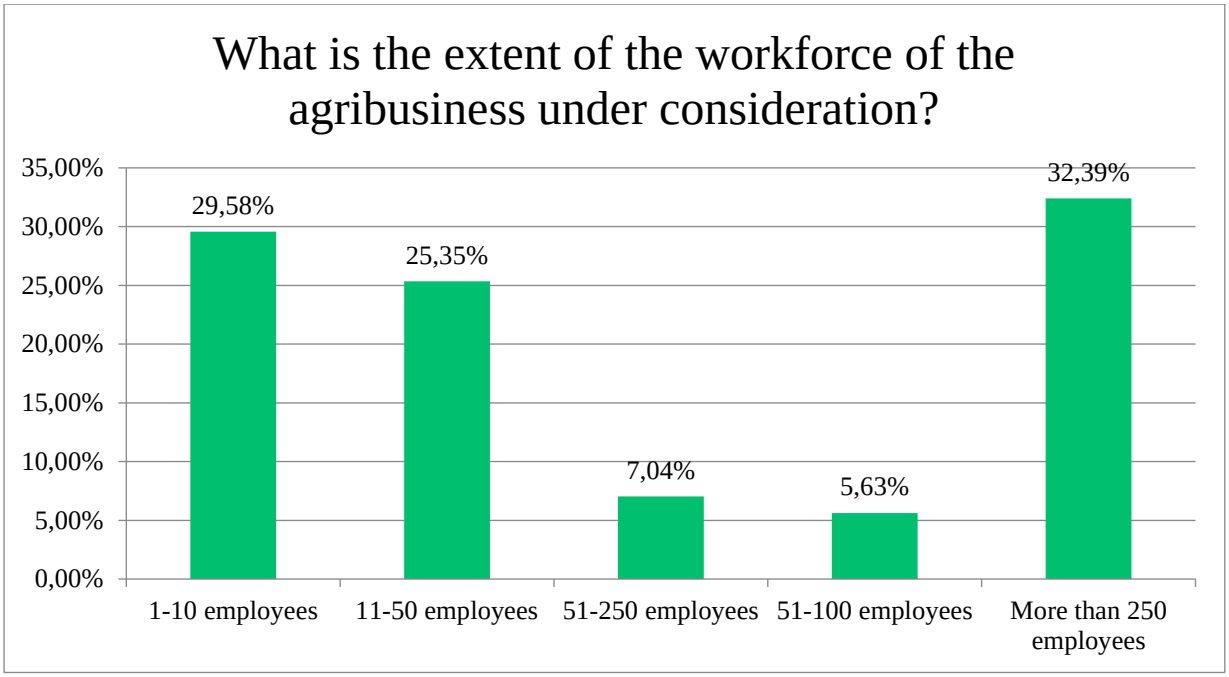

Figure 4-6: Workforce of agribusinesses

Accordingly, the spread of employees depends on the economic sector in which the agribusiness operates. Table 4-2 below illustrates the economic sector and where the bulk of the business turnover is being generated. Primary agriculture is the outlier, compared with the other economic sectors.

Table 4-2: Business turnover

Economic sector	Percentage of the business turnover
Primary agriculture	64.79%
Finance and business services	11.27%
Wholesale	9.86%
Retail	8.45%
Community, social and personal services	4.23%
Transport, storage, and communication	1.41%

It is, however, important to compare the economic sectors – the fact that the bulk of the turnover was generated in the primary agriculture does not necessarily mean that the workforce is also large (250 employees). The comparison is explained in Chapter 5. Moreover, the business turnover details were sorted into four categories to reflect those categories published in the government gazette, namely micro-, small-, medium-, and large-scale (de Wet, 2022).

Although the respondents indicated that primary agriculture is the main economic sector where business turnover is generated, there were larger turnovers made within the other economic sectors, as compared with the primary agriculture sector. Table 4-3 below highlights the total turnover ratios, illustrating that economic sectors such as wholesale, retail, and transport have larger turnovers because of their having larger businesses, as compared with primary agriculture.

The explanation of Table 4-3 is as follows:

- **Column 1:** Illustrates the sector or sub-sector within which the agribusiness operates, such as agriculture, wholesale, and retail.
- **Column 2:** Illustrates the size of the business – micro, small, medium, and large (de Wet, 2022).
- **Column 3:** Illustrates the numbers of full-time paid employees (indicates the size of the workforce).
- **Column 4:** Indicates the annual turnover (in Rand millions) according to the sector or sub-sector, as well as the workforce (full-time paid employees) of the agribusiness.
- **Column 5:** Illustrates the results (expressed as a %) within which categories the agribusiness fall, as provided by the respondents.
- **Row 1:** Focus on agriculture.
- **Row 2:** Focus on wholesale.
- **Row 3:** Focus on retail.
- **Row 4:** Focus on transport, storage, and communication.
- **Row 5:** Focus on finance and business services.
- **Row 6:** Focus on community, social and personal services.

Table 4-3: Turnover indicators

Columns	1	2	3	4	5
Rows	**Standard Industrial Classification according to sector**	**Business size**	**Full time employees**	**Turnover Ratios (R million)**	**Responses (%)**
1	**Agriculture**	Micro	0-10	≤ 7 m	31.91%
		Small	11-50	≤ 17 m	19.15%
		Medium	51-250	≤ 35 m	14.89%
		Large	More than 250	> 35 m	34.04%
2	**Wholesale**	Micro	0-10	≤ 20 m	14.29%
		Small	11-50	≤ 80 m	0.00%
		Medium	51-250	≤ 220 m	28.57%
		Large	More than 250	>220 m	57.14%
3	**Retail**	Micro	0-10	≤ 7.5 m	0.00%
		Small	11-50	≤ 25 m	20.00%
		Medium	51-250	≤ 80 m	0.00%
		Large	More than 250	> 80 m	80.00%
4	**Transport, storage, and communication**	Micro	0-10	≤ 7.5 m	0.00%
		Small	11-50	≤ 45 m	0.00%
		Medium	51-250	≤ 140 m	50.00%
		Large	More than 250	>140 m	50.00%
5	**Finance and business service**	Micro	0-10	≤ 7.5 m	50.00%
		Small	11-50	≤ 35 m	25.00%
		Medium	51-250	≤ 85 m	0.00%
		Large	More than 250	>85 m	25.00%
6	**Community, social and personal services**	Micro	0-10	≤ 5 m	50.00%
		Small	11-50	≤ 22 m	10.00%
		Medium	51-250	≤ 70 m	20.00%
		Large	More than 250	>70 m	20.00%

Source: Zulu (2019)

This ultimately illustrates the point that certain aspects within the chain have larger players, when compared with others. This is clear from the differences between the primary agriculture, wholesale, retail, and transport sectors. In theory, the sectors that are mentioned in Column 1 of Table 4-3 above differ within the operating environment, as the management of the perceived environment for a large business differs when compared with a small business. Therefore, the priorities will differ, depending on the activity that a business specialises in, as diversity exists within the environment. These differentiations have been related and noted in literature (see Section 3.4).

4.4 FACTORS INFLUENCING THE DEGREE OF PRIORITY

The motivation for using this specific analysis was, firstly, that the degree of importance (priority) differs between a range of factors that influence the strategic and operational planning and decision-making processes, and secondly, the operating environment that is becoming more complex because of the operations taking place within the VUCA phenomenon.

The PESTEL + F Analysis Framework connects and measures specific external factors relevant to the agri-operating environment that are not generalisable to another environment because of the different sub-categories that can be identified within the PESTEL + F Analysis. Capital requirements (as discussed in Section 2.6.1 and 3.5) have been added to the academic PESTEL Analysis because capital influences the performance of business activities (Pratama, et al., 2020).

4.4.1 The outline of the sub-categories

Political factors – Politics can potentially influence business operations because the political climate at any point in time might impact on the fundamental practices and performance of a business (Okereke, et al., 2012). Government plays a significant role in the political state of the country, as businesses are exposed to the actions of the Government.

These factors include the following:

1. The provision of political certainty in the country.
2. Government programmes that offer real support to businesses.
3. Finalisation of the land reform and restitution process for the stability and growth of the agricultural sector.
4. Poor service delivery, which a business is affected by, attributable to political infighting, factionalism, corruption, etc. An example includes municipal infrastructure that consists of communication networks, waste management, roads, main water lines, and power outages.
5. Reliance of the business operations on deficient policies and performance of the Government. Examples are ESKOM, Transnet, PRASA, facilitating the ports, maintenance of roads, issuing of water licences, and management of foot and mouth disease, etc.

Economic factors – The Food and Agriculture Organisation (FAO) estimates that there will be over 9 billion people in the world by 2050. This has a significant impact on the economy, as there will be an increase in the demand for food, water, and services (Bahar, et al., 2020). The adaptability of a business to a volatile, uncertain, complex, and ambiguous environment is extremely important for agribusiness operations in the economy.

These adaptability factors include the following:

1. Expansion of the business footprint into other territories. Examples: Investment in other provinces, continents, countries, territorial diversification, cost of doing business.
2. High taxes and transaction costs administered. Examples include VAT, excise duties, electricity tariffs, rates and taxes, and banking fees.
3. The current state of the economy on business profitability. Examples include slow growth in GDP, high inflation, volatile exchange rates, unemployment, and interest rates.
4. Business confidence for agribusinesses operating in South Africa.
5. The development of export opportunities through trade agreements and business linkages with exporting objectives. Examples are the Africa Free Trade Agreement, partnership development, expansion of footprint.

Social factors – Poverty and inequality in incomes levels can present challenges to business for operating at full capacity because of the resulting social unrest and crime in South Africa. In addition, rural and underdeveloped areas are still faced with major concerns of Aids and HIV, which affect the productivity of the workforce (Azomahou, et al., 2016). Higher economic growth in South Africa will not be possible without addressing problems such as low education and illiteracy, and especially where agriculture is most likely to play an important role in resolving economic challenges (Sajjad, 2022a).

These factors include the following:

1. Crime and corruption in the country.
2. Availability of skilled and experienced human resources in the agricultural sector. Example: Farmers, extension workers, farmworkers, technical agricultural expertise, processing, etc.

3. Promoting agriculture as a career among the youth.
4. The agricultural sector's role in achieving the goals of the National Development Plan (NDP) of 2011/2, which aims to eliminate poverty and reduce inequality by 2030.
5. Agile responses are required by the agricultural and food system to adapt to changing consumer preferences.
6. The socially cohesive role of the agricultural sector in South African society. Examples: ensuring basic food security in the country, stability of the countryside, linking urban consumption areas to rural production areas.

Technological factors – Technological improvements decrease the time and effort of communication and production, as well as productivity (Tortorella, et al., 2019). Puaschunder (2020) refers to the digitisation of the world as the "*ongoing globalisation in digital spaces*". The integration of technology into the agricultural sector unlocks access to important information, access to mobile apps, and to new and more efficient farming practices.

These factors include the following:

1. Investment in advanced technologies to improve the performance of a business. Examples are new machinery, GPS, traceability software, mobile apps, and drones.
2. Willingness to adapt to advanced technologies. Examples include soil and water sensors, weather tracking, IT programmes, GIS, digitisation, precision farming, and digitisation of banking.
3. Planning and implementation of renewable energy solutions. Examples are solar panels and wind turbines.
4. Readiness for the fourth industrial revolution. Examples are the willingness to invest in technology, innovative solutions, and readiness to adapt to technological change.
5. Research institutes/universities advocating for the development of technology and technological solutions in the agricultural sector.

Environmental factors – The environment is becoming a more important and even controversial aspect in agri-operations and globally. Economic activities continue to increase in terms of production inputs, industrialisation, digitisation, labour demand and capital

resources. This impacts on the utilisation of natural resources, as economies demand more resources as productivity increases (Khan, et al., 2020).

These factors are set as follows:

1. Pursuing a "Net Zero" Carbon strategy. Examples include using less fuel, cultivating less, transporting less, and promoting carbon sequestration.
2. Recent disruptions and environmental damage in the country. Examples: KwaZulu-Natal floods, difficulties in transporting of goods to ports, delays in delivering goods, and social disruption. Strategies are needed to cope with and manage environmental disasters that could increase in frequency and impact on the business. Examples: insurance, crop insurance, savings, etc.
3. Exposure to agricultural pests and diseases that have a large impact on the sector. Examples: avian flu, swine flu, foot and mouth disease, TB etc.
4. Dependence on access to sufficient and high-quality water.

Legal factors – Businesses must be compliant with government legislation and regulations in South Africa, and must be well informed about local and foreign businesses in order to improve the ease of doing business. The "Transparency International's Corruption Perception Index (CPI)" ranks countries' levels of corruption. This measurement is based on a scale between zero and one hundred. Zero indicates a country that is highly corrupted, and one hundred indicates no corruption in a country. In 2021, South Africa scored 44/100 and ranked at position 70 out of 180 countries (Transparency International, 2022).

These factors include the following:

1. Ability of a business to adapt to new or changing laws and regulations regarding the agricultural and food sector.
2. Greater efficient regulatory processes and compliance with requirements. Examples: export permits, labour law, and administration of statutory obligations.
3. Effective enforcement of current legislation to support the business operations in South Africa. Examples: water rights, contractual agreements, third party/external contractors, protection of IP, property rights and service delivery.

4. Sufficient and efficient current trade agreements for the import of goods. Examples: special safeguards, domestic support, and anti-dumping agreements.
5. The implementation of BBBEE in a business. Examples: Transformation and Empowerment, Skills Development, etc.
6. Land expropriation without compensation and land reform.

Finance factors – Finance is important, as a business requires adequate funds for achieving continuity of its business activities. Without sufficient funds, it would be challenging for a business to operate and generate profits successfully (Madeira, et al., 2021).

These factors include the following:

1. The availability of finance and access to credit is an imperative need for a business. Accessing finance requires establishing creditworthiness to financiers. The current uncertainty in the economic and political environment makes this difficult.
2. Rapidly increasing capital requirements and the declining availability of collateral to operate in the agricultural value chain.
3. The ease of doing business, business linkage promotion, and business development.
4. The need to secure external investment to meet the capital, financing, and expansion requirements of the business.
5. Innovative and tailor-made financial products and tools suited to the agricultural production system.
6. Access to and affordability of risk management tools, e.g. insurance to support the continuity of the agricultural sector. Examples are insurance for drought, floods, hail, civil disturbances, energy, security, and disease outbreaks.

4.4.2 Analysis of the data

The planning, analysing, evaluating, and storing of datasets are extremely important for creating the continuity required to generate informed conclusions from datasets. In statistical terms, moments measure the distribution and central tendency of the data. The moments that are used the most are the mean, variance, skewness of data, and kurtosis (Stoklasa, et al., 2022). This dissertation measured the mean and variance. The central tendency illustrates how values

cluster around the mean, mode, and median. Consequently, this identifies what is most likely going to occur, according to the data. This is useful, as producers and agribusinesses could use moments to conclude how values cluster – showing which external factors are seen as a priority within the operating environment. This dissertation focused on measuring the weighted average, the average, variance, standard deviation, and coefficients of variance to describe, analyse, and evaluate the data.

4.4.3 Weighted average

The weighted average has been applied to determine the pivotal external factors that agribusinesses could prioritise to improve their strategic planning and decision-making processes within their operating environments. Weights were assigned according to the respondents' selection of the degree of importance (priority) (see Section 3.4.).

This was set out as follows:

- If the respondent selected the factor to be an "essential priority", the weight allocated was a five (Essential priority = 5).
- If the respondent selected the factor to be "high priority", the weight allocated was a four (High priority = 4).
- If the respondent selected the factor to be "neutral", the weight allocated was a three (Neutral = 3).
- If the respondent selected the factor to be a "low priority", the weight allocated was a two (Low priority = 2).
- If the respondent selected the factor as "not a priority", the weight allocated was a one (Not a priority = 1).

Thus, if a respondent selected a factor to be more important, the higher the weight allocated was. The weighted average was calculated by Survey Monkey through the completion of the online questionnaire. The weighted average was the main measurement used to analyse and evaluate the dataset. However, it is important to recognise the other statistical measurements.

4.4.4 Average

BYJU'S (2022b) defines average as "the sum of all the numbers in the dataset divided by the total number of values". It is worth noting that the "mean" is often described as the mathematical average or as the average value. Therefore, it can be argued that the mean is a method of describing the average – indicating the central point of the dataset (Anderson, et al., 2015).

4.4.5 Variance

The variance assists to identify the spread between the numbers in the dataset. Accordingly, the larger the spread (or range) is, the more variability there is between the external factors (Scribbr, 2022). This means that respondents did not agree on the specific external factor being a priority in their agri-operating environment. The opposite is also true, the smaller the spread (narrower) is, the less variability there is between the external factors, illustrating that respondents agreed that the external factor is a priority in the operating environment.

4.4.6 Standard deviation

Concurrently, the standard deviation is used with the variance, as it measures the square root of the variance. The advantage of converting the variance to the standard deviation is that it measures the data according to the original data units, making it easier to compare and evaluate the dataset (Anderson, et al., 2015). This determines how close the spread of the values is around the average (mean) – illustrating the clustering and ultimately measuring whether the external factors constitute an essential priority in the agri-operating environment.

4.4.7 Coefficient of variation

The coefficient of variation is expressed as a percentage of how large the variability is between the standard deviation, relative to the average (mean). Therefore, it describes the degree of variability (Pélabon, et al., 2020). The calculation is as follows:

[(Standard deviation/average (mean))] * 100

The larger the percentage is, the more variability there is, illustrating the fact that fewer respondents agreed that the external factor was seen as a priority. The opposite is also true, the smaller the percentage is, the less variability there is.

4.5 DISCUSSION

The 93 respondents represent and have a stake in the South African agricultural operating environment. Because the respondents were not randomly selected, the reliability of the data being captured will be higher. Therefore, this emphasises how important it is to implement the correct sampling methods to ensure the data reliability.

The filtering process of the results followed two streams. Firstly, the business profile, which consists of the background to the agribusiness (geographic location, footprint of the business operations, the sub-sectors involved, size of the workforce and business turnover). This part played a significant role in observing and interpreting an internal assessment of the business. These details concurrently impact on the second stream, as the external factors influence the internal setting of the business. Subsequently, the second stream was based on the PESTEL + F analysis, which comprises 8–12 external factors per sub-category and which had several filtering processes. This will be discussed in Chapter 5. The filtering processes assist to reduce the number of external factors in a structured way to ground the analysis at a narrowed framework. However, to strengthen the dataset, statistical measures were used to ensure the credibility of the data analysis.

4.6 SUMMARY

The key focus of this Chapter was to provide the degree of importance (priority), determined from the external factors that influence the agri-operating environment. Numerous external factors change the state of business operations. Therefore, the ranking of the external factors provides a business with the opportunity to manage and strategically plan its business activities, based on the priorities.

The process required industry experts to review the sub-categories identified within the PESTEL + F Analysis Framework, with the focus on the agri-operating environment in South

Africa. This framework allows producers and agribusinesses to achieve business goals, which would have been challenging to do without prioritising the external factors. Chapter 5 builds on Chapter 4 by strengthening the need for prioritisation, including comparing these priorities with other priority reports in South Africa.

CHAPTER 5:
EVALUATING THE PESTEL + F ANALYSIS FRAMEWORK FOR DETERMINING PRIORITIES

Chapter 5 explores the essential priorities of the PESTEL + F Analysis Framework, as described in Chapter 4. Winston Churchill stated that "*Those that fail to learn from history are doomed to repeat it*" (Virginia Tech, 2022). This statement demonstrates the importance of positioning a business to be able to respond strategically to the unilateral impacts that external factors cause in the macro environment (Strzelczyk & Chłąd, 2017).

The filtering processes assist to reduce the external factors in a structured way to ground the analysis at a narrowed framework. However, to strengthen the dataset, each variable of the statistical measures was compared with the weighted average of each essential priority. In addition, these measures analyse the spread of the data, the central tendency, and variability, which assists to ensure the credibility of the data being captured. This chapter aims to facilitate the need for priority setting within the agri-operating environment. Different groupings of the data are considered to investigate whether the overall top 15 essential priorities would differ according to the role players within the agribusiness, comparing micro- and large-scale agribusinesses, and whether the geographic area would potentially change priorities.

5.1 RADAR CHARTS OF THE PESTEL + F ANALYSIS

Figures 5-1 to 5-7 below indicate the degree of priority and importance visualised on the radar charts for each factor identified within the PESTEL + F Analysis. The factors that are plotted further away from the centre illustrate the essential priorities and importance. Annexure A illustrates the full description of each factor identified.

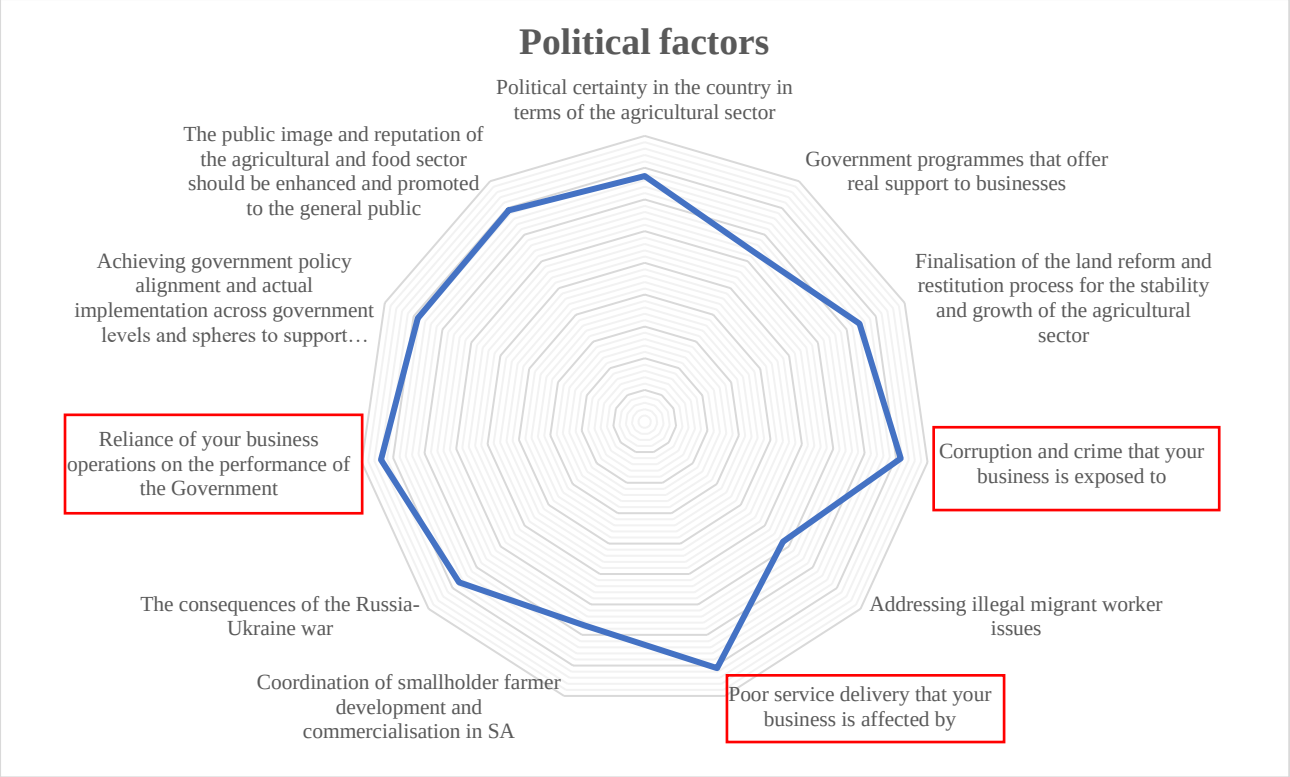

Figure 5-1: Political factors

Figure 5-1 above illustrates the fact that most respondents agreed that the factors of "Reliance of the business operations on the performance of the Government", "Corruption, and crime that the business is exposed to", and "Poor service delivery that the business is affected by due to political infighting, factionalism, corruption" need immediate attention when focusing specifically on the Political factors. The factor that was plotted nearest to the centre had the lowest priority, namely "Addressing illegal migrant workers". Understanding these political factors enables adaptability and pro-active planning of the business operations, although these factors are mainly beyond their control.

Figure 5-2 below indicates the Economic factors. These factors, as perceived by the respondents, were identified as being the most essential priorities and need immediate attention within the agri-operating environment landscape of South Africa. It can be observed that most of the factors identified are plotted away from the centre, which illustrates the urgency of these factors. The two factors that are of high urgency were "High taxes and administered costs" and "Impact of electricity and water shortages". A deficiency in either one of these factors could potentially impact on the strategic and operational decision-making processes of the businesses.

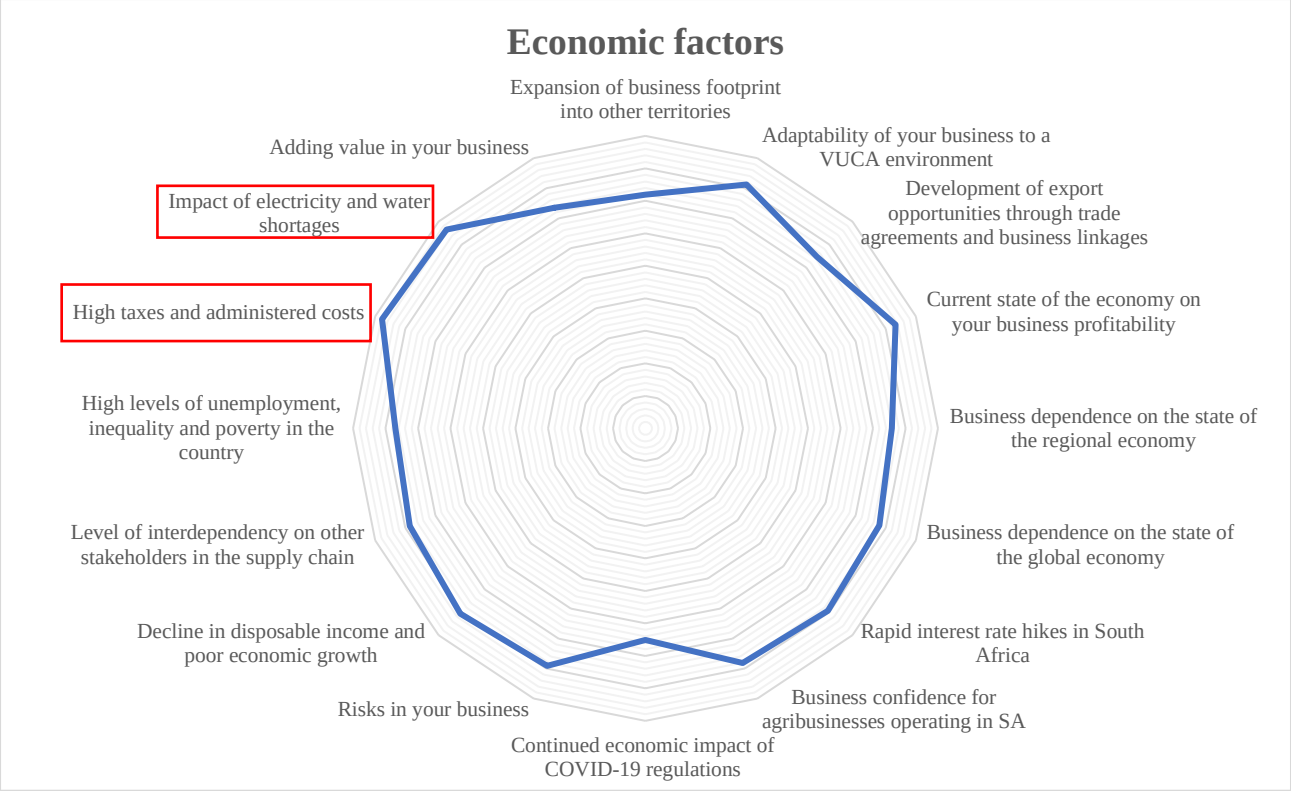

Figure 5-2: Economic factors

Figure 5-3 below illustrates the fact that "Crime and corruption in the country" and "Availability of skilled and experienced Human Resources in the agricultural sector" were the two essential priorities for the Social factor. It is perceived that crime and corruption need immediate attention, as this variable was also identified as an essential priority under the Political factor – showing that producers and agribusinesses are exposed to crime and corruption not only in the country, but also within their businesses. In addition, upskilling and investing in the workforce would create knowledge, build adequate skills, and create an improved understanding of operational financing, production and risk management, as well as in implementing informative decisions (Sajjad, 2022b).

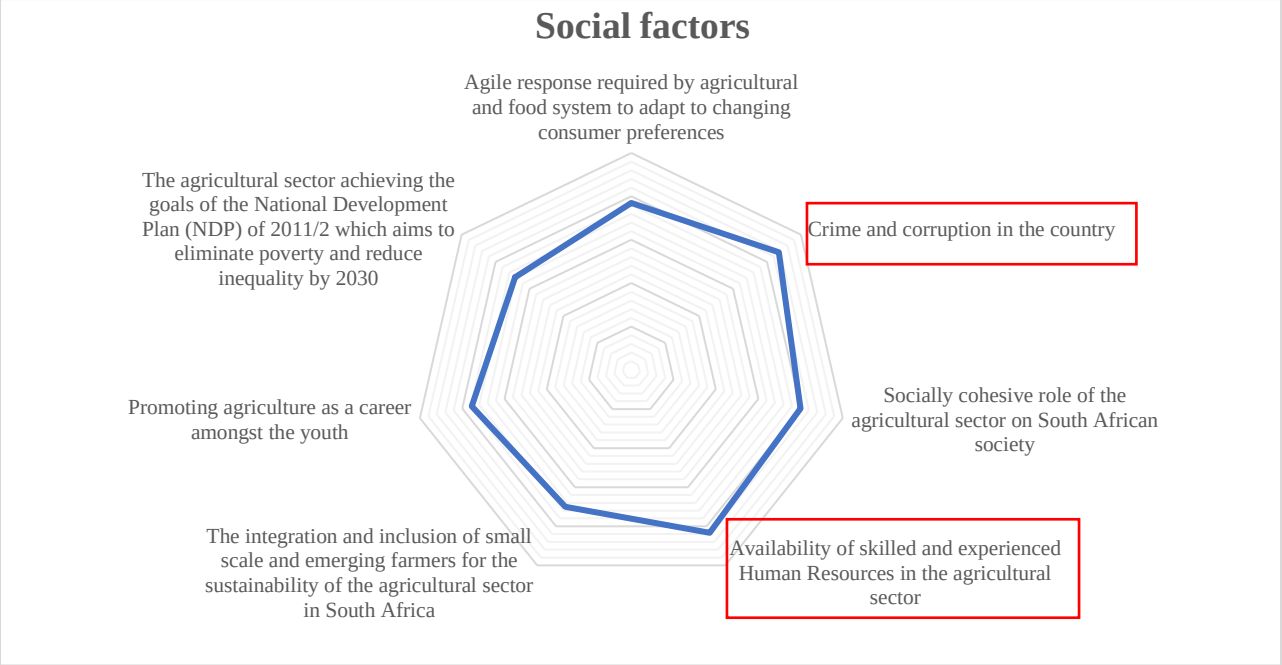

Figure 5-3: Social factors

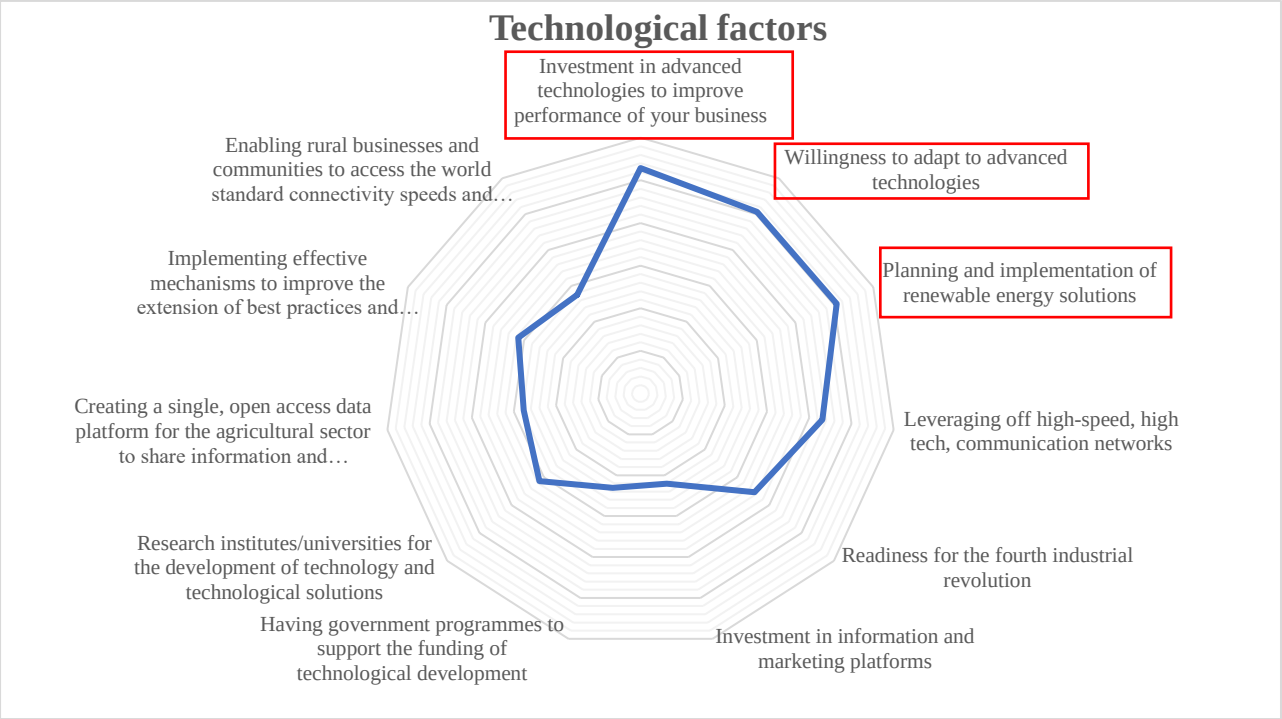

Figure 5-4: Technological factors

Figure 5-4 above illustrates the point that the planning for, the willingness to adapt to, and investing in advanced technologies and renewable energy were extremely important and need immediate attention. This links with the Economic factor of "Impact of electricity and water shortages". A lack in improving and adapting to technologies can impact on the agri-operating

environment tremendously because operations might not then be able to be perform at an optimal level.

Figure 5-5 below illustrates the fact that Environmental factors play a significant role for producers and agribusinesses. Again, it was perceived that access to water and the poor state of infrastructure require immediate attention to be able to run business operations effectively.

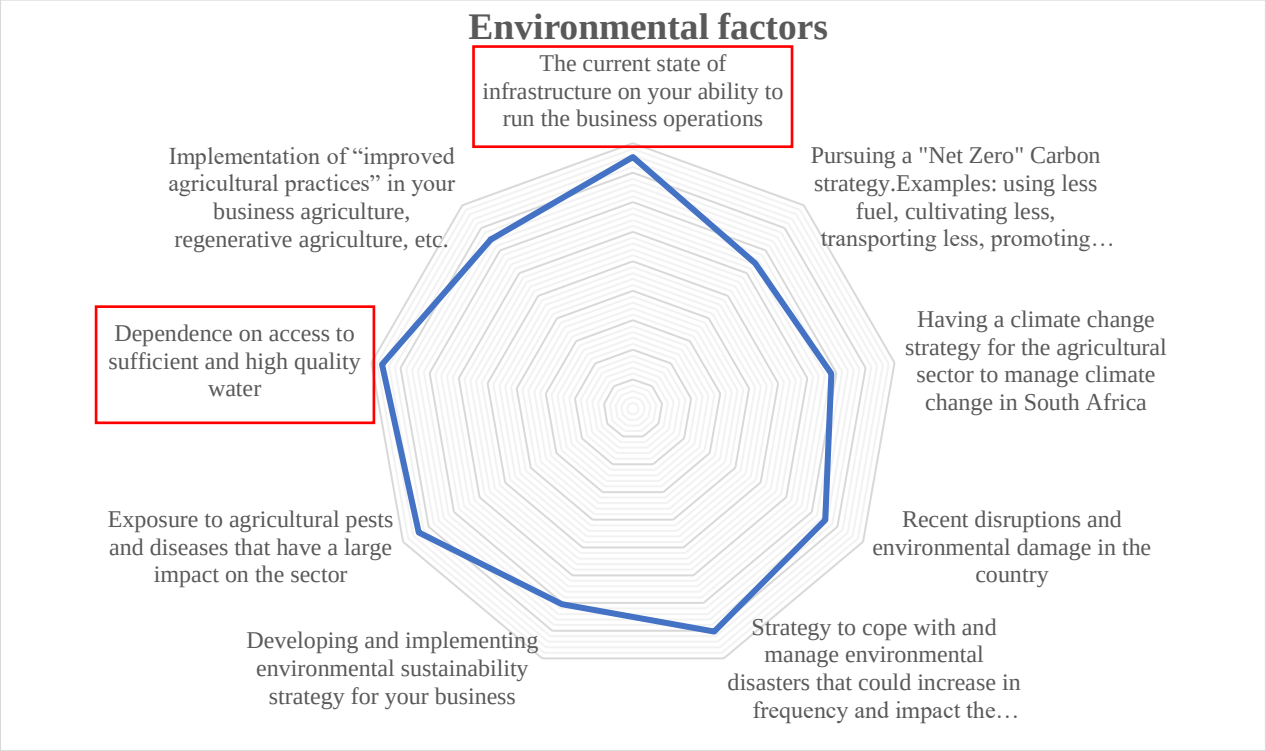

Figure 5-5: Environmental factors

Figure 5-6 below indicates the Legal factors. Most factors were plotted further away from the centre; however, the weights assigned to these factors were lower, as compared with the other factors (see Table 5-1 below). This may indicate that the adequate legal system was rated lower, but not less important (see Section 5.3 below). In addition, the main priority identified is the "Ability of the business to adapt to new or changing laws and regulations with regard to the agricultural and food sector".

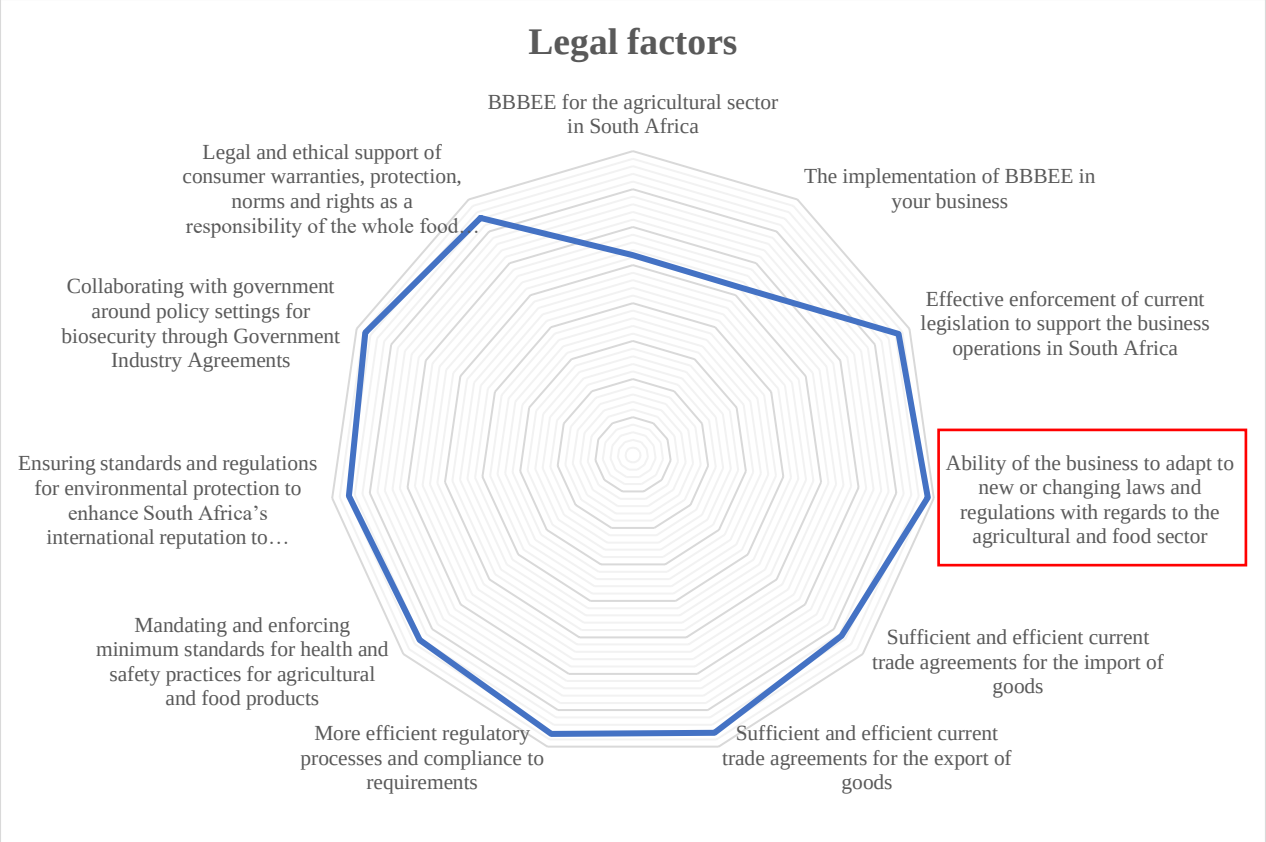

Figure 5-6: Legal factors

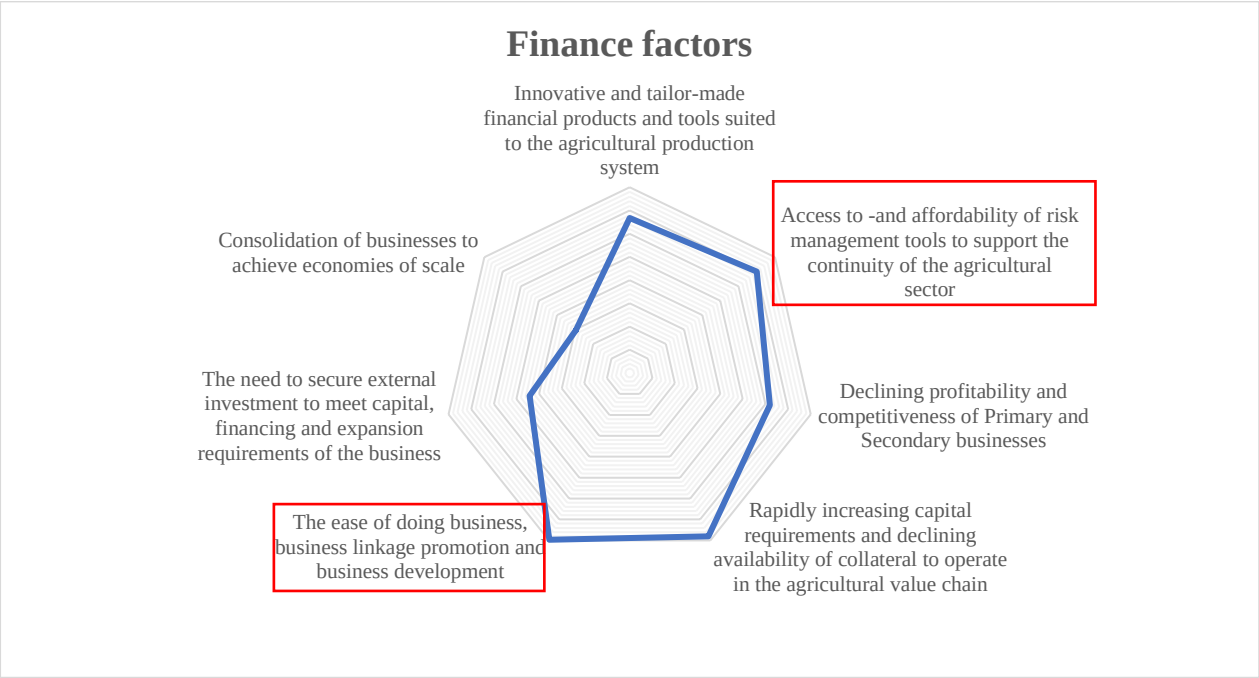

Figure 5-7: Finance factors

Figure 5-7 above illustrates the point that improved access to finance needs to be addressed to improve the development of business operations, as well as to gain access to risk management

tools needed to support the continuity of the agri-operating environment. The essential priorities for the Finance factor indicate that finance is needed to ensure the "Ease of doing business, business linkage promotion and business development", "Rapidly increasing capital requirements and declining availability of collateral to operate in the agricultural value chain", and "Access to and affordability of risk management tools to support the continuity of the agricultural sector".

5.2 CAPTURING AND PRIORITISING PESTEL + F ANALYSIS

Table 5-1 below links with Figures 5-1 to 5-7 above. The top three external factors that carried the largest weights are ranked according to the degree of priority (the factors further away from the centre on the radar charts) and are mentioned in Table 5-1 below. The blocks that are highlighted in orange indicate the number one essential priorities. This will be done throughout Chapter 5.

Table 5-1: PESTEL + F analysis

Ranking	Political	Weighted average
1	Reliance of your business operations on the performance of the Government	**4.19**
2	Corruption and crime that your business is exposed to.	**4.07**
3	Poor service delivery that your business is affected by due to political infighting, factionalism, corruption	**4.04**
Economic		
1	High taxes and administered costs	**4.39**
2	Impact of electricity and water shortages.	**4.33**
3	The current state of the economy on your business profitability	**4.16**
Social		
1	Crime and corruption in the country.	**4.35**
2	Availability of skilled and experienced Human Resources in the agricultural sector.	**4.17**
3	The socially cohesive role of the agricultural sector on South African society.	**4.00**
Technology		
1	Investment in advanced technologies to improve performance of your business.	**4.26**
2	Willingness to adapt to advanced technologies	**4.21**
3	Planning and implementation of renewable energy solutions.	**4.21**
Environmental		
1	Dependence on access to sufficient and high-quality water.	**4.32**
2	The current state of infrastructure on your ability to run the business operations.	**4.27**
3	Exposure to agricultural pests and diseases that have a large impact on the sector.	**4.19**
Legal		
1	Ability of the business to adapt to new or changing laws and regulations with regard to the agricultural and food sector.	**3.92**
2	Collaborating with government around policy settings for biosecurity through Government Industry Agreements and accepting a share of cost for management and response to incursions.	**3.87**
3	Effective enforcement of current legislation to support the business operations in South Africa.	**3.84**
Finance		
1	The ease of doing business, business linkage promotion and business development	**4.10**
2	Rapidly increasing capital requirements and declining availability of collateral to operate in the agricultural value chain	**4.08**
3	Access to and affordability of risk management tools to support the continuity of the agricultural sector.	**4.00**

Moreover, the degrees of importance (priority) differ between the sub-categories. This was seen by the Legal factors having a lower “essential priority” weight when compared with the other factors. The weighted averages for the Legal factor range between 3,80 and 3,95,

compared with the other factors that range between 4,00 and 4,40. In addition, Table 5-2 below indicates the list of the top 15 priorities, overall.

Table 5-2: Top 15 priorities

Ranking	List of top 15 priorities	Weighted average	Category
1	High taxes and administered costs.	4,39	**Economic**
2	Crime and corruption in the country.	4,35	**Social**
3	Impact of electricity and water shortages.	4.33	**Economic**
4	Dependence on access to sufficient and high-quality water.	4,32	**Environment**
5	The current state of infrastructure on your ability to run the business operations.	4,27	**Environment**
6	Investment in advanced technologies to improve performance of your business.	4,26	**Technology**
7	Willingness to adapt to advanced technologies.	4,21	**Technology**
8	Planning and implementation of renewable energy solutions.	4,21	**Technology**
9	Reliance of your business operations on the performance of the Government.	4.19	**Political**
10	Exposure to agricultural pests and diseases that have a large impact on the sector.	4,19	**Environment**
11	Availability of skilled and experienced Human Resources in the agricultural sector.	4,17	**Social**
12	The current state of the economy on your business profitability.	4.16	**Economic**
13	The ease of doing business, business linkage promotion and business development.	4,10	**Finance**
14	Rapidly increasing capital requirements and declining availability of collateral to operate in the agricultural value chain.	4,08	**Finance**
15	Corruption and crime that your business is exposed to.	4.07	**Political**

The results indicate the Economic factor (three factors) as being the essential priority, followed by Social (two factors), Environmental (three factors), Technological (three factors), Political (two factors) and Finance (two factors). The Legal factors did not fall within the top 15 priorities. Figure 5-8 below clearly indicates that “High taxes and administered costs” were ranked as the number one essential priority for producers and agribusinesses.

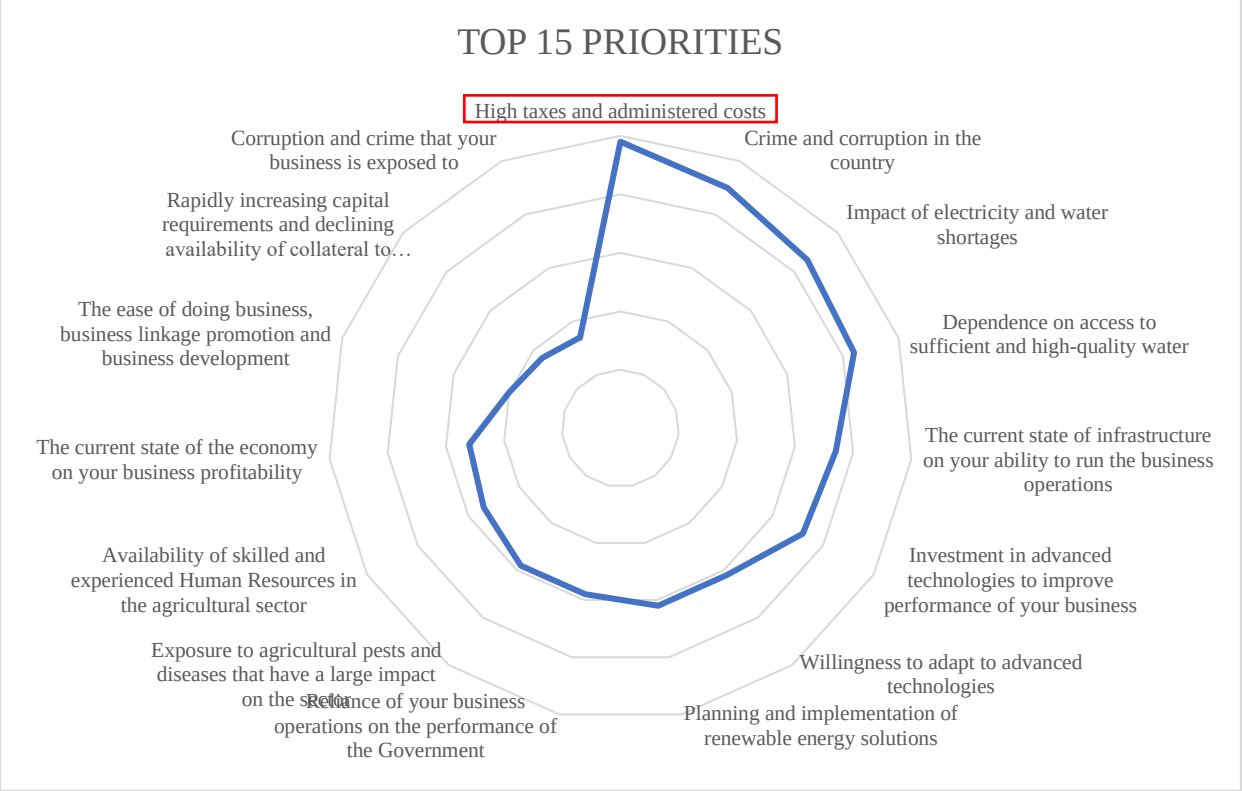

Figure 5-8: Top 15 priorities

Furthermore, the literature indicates that Finance factors could be added to the PESTEL Analysis Framework, as producers and agribusinesses require capital for conducting business activities. The results indicated that Legal factors were not seen as an essential priority. Consequently, the PESTEL + F Analysis was presented as an evolution process, named the PESTEF Analysis Framework. Although Legal factors stay important for business operations, they did not carry a large weight in this specific setting, i.e. the importance for agribusinesses. Figure 5-9 below illustrates the evolution process.

Figure 5-9: Evolution process

5.3 LEGAL SYSTEM IN SOUTH AFRICA

The Legal factors were not perceived as constituting an essential priority. It could potentially be argued that there is an adequate legal system in South Africa to cater for agribusinesses. The IAD framework in Chapter 1 (see Figure 1-4) mentioned that institutions (such as the Legal framework) are embedded into the environment. Respondents not indicating Legal factors as constituting an essential priority represents the point that agribusiness, in relative terms, believe and trust in the enforcement and coordination of the legal system. The landscape of South Africa's legal system provides multiple policy documents and Acts of Parliament regarding the agricultural sector that enable agribusinesses to function in economic prosperity (Mathebe, 2021). There are many laws that apply to agriculture and focus on various aspects within the sector, such as laws regulating plants, inputs, products, labour, land reform, animals, and finance (WITS, 2022). Table 5-3 below illustrates the policy documents and Acts, among various others, that are applicable to the agri-operating environment in South Africa.

Table 5-3: Policy documents and Acts

Acts	Purpose
National Water Act, 1998 (Act 36 of 1998) (Government Gazette, 1998a)	To establish water rights and water resources.
Skills Development Act, 1998 (Act No. 97 of 1998) (Government Gazette, 1998b)	Provision of institutional frameworks and strategies to develop and improve workforce skills.
National Environment Management Act, 1998 (Act 107 of 1998) (Government Gazette, 1998c)	To establish principles for matters affecting the environment. Institutions co-ordinating environmental functions.
International Trade Administration Act, 2002 (Act No. 71 of 2002) (Government Gazette, 2002b)	To establish international trade and custom duties – such as with Southern African Customs Union (SACU), and continued control of imports and exports goods.
Agricultural Debt Management Act, 2001 (Act No. 45 of 2001) (Government Gazette, 2001)	Collection and writing-off of debts and providing debt agreements to the Dept. of Agriculture.
Land Reform: Provision of Land and Assistance Act, 1993 (Act No. 126 of 1993) (Government Gazette, 1993)	Regulation of certain land and settlements to designated persons.
Land and Agricultural Development Bank Act, 2002 (Act No. 15 of 2002) (Government Gazette, 2002a)	Serves as a juristic body known as Land Bank that regulates risk management, finance, and control of the bank.

5.4 STATISTICAL MEASURES OF PESTEL + F ANALYSIS

The weighted average was used to determine the top 15 essential priorities, as well as for comparing the weights against statistical measures to implement strategic decisions (Pinto da Costa & Cabra, 2022). These statistical variables include the average, variance, standard deviation, and coefficient of variance. This is illustrated in Table 5-4 below, where the top three of each statistical variable have been highlighted, which makes it easier to observe how responses varied and clustered between the top 15 priorities.

Table 5-4: Statistical measures

Ranking	TOP 15 PRIORITIES	Weighted average	Average (MEAN)	Variance	Standard deviation	Coefficient of Variation (%)
1	High taxes and administered costs.	4,39	4,39	0,69	0,60	17,72
2	Crime and corruption in the country.	4,35	4,35	0,60	0,77	17,81
3	Impact of electricity and water shortages.	4,33	4,33	0,74	0,86	19,86
4	Dependence on access to sufficient and high-quality water.	4,32	4,32	0,80	0,89	20,73
5	The current state of infrastructure on your ability to run the business operations.	4,27	4,27	0,67	0,82	19,25
6	Investment in advanced technologies to improve performance of your business.	4,26	4,26	0,69	0,83	19,46
7	Willingness to adapt to advanced technologies.	4,21	4,21	0,69	0,83	19,76
8	Planning and implementation of renewable energy solutions.	4,21	4,21	0,85	0,92	21,84
9	Reliance of your business operations on the performance of the Government.	4,19	4,19	0,92	0,96	22,82
10	Exposure to agricultural pests and diseases that have a large impact on the sector.	4,19	4,19	1,03	1,01	24,19
11	Availability of skilled and experienced Human Resources in the agricultural sector.	4,17	4,17	0,69	0,83	20,01
12	The current state of the economy on your business profitability.	4,16	4,16	0,65	0,81	19,43
13	The ease of doing business, business linkage promotion and business development.	4,10	4,10	0,81	0,90	21,97
14	Rapidly increasing capital requirements and declining availability of collateral to operate in the agricultural value chain.	4,08	4,08	0,76	0,87	21,42
15	Corruption and crime that your business is exposed to.	4,07	4,07	0,90	0,95	23,35

5.4.1 Weighted average and top three statistical measures

The top three rankings of each statistical variable are illustrated in Table 5-5 below, as discussed and compared with the weighted average.

Table 5-5: Top statistical rankings

Ranking	TOP PRIORITIES ACCORDING TO STATISTICAL MEASURES	Weighted average	Average (MEAN)	Variance	Standard deviation	Coefficient of Variation (%)
1	High taxes and administered costs.	4,39	4,39		0,60	17,72
2	Crime and corruption in the country.	4,35	4,35	0,60	0,77	17,81
3	Impact of electricity and water shortages.	4,33	4,33			
5	The current state of infrastructure on your ability to run the business operations.	4,27		0,67		19,25
10	Exposure to agricultural pests and diseases that have a large impact on the sector.	4,19		1,03		
12	The current state of the economy on your business profitability.	4,16		0,65	0,81	19,43

5.4.1.1 Average (mean)

The ranking for the average remains in the same position, compared with the weighted average. Statistically, the numbers cluster around the same priorities. This illustrates the point that the respondents agree that these three external factors were seen as being the essential priorities for the agri-operating environment.

5.4.1.2 Variance

"High taxes and administered costs" were ranked as the number one priority because of the narrow spread – most respondents agreed that these constitute the most essential priority that influences the business. However, Table 5-5 above indicates that "The current state of the economy on the business profitability", which was ranked as the number 12th essential priority, was seen as the second essential priority, as the variance illustrates a narrow spread.

On the other hand, "Corruption and crime that the business is exposed to" was ranked as the least essential priority (number 15), indicating a larger spread in responses. Compared with the variance, "Exposure to agricultural pests and diseases had a large impact on the sector". This

confirms that differences exist in the data, which are seen when comparing the weighted average and the variance.

5.4.1.3 Standard deviation

The standard deviation measures the data according to the original units and reflects how the data clusters around the mean. Statistically, the numbers cluster around the same priorities, as the weighted average indicates that respondents agree to these external factors being seen as essential priorities for the agri-operating environment. The only outlier, compared with the weighted average, is priority number 12 – "The current state of the economy on the business profitability".

5.4.1.4 Coefficient of variation

The coefficient of variation describes the degree of variability. Compared with the weighted average, priority number one, "High taxes and administered costs", and number two, "Crime and corruption in the country", remained in the same positions. However, "The current state of infrastructure on your ability to run the business operations", which was in the fifth position, is now seen as the third priority, according to the coefficient of variation. In addition, the outlier was priority number 12, which was seen as priority number four when analysing the coefficient of variation.

Therefore, when analysing the priorities according to statistical measures, the priorities remain in the positions indicated by the weighted average. However, the only priority that differs according to the statistical measures and that was seen as the third essential priority was "The current state of the economy on the business profitability", which was ranked as number 12. The statistical measures only provide additional information to the weighted average of the top 15 priorities, as this average portrays the central tendency, clustering and spread of the data captured.

5.5 DIFFERENCES IN PRIORITIES

Identifying the external factors and constructing the essential priorities was proposed as an initiative that would establish a blueprint for the agri-operating environment, and in doing so, would create a platform for producers and agribusinesses to use to sustain their business

operations and continuity, to implement strategic decisions, and to react to the pivotal external factors that could harm their businesses. Furthermore, the priorities are expected to differ for producers and agribusinesses, based on the various elements that contribute to the agri-operating environment. These elements include a respondent's role within the agribusiness, business turnover, the size and magnitude of the business, and the geographic area concerned.

5.5.1 Differences between role players within the agribusiness

A comparison was made between the top- and middle-levels of management, as well as producers. The response rates were 18,31% for those who operate within the top management positions, 16,90% for middle management, and 38,04% for those who were producers. This comparison was made to reflect whether priorities would differ, depending on the respondent's position/role within a business's operations.

Table 5-6 below indicates the priorities identified by the top management respondents. The Economic factor, "High taxes and administered costs", was also ranked as the number one priority, when compared with the overall top 15 priorities. Technological improvement, impact of electricity, water shortages, and access to quality water were also seen as being essential priorities for top managers.

Table 5-6: Top management priorities

Ranking	Top 10 priorities for Top Management	Weighted average	Category
1	High taxes and administered costs.	4,77	**Economic**
2	Impact of electricity and water shortages.	4,69	**Economic**
2	Investment in advanced technologies to improve performance of your business.	4,69	**Technology**
4	Dependence on access to sufficient and high-quality water.	4,67	**Environmental**
5	Crime and corruption in the country.	4,62	**Social**
6	The current state of infrastructure on your ability to run the business operations.	4,58	**Environmental**
7	Corruption and crime that your business is exposed to.	4,54	**Political**
8	Poor service delivery that your business is affected by due to political infighting, factionalism, corruption, etc.	4,46	**Political**
8	Willingness to adapt to advanced technologies.	4,46	**Technology**
8	Reliance of your business operations on the performance of the Government.	4,46	**Political**
8	The current state of the economy on your business profitability.	4,46	**Economic**

Currently, there are 11 priorities identified within the top 10 priorities, which is attributable to the four priorities being found to carry the same weighted average (4,46). Accordingly, the coefficient of variation was used to measure the variability between these four priorities. Figure 5-10 below illustrates the four priorities with the same weighted average, along with the coefficient of variation.

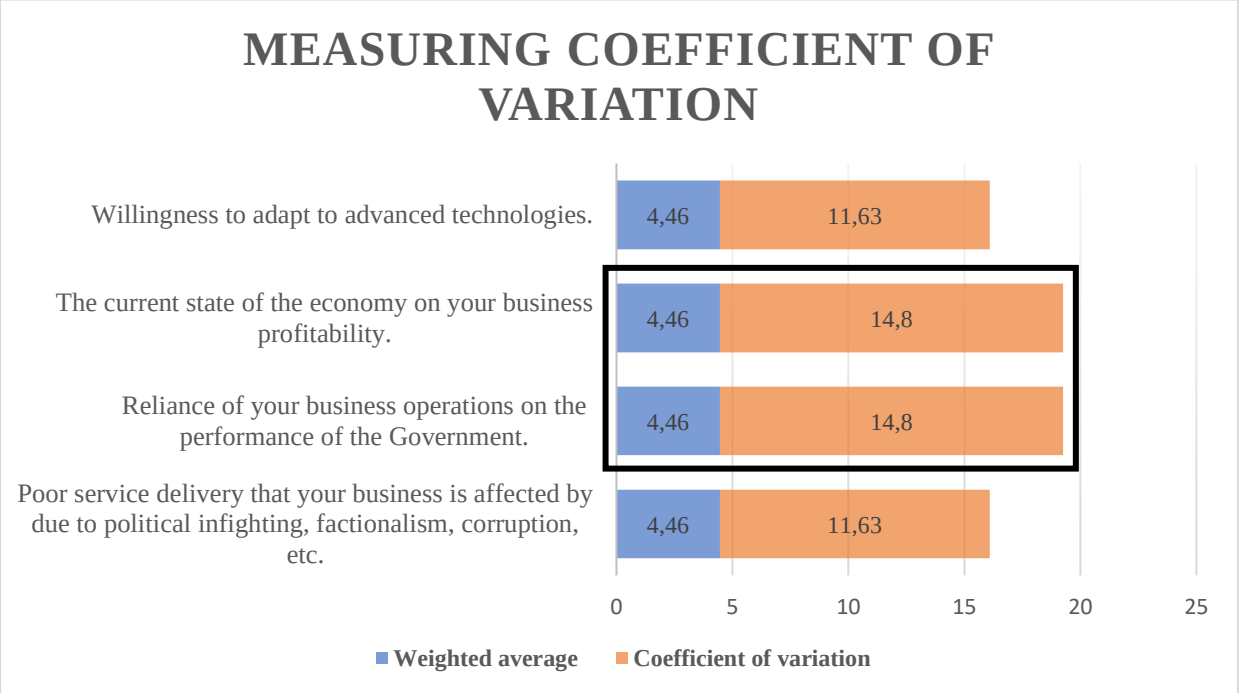

Figure 5-10: Top management variability

Figure 5-10 above indicates that "The current state of the economy on your business profitability" and "Reliance of your business operations on the performance of the Government" have the largest variability. However, both the measures of variability are equal to 14,8. In this situation, none of the factors was removed from the top 10 priority list for top management.

Respondents who operate within the middle-level of management also identified the Economic sector as being the most essential priority. However, the "Impact of electricity and water shortages" was ranked as the number one priority, and "High taxes and administered costs" was ranked as the sixth essential priority, when compared with top management respondents who ranked it as the most essential priority. This illustrates the point that priorities will differ among different role players. This is attributable to seniority level – top management have a more strategic view when compared with middle management, who have a relatively more operational view of the business. In addition, investing, planning, and leveraging technologies were also seen as being the top essential priorities for middle management (see Table 5-7 below).

Table 5-7: Middle management priorities

Ranking	Top 10 priorities for Middle Management	Weighted average	Category
1	Impact of electricity and water shortages.	4,64	**Economic**
2	Investment in advanced technologies to improve performance of your business.	4,55	**Technology**
3	Planning and implementation of renewable energy solutions.	4,45	**Technology**
3	Leveraging off high-speed, high tech, communication networks.	4,45	**Technology**
5	Adaptability of your business to a volatile, uncertain, complex, and ambiguous environment.	4,36	**Economic**
6	The consequences of the Russia-Ukraine war.	4,3	**Politics**
7	High taxes and administered costs.	4,27	**Economic**
7	Readiness for the fourth industrial revolution.	4,27	**Technology**
7	Willingness to adapt to advanced technologies.	4,27	**Technology**
7	Crime and corruption in the country.	4,27	**Social**

Furthermore, the essential priority for producers, as indicated in Table 5-8 below, did not fall within the Economic factor, but was rather seen as "Crime and corruption in the country" under the Social factor. Again, this illustrates the point that priorities differ between different role players. For the farmers, a larger spread of categories was identified within the top five essential

priorities (Social, Environmental, Economic, and Technological), as compared with top- and middle-level management. Top management prominently focused on the Economy and Environment, and middle management focused on the Economy and Technology.

Table 5-8: Producers priorities

Ranking	Top 10 priorities for Farmers	Weighted average	Category
1	Crime and corruption in the country.	4,46	**Social**
2	Exposure to agricultural pests and diseases that have a large impact on the sector.	4,39	**Environmental**
3	High taxes and administered costs.	4,33	**Economic**
4	Planning and implementation of renewable energy solutions.	4,29	**Technology**
5	Availability of skilled and experienced Human Resources in the agricultural sector.	4,17	**Social**
5	The current state of infrastructure on your ability to run the business operations.	4,17	**Environmental**
5	Dependence on access to sufficient and high-quality water.	4,17	**Environmental**
8	Reliance of your business operations on the performance of the Government.	4,13	**Politics**
9	The current state of the economy on your business profitability.	4,08	**Economic**
10	Rapidly increasing capital requirements and declining availability of collateral to operate in the agricultural value chain.	4,05	**Finance**

The degree of importance for strategic decisions, planning, and execution of activities for the role players will vary according to their positions within the business. Figure 5-11 below illustrates the similarities of priorities identified between the role players; however, the position of importance remains in a different order of ranking. The blue represents top management, orange for middle management, and green for producers. Wherever there is an indication of a zero, this indicates that there were no similarities across all three categories of role players, but only between two of the role players.

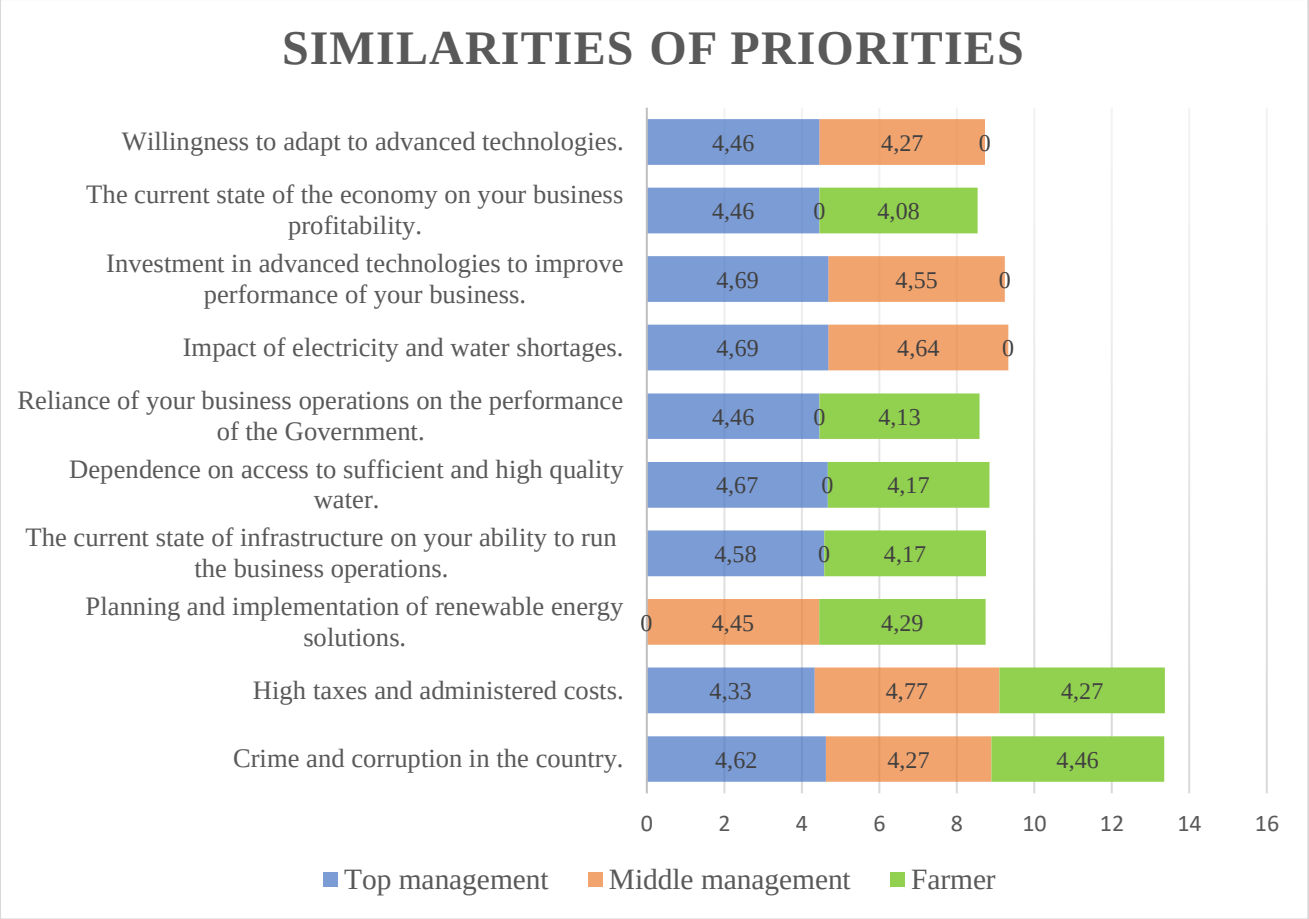

Figure 5-11: Similarities of priorities

5.5.2 Differences within the economic sectors

Most of the respondents indicated that their business operates within the primary agricultural sector (see Figure 5-12 below). However, when comparing the total turnover ratios (in Rand million) of the businesses with the other economic sectors, it is indicated that wholesale, retail, transport, finance, and services, when compared with primary agriculture, vary. In theory, a business would differ in the operating environment, as it depends on the activity that the business specialises in. Therefore, the environment for a micro-scale business could potentially differ when compared with small- and medium-, and large-scale businesses. This strengthens the notion that diversity exists within the operating environment. Table 5-9 below indicates the economic sector (such as agriculture and wholesale), the total turnover ratios of the economic sector that identifies the size and magnitude of the business (such as R7 million in agriculture), and the responses according to the specific economic sector (31.91% indicated that the business generates less than R7 million for agriculture).

Table 5-9: Total turnover ratios of respondents

Columns	1	4	5
Rows	**Standard Industrial Classification according to sector**	**Turnover ratios (R million)**	**Responses (%)**
1	**Agriculture**	≤ 7 m	31.91%
		≤ 17 m	19.15%
		≤ 35 m	14.89%
		> 35 m	34.04%
2	**Wholesale**	≤ 20 m	14.29%
		≤ 80 m	0.00%
		≤ 220 m	28.57%
		>220 m	57.14%
3	**Retail**	≤ 7.5 m	0.00%
		≤ 25 m	20.00%
		≤ 80 m	0.00%
		> 80 m	80.00%
4	**Transport, storage, and communication**	≤ 7.5 m	0.00%
		≤ 45 m	0.00%
		≤ 140 m	50.00%
		>140 m	50.00%
5	**Finance and business service**	≤ 7.5 m	50.00%
		≤ 35 m	25.00%
		≤ 85 m	0.00%
		>85 m	25.00%
6	**Community, social and personal services**	≤ 5 m	50.00%
		≤ 22 m	10.00%
		≤ 70 m	20.00%
		>70 m	20.00%

5.5.3 Differences between micro-, small- and medium-, and large-scale businesses

The size and magnitude of an agribusiness can influence the ranking of priorities that impact on the agri-operating environment. Therefore, the business must align itself according to the size categories provided by the Government Gazette (micro, small, medium, and large) (de Wet, 2022). In addition, this would assist a business in the long run to make informed strategic decisions for its business operations. Figure 5-12 below indicates that the bulk of the study respondents operate and generate profit within the primary agricultural sector.

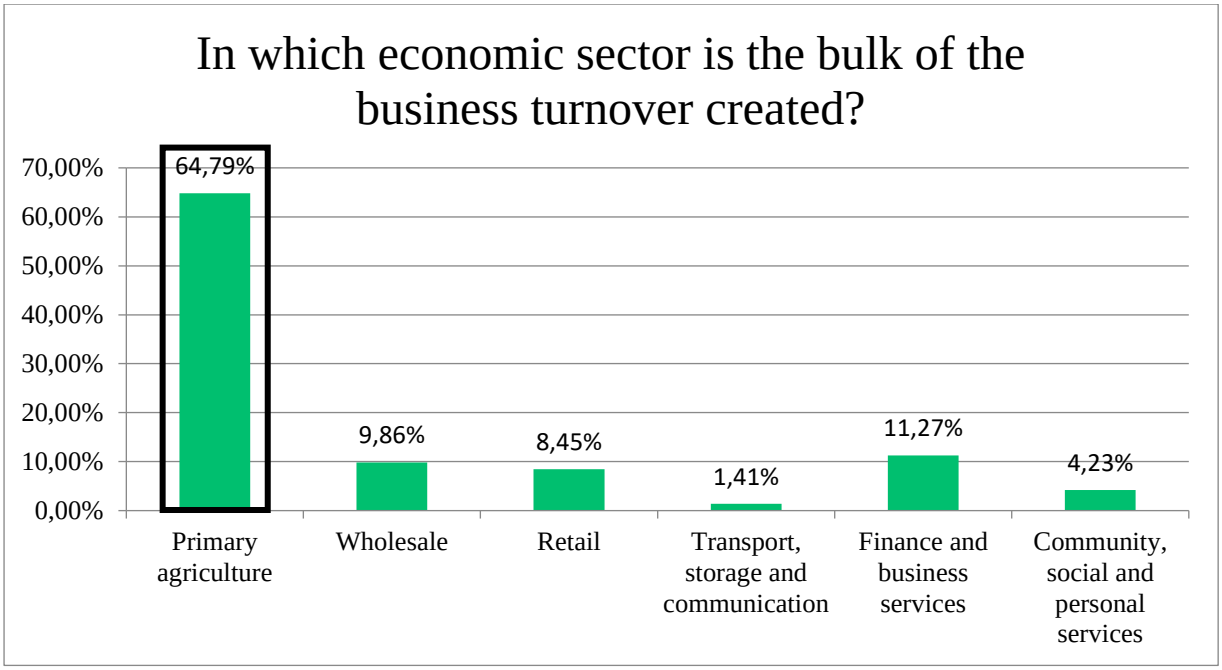

Figure 5-12: Business turnover

A comprehensive conclusion regarding the setting of priorities could not be drawn regarding wholesale, retail, transport, finance, and services because of the low response rates received from the respondents. However, a comparison could be drawn from the primary agricultural sector. Figure 5-13 below indicates the differences in the spread of respondents operating and generating profits within the primary agricultural sector.

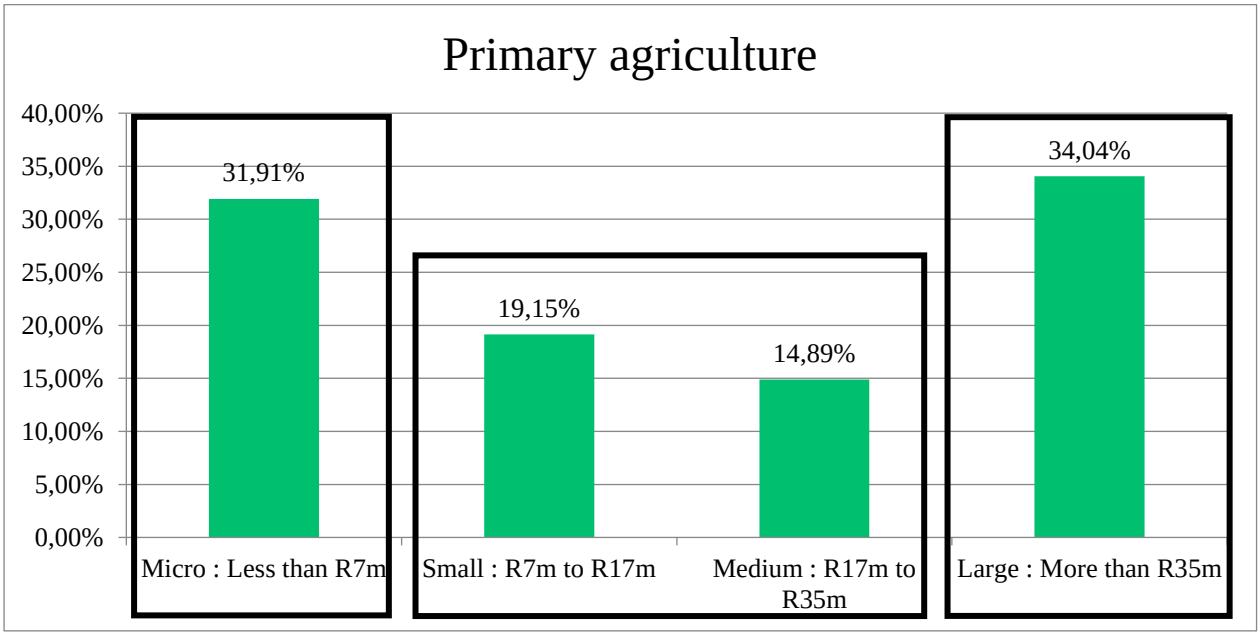

Figure 5-13: Primary agricultural sector

When analysing the three groupings shown in Figure 5-13 above, 15 respondents indicated that their business operates within a micro-environment, and 16 respondents within the small and medium environments, as well as the large environment. The conclusion was drawn that priorities differ, depending on the size and magnitude as well as the business turnover. The principles of the operations remain the same, although the importance of certain factors differs between the three groupings. Table 5-10 below indicates the top 10 priorities for micro agribusinesses.

Table 5-10: Priorities for micro agribusinesses

Ranking	Top 10 priorities for Micro Agribusinesses	Weighted average	Category
1	Crime and corruption in the country.	4,69	**Social**
2	Exposure to agricultural pests and diseases that have a large impact on the sector.	4,46	**Environmental**
3	Dependence on access to sufficient and high-quality water.	4,38	**Environmental**
3	Planning and implementation of renewable energy solutions.	4,38	**Technology**
5	Rapidly increasing capital requirements and declining availability of collateral to operate in the agricultural value chain.	4,25	**Finance**
6	High taxes and administered costs.	4,23	**Economic**
7	Corruption and crime that your business is exposed to.	4,15	**Political**
7	The consequences of the Russia-Ukraine war.	4,15	**Political**
9	Impact of electricity and water shortages.	4,08	**Economic**
9	Declining profitability and competitiveness of Primary and Secondary businesses.	4,08	**Finance**
9	Reliance of your business operations on the performance of the Government.	4,08	**Political**

Figure 5-14 below indicates that “Reliance of the business operations on the performance of the Government” has the largest variability (27,35%). Therefore, this priority is highlighted in red, as it could potentially be removed from the priority list, thereby only indicating the top 10 priorities for micro agribusinesses.

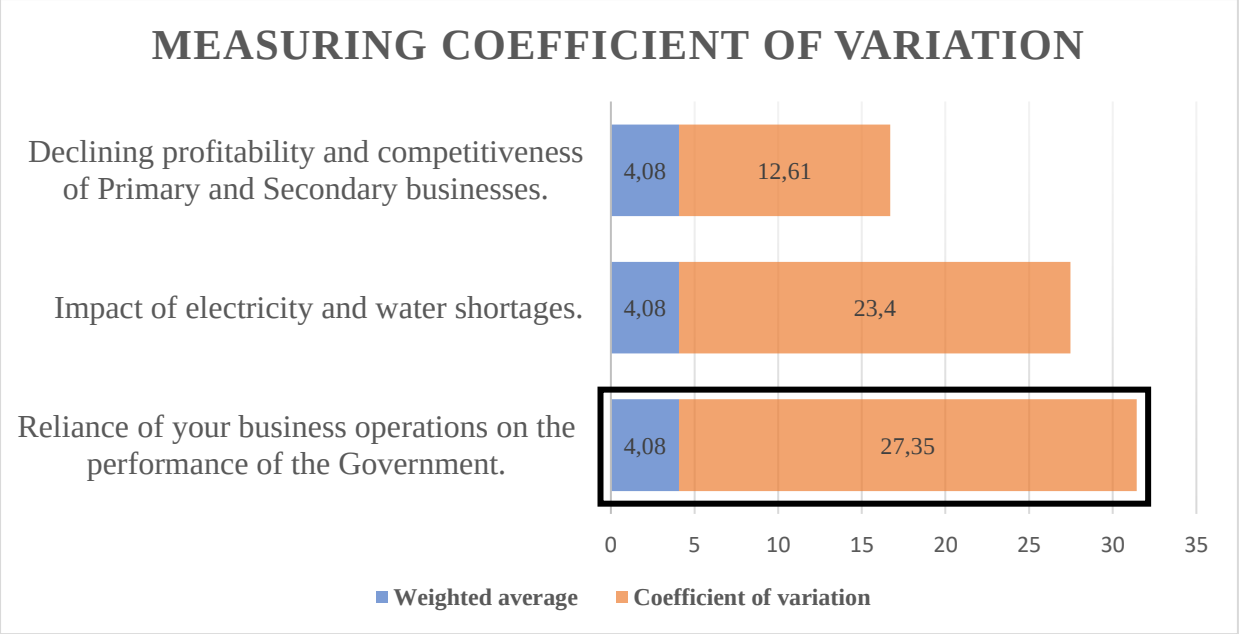

Figure 5-14: Variability of micro agribusinesses

Because of the lower response rates received from small and medium agribusinesses, these two categories have been grouped together. Table 5-11 below indicates the top 10 priorities, combined, for small and medium agribusinesses.

Table 5-11: Priorities for small and medium agribusinesses

Ranking	Top 10 priorities for small and medium agribusinesses combined	Weighted average	Category
1	Impact of electricity and water shortages.	4,67	**Economic**
2	The current state of the economy on your business profitability.	4,6	**Economic**
2	Availability of skilled and experienced Human Resources in the agricultural sector.	4,6	**Social**
2	The current state of infrastructure on your ability to run the business operations.	4,6	**Environmental**
5	Exposure to agricultural pests and diseases that have a large impact on the sector.	4,57	**Environmental**
6	High taxes and administered costs.	4,53	**Economic**
6	Crime and corruption in the country.	4,53	**Social**
8	Business dependence on the state of the global economy.	4,47	**Economic**
8	Investment in advanced technologies to improve performance of your business.	4,47	**Technology**
8	Reliance of your business operations on the performance of the Government.	4,47	**Politics**
8	Risks in your business.	4,47	**Economic**
8	The socially cohesive role of the agricultural sector on South African society.	4,47	**Social**

Figure 5-15 below indicates that "Reliance of the business operations on the performance of the Government" has the largest variability, at 18,40%. In addition, "Risks in the business" and "The socially cohesive role of the agricultural sector on South African society" have the same variability of 15,45%. Therefore, the top 10 list of essential priorities for small and medium agribusinesses only needed to remove "Reliance of the business operations on the performance of the Government", thereby indicating the top 11 priorities.

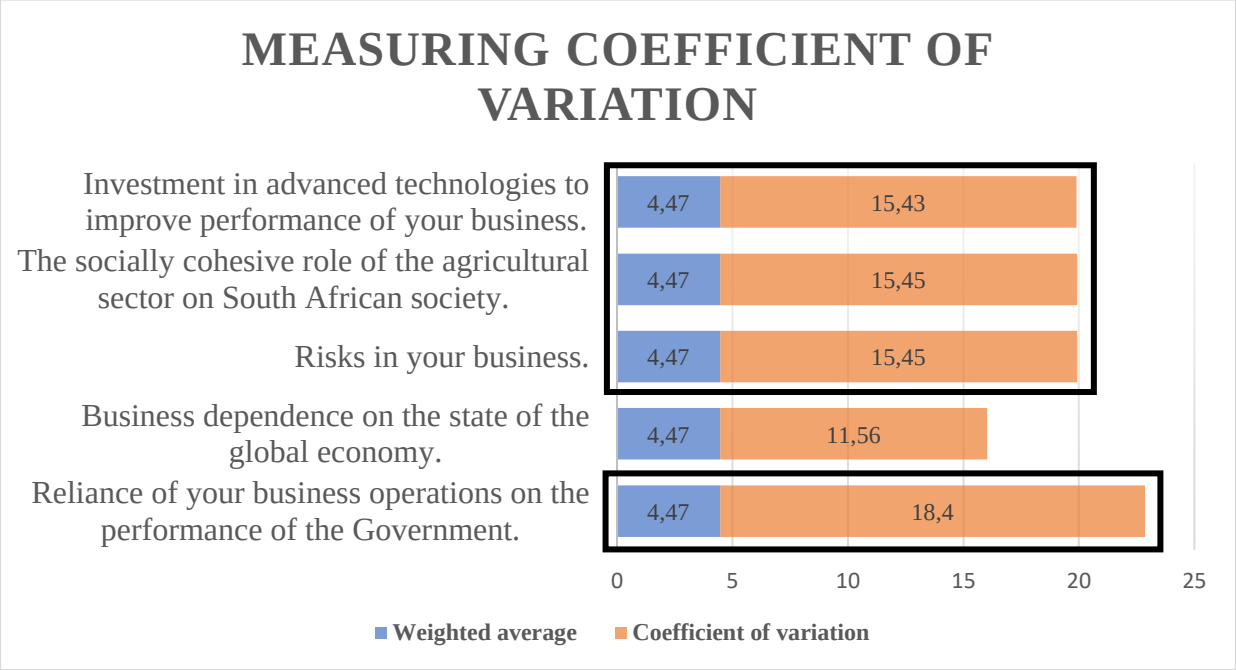

Figure 5-15: Variability of small and medium agribusinesses

Table 5-12 below illustrates the top 10 priorities for large agribusinesses.

Table 5-12: Priorities for large agribusinesses

Ranking	Top 10 priorities for Large Agribusinesses	Weighted average	Category
1	High taxes and administered costs.	4,56	**Economic**
2	Reliance of your business operations on the performance of the Government.	4,5	**Political**
3	Dependence on access to sufficient and high-quality water.	4,4	**Environmental**
4	Poor service delivery that your business is affected by due to political infighting, factionalism, corruption, etc.	4,38	**Political**
5	The current state of infrastructure on your ability to run the business operations.	4,33	**Environmental**
5	Exposure to agricultural pests and diseases that have a large impact on the sector.	4,33	**Environmental**
7	Investment in advanced technologies to improve performance of your business.	4,31	**Technology**
7	Crime and corruption in the country.	4,31	**Social**
9		4,27	**Legal**
10	Adaptability of your business to a volatile, uncertain, complex, and ambiguous environment.	4,25	**Economic**

Although the Legal factors were not mentioned as being among the top 15 priorities, this category was seen as an essential priority for large agribusinesses. This indicates that Legal factors remain important for businesses. Figure 5-16 below illustrates the comparison between the same essential priorities identified for micro-, small- and medium-, and large-scale agribusinesses. Only four external factors were seen as priorities across all three agribusinesses, although they showed different rankings. Similarities also existed between only two of the agribusinesses, such as “Investment in advanced technologies”, which was identified as a priority for only small and medium, and large agribusinesses.

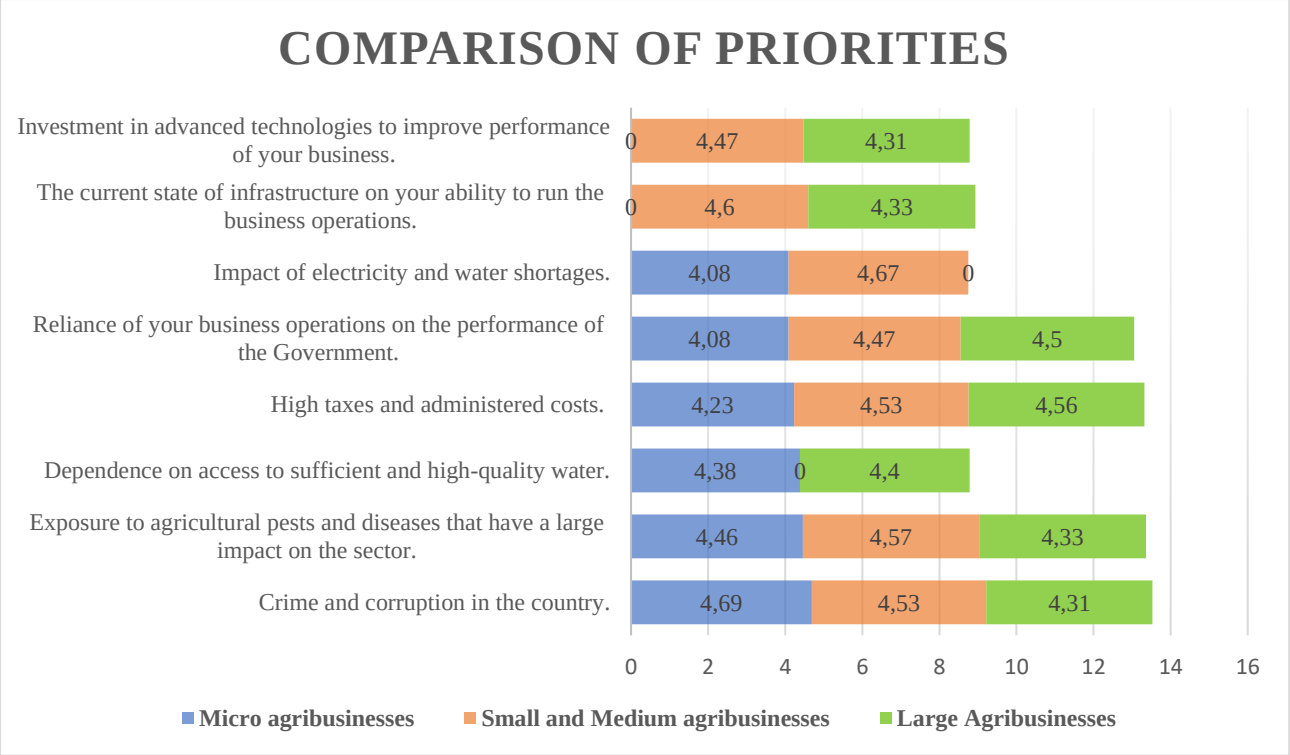

Figure 5-16: Comparison of priorities

The Social factor was seen as the essential priority for micro agribusinesses, as compared with the small and medium, and large agribusinesses that identified the Economic factor as being the essential priority. Furthermore, setting priorities enables the business to make strategic decisions based on the size, magnitude, and business turnover, as the priorities differ based on these variables. This should also be considered from a business financial and policy point of view.

5.5.4 Differences between priorities for provinces

Figure 4-3 in Chapter 4 indicated that a high concentration of the head offices of agribusinesses was situated within the Gauteng province. However, when analysing the footprints of the agribusinesses, a different picture emerged. The footprint illustrated high concentrations across all nine provinces in South Africa, as well as the footprint expanding into neighbouring countries – Botswana, Eswatini, Namibia, and Zimbabwe. However, this dissertation did not set priorities for the neighbouring countries, but purely collected additional information of the footprints of agribusinesses in South Africa. This identified the distinctiveness of the agri-operating environment in South Africa. However, the different footprints bring multiple

challenges, as dissimilarity across pivotal external factors could exist between agribusinesses that operate in different geographic areas.

A comparison was made between Gauteng and Free State (both Highveld provinces) and this indicated that variations exist between their priorities. Gauteng province indicates that the Technological factor needs to be set as a priority, as compared with the Free State, which focuses on the Environmental factor. Table 5-13 below indicates the priorities for Gauteng.

Table 5-13: Priorities for Gauteng

Ranking	Top 10 priorities for Gauteng	Weighted average	Category
1	Investment in advanced technologies to improve performance of your business.	4,5	**Technology**
2	Impact of electricity and water shortages.	4,45	**Economic**
3	Crime and corruption in the country.	4,43	**Social**
4	Willingness to adapt to advanced technologies.	4,39	**Technology**
5	Planning and implementation of renewable energy solutions.	4,32	**Technology**
6	High taxes and administered costs.	4,28	**Economic**
7	The current state of infrastructure on your ability to run the business operations.	4,27	**Environmental**
7	Dependence on access to sufficient and high-quality water.	4,27	**Environmental**
9	Corruption and crime that your business is exposed to.	4,24	**Politics**
10	Readiness for the fourth industrial revolution.	4,21	**Technology**
10	The current state of the economy on your business profitability.	4,21	**Economic**
10	Leveraging off high-speed, high tech, communication networks.	4,21	**Technology**

Figure 5-17 below indicates that “Leveraging off high-speed, high tech, communication networks” (20,78%) and “The current state of the economy on the business profitability” (20,47%) have the largest variability. Therefore, these two priorities could be removed to indicate the top 10 priorities of Gauteng.

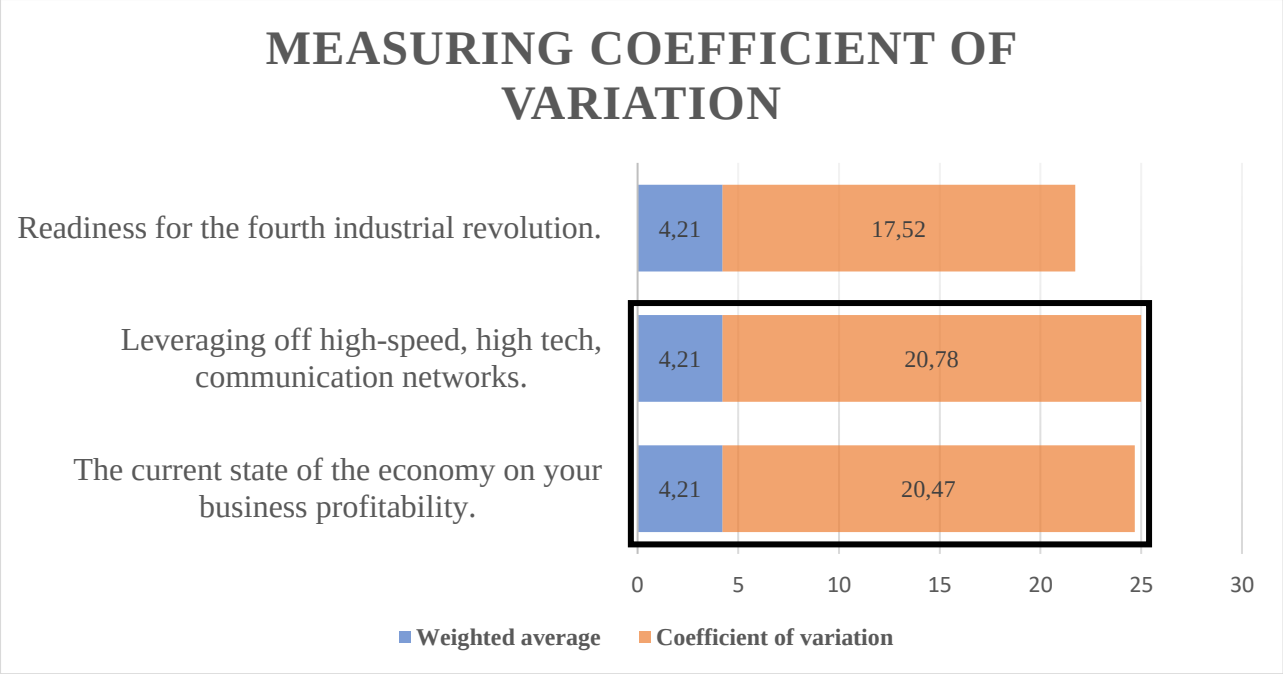

Figure 5-17: Variability of Gauteng

Table 5-14 below illustrates the top 10 priorities for the Free State.

Table 5-14: Priorities for the Free State

Ranking	Top 10 priorities for Free State	Weighted average	Category
1	Exposure to agricultural pests and diseases that have a large impact on the sector.	4,55	**Environmental**
2	High taxes and administered costs.	4,36	**Economics**
3	The current state of the economy on your business profitability.	4,27	**Economics**
3	Crime and corruption in the country.	4,27	**Social**
3	Reliance of your business operations on the performance of the Government.	4,27	**Politics**
3	Corruption and crime that your business is exposed to.	4,27	**Politics**
7	Risks in your business.	4,18	**Economics**
7	The current state of infrastructure on your ability to run the business operations.	4,18	**Environmental**
9	Adaptability of your business to a volatile, uncertain, complex, and ambiguous environment.	4,09	**Economics**
9	Rapid interest rate hikes in South Africa.	4,09	**Economics**
9	The socially cohesive role of the agricultural sector on South African society.	4,09	**Social**
9	Availability of skilled and experienced Human Resources in the agricultural sector.	4,09	**Social**
9	Strategy to cope with and manage environmental disasters that could increase in frequency and impact the business.	4,09	**Environmental**
9	Dependence on access to sufficient and high-quality water.	4,09	**Environmental**
9	Poor service delivery that your business is affected by due to political infighting, factionalism, corruption, etc.	4,09	**Politics**

Figure 5-18 below indicates the number of variabilities between the external factors that were all ranked in the 9th position. The orange bars inside of the black rectangular block indicates all the factors that could be removed to narrow the list down to the top 10 priorities for the Free State. These factors have also been highlighted in red in Table 5-14 above.

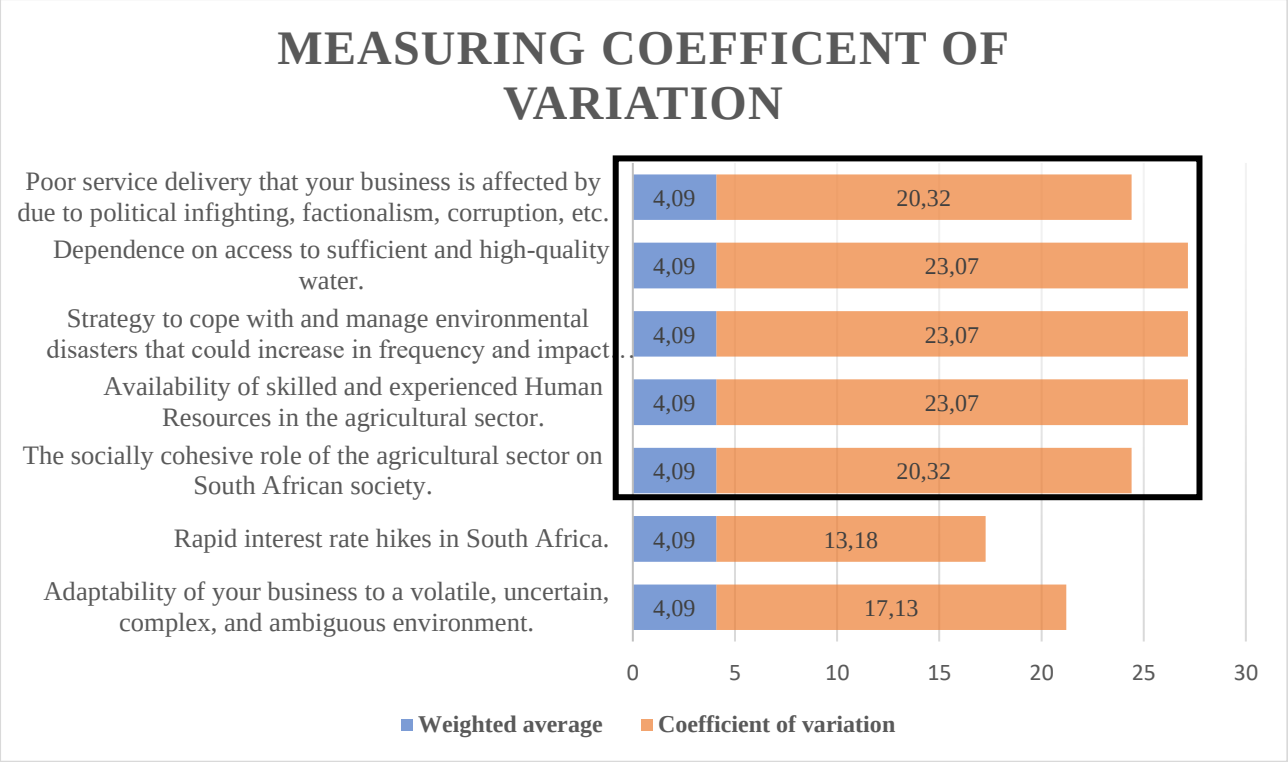

Figure 5-18: Variability of Free State

Figure 5-19 below illustrates the similarities of priorities between Gauteng and the Free State provinces. There were only four priorities that were mentioned as an essential priority for both Gauteng and the Free State; however, the weights assigned to these priorities differed. Moreover, this indicates that agribusinesses align priorities differently according to their geographic area.

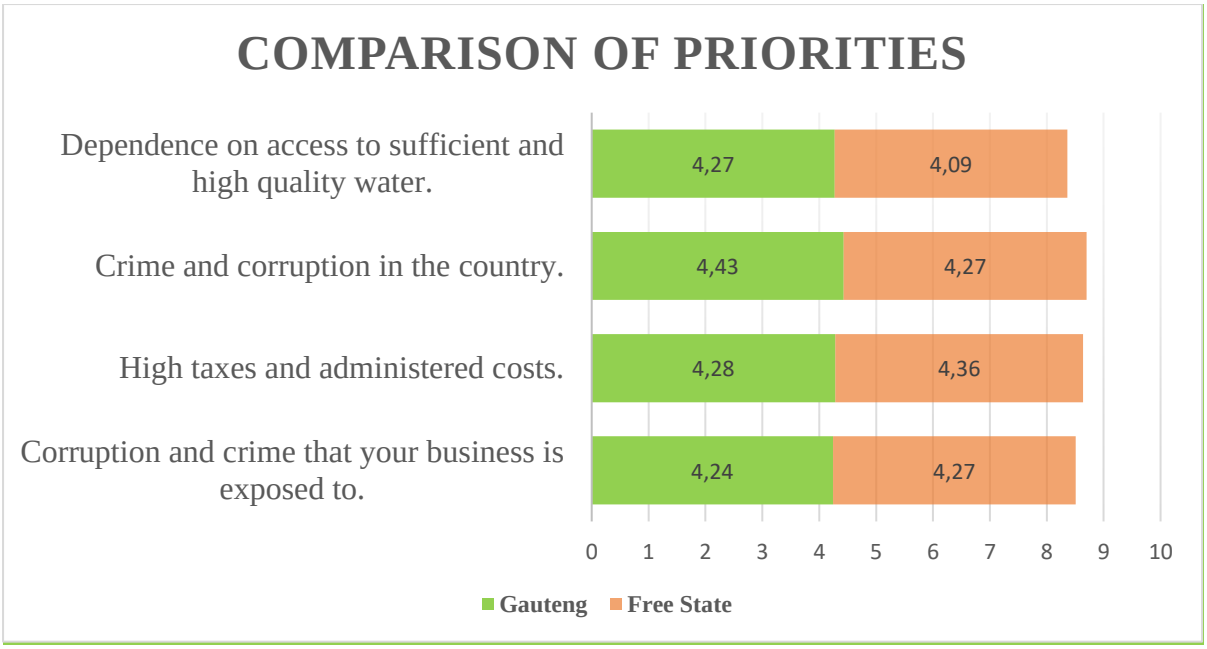

Figure 5-19: Comparison of priorities

Figure 5-20 below depicts South Africa's nine provinces.

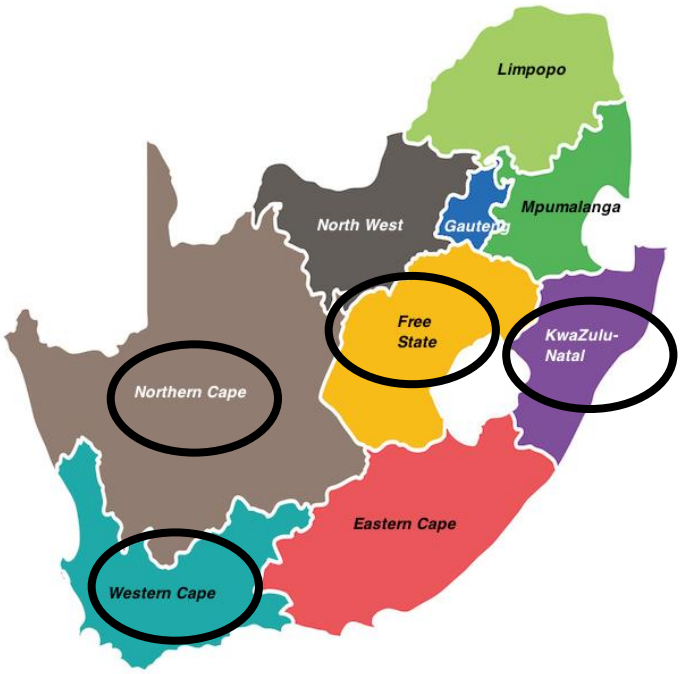

Figure 5-20: Provinces of South Africa

The Free State is located more in the Highveld region and Mpumalanga more in the Lowveld region. The Northern Cape is seen as an arid province, and KwaZulu-Natal as a coastal and mountainous province. Figure 5-21 below illustrates the responses of the number of head offices and footprints of agribusinesses within these four provinces.

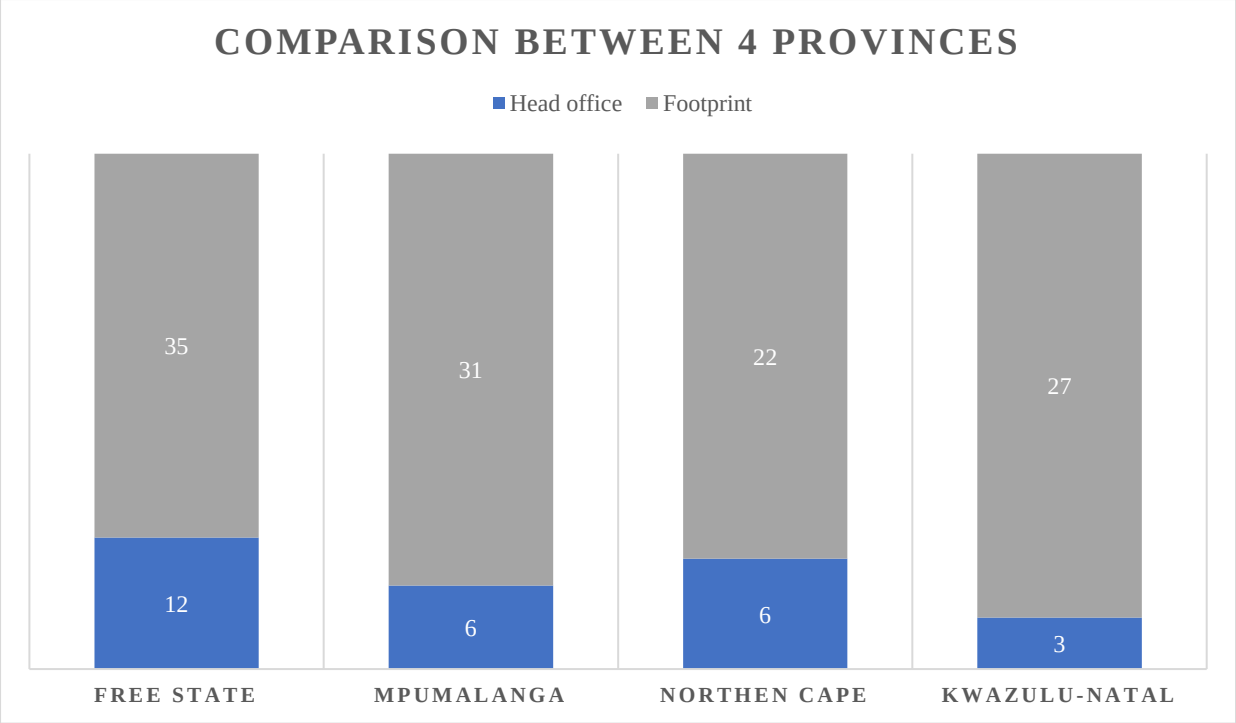

Figure 5-21: Comparison between provinces

An analysis was not done to determine whether the priorities for these four provinces would differ according to their geographic area because of the low response rate. However, because Gauteng and the Free State have differences in priorities and because both provinces are located within the Highveld, the conclusion can be drawn that their priorities would also differ, when compared with other provinces.

The reason for this is attributable to the differences that exist. These differences among various provinces could include weather conditions, level of education of the employees, existing technologies and improvement within the province, the state of the infrastructure, and exposure to agricultural pests and diseases in the Highveld, Lowveld, arid and coastal provinces. The turnover generated and the size and magnitude of the agribusiness would also influence the ranking of priorities for individual provinces.

5.6 COMPARISON WITH OTHER PRIORITY REPORTS

As mentioned in Chapter 1, there are various reports available that would assist an agribusiness to plan, implement and execute strategic and operational decisions, based on the information captured within the reports. In addition, priority reports observe the ranking of external factors

identified within the country. The "Annual Agribusiness Survey Report" of South Africa, which is derived from the PESTEL + F Analysis Framework, will be compared with (1) the "Agribusiness Outlook Report 2022" of East Africa, and (2) "The Global Risks Report" of the WEF, which is based on the global trends.

5.6.1 Agribusiness Outlook Report 2022

Figure 5-22 below illustrates the top 15 priorities captured within the "Agribusiness Outlook Report 2022" of East Africa. This report was published by AGRA (Alliance for a Green Revolution in Africa) in association with KPMG (AGRA, 2022).

Priority	Rank	Score
More flexible financing structures for agriculture and agribusiness sector that support business growth and provide flexibility to respond to market shocks and emerging innovation	1	8.26
Increase productivity on small farms. They are key to agricultural transformation on the continent	2	8.20
Catalytic financing for the entire agricultural value chain, not just technology	3	8.00
Blended finance initiatives for agribusinesses	4	7.98
Increase access to small affordable smart technologies for small farms	4	7.98
Promote climate smart agriculture as a key driver for transformation and development of resilience	6	7.94
Increased public-private initiatives that fund and accelerate developments in the agribusiness space	7	7.91
Develop inclusive supply chains involving smallholder farmers. This is critical to our sourcing and risk management strategy	8	7.88
Access to finance for climate adaptation initiatives or climate smart agriculture in the supply chain and at company level	9	7.87
Develop multi-stakeholder platforms and partnerships for driving agricultural transformation	10	7.85
Supporting farmers adopt better production technologies like regenerative agriculture practices	11	7.78
Governments to develop and implement more friendly policies with relation to cross border and international trade	11	7.78
Increase technology investments in agriculture because this is a game changer for the sector	13	7.78
Equip future industry leaders including women leaders with the skills and experience to take on leadership and governance roles in the company and industry.	14	7.70
Promoting awareness of and support for adoption of climate smart agriculture and climate resilient practices at farm and company level	15	7.69
Increase public and private investment in the agricultural sector	15	7.69

Figure 5-22: Agribusiness Outlook Report

Source: AGRA (2022)

This report worked on a scale from 1 to 10, with one not being a priority and ten being seen as a priority that needs immediate attention. This report provides an overview of the agri-operating environment in East Africa. The factor that was ranked in first place, with a weight of 8.26, was "*More flexible financing structures for agriculture and agribusiness sector that support business growth and provide flexibility to respond to market shocks and emerging*

innovation". Thus, this factor could be observed as a Finance factor when compared with the "Annual Agribusiness Survey Report" of South Africa.

It is important to benchmark established priority reports to identify whether similarities or differences exist when comparing the South African and East Africa reports. A comparison made between the two reports is listed below in Table 5-15.

Table 5-15: Comparison between the reports

Labelling the priorities identified within the Agribusiness Outlook Report of East Africa		**Annual Agribusiness Survey Report of South Africa**	
Politics (Ranked as priority nr 7)	Increased public-private initiatives that fund and accelerate developments in the agribusiness space	**Politics** (Ranked as priority nr 9)	Reliance of your business operations on the performance of the Government.
Economics (Ranked as priority nr 8)	Develop inclusive supply chains involving smallholder farmers. This is critical to our sourcing and risk management strategy.	**Economics** (Did not fall within top 15 priorities)	Coordination of smallholder farmer development and commercialisation in South Africa.
Social (Ranked as priority nr 14)	Equip future industry leaders, including women leaders, with the skills and experience to take on leadership andgovernance roles in the company and industry.	**Social** (Ranked as priority nr 11)	Availability of skilled and experienced Human Resources in the agricultural sector.
Technology (Ranked as priority nr 11)	Supporting farmers to adopt better production technologies like regenerative agriculture practices.	**Technology** (Ranked as priority nr 6)	Investment in advanced technologies to improve the performance of your business.
Environmental (Ranked as priority nr 6)	Promote climate smart agriculture as a key driver for transformation and development of resilience.	**Environmental** (Did not fall within top 15 priorities)	Having a climate change strategy for the agricultural sector to manage climate change in South Africa.
Legal (Ranked as priority nr 11)	Governments to develop and implement more friendly policies with relation to cross border and international trade.	**Legal** (Did not fall within top 15 priorities)	More efficient regulatory processes and compliance with requirements.
Finance (Ranked as priority nr 4)	Blended finance initiatives for agribusinesses.	**Finance** (Ranked as priority nr 14)	Rapidly increasing capital requirements and declining availability of collateral to operate in the agricultural value chain.

Source: Compiled by author

Furthermore, the Agribusiness Outlook Report for East Africa provides the differences between priorities from the previous year. This is important to mention, as the Annual Agribusiness Survey Report for South Africa strives to achieve the same outcome, comparing differences between priorities from previous years. This enables a producer and agribusiness to make strategic and operational decisions, based on the way which priority changes.

Figure 5-23 below illustrates the differences between the top 10 priorities for 2020 and 2021 for the East African report. The interpretation is that larger or smaller weights were assigned to the external factors in 2021, as compared with 2020, which ultimately changes the ranking of these external factors and the degree of importance (priority). For example, the weight for priority number one was smaller in 2021 (8.26) compared with 2020 (8.67). However, the smaller weight assigned could be interpreted to indicate that "more flexible financing structures for agriculture" remain an essential priority, but have been given more consideration from the previous year (2020). It is further observed that priorities numbered eight and ten are new priorities that had not been captured in 2020, which indicates that new priorities can arise according to the need in the East African environment. This supports the continuous revue of external factors, which ensures that current factors are always updated within the report.

The top 10 priorities

Rank 2021	Rank 2020	Action	Priority Score 2021/2020
1	1	More flexible financing structures for agriculture and agribusiness sector that support business growth and provide flexibility to respond to market shocks and emerging innovation	8.26/8.67
2	2	Increase productivity on small farms. They are key to agricultural transformation on the Continent	8.20/8.65
3	5	Catalytic financing for the entire value chain, not just technology	8.00/8.53
4	11	Blended finance initiatives for agribusinesses	7.98/8.38
4	25	Increase access to small, affordable, smart technologies for small farms	7.98/8.22
5	26	Promote climate smart agriculture as a key driver for transformation and development of resilience	7.94/8.21
6	55	Increased public-private initiatives that fund and accelerate developments in the agribusiness space	7.91/7.71
7	19	Develop inclusive supply chains involving smallholder farmers. This is critical to our sourcing and risk management strategy	7.88/8.30
8	New	Access to finance for climate adaptation initiatives or climate smart agriculture in the supply chain and at the company level	7.87/New
9	40	Develop multi-stakeholder platforms and partnerships for driving agricultural Transformation	7.85/8.03
10	New	Supporting farmers adopt better production technologies like regenerative agriculture practices	7.78/New

Figure 5-23: Top 10 priorities

Source: AGRA (2022)

5.6.2 The Global Risks Report

The World Economic Forum annually publishes “The Global Risks Report” (WEF, 2022). This report aims to rank the global factors that are seen as potential risks for businesses. Multiple companies participate in this report, which operates within the VUCA environment. These factors are ranked into various categories that allow a business to plan according to the continuous changing operating environment. Various risks are identified within the Economic, Environmental, Geopolitical, Social, and Technological factors. Figure 5-24 below indicates the top 10 global risks foreseen over the next 10 years – illustrating that businesses need to set priorities within the Environmental factor, because this factor is seen as being responsible for the top three risks for businesses.

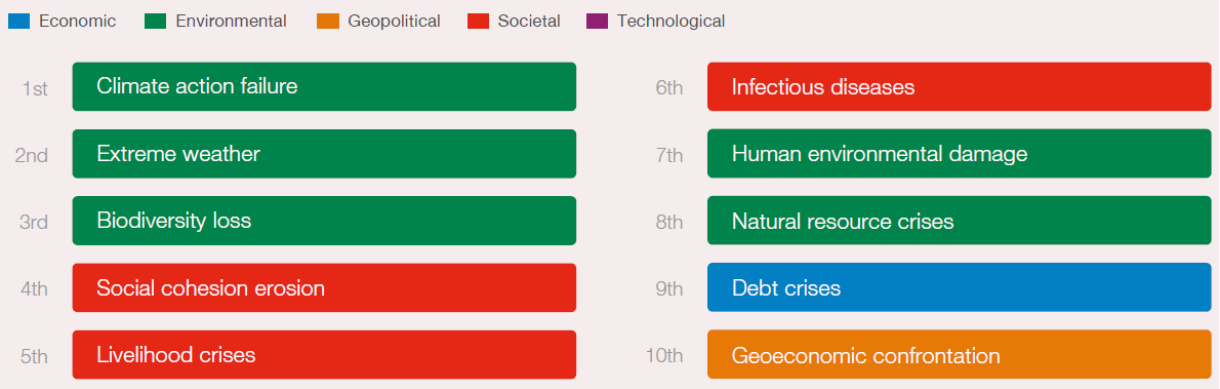

Figure 5-24: Top 10 Global Risks

Source: WEF (2022)

When compared with the Global Risks Report, the Annual Agribusiness Survey Report for South Africa indicates that Economic and Social factors are the essential priorities. The Global Risks Report differs, as it indicates Environmental factors as being the essential priorities. Moreover, there are different methods that are used to illustrate how priorities change. For instance, Figure 5-25 below illustrates the top 15 factors that have deteriorated the most since the COVID-19 pandemic, and indicates that the Social and Environmental factors need to be prioritised. However, it is expected that the Ukraine-Russia conflict experienced since February 2022 could change these priorities.

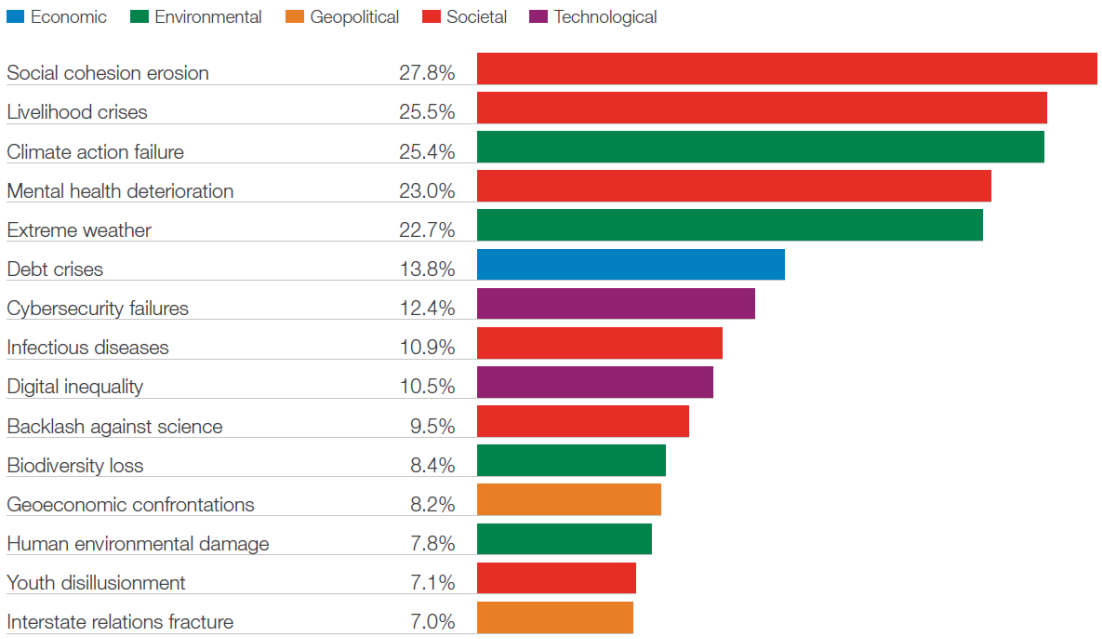

Figure 5-25: Top 15 factors after COVID-19

Source: WEF (2022)

Figure 5-26 below indicates the global risks which could potentially become crucial threats over the next two years and which need to be set as essential priorities. The Environmental and Social factors once again are shown as critical factors that could potentially harm the business operations.

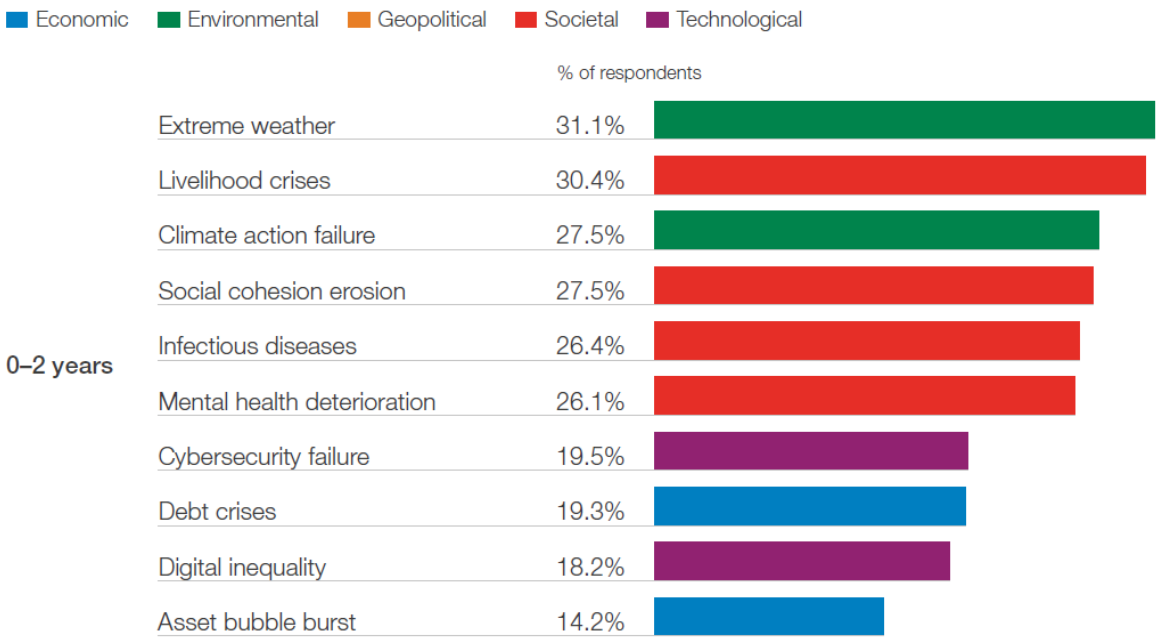

Figure 5-26: Potential threats

Source: WEF (2022)

It is important to note that these factors were ranked according to the perceived global risks. Therefore, the priorities might differ according to the circumstances that businesses operate in, the geographic area, and exposure to the VUCA environment. However, it remains important to benchmark reports to enrich future research and data captured, specifically for the agri-operating environment of South Africa.

5.7 SUMMARY

The first step was to reduce the spread of external factors and to sort these into the top three essential priorities. As the second step in the prioritisation, a list of the top 15 external factors was constructed. The results indicated that most of the external factors are positioned within the economic domain – thus the largest concern for producers and agribusinesses was to prioritise these Economic factors. These Economic factors included "High taxes and administered costs", the "Impact of electricity and water shortages", and the "Current state of

the economy on a business's profitability". "Crime and corruption in the country," which falls under the Social factor, was also ranked as the second essential priority (apart from the Economic factors).

As a result, this Chapter demonstrates that the ranking of essential priorities differs when grouping specific factors with each other and comparing these with established reports. This strengthens the observation made for the desirability of developing a framework that would assist producers and agribusinesses to set priorities according to their role, business turnover, size, and magnitude, as well as geographic area that positions the business to strategically plan and execute decisions. However, shortcomings existed within the data. This will be discussed in Chapter 6.

CHAPTER 6:
CONCLUSIONS AND RECOMMENDATIONS

This dissertation has presented an investigation of the South African agricultural operating environment for producers and agribusinesses. The focus was specifically to uncover, capture, and rank the pivotal external factors and forthcoming priorities according to the degrees of importance. This landscape enables the implementation of strategic and operational decisions through the development of the PESTEL + F Analysis Framework, which provides an overview of the current situation in South Africa, specifically focused on the agricultural sector.

The goal of this dissertation was to shift the focus from the internal environment to the external environment and to apply the PESTEL + F Analysis Framework that specifically enables a producer and agribusiness to achieve business goals at an optimal level, while operating and being exposed to a volatile, uncertain, complex, and ambiguous environment. For this to be achieved, an agribusiness must understand the environment in which the business operates.

Chapter 6 observes the shortcomings and how these could be improved to establish credibility within the data being captured. This Chapter also benchmarks established priority reports that provide an outlook of the agri-operating environment, which will be compared with the PESTEL + F Analysis Framework, illustrating the differences as well as similarities that exist between reports. Furthermore, the propositions that have been captured throughout each chapter will be discussed, and recommendations made for future studies that could enhance the agri-operating environment of South Africa in this regard.

6.1 DISCUSSION OF RESEARCH PROPOSITIONS

The goals of this dissertation were specifically (1) to explore appropriate tools and frameworks that would enable producers and agribusinesses to make informed strategic and operational decisions that improve their ability to manage external factors in the agri-operating environment more effectively; (2) to shift the focus from the internal environment that affects the business operations to the external environment, and in so doing, to set priorities; and (3)

to create a platform to assess the importance and urgency of the external factors that influence the agri-operating environment in South Africa.

This dissertation addressed the aim of the research through the three research propositions that were embedded into Chapter 2, 3, 4 and 5.

6.1.1 Proposition 1 – VUCA environment

A business cannot confine itself to the same decision-making process that was implemented in previous years because the business is exposed to the VUCA phenomenon. The first proposition established how businesses could develop innovative structures (such as the IAD Framework referred to in Chapter 1) to manage and adapt their business operations. This proposition was explored in Chapter 2, which indicated the need to adapt functions to utilise business performance and growth on the global, regional, and national levels (see Section 2.4). The conceptual framework (see Figure 2-5) was developed, guided by the findings of the research, which indicated that adding the VUCA phenomenon to the four circles of the operating environment would strengthen the ability of a business to make better-informed decisions within the turbulent operating environment.

6.1.2 Proposition 2 – Perceived operating environment

The second proposition of the dissertation addressed the issue that, while the operating environment is presumably the same, the impact on businesses is likely to be different, according to the business turnover, size, magnitude, province, and specific role players. This places emphasis on producers and agribusinesses to assess the environment according to the factors that influence their business operations to construct priority-setting (Fleurence & Torgerson, 2004). Knowing and understanding the perceived operating environment enables a business to set priorities as well as to mitigate any potential risks and uncertainties that arise in the environment. This proposition was integrated in Chapter 3 and partly in Chapter 4, which detects and measures tools to manage risks such as implementing the four risk management strategies (avoid, transfer, mitigate, and accept) (Simplilearn Solutions, 2022). Chapter 4 investigated the outcomes of setting these priorities specifically for the agricultural operating environment in South Africa.

6.1.3 Proposition 3 – PESTEL + F Analysis Framework

The third research proposition was to create the platform. The agri-operating environment is comprised of a mosaic of PESTEL + F factors that vary in importance. The PESTEL + F Analysis was constructed, based on literature and opinions of experts in the agricultural sector. One of the major strengths of the framework is that the external factors identified were ranked according to their respective importance within the business (priorities were set according to the perceived operating environment). This framework was examined in earlier Chapters, which contributed useful benchmarks that guide producers and agribusinesses to isolate the factors that were seen as essential priorities. The identification and the ranking of these essential priorities are critical for the success of the business and for strategic and operational decision making.

6.2 RECOMMENDATIONS

Various findings of this study have been compared with previous priority reports, as referred to in Section 5.6. Informative information was found through the answers to the open-ended questions presented to the respondents. In Chapter 5, it was expressed that 70% of the respondents indicated the desirability of receiving a follow-up report of this study's results. In the following section, certain recommendations are made, based on the findings of the study.

6.2.1 Implementation of priorities

"High taxes and administered costs", which fall under the Economic factor, constituted the main essential priority and requires immediate attention. The lack of addressing this factor could result in unintended consequences for agribusiness operations.

The "Annual Agribusiness Survey Report" for South Africa is unique, as it recommends overseeing the nine provinces and categorising factors according to the sizes and magnitudes of businesses. Thus, this highlights the point that differing essential priorities can be observed, which can have major concerns for a specific province, according to the findings of this study. Once the identification of the essential priorities is understood, it will be easier for producers and agribusinesses to focus on what needs immediate attention. This will greatly assist in implementing strategic and operational decisions.

6.2.2 Structuring a framework

It is recommended that this study, which followed the PESTEL + F Analysis Framework to enable producers and agribusinesses to engage in setting priorities for business operations, should be further developed. This study was implemented to rank priorities according to the factors within the external environment that could potentially be seen as an opportunity or a threat. This guides a business to rank the factors that would enable the business to contemplate different versions of the future in a structured way. This recommendation is supported by the statement, "*This analysis can be used as a strategic tool to improve the agricultural environment*" (Mihailova, 2020) (see Section 3.4).

6.2.3 Revisions of PESTEL + F factors

It is highly recommended that the criteria for the different PESTEL + F factors should frequently be reviewed (quarterly or bi-annually) to ensure that relevant and new factors are considered and included within the framework. Thus, the framework for the questionnaire would remain the same, while the sub-categories (criteria) in the PESTEL + F factors would be reviewed or removed, depending on the state of the environment. This is attributable to the uncertainties in the environment that constantly change regarding a business's operations. Current examples include the Ukraine-Russia conflict, which increases input costs, such as diesel and fertiliser. The food security situation that must be reviewed on an annual basis because of the uncertain environment, and the probable worsening of electricity load-shedding.

6.2.4 Further research recommended

It can be concluded that the results in this study have been confirmed by previous studies that are reflected within the literature study. It is further recommended that this type of study should be funded and supported by corporate agribusinesses and should be conducted on an annual basis to establish the changing priorities and trends, over time. This study should also be compared with similar reports and studies conducted elsewhere (e.g. East Africa, Australia, and New Zealand) in order to conduct benchmarking. Additionally, to build on the existing PESTEL+F Analysis Framework by adding a product-based industry can provide further insight and value to external factors that influence the environmental agri-operating environment.

This study has the potential to position itself in the world arena of agribusiness. Further international contacts should be sought to refine it and to stay abreast of developments in the research approach, and the global VUCA environment, as well as identifying the way in which the level of awareness at business and policy levels is increased. This study has given valuable insight at the business and policy levels. It is recommended that this study should be brought to the attention of relevant Government Departments, and it could thus be positioned to allow better-informed policy decisions to be made.

6.3 ADVANTAGE OF IMPLEMENTING CHANGE MANAGEMENT TOOLS

Producers and agribusinesses should progressively integrate and familiarise themselves with change management tools in response to the VUCA environment (see Sections 3.3.4/5/6). Operating within a VUCA environment creates new and advanced opportunities, as well as threats, that agribusinesses are more exposed to, as compared with previous years. This calls for exploring solutions and conducting interdisciplinary research, which is necessary for business operations because of the PESTEL + F environment that is looking considerably different, as the VUCA phenomenon is becoming more complex (Sinha & Sinha, 2020).

If an agribusiness understands the environment in which the business operates, priorities can be implemented to protect the business, to a certain degree, against external factors that are uncontrollable, and this plays an important part in strategic planning and priority setting. These tools for change management could enable a business to rank essential priorities and to reconsider the implementation phase, when necessary. Priorities can change instantaneously owing to unforeseen, disruptive events. Agribusinesses therefore depend on change management tools, as these provide a constructive contribution to producers and agribusinesses in an uncertain environment. These tools were discussed in Chapter 3, such as scenario planning, the ‘unfreeze-change refreeze’ theory by Kurt Lewin, and the PDSA (Plan-Do-Study-Act) cycle, to position a business to become pro-active and respond strategically.

6.4 PESTEL + F FRAMEWORK AND PRIORITY REPORTS

The PESTEL + F Analysis Framework, which is named as the “Annual Agribusiness Survey Report”, specifically focuses on prioritising the external factors that influence the agri-

operating environment of South Africa. This survey report was compared with the Agribusiness Outlook Report from AGRA in Africa, and Global Risks Report from WEF, which focuses on the world. This was done to benchmark established priority reports that focus on agricultural sectors.

It is worth noting that the priorities between priority reports can differ (see Section 5.6) because of different aspects that were taken into consideration, such as differences in geographic areas, business turnover, size, and magnitude of the agribusiness. This study focused on in-depth research specifically for the agri-operating environment of South Africa.

6.5 SHORTCOMINGS OF DATA

A comprehensive conclusion regarding setting priorities could not be fully reached because insufficient responses were received and could not effectively be compared with one another. It is noted that weaknesses of this type do exist, as research is hardly ever done without limitations that influence the outcome of the results (Ross & Bibler Zaidi, 2019). There were three noteworthy shortcomings.

The first prominent shortcoming is that there was a relatively low response rate from many of the provinces, other than Gauteng and the Free State. An extensive comparison across the nine provinces was therefore not possible. A large enough sample size was not represented and that consequently limited the conclusions. The range of raising awareness and the methods used to capture data, in addition, do not suit all producers and agribusinesses equally, which further limited the data being captured.

The second notable shortcoming is that most of the respondents indicated that their business operations take place within the primary agricultural sector. Therefore, comparisons could not be drawn based upon other sectors, such as wholesale, retail, and transport. This confirms that the sample size was not fully representative and this led to some shortcomings in concluding differences in priorities for micro-, small-, medium-, and large-scale agribusinesses that operate in sectors other than primary agriculture. The footprints of the agribusinesses also indicated that business operations also take place in neighbouring and distant countries, such as Namibia,

Zimbabwe, Australia, Uganda, and Ghana. However, the data analysed was limited to South Africa.

The third important shortcoming is that, from the results captured in Chapter 5, the various groupings of the data will collect either similarities or differences owing to aspects such as the size, magnitude, business turnover, and role players (top and middle management, producers etc.). However, because of the low response rate received from various provinces, the shortcoming in this context was that a complete overview to enrich data could not be captured. The data that has been captured is subjective, based on the perceptions of respondents and on the availability of information. In addition, the subjective data carried statistical significance owing to the sample size having knowledge, experience, and adequate skills, which limits data in being generalisable.

Understanding the shortcomings of this study could support the scope for future research into setting priorities in the agri-operating environment. Furthermore, because producers and agribusinesses operate within a rapidly changing VUCA environment, information becomes "perishable" and obsolete. This shows the importance of having relevant and up to date, objective information on which to make strategic and operational decisions within the business.

6.6 CLOSING REMARKS

The landscape of the agri-operating environment continues to evolve at an accelerating pace and faces a broad spectrum of challenges that need to be overcome to enable continuity within business operations. Producers and agribusinesses need to incorporate a combination of strategies, tools, and frameworks to pro-actively plan and implement activities to deal with risks and uncertainties within the external environment.

This study aimed to understand the relationship between the internal and external environments and confirm whether greater attention should be placed on examining and interpreting the external environment. As a result, producers and agribusinesses can rank external factors specifically to the criteria identified in their perceived agri-operating environment. As discussed earlier, it is recommended that the use of scenario planning and analysis be explored

further at academic, business and policy levels to align these role players with the different versions of the future and to jointly and pro-actively explore possible solutions.

REFERENCES

Abafat, S., Rezazadeh, M. H. & Bostani, M. K., 2021. The Foresight of Infrastructural Development of the City of Ardabil with the Integrating Approach of Scenario Planning and the Analytical Models of SOWT and QSPM. *Revista Geintec-Gestao Inovacao E Tecnologias* , 11(3), pp. 1859-1871.

Abusweilem, M. A. & Abualoush, S., 2019. The impact of knowledge management process and business intelligence on organizational performance. *Management Science Letters*, 9(12), pp. 2143-2156.

Acharya, A. S., Prakash, A., Saxena, P. & Nigam, A., 2013. Sampling: Why and How of it?. *Indian Journal of Medical Specialities*, 4(2), pp. 330-333.

Adeoye, A. O. & Elegunde, A. F., 2012. Impacts of External Business Environment on Organisational Performance in the Food and Beverage Industry in Nigeria. *British Journal of Arts and Social Sciences*, 6(2), pp. 194-201.

AGRA, 2022. *The Agribusiness Outlook Report 2022*, Kenya: AGRA and KPMG.

Ahmady, G. A., Mehrpour, M. & Nikooravesh, A., 2016. Organizational Structure. *Procedia - Social and Behavioral Sciences 230*, pp. 455-462.

Al Idrus, S., Ahmar, A. S. & Abdussakir, A., 2018. The effect of organizational learning and job satisfaction on market orientation,and its impact on business achievement. *Journal of Entrepreneurship Education*, 21(4), pp. 1-6.

Almasi, M. S. & Enke, D., 2014. Volatility Forecasting using a Hybrid GJR-GARCH Neural Network Model. *Procedia Computer Science*, Volume 36, pp. 246-253.

Amoroso, S., Moncada-Paternò-Castello, P. & Vezzani, A., 2017. R&D profitability: the role of risk and Knightian uncertainty. *Small Business Economics*, 48(2), pp. 331-343.

Anderson, D. R. et al., 2015. Chapter 3: Descriptive Statistics: Numerical Measures. In: *Modern Business Statistica, Sixth Edition.* Boston: Cengage Learning, pp. 108-179.

Arshad, I. & Ibrahim, Y., 2019. Uncertainty avoidance, risk avoidance and perceived risk: A cultural perspective of individual investors. *Hasanuddin Economics and Business Review*, 3(1), pp. 21-33.

Arshinder, A. K. & Deshmukh, S. G., 2008. Supply chain coordination: Perspectives, empirical studies and research directions. *International Journal of Production Economics,* 115(2), pp. 316-335.

Aubin, I. et al., 2020. Managing data locally to answer questions globally: The role of collaborative science in ecology. *Journal of Vegetation Science,* 31(3), pp. 509-517.

Azomahou, T. T., Boucekkine, R. & Diene, B., 2016. HIV/AIDS and development: a reappraisal of the productivity and factor accumulation effects. *American Economic Review,* 106(5), pp. 472-77.

Bahar, N. H. et al., 2020. Meeting the food security challenge for nine billion people in 2050: What impact on forests?. *Global Environmental Change,* Volume 62, pp. 1-21.

Bartscht, J., 2015. Why systems must explore the unknown to survive in VUCA environments. *Kybernetes,* pp. 253-270.

Beneke, J., Blampied, S., Dewar, N. & Soriano, L., 2016. The impact of market orientation and learning orientation on organisational performance: A study of small to medium-sized enterprises in Cape Town, South Africa. *Journal of Research in Marketing and Entrepreneurship,* pp. 1471-5201.

Bernstein, H., 2013. Commercial Agriculture in South Africa since 1994: 'Natural, Simply Capitalism'. *Journal of Agrarian Change,* 13(1), pp. 23-46.

Beven, K., 2018. The meanings of uncertainty. In: *Environmental Modelling: An Uncertain Future?.* Canada : Routledge, pp. 23-25.

Bintara, R., 2020. The Effect of Working Capital, Liquidity and Leverage on Profitability. *Saudi Journal of Economics and Finance,* 4(1), pp. 28-35.

Bohórquez Arévalo, L. E. & Espinosa, A., 2015. Theoretical approaches to managing complexity in organizations: A comparative analysis. *Estudios Gerenciales,* 31(134), pp. 20-29.

Bonciani, D. & Ricci, M., 2018. *The global effects of global risk and uncertainty,* s.l.: ECB Working Paper No. 2179.

Borghetti, F. et al., 2020. *A quantitative model to define the priority of recovery of road network elements following a relevant event.* Singapore, Research Publishing, pp. 3829-.

Born, L. et al., 2021. *Digital Agriculture Profile - South Africa,* South Africa: African Development Bank.

Brar, P. K. & Danyluk, M. D., 2018. Nuts and Grains: Microbiology and Preharvest Contamination Risks. *Preharvest food safety*, pp. 105-121.

Bryson, J. M., Edwards, L. H. & Van Slyke, D. M., 2018. Getting strategic about strategic planning research. *Public Management Review,* 20(3), pp. 317-339.

Bulturbayevich, M. B. & Ismatullayevich, S. I., 2021. The importance of the implementation of vertical integration processes in the development of innovative activities in industrial enterprises. *Web of Scientist: International Scientific Research Journal,* 2(6), pp. 220-228.

BYJU'S, 2022a. *Agriculture & Agricultural Practices.* [Online]
Available at: https://byjus.com/biology/agriculture-agricultural-practices/

BYJU'S, 2022b. *Difference Between Average And Mean.* [Online]
Available at: yjus.com/maths/difference-between-average-and-mean/#:~:text=Average%20can%20simply%20be%20defined%20as%20the%20sum%20of%20all,the%20average%20of%20the%20sample.

California Association, 2022. *What is Economic Development?.* [Online]
Available at: https://caled.org/economic-development-basics/#:~:text=Economic%20Development%20is%20the%20creation,different%20things%20to%20different%20people.

Cambridge Dictionary, 2022. *Meaning of avoid in English.* [Online]
Available at: https://dictionary.cambridge.org/dictionary/english/avoid

Campbell, S. et al., 2020. Purposive sampling: complex or simple? Research case examples. *Journal of Research in Nursing,* 25(8), pp. 652-661.

CFI Team, 2022. *What is a Stakeholder?.* [Online]
Available at:
https://corporatefinanceinstitute.com/resources/knowledge/finance/stakeholder/

Chron Contributor, 2022. *Definition of Business Trends.* [Online]
Available at: https://smallbusiness.chron.com/dental-practice-valuation-methods-42387.html

Cioană, G., 2009. From static priority to dynamic priority in managing business processes. *International Comparative Management*, Volume 10, pp. 543-547.

CNA , 2016. *Risk Transfer: A Strategy to Help Protect Your Business*, United States: CNA Financial Corporation.

Coelho, P. S., Rita, P. & Santos, Z. R., 2018. On the relationship between consumer-brand identification, brand community, and brand loyalty. *Journal of Retailing and Consumer Services*, Volume 43, pp. 101-110.

Corrocher, N. & Zirulia, L., 2010. Demand and innovation in services: The case of mobile communications. *Research Policy*, 39(7), pp. 945-955.

COSO, 2013. *Internal Control - Integrated Framework*, Durham: Committee of Sponsoring Organizations of the Treadway Commission.

Cumming, T. L. et al., 2017. Achieving the national development agenda and the Sustainable Development Goals (SDGs) through investment in ecological infrastructure: A case study of South Africa. *Ecosystem Services*, Volume 27, pp. 253-260.

DAFF, 2022. *Facilitating Broad-Based Black Economic Empowerment in the agricultural sector.* [Online]
Available at: http://webapps.daff.gov.za/AgriBEE/

Dahl, R. E., Oglend, A. & Yahya, M., 2020. Dynamics of volatility spillover in commodity markets: Linking crude oil to agriculture. *Journal of Commodity Markets*, Volume 20, pp. 1-19.

Davenport, T. H. & Prusak, L., 1998. *Working Knowledge: How Organizations Manage what They Know*. Boston: Harvard College.

de Bruin, L., 2016. *Porter's Five Forces.* [Online]
Available at: https://www.business-to-you.com/porters-five-forces/

de Carvalho, M. M. & Rabechini, R. J., 2015. Impact of risk management on project performance: the importance of soft skills. *International Journal of Production Research*, 53(2), pp. 321-340.

de Olde, E. M. & Valentinov, V., 2019. The Moral Complexity of Agriculture: A Challenge for Corporate Social Responsibility. *Journal of Agricultural and Environmental Ethics*, 32(3), pp. 413-430.

de Wet, P., 2022. *The definitions of micro, small, and medium businesses have just been radically overhauled – here's how.* [Online]
Available at: https://www.businessinsider.co.za/micro-small-and-medium-business-definition-update-by-sector-2019-3

Deloitte, 2022. *COSO – Control Environment.* [Online]
Available at: https://www2.deloitte.com/za/en/nigeria/pages/audit/articles/financial-reporting/coso-control-environment.html

Dibiasi, A. & Iselin, D., 2021. Measuring Knightian Uncertainty. *Empirical Economics,* 61(4), pp. 2113-2141.

Dorward, A. R. & Omamo, S. W., 2009. A Framework for Analyzing Institutions. In: *Institutional Economics Perspectives on African Agricultural Development.* Washington: International Food Policy Research Institute, p. 79.

Duan, Y., Cao, G. & Edwards, J. S., 2020. Understanding the Impact of Business Analytics on Innovation. *European Journal of Operational Research,* 281(3), pp. 673-686.

Dufresne, K., 2022. *The Delphi Technique.* [Online]
Available at: https://s4be.cochrane.org/blog/2017/11/15/the-delphi-technique/

Duncan, R. B., 1972. Characteristics of Organizational Environments and Perceived Environmental Uncertainty. *Administrative Science Quarterly,* pp. 313-327.

Dunne, J. H., Harris, P. & Jalbert, T., 2021. Mitigating Risk Amidst Catastrophic Events: A Focus on Shareholder and Operating Agreements. *Review of Business & Finance Studies,* 12(1), pp. 69-78.

Duong, T. T., Brewer, T., Luck, J. & Zander, K., 2019. A Global Review of Farmers' Perceptions of Agricultural Risks and Risk Management Strategies. *Agriculture,* 9(1), pp. 1-16.

Flanagan, D. J., Lepisto, D. A. & Ofstein, L. F., 2018. Coopetition among nascent craft breweries: a value chain analysis. *Journal of Small Business and Enterprise Development,* 25(1), pp. 2-16.

Fleurence, R. L. & Torgerson, D. J., 2004. Setting priorities for research. *Health Policy,* 69(1), pp. 1-10.

Fosher, H., 2018. *Understanding the Marketing and Management of trails using PESTEL Analysis*, Durham : University of New Hampshire.

Friedman, M., 1982. Social Responsibility of Business and Labor . In: *Capitalism and Freedom.* Chicago: The University of Chicago , p. 112.

FundingHub, 2022. *A Guide to BBBEE for Business Owners in South Africa.* [Online] Available at: https://www.fundinghub.co.za/guide/a-guide-to-b-bbee-for-business-owners-in-south-africa

Gaffneya, J., Challender, M., Califf, K. & Harden, K., 2019. Building bridges between agribusiness innovation and smallholder farmers: A review. *Global Food Security*, Volume 20, pp. 60-65.

Garg, A. K. & Phaahla, P. N., 2018. Factors Affecting the Business Performance of Small Businesses in Sekhukhune. *Journal of Economics and Behavioral Studies*, 10(4), pp. 54-67.

Gerlak, A. K. et al., 2021. Scenario Planning: Embracing the Potential for Extreme Events in the Colorado River Basin. *Climatic Change*, 165(1), pp. 1-21.

Girdžiūtė, L., 2012. Risks in Agriculture and Their Assessment Methods. *Research for Rural Development*, 2(18), pp. 197-202.

Gonthier, D. J., 2014. Biodiversity conservation in agriculture requires a multi-scale approach. *Proceedings of the Royal Society B: Biological Sciences* , 281(1791), pp. 1-8.

GOV.ZA, 2022. *Agriculture, land reform and rural development.* [Online] Available at: https://www.gov.za/about-sa/agriculture-land-reform-and-rural-development

Government Gazette, 1993. *Act No. 126 of 1993, Provision of Land and Assistance Act, 1993.* [Online]
Available at:
https://www.gov.za/sites/default/files/gcis_document/201409/act126of1993.pdf
[Accessed 2022].

Government Gazette, 1998a. *National Water Act 36 of 1998.* [Online]
Available at: https://www.gov.za/documents/national-water-act
[Accessed 2022].

Government Gazette, 1998b. *Act No. 97, 1998 Skills Development Act, 1998.* [Online] Available at: https://www.gov.za/sites/default/files/gcis_document/201409/a97-98.pdf [Accessed 2022].

Government Gazette, 1998c. *National Environmental Management Act 107 of 1998.* [Online] Available at: https://www.gov.za/documents/national-environmental-management-act

Government Gazette, 2001. *No. 45 of 2001: Agricultural Debt Management Act, 2001.* [Online] Available at: https://www.gov.za/sites/default/files/gcis_document/201409/a45-010.pdf [Accessed 2022].

Government Gazette, 2002a. *Land and Agricultural Development Bank Act, 2002 (Act No. 15 of 2002).* [Online] Available at: http://www.treasury.gov.za/legislation/acts/2002/a15-02.pdf [Accessed 2022].

Government Gazette, 2002b. *No. 71 of 2002: International Trade Administration Act, 2002..* [Online] Available at: https://www.gov.za/sites/default/files/gcis_document/201409/a71-020.pdf [Accessed 2022].

Graupner, S., Basu, S. & Singha, S., 2011. *Business Operating Environment for Service Clouds,* USA: Annual SRII Global Conference.

Grohmann, A., Klühs, T. & Menkhoff, L., 2018. Does financial literacy improve financial inclusion? Cross country evidence. *World Development,* Volume 111, pp. 84-96.

Gulati, R., Mikhail, O., Morgan, R. C. & Sittig, D. F., 2016. Vision Statement Quality and Organizational Performance in U.S. Hospitals. *Journal of Healthcare Management,* 61(5), pp. 335-350.

Gupta, G. & Bose, I., 2019. Digital transformation in entrepreneurial firms through information exchange with operating environment. *Information & Management,* pp. 1-15.

Hamsa, K. R. & Bellundagi, V., 2017. Review on Decision-making under Risk and Uncertainty in Agriculture. *Economic Affairs,* 62(3), pp. 447-453.

Handa, V., 2022. *Why is the Republic of South Africa referred to as a Rainbow Nation?.* [Online]
Available at: https://timesofindia.indiatimes.com/why-is-the-republic-of-south-africa-referred-to-as-a-rainbow-nation/articleshow/2515812.cms

Hardaker, J. B., 2015. Risk and Uncertainty. In: *Coping with Risk in Agriculture, 3rd Edition.* London: CAB International, p. 4.

Hayes, J., 2022. *The Theory and Practice of Change Management,* s.l.: Bloomsbury Publishing.

Heeringa, J. et al., 2020. Horizontal and Vertical Integration of Health Care Providers: A Framework for Understanding Various Provider Organizational Structures. *International Journal of Integrated Care,* 20(1), pp. 1-10.

Hollensbe, E., Wookey, C., Hickey, L. & George, G., 2014. Organizations with purpose. *The Academy of Management Journal,* pp. 1227-1234.

Holton, G. A., 2004. Defining Risk. *Financial Analysts Journal,* 60(6), pp. 19-25.

Hove, P. & Tarisai, C., 2013. Internal Factors Affecting the Successful Growth and Survival of Small and Micro Agri-business Firms in Alice Communal Area. *Journal of Economics,* 4(1), pp. 57-67.

Howes, L., 2022. *The Importance of Respecting Your Priorities.* [Online]
Available at: https://www.entrepreneur.com/article/318121#:~:text=That's%20why%20you%20need%20to,someone%20else%20feels%20is%20important.

Husnayain, A., Fuad, A. & Cu, E., 2020. Applications of Google Search Trends for risk communication in infectious disease management: A case study of the COVID-19 outbreak in Taiwan. *International Journal of Infectious Diseases,* Volume 95, pp. 221-223.

Ideagen, 2022. *What is a risk management strategy?.* [Online]
Available at: https://www.ideagen.com/thought-leadership/blog/what-is-a-risk-management-strategy

IMF, 2022. *Six Charts Explain South Africa's Inequality.* [Online]
Available at: https://www.imf.org/en/News/Articles/2020/01/29/na012820six-charts-on-south-africas-persistent-and-multi-faceted-inequality

Indeed, 2022. *Setting Business Priorities (With Definition and Steps).* [Online] Available at: https://www.indeed.com/career-advice/career-development/business-priorities#:~:text=Directing%20your%20employees&text=Employees%20can%20use%20business%20priorities,for%20which%20they%20should%20strive.

Insurance Information Institute, 2022. *crop-hail insurance.* [Online] Available at: https://www.iii.org/article/understanding-crop-insurance

IRC, 2022. *Ukraine war: What are the impacts on the world today?.* [Online] Available at: https://www.rescue.org/article/ukraine-war-what-are-impacts-world-today

James, L. K., Swinton, S. M. & Thelen, K. D., 2010. Profitability Analysis of Cellulosic Energy Crops Compared with Corn. *Agronomy Journal,* 102(2), pp. 675-687.

Jayne, T. S., Mather, D. & Mghenyi, E., 2010. Principal Challenges Confronting Smallholder Agriculture in Sub-Saharan Africa. *World Development,* pp. 1384-1398.

JSE, 2013. *SAFEX Commodity Derivatives.* Johannesburg: JSE CDM Dealers Examination Material.

Kaan, D., 1998. Defining Risk and a Framework for Moving Towards Resilience In Agriculture. *Risk and Resilience Agriculture Series,* 1(3), pp. 1-4.

Kahan, D., 2013. *Managing Risk In Farming,* United Nations: Food and Agriculture Organization .

Kaplan Financial , 2022. *The value chain model.* [Online] Available at: https://kfknowledgebank.kaplan.co.uk/business-strategy/strategic-analysis/porter%27s-value-chain

Kaushika, V., Khare, A., Boardman, R. & Canoc, M. B., 2020. Why do online retailers succeed? The identification and prioritization of success factors for Indian fashion retailers. *Electronic Commerce Research and Applications,* Volume 39, pp. 1567-4223.

Kennerley, M. & Neely, A., 2003. Measuring performance in a changing business environment. *International Journal of Operations & Production Management,* pp. 213-229.

Khan, A. et al., 2020. The impression of technological innovations and natural resources in energy-growth-environment nexus: A new look into BRICS economies. *Science of the Total Environment*, Volume 727, pp. 1-12.

Kirieieva, E. A. et al., 2019. Strategic priorities and financial support of Ukrainian agricultural sector development. *International Journal of Ecological Economics & Statistics*, 40(2), pp. 25-37.

Koc, T. & Bozdag, E., 2017. Measuring the degree of novelty of innovation based on Porter's value chain approach. *European Journal of Operational Research*, 257(2), pp. 559-567.

Kohnova, L., Papula, J. & Salajova, N., 2019. Internal factors supporting business and technological transformation in the context of Industry 4.0. *Verslas: Teorija ir praktika / Business: Theory and Practice*, Volume 20, pp. 137-145.

Kotler, P. & Keller, K. L., 2016a. Marketing Balance. In: *Marketing Management, 15th edition.* England: Pearson Education, p. 41.

Kotler, P. & Keller, K. L., 2016b. New Company Capabilities. In: *Marketing Management, 15th edition.* England: Pearson Education, pp. 39-40.

KPMG, 2021. *Agribusiness Agenda,* New Zealand: KPMG International Limited.

KPMG, 2022. *Embedding resilience.* [Online]
Available at: https://home.kpmg/xx/en/home/insights/2020/03/the-business-implications-of-coronavirus.html

Kraxberger, B., 2007. Failed states: temporary obstacles to democratic diffusion or fundamental holes in the world political map?. *Third World Quarterly*, 28(6), pp. 1055-1071.

Kuhlmann, K. & Dey, B., 2021. Using Regulatory Flexibility to Address Market Informality in Seed Systems: A Global Study. *Agronomy*, 11(2), pp. 1-27.

Lamm, A. J. & Lamm, K. W., 2019. Using Non-Probability Sampling Methods in Agricultural and Extension Education Research. *Journal of International Agricultural and Extension Education*, 26(1), pp. 52-59.

Lazenby, K., 2018. Chapter 7: Scenario development. In: *The strategic management process.* Braamfontein: Van Schaik, pp. 175-186.

Lazenby, K. & Ehlers, T., 2019a. Strategic Direction. In: *Strategic Management.* Pretoria: Van Schaik, pp. 58-65.

Lazenby, K. & Ehlers, T., 2019b. The strategic management process. In: K. Lazenby & T. Ehlers, eds. *Strategic Management, Fourth Edition.* Pretoria: Van Schaik, pp. 1-28.

Lazenby, K. & Ehlers, T., 2020a. Value Chain Analysis. In: *Strategic Management.* Cape Town: Van Schaik, pp. 150-153.

Lazenby, K. & Ehlers, T., 2020b. Industry or market environment. In: *Strategic Management, fourth edition.* Cape Town: Van Schaik, pp. 121-126.

Lazenby, K. & Ehlers, T., 2020c. The Industry Life Cycle. In: *Strategic Management, Fourth edition.* Cape Town: Van Schaik, pp. 231-234.

Leis, J. A. & Shojania, K. G., 2017. A primer on PDSA: executing plan–do–study–act cycles in practice, not just in name. *BMJ qaulity & safety*, 26(7), pp. 572-577.

LEK 788, 2021. *Supply Chain Notes,* Pretoria: University of Pretoria.

Levkivska, L. & Levkovych, I., 2017. Social responsibility in Ukrainian agriculture: the regional issue. *Eastern Journal of European Studies,* 8(1), pp. 97-114.

Lim, A., 2022. *Businesses Exist Because of Its Customers.* [Online]
Available at: https://ariel-lim.com/blog/real-purpose-of-business-why-exist/

Linnenluecke, M. K., 2017. Resilience in Business and Management Research: Review of Influential Publications and a Research Agenda. *International Journal of Management Reviews,* Volume 19, pp. 4-30.

Lin, Y.-T., 2014. Vertical Integration under Competition Production and Operations Management. *Production and Operations Management Society,* pp. 19-35.

Luo, Y., 2021. New OLI advantages in digital globalization. *International Business Review,* pp. 1-8.

Lusardi, A., 2019. Financial literacy and the need for financial education: evidence and implications. *Swiss Journal of Economics and Statistics,* 155(1), pp. 1-8.

Mack, O. & Khare, A., 2016. The VUCA Phenomenon. In: O. Mack, A. Khare, A. Kramer & T. Burgartz, eds. *Managing in a VUCA world.* Switzerland: Springer, pp. 5-7.

MacLeod, C. J., 2019. *Demonstrating the value of evidence-based prioritisation of farm management actions for biodiversity and broader environmental outcomes*, New Zealand: Agricultural Research Group on Sustainability.

Madeira, A., Palrão, T. & Mendes, A. S., 2021. The Impact of Pandemic Crisis on the Restaurant Business. *Sustainability*, 13(1), pp. 1-13.

Mageplaza, 2022. *What Are Internal & External Environmental Factors That Affect Business.* [Online]
Available at: https://www.mageplaza.com/blog/what-are-internal-external-environmental-factors-that-affect-business.html

Mardani, A. et al., 2016. VIKOR Technique: A Systematic Review of the State of the Art Literature on Methodologies and Applications. *Sustainability*, 8(37), pp. 1-38.

Mariadoss, B. J., Johnson, J. L. & Martin, K. D., 2014. Strategic intent and performance: The role of resource allocation decisions. *Journal of Business Research*, 67(11), pp. 2393-2402.

Markmann, C., Darkow, I. L. & der Gracht, H., 2013. A Delphi-based risk analysis — Identifying and assessing future challenges for supply chain security in a multi-stakeholder environment. *Technological Forecasting and Social Change*, 80(9), pp. 1815-1833.

Marunda, E. & Marunda, E., 2014. Enhancing the Micro and Small to Medium size Enterprise Operating Environment in Zimbabwe. *Journal of Business and Management,* 16(11), pp. 113-116.

Masih, J., Rajkumar, R., Matharu, P. S. & Sharma, A., 2019. Market Capturing and Business Expansion Strategy for Gluten-Free Foods in India and USA Using PESTEL Model. *Agricultural Sciences*, 10(2), pp. 202-213.

Mathebe, L., 2021. The Constitutional Court of South Africa: Thoughts on its 25-Year-Long Legacy of Judicial Activism. *Journal of Asian and African Studies* , 56(1), pp. 18-33.

Mathur, V. C. & Singh, N. P., 2005. Management of Risks in Agriculture: A Synthesis. *Agricultural Economics Research Review*, Volume 18, pp. 149-155.

MBA Knowledge Base, 2022. *External Environment Factors of Business.* [Online]
Available at: https://www.mbaknol.com/global-business-environment/external-environment-factors-of-business/

McGinnis, M. D., 2011. An Introduction to IAD and the Language of the Ostrom Workshop: A Simple Guide to a Complex Frameworkpsj_4. *Policy Studies Journal,* 39(1), pp. 169-183.

McKibbin, W. J., Morris, A. C., Panton, A. & Wilcoxen, P., 2017. Climate change and monetary policy: Dealing with disruption. *Centre for Applied Macroeconomic Analysis,* Volume 77, pp. 1-31.

Mihailova, M., 2020. The state of agriculture in Bulgaria – PESTLE analysis. *Bulgarian Journal of Agricultural Science,* 26(5), pp. 935-943.

Mikhno, I. et al., 2021. Green Economy in Sustainable Development and Improvement of Resource Efficiency. *Central European Business Review,* 10(1), pp. 99-113.

Miles, M. P., 1997. Strategic planning and agribusiness: an exploratory study of the adoption of strategic planning techniques by co-operatives. *British Food Journal,* 99(11), pp. 401-408.

Millar, C., Groth, O. & Mahon, J., 2018. Management Innovation in a VUCA World: Challenges and Recommendations. *California management review,* 61(1), pp. 5-14.

Ministerial Declaration, 2011. *Action Plan on Food Price Volatility and Agriculture.* France, Ministerial Declaration, pp. 1-24.

Mitleton-Kelly, E., 2011. A complexity theory approach to sustainability: A longitudinal study in two London NHS hospitals. *The Learning Organization,* 18(1), pp. 45-53.

Mittenzwei, K., Persson, T., Höglind, M. & Kværnø, S., 2017. Combined effects of climate change and policy uncertainty on the agricultural sector in Norway. *Agricultural Systems,* Volume 153, pp. 118-126.

Mutura, J. K., Nyairo, N., Mwangi, M. & Wambugu, S. K., 2015. Vertical and Horizontal Integration as Determinants of Market Channel Choice among Smallholder Dairy Farmers in Lower Central Kenya. *Asian Online Journal Publishing Group,* 2(2), pp. 83-90.

Mzwinila, K. C., Okharedia, A. A. & Lekunze, J. N., 2022. The role of knowledge management capabilities in the performance of Botswana water utilities corporation. *Journal of Business and Retail Management Research,* 16(2), pp. 9-21.

namc, 2022. *ABOUT AGRICULTURE AND AGRO PROCESSING MASTER PLAN (AAMP).* [Online]
Available at: https://www.namc.co.za/aamp/

NDSU, 2022. *Business Environment.* [Online]
Available at: https://www.ag.ndsu.edu/aglawandmanagement/agmgmt/reference/strategic-business-planning/step-3-business-environment

Nguyena, H. L., Larimo, J. & Wang, Y., 2019. Control, innovation and international joint venture performance: The moderating role of internal and external environments. *International Business Review,* 28(6), pp. 1-12.

Ngwangwama, M. M., Ungerer, M. & Morrison, J., 2019. Management Practices and Activities Influencing the Effectiveness of Organisations in Namibia. *Southern African Business Review,* 23(1).

Nicolai, V. & Vincent, D., 2018. Investment in South Africa: Opening the Economy to Transform the Society. *The Journal Of The Helen Suzman Foundation,* pp. 1-21.

Nishimura, K. G. & Ozaki, H., 2007. Irreversible investment and Knightian uncertainty. *Journal of Economic Theory,* 136(1), pp. 668-694.

Notenbaert, A., Pfeifer, C., Silvestri, S. & Herrero, M., 2017. Targeting, out-scaling and prioritising climate-smart interventions in agricultural systems: Lessons from applying a generic framework to the livestock sector in sub-Saharan Africa. *Agricultural Systems,* Volume 151, pp. 153-162.

Novickytė, L., 2018. Income Risk Management in Agriculture using Financial Support. *European Journal of Sustainable Development,* 7(4), pp. 191-202.

NPC, 2022. *National Development Plan.* [Online]
Available at: https://www.nationalplanningcommission.org.za/National_Development_Plan

O'Connell, N., Pinson, P., Madsen, H. & O'Malley, M, M., 2014. Benefits and challenges of electrical demand response: A critical review. *RenewableandSustainableEnergyReviews,* Volume 39, pp. 686-699.

OCSDNet, 2022. *The IAD Framework.* [Online]
Available at: https://ocsdnet.org/about-ocsdnet/about-ocs/iad-framework/

Ogochi, K. D., 2018. Lewin's Theory of Change: Applicability of its Principles in a Contemporary Organization. *Journal Strategic Management*, 2(5), pp. 1-11.

Oke, A., Prajogo, D. I. & Jayaram, J., 2013. Strengthening the Innovation Chain: The Role of Internal Innovation Climate and Strategic Relationships with Supply Chain Partners. *Journal of Supply Chain Management*, 49(4), pp. 43-58.

Okereke, C., Wittneben, B. & Bowen, F., 2012. Climate Change: Challenging Business, Transforming Politics. *Business & Society*, 51(1), pp. 7-30.

Old Mutual, 2022. *Make a claim.* [Online]
Available at: https://www.oldmutual.co.za/claims/

Olsen, E., 2016. *SWOT Analysis: Finding Opportunities in Your Operating Environment.* [Online]
Available at: https://www.dummies.com/article/business-careers-money/business/strategic-planning/swot-analysis-finding-opportunities-in-your-operating-environment-177533/

Orwell, G., 2009. *Animal Farm.* New York: Infobase Publishing.

Oshodi, A. F., 2022. Backward Integration Policy and Manufacturing Firms Value Added in Nigeria. *Economics and Culture*, 19(1), pp. 5-16.

Osterwalder, A. & Pigneur, Y., 2011. Aligning Profit and Purpose Through Business Model Innovation. *Responsible management practices for the 21st century*, pp. 61-76.

Pan, W., Chen, L. & Zhan, W., 2019. PESTEL Analysis of Construction Productivity Enhancement Strategies: A Case Study of Three Economies. *Journal of Management in Engineering*, 35(1), pp. 1-11.

Pardanawati, S. L., 2021. Effect of Working Capital Turnover, Leverage and Sales Growth on Profitability of Consumption Industry Companies in IDX. *Annals of R.S.C.B.*, 25(6), pp. 5770 - 5781.

Parker, C., Scott, S. & Geddes, A., 2019. *Snowball Sampling*, s.l.: SAGE Research Methods Foundations.

Passett, E., Cinquini, L. & Tenucci, A., 2018. Implementing internal environmental management and voluntary environmental disclosure - Does organisational change happen. *Accounting, Auditing & Accountability Journal*, pp. 1-29.

Paunescu, C., Popescu, M. C. & Blid, L., 2018. Business impact analysis for business continuity: Evidence from Romanian enterprises on critical functions. *Management & Marketing,* 13(3), pp. 1035-1050.

Pélabon, C., Hilde, C. H., Einum, S. & Gamelon, M., 2020. On the use of the coefficient of variation to quantify and compare trait variation. *Evolution Letters,* 4(3), pp. 180-188.

Peng, X. E. & Simpson-Bell, C., 2022. Assessing the Impact of Business Closures on COVID-19 Outcomes. *IMF Working Papers,* Volume 139.

Pettit, T. J., Fiksel, J., Polyviou, M. & Croxton, K., 2015. From Risk to Resilience: Learning to Deal With Disruption. *MIT Sloan Management Review,* pp. 79-86.

Pinto da Costa, J. F. & Cabra, M., 2022. Statistical Methods with Applications in Data Mining: A Review of the Most Recent Works. *Mathematics,* 10(993), pp. 1-22.

Prajogo, D. I., 2016. The strategic fit between innovation strategies and business environment in delivering business performance. *International Journal of Production Economics,* Volume 171, pp. 241-249.

Pratama, A. E., Dimyati, M. & Pratiwi, Y. E., 2020. Working Capital Turnover, Operational Cost Ratio, and Inventory Turnover on Company Performance. *Assets : Jurnal Ilmiah Ilmu Akuntansi, Keuangan dan Pajak,* 4(1), pp. 42-49.

Professional Academy, 2022. *Marketing Theories – PESTEL Analysis.* [Online] Available at: https://www.professionalacademy.com/blogs/marketing-theories-pestel-analysis/

Puaschunder, J. M., 2020. *The Future of the City after COVID-19: Digitionalization, Preventism and Environmentalism* , New Jersey: Research Association for Interdisciplinary Studies.

Pulka, B. M., Ramli, A. & Mohamad, A., 2021. Entrepreneurial competencies, entrepreneurial orientation, entrepreneurial network, government business support and SMEsperformance. The moderating role of the external environment. *Journal of Small Business and Enterprise Development,* 28(4), pp. 586-618.

Puspita, G., Arisandy, M. & Octaviani, L., 2021. The Effect Of Fixed Asset Turnover And Working Capital Turnover On Profitability. *Journal of Financial and Behavioural Accounting,* 1(1), pp. 75-82.

Rachinger, M. et al., 2019. Digitalization and its influence on business model innovation. *Journal of Manufacturing Technology Management*, 30(8), pp. 1143-1160.

Raoof, A., 2017. “It is not the strongest species that survive, nor the most intelligent, but the most responsive to change”: Charles Darwin.. *International Journal of Anatomical Variations*, 10(1), pp. 0012-12.

Ray, P., Panigrahi, R. S. & Mohapatra, B. P., 2022. Prioritising Agripreneurial Skills Required for Farm Youth: A Fuzzy Analytic Hierarchy Approach. *Journal of Agricultural Science and Technology*, 24(3), pp. 567-578.

Raziq, A. & Maulabakhsh, R., 2015. Impact of Working Environment on Job Satisfaction. *Procedia Economics and Finance*, Volume 23, pp. 717-725.

Reijs, J. et al., 2021. *Building farm-level sustainability programmes in agribusiness: a 5 step cycle based on lessons from working with the dairy industry*, Netherlands: Wageningen University & Research.

Rizwan, M. et al., 2019. *Why and for what? An evidence of agriculture credit demand among rice farmers in Pakistan*, Tokyo: ADBI Working Paper 995.

Ross, P. T. & Bibler Zaidi, N. L., 2019. Limited by our limitations. *Perspectives on Medical Education*, Volume 8, pp. 261-264.

Ruan, S., 2020. Research on Strategic Cost Management of Enterprises Based on Porter's Value Chain Model. *Journal of Physics: Conference Series*, 1533(2), pp. 1-5.

Sajjad, F., 2022a. *The role of education in rural communities.* [Online]
Available at: https://medium.com/@rdi_77976/the-role-of-education-in-rural-communities-b478ed01b9d6

Sajjad, F., 2022b. *The role of education in rural communities.* [Online]
Available at: https://medium.com/@rdi_77976/the-role-of-education-in-rural-communities-b478ed01b9d6

Saltamarski, D., 2020. Wine sector analyzed through PESTLE analysis as a part of the strategic management. *Journal of sustainable development* , 11(27), pp. 75-86.

Samset, K. & Christensen, T., 2017. Ex Ante Project Evaluation and the Complexity of Early Decision-Making. *Public Organization Review*, 17(1), pp. 1-17.

Sandanda, M., Pooe, D. & Dhurup, M., 2014. Strategic Planning And Its Relationship With Business Performance Among Small And Medium Enterprises In South Africa. *International Business & Economics Research Journal*, 13(3), pp. 659-670.

Santiago, S., Talbert, E. C. & Benoza, G., 2019. Finding Pete and Nikki: Defining the Target Audience for "The Real Cost" Campaign. *American Journal of Preventive Medicine*, 56(2), pp. 9-15.

Sayadi, M. K., Heydari, M. & Shahanag, K., 2009. Extension of VIKOR method for decision making problem with interval numbers. *Applied Mathematical Modelling*, 33(5), pp. 2257-2262.

Schendel, D., 1995. Technological Transformation and the New Competitive Landscape. *Strategic Management Journal*, Volume 16, pp. 1-6.

Schooley, S., 2021. *How to Find Your Business Niche.* [Online]
Available at: https://www.businessnewsdaily.com/6748-business-niche-characteristics.html

Scribbr, 2022. *What's the difference between standard deviation and variance?.* [Online]
Available at: https://www.scribbr.com/frequently-asked-questions/standard-deviation-vs-variance/

Shepherd, M., Turner, J. A., Small, B. & Wheeler, D., 2018. Priorities for science to overcome hurdles thwarting the full promise of the 'digital agriculture' revolution. *Journal of the Science of Food and Agriculture*, 100(14), pp. 5083-5092.

Shin, J., Taylor, M. S. & Seo, M. G., 2012. Resources for change: the relationships of organizational inducements and psychological resilience to employees' attitudes and behaviors toward organizational change. *Academy of Management Journal*, 55(3), pp. 727-748.

Sihlobo, W., 2022. *Agbiz/IDC Agribusiness Confidence Index moderates further in Q2, 2022*, Pretoria: Agricultural Business Chamber of South Africa (Agbiz).

Simatupang, T. M., Piboonrungroj, P. & Williams, J. S., 2017. The emergence of value chain thinking. *International Journal of Value Chain Management*, 8(1), pp. 40-57.

Simplilearn Solutions, 2022. *What is Risk Mitigation? Definition, Types, Top Strategies, and Tools Explained.* [Online]
Available at: https://www.simplilearn.com/what-is-risk-mitigation-article

Sinha, D. & Sinha, S., 2020. Managing in a VUCA World: Possibilities and Pitfalls. *Journal of Technology Management for Growing Economies,*, 11(1), pp. 17-21.

Sneha, G. & Hens, L., 2020. COVID-19: impact by and on the environment, health and economy. *Environment, Development and Sustainability*, 22(6), pp. 4953-4954.

Standard Bank, 2017. Chapter 4: Financial analysis of farming results. In: M. G. Andre Louw, ed. *Finance and Farm Management.* Johannesburg: Standard Bank Agribusiness SA, pp. 87-99.

Standard Bank, 2022. *Standard Bank Agribusiness.* [Online] Available at: https://www.standardbank.co.za/southafrica/business/products-and-services/business-solutions/industry/agribusiness

Stoklasa, J., Luukka, P. & Collan, M., 2022. On the relationship between possibilistic and standard moments of fuzzy numbers. *Journal of Computational and Applied Mathematics,* Volume 411, pp. 114-276.

Strasser, A., 2017. Delphi Method Variants in Information Systems Research: Taxonomy Development and Application. *The Electronic Journal of Business Research Methods,* 11 March, 15(2), pp. 120-133.

Strzelczyk, M. & Chłąd, M., 2017. Use of PESTEL Analysis for Assessing the Situation of Polish Transport Enterprises (Part I). *Zeszyty Naukowe Politechniki Częstochowskiej,* 27(2), pp. 161-168.

Surbhi, S., 2022. *Difference Between Internal and External Environment.* [Online] Available at: https://keydifferences.com/difference-between-internal-and-external-environment.html

Suttner, R., 2014. Popular power, constitutional democracy and crisis: South Africa 1994-2014. *Strategic Review for Southern Africa,* 36(2), pp. 7-30.

Swartz, C. L. & Kawajiri, Y., 2019. Design for dynamic operation - A review and new perspectives for an increasingly dynamic plant operating environment. *Computers and Chemical Engineering,* Volume 128, pp. 329-339.

Tain, D., 2019. Capitalizing on Complexity in Modern Business Environments: A Network-Based Perspective for Projects and Organizations. *PM World Journal,* 3(2), pp. 1-18.

Talluri, S., Kull, T. J., Yildiz, H. & Yoon, J., 2013. Assessing the Efficiency of Risk Mitigation Strategies in Supply Chains. *Journal of Business Logistics,* 34(4), pp. 253-269.

Tasamba, J., 2022. *Wheat prices in Africa up 60% due to Russia-Ukraine war: AfDB.* [Online]
Available at: https://www.aa.com.tr/en/africa/wheat-prices-in-africa-up-60-due-to-russia-ukraine-war-afdb/2573858#

Tedesco, I., 2018. *A holistic approach to agricultural risk management for improving resilience,* Europe: Platform for Agricultural Risk Management, Working Paper, 5.

Tortorella, G. L., Giglio, R. & van Dun, D. H., 2019. Industry 4.0 adoption as a moderator of the impact of lean production practices on operational performance improvement. *International Journal of Operations & Production Management,* Volume 39, pp. 860-866.

Tough, A., 1971. Focusing on highly deliberate efforts to learn. In: *The Adult's Learning Projects: A fresh approach to theory and practice in adult learning.* s.l.:Ontario Institute for Studies in Education, p. 1.

Trading Economics, 2022. *South Africa - GINI Index.* [Online]
Available at: https://tradingeconomics.com/south-africa/gini-index-wb-data.html

Transparency International, 2022. *Corruption Perceptions Index.* [Online]
Available at: https://www.transparency.org/en/cpi/2021

Udoagwu, K., 2021. *Types of marketing environments you should know.* [Online]
Available at: https://www.wrike.com/blog/what-is-marketing-environment/

Ulubeyli, S. K. O. K. A. a. A. V., 2019. Strategic Factors Affecting Green Building Industry: A Macro-Environmental Analysis Using PESTEL Framework. *Sakarya University Journal of Science,* 23(6), pp. 1042-1055.

van Niekerk, G., 2022. *The impact of drought and rain cycles in the Lowveld.* [Online]
Available at: https://www.bushwise.co.za/blog/impact-drought-rain-cycles-lowveld/

Van Winsen, F. et al., 2016. Determinants of risk behaviour: effects of perceived risks and risk attitude on farmer's adoption of risk management strategies. *Journal of Risk Research,* 19(1), pp. 56-78.

Vanem, E., 2012. Ethics and fundamental principles of risk acceptance criteria. *Safety Science*, 50(4), pp. 958-967.

Velocity Global, 2022. *Globalization Benefits and Challenges.* [Online] Available at: https://velocityglobal.com/blog/globalization-benefits-and-challenges/

Virginia Tech, 2022. *History Repeating.* [Online] Available at: https://liberalarts.vt.edu/magazine/2017/history-repeating.html

Vogus, T. J. & Sutcliffe, K. M., 2007. *Organizational Resilience: Towards a Theory and Research Agenda*, Nashville: IEEE Xplore.

Wanjiru, A. I., Muathe, S. M. & Kinyua-Njuguna, J. W., 2019. Moderating Effect of External Operating Environment on the Relationship Between Corporate Strategies and Performance of Manufacturing Firms in Nairobi City County, Kenya. *European Journal of Business and Management*, 11(14), pp. 34-44.

Ward, P. T., Duray, R., Leong, G. K. & Sum, C. C., 1995. Business Environment, Operations Strategy, and Performance: An Empirical Study of Singapore Manufacturers. *Journal of Operations Management*, 13(2), pp. 99-115.

WEF, 2020. *The Global Competitiveness Report Special Edition: How Countries are Performing on the Road to Recovery*, Switzerland: World Economic Forum.

WEF, 2022. *The Global Risks Report 17th Edition*, Switzerland: World Economic Forum.

Wieliczko, B. & Floriańczyk, Z., 2021. Priorities for Research on Sustainable Agriculture: The Case of Poland. *Energies*, 15(1), pp. 1-21.

Wilkinson, B., Le Xuan, B. & Varma, R., 2021. *Financial Impact of Lockdown on Big Business Versus Small Business based on Data Analytics*, s.l.: s.n.

WITS, 2022. *Agriculture: Government Publications: Policy Documents & Acts.* [Online] Available at: https://libguides.wits.ac.za/c.php?g=145268&p=952475

World Bank, 2022. *Gini index - South Africa.* [Online] Available at: https://data.worldbank.org/indicator/SI.POV.GINI?end=2014&locations=ZA&most_recent_value_desc=false&start=1993&view=chart

Xu, M., David, J. M. & Kim, S. H., 2018. The Fourth Industrial Revolution: Opportunities and Challenges. *International Journal of Financial Research*, 9(2), pp. 90-95.

Yüksel, İ., 2012. Developing a Multi-Criteria Decision Making Model for PESTEL Analysis. *International Journal of Business and Management,* 7(24), pp. 52-66.

Zack, M., McKeen, J. & Singh, S., 2009. Knowledge management and organizational performance: an exploratory analysis. *Journal of Knowledge Management,* 13(6), pp. 392-409.

Zhiyong, X., 2017. PESTEL Model Analysis and Legal Guarantee of Tourism Environmental Protection in China. *IOP Conference Series: Earth and Environmental Science*, 81(1), pp. 1-7.

Zinovieva, C. G., 2016. *Study of external and internal factors affecting enterprise's stability,* Russia: Nosov Magnitogorsk State Technical University.

Zinovieva, C. G. et al., 2016. Study of external and internal factors affecting enterprise's stability. *Advances in Systems Science and Applications,* 16(1), pp. 62-71.

Žižlavský, O., 2014. Net present value approach: method for economic assessment of innovation projects. *Procedia - Social and Behavioral Sciences,* Volume 156, pp. 506-512.

Zulu, L. D., 2019. *Department of small business development,* South Africa: Government Gazette.

ANNEXURE A

Politics	Economic
1) Political certainty in the country in terms of the agricultural sector. 2) Government programmes that offer real support to businesses. 3) Finalisation of the land reform and restitution process for the stability and growth of the agricultural sector. 4) Corruption and crime that your business is exposed to. 5) Addressing illegal migrant worker issues in the agricultural sector. 6) Poor service delivery that your business is affected by due to political infighting, factionalism, corruption, etc. Examples: municipal infrastructure. 7) Coordination of smallholder farmer development and commercialisation in South Africa. 8) The consequences of the Russia-Ukraine war. 9) Reliance of your business operations on the performance of the Government. Examples: facilitating the ports, maintenance of roads, issuing of water licenses, management of foot and mouth disease. 10) Achieving government policy alignment and actual implementation across government levels and spheres to support business operations. 11) The public image and reputation of the agricultural and food sector should be enhanced and promoted to the general public.	1) Expansion of business footprint into other territories. Examples: Investment in other provinces, continents, countries, territorial diversification. 2) Adaptability of your business to a volatile, uncertain, complex, and ambiguous environment. 3) The development of export opportunities through trade agreements and business linkages with exporting objective. Examples: Africa Free Trade Agreement, partnership development, expansion of footprint. 4) The current state of the economy on your business profitability. Examples: slow growth in GDP, high inflation, volatile exchange rates, etc. 5) Business dependence on the state of the regional economy. 6) Business dependence on the state of the global economy. 7) Rapid interest rate hikes in South Africa. 8) Business confidence for agribusinesses operating in South Africa. 9) Continued economic impact of COVID-19 regulations from 2020-2022. 10) Risks in your business. Examples: riots, floods, droughts, strikes. 11) The decline in disposable income and poor economic growth in South Africa. 12) Level of interdependency on other stakeholders in the supply chain. 13) High levels of unemployment, inequality, and poverty in the country. 14) High taxes and administered costs. Examples: Electricity tariffs, rates and taxes. 15) Impact of electricity and water shortages. 16) Adding value in your business. Examples: Processing, packaging, horizontal and/or vertical integration.

Social	Technology
1) Adding value in your business. Examples: Processing, packaging, horizontal and/or vertical integration. 2) Crime and corruption in the country. 3) The socially cohesive role of the agricultural sector on South African society. Examples: ensuring basic food security in the country, stability of the countryside, linking urban consumption areas to rural production areas. Safe, affordable, available food of an acceptable nutritious quality on a reliable basis. 4) Availability of skilled and experienced Human Resources in the agricultural sector. Example: Farmers, extension workers, farmworkers, technical agricultural expertise, processing, etc. 5) The integration and inclusion of small scale and emerging farmers for the sustainability of the agricultural sector in South Africa. 6) Promoting agriculture as a career amongst the youth. 7) The agricultural sector achieving the goals of the National Development Plan (NDP) of 2011/2 which aims to eliminate poverty and reduce inequality by 2030.	1) Investment in advanced technologies to improve performance of your business. Examples: new machinery, GPS, traceability software, and mobile apps, drones. 2) Willingness to adapt to advanced technologies. Examples: Soil and water sensors, weather tracking, IT programmes, GIS, digitisation. 3) Planning and implementation of renewable energy solutions. Examples: Solar panel & wind turbines. 4) Leveraging off high-speed, high tech, communication networks. Examples: Access to high-speed internet, large band width connections, etc. 5) Readiness for the fourth industrial revolution. Examples: Willingness to invest in technology, innovative solutions, readiness to adapt to technological change. 6) Investment in information and marketing platforms. Examples: social media, email marketing, radio/digital advertisements, online marketplace. 7) Having government programmes to support the funding of technological development in the agricultural sector. 8) Research institutes/universities for the development of technology and technological solutions in the agricultural sector. 9) Creating a single, open access data platform for the agricultural sector to share information and maximise the benefits of data enabled decision making and big data. 10) Implementing effective mechanisms to improve the extension of best practices and new innovations to on-farm practices. 11) Enabling rural businesses and communities to access the world standard connectivity speeds to maximise the benefits of all digital technologies that become available in rural areas. 12) Accelerated investment in innovation and technology

Environmental	Legal
1) The current state of infrastructure on your ability to run the business operations. Examples: roads, freight, ports, railways. 2) Pursuing a "Net Zero" Carbon strategy. Examples: using less fuel, cultivating less, transporting less, promoting carbon sequestration. 3) Having a climate change strategy for the agricultural sector to manage climate change in South Africa. 4) Recent disruptions and environmental damage in the country. Examples: KZN floods, transport of goods to ports, delays in delivering goods, social disruption. 5) Strategy to cope with and manage environmental disasters that could increase in frequency and impact the business. Examples: insurance, crop insurance, savings, etc. 6) Developing and implementing environmental sustainability strategy for your business. Examples: net zero and carbon neutral footprint, water use saving or reduction. 7) Exposure to agricultural pests and diseases that have a large impact on the sector. Examples: avian flu and swine flu, foot and mouth disease, TB etc. 8) Dependence on access to sufficient and high-quality water. 9) Implementation of "improved agricultural practices" in your business. Examples: reducing agrochemicals such as fertilizer and pesticides, organic production, conservation agriculture, regenerative agriculture, etc.	1) Broad-Based Black Economic Empowerment (BBBEE) for the agricultural sector in South Africa. 2) The implementation of BBBEE in your business. Examples: Transformation and Empowerment, Skills Development, etc. 3) Effective enforcement of current legislation to support the business operations in South Africa. Examples: water rights, contractual agreements, third party/external contractor, protection of IP, property rights and service delivery. 4) Ability of the business to adapt to new or changing laws and regulations with regards to the agricultural and food sector. 5) Sufficient and efficient current trade agreements for the import of goods. Examples: Special safeguards, domestic support, anti-dumping agreement. 6) Sufficient and efficient current trade agreements for the export of goods. Examples: Market access, export competition and subsidies. 7) More efficient regulatory processes and compliance to requirements. Examples: export permits, labour law, administration of statutory obligations. 8) Mandating and enforcing minimum standards for health and safety practices for agricultural and food products together with regular compliance reviews and significant consequences for those found to be in breach of the standards. 9) Ensuring standards and regulations for environmental protection to enhance South Africa's international reputation to produce sustainably produced food in agriculture, forestry, and fisheries. 10) Collaborating with government around policy settings for biosecurity through Government Industry Agreements and accepting a share of cost for management and response to incursions. 11) Legal and ethical support of consumer warranties, protection, norms, and rights as a responsibility of the whole food chain.
Finance	
1) Innovative and tailor-made financial products and tools suited to the agricultural production system. 2) Access to -and affordability of risk management tools to support the continuity of the agricultural sector. Examples: Drought, floods, civil disturbances, energy security, disease outbreaks, and insurance. 3) Declining profitability and competitiveness of Primary and Secondary businesses. 4) Rapidly increasing capital requirements and declining availability of collateral to operate in the agricultural value chain. 5) The ease of doing business, business linkage promotion and business development. 6) The need to secure external investment to meet capital, financing, and expansion requirements of the business. 7) Consolidation of businesses to achieve economies of scale. Examples: Mergers, acquisitions, increasing farm sizes.	

ANNEXURE B

Annual Agribusiness Priorities Survey

Dear Respondent

You are invited to participate in the Annual Agribusiness Priorities Survey to assess the operating environment for South African agribusinesses. Please feel free to share this email with your network.

This survey is part of a series of Agribusiness surveys conducted by Dr Danie Jordaan and Miss Jade Smith at the Department of Agricultural Economics, Extension and Rural Development at the University of Pretoria in South Africa.

Please complete and submit this electronic questionnaire on/or before Friday, 30 September 2022. The survey is expected to take no longer than 20 minutes.

The survey comprises two sections. A profile section and a section that prioritises elements of agribusiness' operating environment.

Your participation and response will remain confidential. You are free to decline the completion of the survey at any time.

Thank you for your time and willingness to participate in this survey. Your inputs are highly valued for the success of advancing the growth and sustainability of the agricultural and agribusinesses sector in South Africa.

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Section 1 - Agribusiness profile

This section records a high level profile of the participating agribusinesses including the locality of head office, geographical footprint, sectoral focus, primary segments, company size, extent of the workforce, and annual turnover.

2. Please indicate the provincial locality of the **head office** of the agribusiness under consideration

- ◯ Gauteng
- ◯ Free State
- ◯ Limpopo
- ◯ Mpumalanga
- ◯ North West
- ◯ Northern Cape
- ◯ Western Cape
- ◯ Eastern Cape
- ◯ KwaZulu-Natal
- ◯ Other (please specify)

3. Please indicate the provincial and country **footprint** of the agribusiness under consideration (select all that apply)

- [ ] Eastern Cape
- [ ] Free State
- [ ] Gauteng
- [ ] KwaZulu-Natal
- [ ] Limpopo
- [ ] Mpumalanga
- [ ] Northern Cape
- [ ] North West
- [ ] Western Cape
- [ ] Botswana
- [ ] Eswatini
- [ ] Lesotho
- [ ] Mozambique
- [ ] Namibia
- [ ] Tanzania
- [ ] Zambia
- [ ] Zimbabwe
- [ ] Other (please specify)

4. What is your **role** in the agribusiness under consideration?

- ( ) Board member
- ( ) Top management
- ( ) Middle management
- ( ) General staff
- ( ) Entrepreneur not employed in business or not a farmer
- ( ) Farmer
- ( ) Other (please specify)

5. Into which broad **segment** does the agribusiness in question fall?

- ◯ Input supply
- ◯ Primary Agriculture
- ◯ Storage and distribution
- ◯ Processing and packaging
- ◯ Wholesale, retail
- ◯ Support services (Banking, insurance, etc.)

6. In which **sub-sectors** does the agribusiness under consideration have a footprint? (select all that apply)

- ☐ Maize
- ☐ Wheat
- ☐ Sorghum
- ☐ Sunflower
- ☐ Soya beans
- ☐ Canola
- ☐ Cotton
- ☐ Sugar
- ☐ Citrus
- ☐ Dried fruit
- ☐ Deciduous and subtropical fruits, including nuts
- ☐ Vegetables
- ☐ Red meat
- ☐ Poultry and eggs
- ☐ Ostriches
- ☐ Pigs
- ☐ Milk
- ☐ Wool
- ☐ Game and wildlife
- ☐ Other (please specify)

7. What is the extent of the **workforce** of the agribusiness under consideration?

- ◯ 1-10 employees
- ◯ 11-50 employees
- ◯ 51-250 employees
- ◯ 51-100 employees
- ◯ More than 250 employees

8. In which economic sector is the bulk of the **business turnover** created?

- ◯ Primary agriculture
- ◯ Wholesale
- ◯ Retail
- ◯ Transport, storage and communication
- ◯ Finance and business services
- ◯ Community, social and personal services

Section 2 - PESTEL + Finance Priorities

This section considers the thematic priorities for agribusinesses that operate within or have a base in South Africa. In a volatile, uncertain, complex and ambiguous environment the prioritisation of a range of themes that require specific attention is essential to inform private sector strategy and public sector policy.

These priorities are grouped in the themes of political, economic, social, technological, environmental, legal and finance.

You are requested to assess the factors in terms of priority in the following section.

Rate the degree of priority (importance) of the following factors in the recent past and future (5 years) in terms of their influence on your business.

POLITICAL

	Not a priority	Low priority	Neutral	High priority	Essential priority
Political certainty in the country in terms of the agricultural sector.	○	○	○	○	○
Government programmes that offer real support to businesses.	○	○	○	○	○
Finalisation of the **land reform and restitution process** for the stability and growth of the agricultural sector.	○	○	○	○	○
Corruption and crime that your business is exposed to.	○	○	○	○	○
Addressing **illegal migrant worker issues** in the agricultural sector.	○	○	○	○	○
Poor service delivery that your business is affected by due to political infighting, factionalism, corruption, etc. *Example: municipal infrastructure.*	○	○	○	○	○
Coordination of **smallholder farmer development and commercialisation** in South Africa.	○	○	○	○	○
The consequences of the **Russia-Ukraine war**.	○	○	○	○	○
Reliance of your business operations on the **performance of the Government**. *Examples: facilitating the ports, maintenance of roads, issuing of water licenses, management of foot and mouth disease.*	○	○	○	○	○
Achieving government policy alignment and actual implementation across government levels and spheres to support business operations.	○	○	○	○	○
The **public image and reputation of the agricultural and food sector** should be enhanced and promoted to the general public.	○	○	○	○	○

Rate the degree of priority (importance) of the following factors in the recent past and future (5 years) in terms of their influence on your business.

ECONOMIC

	Not a priority	Low priority	Neutral	High priority	Essential priority
Expansion of business footprint into other territories. *Examples: Investment in other provinces, continents, countries, territorial diversification.*	○	○	○	○	○
Adaptability of your business to a volatile, uncertain, complex and ambiguous environment.	○	○	○	○	○
The development of **export opportunities** through trade agreements and business linkages with exporting objective. *Examples: Africa Free Trade Agreement, partnership development, expansion of footprint.*	○	○	○	○	○
The current **state of the economy** on your **business profitability**. *Examples: slow growth in GDP, high inflation, volatile exchange rates, etc.*	○	○	○	○	○
Business **dependence** on the state of the **regional economy**.	○	○	○	○	○
Business **dependence** on the state of the **global economy**.	○	○	○	○	○
Rapid **interest rate hikes** in South Africa.	○	○	○	○	○
Business confidence for agribusinesses operating in South Africa.	○	○	○	○	○
Continued **economic impact of COVID-19 regulations** from 2020-2022.	○	○	○	○	○
Risks in your business. *Examples: riots, floods, droughts, strikes.*	○	○	○	○	○
The **decline in disposable income and poor economic growth** in South Africa.	○	○	○	○	○
Level of interdependency on other stakeholders in the **supply chain.**	○	○	○	○	○
High levels of **unemployment, inequality and poverty** in the country.	○	○	○	○	○
High taxes and administered costs. *Examples: Electricity tariffs, rates and taxes.*	○	○	○	○	○
Impact of **electricity and water shortages.**	○	○	○	○	○
Adding value in your business. *Examples: Processing, packaging, horizontal and/or vertical integration.*	○	○	○	○	○

Rate the degree of priority (importance) of the following factors in the recent past and future (5 years) in terms of their influence on your business.

SOCIAL

	Not a priority	Low priority	Neutral	High priority	Essential priority
Agile response required by agricultural and food system to **adapt to changing consumer preferences**.	○	○	○	○	○
Crime and corruption in the country.	○	○	○	○	○
The **socially cohesive role of the agricultural sector** on South African society. *Examples: ensuring basic food security in the country, stability of the country-side, linking urban consumption areas to rural production areas. Safe, affordable, available food of an acceptable nutritious quality on a reliable basis.*	○	○	○	○	○
Availability of **skilled and experienced Human Resources** in the agricultural sector. *Example: Farmers, extension workers, farmworkers, technical agricultural expertise, processing, etc.*	○	○	○	○	○
The **integration and inclusion of small scale and emerging farmers** for the sustainability of the agricultural sector in South Africa.	○	○	○	○	○
Promoting agriculture as a career amongst the youth.	○	○	○	○	○
The agricultural sector achieving the goals of the **National Development Plan (NDP)** of 2011/2 which **aims to eliminate poverty and reduce inequality** by 2030.	○	○	○	○	○

Rate the degree of priority (importance) of the following factors in the recent past and future (5 years) in terms of their influence on your business.

TECHNOLOGY

	Not a priority	Low priority	Neutral	High priority	Essential priority
Investment in **advanced technologies** to improve performance of your business. *Examples: new machinery, GPS, traceability software, and mobile apps, drones.*	○	○	○	○	○
Willingness to adapt to advanced technologies. *Examples: Soil and water sensors, weather tracking, IT programmes, GIS, digitisation.*	○	○	○	○	○
Planning and implementation of **renewable energy solutions**. *Examples: Solar panel & wind turbines.*	○	○	○	○	○
Leveraging off **high-speed, high tech, communication networks**. *Examples: Access to high speed internet, large band width connections, etc.*	○	○	○	○	○
Readiness for the **fourth industrial revolution**. *Examples: Willingness to invest in technology, innovative solutions, readiness to adapt to technological change.*	○	○	○	○	○
Investment in **information and marketing platforms**. *Examples: social media, email marketing, radio/digital advertisements, online market place.*	○	○	○	○	○
Having **government programmes to support the funding of technological development** in the agricultural sector.	○	○	○	○	○
Research institutes/universities for the **development of technology** and technological solutions in the agricultural sector.	○	○	○	○	○
Creating a single, **open access data platform for the agricultural sector** to share information and maximise the benefits of data enabled decision making and big data.	○	○	○	○	○
Implementing effective mechanisms to **improve the extension of best practices** and new innovations to on-farm practices.	○	○	○	○	○
Enabling **rural businesses and communities to access the world standard connectivity** speeds to maximise the benefits of all digital technologies that become available in rural areas.	○	○	○	○	○

Rate the degree of priority (importance) of the following factors in the recent past and future (5 years) in terms of their influence on your business.

ENVIRONMENTAL

	Not a priority	Low priority	Neutral	High priority	Essential priority
The **current state of infrastructure** on your ability to run the business operations. *Examples: roads, freight, ports, railways.*	○	○	○	○	○
Pursuing a **"Net Zero" Carbon strategy.** *Examples: using less fuel, cultivating less, transporting less, promoting carbon sequestration.*	○	○	○	○	○
Having a **climate change strategy** for the agricultural sector to manage climate change in South Africa.	○	○	○	○	○
Recent disruptions and environmental damage in the country. *Examples: KZN floods, transport of goods to ports, delays in delivering goods, social disruption.*	○	○	○	○	○
Strategy to cope with and manage environmental disasters that could increase in frequency and impact the business. *Examples: insurance, crop insurance, savings, etc.*	○	○	○	○	○
Developing and implementing **environmental sustainability strategy** for your business. *Examples: net zero and carbon neutral footprint, water use saving or reduction.*	○	○	○	○	○
Exposure to **agricultural pests and diseases** that have a large impact on the sector. *Examples: avian flu and swine flu, foot and mouth disease, TB etc.*	○	○	○	○	○
Dependence on access to **sufficient and high quality water**.	○	○	○	○	○
Implementation of **"improved agricultural practices"** in your business. *Examples: reducing agrochemicals such as fertilizer and pesticides, organic production, conservation agriculture, regenerative agriculture, etc.*	○	○	○	○	○

Rate the degree of priority (importance) of the following factors in the recent past and future (5 years) in terms of their influence on your business.

LEGAL

	Not a priority	Low priority	Neutral	High priority	Essential priority
Broad-Based Black Economic Empowerment (BBBEE) for the agricultural sector in South Africa.	○	○	○	○	○
The implementation of **BBBEE in your business.** *Examples: Transformation and Empowerment, Skills Development, etc.*	○	○	○	○	○
Effective enforcement of current legislation to support the business operations in South Africa. *Examples: water rights, contractual agreements, third party/external contractor, protection of IP, property rights and service delivery.*	○	○	○	○	○
Ability of the business to **adapt to new or changing laws and regulations** with regards to the agricultural and food sector.	○	○	○	○	○
Sufficient and efficient current **trade agreements** for the **import** of goods. *Examples: Special safeguards, domestic support, anti-dumping agreement.*	○	○	○	○	○
Sufficient and efficient current **trade agreements** for the **export** of goods. Examples: Market access, export competition and subsidies.	○	○	○	○	○
More efficient **regulatory processes and compliance** to requirements. Examples: export permits, labour law, administration of statutory obligations.	○	○	○	○	○
Mandating and enforcing minimum standards for health and safety practices for agricultural and food products together with regular compliance reviews and significant consequences for those found to be in breach of the standards.	○	○	○	○	○
Ensuring **standards and regulations for environmental protection** to enhance South Africa's international reputation to produce sustainably produced food in agriculture, forestry and fisheries.	○	○	○	○	○
Collaborating with **government around policy settings for biosecurity** through Government Industry Agreements and accepting a share of cost for management and response to incursions.	○	○	○	○	○
Legal and ethical support of **consumer warranties, protection, norms and rights** as a responsibility of the whole food chain.	○	○	○	○	○

Rate the degree of priority (importance) of the following factors in the recent past and future (5 years) in terms of their influence on your business.

FINANCE

	Not a priority	Low priority	Neutral	High priority	Essential priority
Innovative and tailor-made financial products and tools suited to the agricultural production system.	○	○	○	○	○
Access to -and affordability of risk management tools to support the continuity of the agricultural sector. *Examples: Drought, floods, civil disturbances, energy security, disease outbreaks, and insurance.*	○	○	○	○	○
Declining profitability and competitiveness of Primary and Secondary businesses.	○	○	○	○	○
Rapidly increasing capital requirements and declining availability of collateral to operate in the agricultural value chain.	○	○	○	○	○
The **ease of doing business, business linkage promotion and business development.**	○	○	○	○	○
The need to secure **external investment to meet capital, financing and expansion requirements** of the business.	○	○	○	○	○
Consolidation of businesses to achieve **economies of scale.** *Examples: Mergers, acquisitions, increasing farm sizes.*	○	○	○	○	○

Open ended priorities

Please list any priorities that have an important influence on the agricultural and agribusiness sector that may have not been mentioned in our list as it currently stands. We would appreciate your feedback of the coverage of the main topics that are currently relevant.

22. In the event that you would like to, list up to **5 priorities** that are not captured by this questionnaire.

Priority 1

Priority 2

Priority 3

Priority 4

Priority 5