INTEGRATED INNOVATION STRATEGIES ON SUSTAINABILITY OF AGRICULTURAL COOPERATIVES IN LEJWELEPUTSWA DISTRICT, FREE STATE PROVINCE, SOUTH AFRICA

by

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DECLARATION

I, Siyaze Knowledge Gantsho hereby declare that this thesis represents my own work for my submission of the PhD in Sustainable Agriculture at the University of the Free State, it has not been submitted previously to this or any other institution for other qualification/s. I have read the University's current research ethics guidelines and accept responsibility in accordance with the University's Ethics Committee

Siyaze Knowledge Gantsho

29 November 2023

Date

DEDICATION PAGE

To God be the glory! “

I can do all things through him who gives me strength”

I dedicate this thesis to my father Mfazwe ‘Kethe’ Gantsho who always inspired and encouraged me throughout my studies. He taught me: **“Boroko ha se lefa.”**

A special dedication to my son Nikelo Gantsho, I hope he follows my academic steps one day.

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ABSTRACT

Agriculture is practiced in rural areas characterised by extreme poverty. In the Lejweleputswa district, crop farming cooperatives, together with other agricultural production activities, are significant economic engine. Conversely, modern crop producers are reluctant to incorporate innovation into their routine farming practices.

This paper, which focuses on integrated innovation methods that support agricultural cooperatives, is a component of a PhD research project conducted in the province of Free State in the Lejweleputswa district municipality. The lack of enthusiasm among cooperative members in integrating innovation techniques into business operations as a trending factor for sustainability made agriculture cooperatives unsustainable, according to the study's research topic. The primary objective was to examine the impact of integrated innovation strategies on the sustainability of agriculture cooperatives in Lejweleputswa district, Free State province in order to make a policy recommendation for sustainability.

The descriptive study analysis was conducted on 139 cooperative members from 25 different agriculture cooperatives. Data was collected using survey questions that were standardised. Likert scales with 5 points were used to assess these survey questions. Collected data sets were analysed using SPSS version 28 software.

The data was found to be reliable as a Cronbach’s alpha was found to be 0.927 and 0.861 for product and process innovation strategy implementation. The average correlation coefficient was observed to be 0.6 which denotes an overall positive correlation between variables. The one sample test was used to determine the p-value (Sig-value), which was found to be less than 0.05. Pearson correlation coefficient was found to be 0.68 on average, denoting that there is a positive relationship between variables of organisational strategies. The p-value (0.026) < 0.05 indicated a statistically significant difference between the variables.

The F-value for marketing innovation strategies variables was found to be less than the degree of freedom, 1.552 and 3.0, respectively. Thus, the hypothesis was

accepted. The one-sample t test was also used to determine the mean, standard deviation, and the p-values of the results. All the mean values were significantly higher than 3, and p-values were found to be all less than 0.05, thus indicating that respondents agree with the discussed challenges.

The findings indicated that RSMEA, NNFI and CFI were within the acceptable ranges for good model fit at 0.049, 0.953 and 0.957, respectively. This implies that the hypothesised model was a good fit for collected data. It was observed that only 40.29% agreed to have received financial support from FDI's and only 58.27% agreed to have received non-financial support from government agencies.

The results suggest that agricultural cooperatives are not motivated to use innovative marketing techniques. It is determined that most the Lejweleputswa district's agricultural cooperatives have a poor opinion of marketing innovation.

The result of the study proves the hypothesis that the implementation of innovation strategies is significantly low in agriculture cooperatives.

***Key words**:* Innovation, Strategy, Sustainability, Innovation Strategies, Agriculture Cooperative,

OPSOMMING

Landbou kom voor in landelike gebiede wat gekenmerk word deur hoë vlakke van armoede. Koöperasies se saaiboerdery, tesame met ander landbouproduksie-aktiwiteite, is 'n belangrike ekonomiese dryfveer in die distrik Lejweleputswa. Huidige saaiboere, aan die ander kant, is huiwerig om innovasie in hul daaglikse boerderyprosesse te implementeer en te integreer.

Hierdie artikel is deel van 'n PhD-navorsingstudie wat in die Lejweleputswa-distriksmunisipaliteit in die provinsie Vrystaat uitgevoer is en fokus op geïntegreerde innovasiestrategieë wat landboukoöperasies onderhou. Die studie se navorsingsprobleem was dat landboukoöperasies nie volhoubaar kon wees nie omdat koöperatiewe lede nie daarin belangstel om innovasiestrategieë in sakebedrywighede in te sluit as 'n neigende faktor vir volhoubaarheid nie. Die primêre doelwit was om die impak van geïntegreerde innovasiestrategieë op die volhoubaarheid van landboukoöperasies in die Lejweleputswa-distrik in die Vrystaat-provinsie te ondersoek ten einde 'n beleidsaanbeveling vir volhoubaarheid te maak.

Die studie is uitgevoer om die implementering van innovasiestrategieë op volhoubare landboukoöperasies in die Lejweleputswa-distrik te ondersoek. Die beskrywende studie-analise is uitgevoer op 139 koöperatiewe lede van 25 verskillende landboukoöperasies. Data is ingesamel met behulp van opnamevrae wat gestandaardiseer is. Likertskale met 5 punte is gebruik om hierdie opnamevrae te assesseer. Versamelde datastelle is ontleed met behulp van SPSS weergawe 28 sagteware.

Daar is gevind dat die data betroubaar is, aangesien daar gevind is dat 'n Cronbach se alfa 0,927 en 0,861 is vir die implementering van produk- en prosesinnovasiestrategieë. Die gemiddelde korrelasiekoëffisiënt is waargeneem as 0,6 wat 'n algehele positiewe korrelasie tussen veranderlikes aandui. Die een steekproeftoets is gebruik om die p-waarde (Sig-waarde) te bepaal, wat minder as 0,05 was. Daar is gevind dat Pearson-korrelasiekoëffisiënt gemiddeld 0,68 is, wat aandui dat daar 'n positiewe verband tussen veranderlikes van organisatoriese

strategieë is. Die p-waarde (0,026) < 0,05 dui op 'n statisties beduidende verskil tussen die veranderlikes.

Die bevindinge het aangedui dat RSMEA, NNFI en CFI binne die aanvaarbare reekse was vir goeie modelpassing op onderskeidelik 0.049, 0.953 en 0.957. Dit impliseer dat die veronderstelde model goed pas by versamelde data. Daar is opgemerk dat slegs 40.29% ingestem het om finansiële ondersteuning van FDI's te ontvang en slegs 58.27% het ingestem om nie-finansiële ondersteuning van regeringsinstansies te ontvang.

Die bevindinge impliseer dat daar geen begeerte binne landboukoöperasies is om bemarkingsinnovasiestrategieë te implementeer nie. Daar word tot die gevolgtrekking gekom dat die meeste landboukoöperasies in die Lejweleputswa-distrik 'n negatiewe persepsie van bemarkingsinnovasie het. Die resultaat van die studie bewys die hipotese dat die implementering van innovasiestrategieë aansienlik laag is in landboukoöperasies.

Sleutelwoorde: Innovasie, Strategie, Volhoubaarheid, Innovasiestrategieë, Landboukoöperasie,

ABREVIATIONS

AGFI: Adjusted Goodness of Fit Index

ANOVA: Analysis of Variance Test

AVE: Average Variance Extracted

CAADP: Comprehensive Africa Agricultural Development Programme

CASP: Comprehensive Agricultural Support Programme

CFA: Confirmatory Factor Analysis

CFI: Comparative Fit Index

CIS: Cooperative Incentive Scheme

CODAS: Cooperative Data Analysis System

CR: Composite Reliability

DALRRD: Department of Agriculture, Land Reform and Rural Development

DAFF: Department of Agriculture, Forestry and Fisheries

DESTEA: Department of Economic, Small Business Development, Tourism and Environmental Affairs

DTI: Department of Trade and Industry

FAO: Food and Agriculture Organisation

FDC: Free State Development Corporation

GCIS: Government Communication and Information Systems

GFI: Good Fit Index

IDC: Industrial Development Corporation

IS: Innovation Success

LDA: Lejweleputswa Development Agency

LED: Local Economic Development

LRAD: Land Redistribution for Agriculture Development

MAFISA: Micro Agricultural Financial Institutions

MARKINN: Marketing Innovation

MDG: Millennium Development Goal

NCASA: National Cooperative Association of South Africa

NDA: National Department of Agriculture

NEPAD: New Partnership for Africa's Development

NFI: Normed Fit Index

NNFI: Non-normed Fit Index

NYDA: National Youth Development Agency

OECD: Organisation of Economic Co-operation and Development

ORGINN: Organisational Innovation

PROCEIIN: Process Innovation

PRODINN: Product Innovation

RMSEA: Root Mean Square Error of Approximation

SAJAE: South African Journal of Agricultural Extension

SAPA: South African Potatoes Association

SEDA: Small Enterprise Development Agency

SEFA: Small Enterprise Development Agency

SEM: Structural Equation Modelling

SPSS: Statistical Package for Social Sciences

TLI: Tucker-Lewis Index

LIST OF APPENDICES

CHAPTER 1: BACKGROUND

1.1 Introduction

This chapter gives the context and theory related to the innovation and sustainability of agriculture cooperatives. It discusses the background, research problem, objectives, study area and the structure of the contents of the study. Furthermore, the chapter elucidates used terminologies, exhibits the research questions, and states the structure of the chapters and the limitations of the study. The study was influenced by the rate at which crop agricultural cooperatives collapse due to a lack of innovative activities and practices.

Section 1.2 explains this study's background and provides a brief definition of agriculture cooperative and innovation strategies, providing a review of the major issues addressed in this study. In section 1.3; the problem statement is revealed, and in Sections 1.4 and 1.5; this study's research objectives and researched questions are addressed. Section 1.6 outlines the validity and reliability of the data collected.

The importance of the study is discussed in section 1.7, and the study terminologies are explained in section 1.8. The framework analysis is detailed in section 1.9.

Section 1.10 will explain how the research study is organised, and the limitation of the study is explained in section 1.11.

Finally, the chapter conclusion and summary are described in section 1.12.

1.2 Background

Innovation is a critical prerequisite for the development and stability of the agricultural sector. Innovation is the key to sustainability for a business sector operating in a viable market (Mahmutaj, Rocheska and Krasniqi, 2021). Innovation is perceived as the base of productivity, competitiveness, and growth in all advanced and emerging areas of cooperatives. The main purpose of innovation is to create jobs, generate income, target social development, and reduce poverty.

An agriculture cooperative is a business that provides agricultural services and inputs to its members. The role of agricultural cooperatives is, besides its overall contribution to the economy, significant contributions such as creating new jobs, effectively mobilizing resources, and generating investment in the industry. In its diverse forms, agricultural cooperatives make a noteworthy impact on the socio-economic improvement of their members (Macaskill, 2018).

As explained by Garnevska, Guozhong, and Nicola (2011), Cooperatives play an important role in socio-economic growth. Agriculture cooperatives are formed to offer commercial welfare for their stakeholders. Agriculture cooperatives plays a role in improving food security and generating opportunities for employment (FAO, 2012). and play a significant role in rural development and the reduction of poverty through agricultural development (Garnevska, Guozhong, and Nicola, 2011).

As stated by Sizya (2001), agriculture cooperatives are often considered as a vehicle through which administrations like the arrangement of homestead inputs, monetary advances, agrarian augmentation, promotion of farm items and other financial exercises are delivered to individuals in the community. Such cooperatives are organised structures that support rural development to reduce poverty.

Notwithstanding the consideration given by the South African government to the job of farming cooperatives in adding to financial development and the formation of occupations, few issues should be settled (Bhorat, 2011). These concerns include support in terms of the development of new skills, further developed assistance and augmentation services, upgraded access to monetary administrations and expedited progress with the land reallocation process in South Africa. This will expand the job agriculture cooperatives play in poverty alleviation (Bhorat, 2011).

For agriculture cooperatives to achieve sustainable development, they must encourage and engage innovative practices within their business operations. The objective of this study is to examine the influence of innovation strategies on the sustainability of agricultural cooperatives in the Lejweleputswa district. Innovation is a basic prerequisite for the development and stability of the agricultural sector.

Innovation is a key to sustainability for the agricultural sector operating in an undeniably aggressive market.

Innovation is considered a major foundation of progress and productivity, competitiveness, and growth in all advanced and emerging areas of cooperatives. The main purpose of innovation is to create jobs, generate income, affect social development, and reduce poverty in communities.

Pavlov (2017) suggests that innovation in the cutting-edge economy is not less important than different elements of production like capital, land, and labour. Innovation does not just assist with settling current or existing business issues; it also adds esteem in keeping up with creations that are lessening in specific areas because of an absence of labour. It expands the competitiveness of agriculture cooperatives, and whole economies meet or even outperform public requirements.

For innovation to be instigated and realised in the agriculture cooperatives, the cooperatives should have an explicit and unambiguous plan or strategy on how to achieve this. The cooperative's innovation strategies refer to the distinctive events such as the actual growth and execution of innovation.

Pavlov (2017) further argues that innovation strategy is a significant element for effectively acknowledging product, organisational, and management innovations and enhancing the marketplaces of the innovative cooperatives. According to Pisano (2015), initiatives on innovation frequently fall flat and successful innovators have difficulty maintaining sustainable development. Innovation improvement can be useless without an innovation strategy, and different operations of the cooperative can easily have contradictory priorities even if the business strategy is clear.

Pisano (2015) further claims that a reasonable and basic innovation strategy assists managers with planning a framework to match their competitive necessities. Innovation strategy is a basic provision for innovation, and a means to achieve an organisation's strategic goals. The implementation of an innovation strategy expands the management's innovation capabilities.

Pisano (2015) argues that with an innovation strategy, the setting for advancement and the cooperative's devotion to development are recognised and formalised. A formalised way to deal with advancement further expands the odds of framing a fruitful design for innovation. Finally, an innovation strategy must align with the cooperative's vision and mission.

Strategic innovation for sustainability can be characterised as the origination of something new that further develops performance in the three (3) aspects of sustainability, specifically social, environmental, and economic. There is discussion and misconception regarding what such improvements in performance include, yet there is presently a developing agreement that, likewise with regular innovation, they are not limited to technological change but also include a change for processes, working methodology or operational procedures and practices, plans of action, thinking and frameworks (Szekely, 2012)

1.3 Problem Statement

The existing literature has provided different views and various approaches to innovation strategies. However, a gap remains. The gap, in general, refers to how innovation strategies can be implemented by agriculture cooperatives to enhance sustainability.

The researcher asserts that agriculture cooperatives lack suitable patterns set in place to handle innovation. Most of the time, agricultural cooperatives cannot identify innovation strategies that can help them be sustainable. Cooperatives also leaves ideas unimplemented which hinders both innovation and creativity.

There is innovation implementation gap experienced, which demotivates employees who have very productive innovations that could enhance sustainability in the cooperative. This gap necessitated the need to conduct a study in the Lejweleputswa district context to establish the impact of innovation strategies on the sustainability of agricultural cooperatives.

1.4 Research Objectives

The study's primary objective is to examine the impact of integrated innovation strategies on the sustainability of agriculture cooperatives in Lejweleputswa district, Free State province in order to make a policy recommendation for the cooperative for sustainability. The specific objectives are as follows:

- To examine the main types of innovation strategies in agricultural cooperatives.
- To identify the challenges that agricultural cooperatives encounter to implement innovation strategies.
- To determine the success of innovation strategies in agricultural cooperatives.
- To indicate the types of support that the agricultural cooperatives receive to implement innovation strategies.
- To make a policy recommendation on the implementation of integrated innovation strategies for sustainable agriculture cooperatives.

1.5 Research Questions

The following research questions pertain to the problem statement and gives context to research objectives for implementation of innovation strategies in Lejweleputswa agriculture cooperatives:

- What are the main types of innovation strategies that impact the sustainability of agricultural co-operatives in Lejweleputswa district, Free State province?
- What challenges does the agricultural cooperatives encounter in implementing innovation strategies?
- What determines the successful implementation of innovation strategy?
- What types of support do agricultural cooperatives receive for implementing innovation strategies successfully?

- In line with the outcomes of the above analysis, what policy recommendations can be made to sustain agriculture cooperatives? Who should take the lead in implementing the strategies and what is the role of the members?

1.6 Validity and Reliability

The validity and reliability of data measurement tools were critical in this research study. Validity refers to an instrument's ability to measure what it is designed to ascertain (Brynard and Hanekom, 2006).

According to Quinlan (2011), validity is determined by how rational and meaningful the research is. Criterion-related validity, content validity, face validity, and concurrent validity are the four (4) ways to assess the legitimacy of the research instrument.

Face validity is based on the researcher and respondents' subjective judgments. Content validity identifies with the precision and propriety of the inquiries collected in a survey questionnaire, though face validity depends on the analyst's and respondents' emotional decisions. Concurrent validity identifies how much an estimation strategy uncovers the data it wanted to uncover, though criterion validity alludes to whether an instrument utilised for information assortment surveyed what it should evaluate.

In this study, content and face validity were evaluated and utilised.

1.7 Importance of the study

This research will be important to the agriculture cooperatives as it will provide knowledge on how and which type of innovation strategies need to be adopted to maintain sustainability. Understanding and accepting the innovative strategy practices will offer knowledge into the justification for why and how agriculture cooperatives can be innovative. This study will also be useful in helping the members of agriculture cooperatives to improve their innovative capabilities and proficiencies.

1.8 Terminologies used in this study.

1.8.1 Innovation

As per Katz, du Preez, and Schutte (2010), innovation is a fruitful era of improvement and an execution of new and groundbreaking thoughts that present new products, processes, and additional techniques to an organisation. Based on the definition, four types of innovation were identified in the study, namely, Product Innovation, Process Innovation, Marketing innovation and Organisational Innovation.

1.8.2 Innovation Strategies

Innovation strategy is an operational support for innovation. The implementation of innovation strategy enhances the management of cooperative's innovation capabilities. Innovation strategy helps agricultural cooperatives to identify the competitive needs for innovation and formalise the implementation of it. Innovation strategy directs the way resources should be employed to accomplish cooperative's innovation goals and gaining a competitive edge.

1.8.2.1 Product Innovation Strategy

Product innovation strategy is a methodical approach to bringing innovative concepts, features, technologies, or designs that provide value for consumers and set the product apart from competitors' offers in the market. Ensuring a competitive advantage is the primary goal of a product innovation strategy.

1.8.2.2 Process Innovation Strategy

Process innovation strategy is a method for creating and executing fresh, vastly enhanced commercial procedures that boost output, cut expenses, and meet client demands. It may entail implementing new techniques, instruments, technology, or organisational adjustments.

1.8.2.3 Organisational Innovation Strategy

An organisation innovation strategy is a plan that describes how an organisation will use its culture, resources, and ability to innovate to meet its objectives. The process

of generating new or improved goods, services, procedures, business models, or processes is known as innovation, and it benefits consumers, stakeholders, and society.

1.8.2.4 Marketing Innovation Strategy

Marketing innovation strategy is a holistic approach of utilising novel strategies and tactics for product or service placement, design, packaging, and promotion. It enhances corporate results and adds value for customers.

1.8.3 Sustainability

In its broadest sense, sustainability refers to the ability to maintain or carry out a process for a long time. In the context of business and policy, sustainability seeks to prevent the depletion of natural or physical resources so that they can be utilised for an extended period.

1.8.4 Policy Recommendation

It is a written policy advice created for a group with decision making capacity. It serves as a means of formally endorsing a set of concepts or a strategy for handling certain circumstances. Policy recommendations are the chief product of the ongoing work of government managers to create and administer public policy.

1.9 Framework of Analysis

This study focused on innovation strategies in agricultural cooperatives and has selected the main strategies that affect the productivity and sustainability of such cooperatives. Concerning this, the layout of the chapters is discussed further in 1.11. The framework explains the steps that leads to the policy recommendation on the implementation of innovation strategies for sustainable agricultural cooperatives.

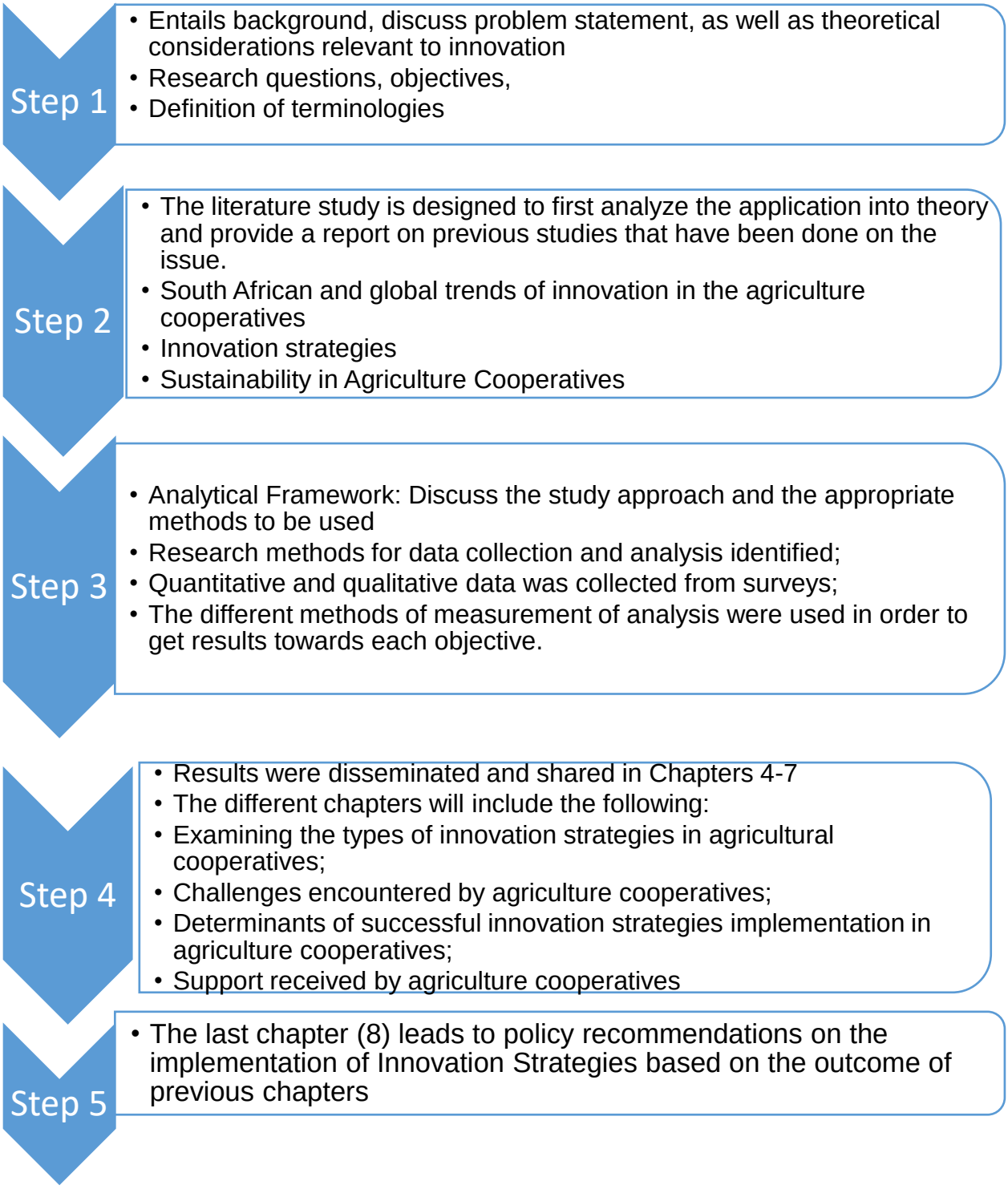

Fig 1: Framework of Analysis

1.10 Study Summary

The research is organised into eight (8) chapters. The layout of the main content that will be included in the various chapters is explained below:

Chapter 1: Introduction

The research is built around this chapter. It provides information about the topic to be discussed and the methodology used for the study.

Chapter 2: Literature Review

This chapter focused on the history and the practices that contribute to innovation strategies in agriculture. Theories found in the literature that explain the existing innovation strategies are revealed in this chapter.

Chapter 3: Research Method

This chapter explains how the study's findings were obtained. The chapter outlines a strategy for employing all necessary data collection methods, breaking down the gathered information and experimentally addressing the research questions.

Chapter 4: Types of innovation strategies

The chapter examines the types of innovation strategies that impact the sustainability of agriculture cooperatives. The chapter draws attention to the types, characteristics, and classifications of innovation strategies in agriculture cooperatives. Chapter 4 is divided into three sub-chapters that are written in article format. Each sub-chapter has the following hypothesis:

- The implementation of product and process innovation strategy is significantly low in most agriculture cooperatives in Lejweleputswa district.
- The implementation of organisational innovation strategy is significantly low in most agriculture cooperatives in Lejweleputswa district.
- The implementation of marketing innovation strategy is significantly low in most agriculture cooperatives in Lejweleputswa district.

Chapter 5: The challenges faced by agricultural cooperatives.

This chapter discusses the challenges that agricultural cooperatives encounter in integrating innovation strategies into their daily business operations.

Chapter 6: Innovation success measures

This chapter focused on determining factors that measure the success of innovation strategies in agricultural cooperatives. The theories found in the literature that explain the existing innovation metrics are mentioned in this chapter.

Chapter 7: Support available.

Support available for agriculture cooperatives is discussed in this chapter. Financial and non-financial support available from the government and its agencies is also discussed. The level of assistance provided versus the level of assistance required is thoroughly discussed by examining government support structures in the Lejweleputswa district.

Chapter 8: Policy recommendation and conclusion

The study ends with this chapter. It will make suggestions based on the findings and the literature review and results analysis. Recommendations are given in order to address each objective and reach a conclusion on the policy that will influence the implementation of innovation strategies on the long-term viability of agriculture cooperatives in the Lejweleputswa district.

To facilitate publication, chapters four (4) through seven (7) are written in the form of articles.

1.11 Limitations of the Study

The significant impediment experienced by the researcher was that some government agencies were not able to share data since this data consisted of information that cannot be divulged to general society because of a paranoid fear of uncovering the

insubstantial records. This is also on the grounds that the monetary presentation of these agencies is not made public like that of private companies.

1.12 Conclusion and Summary

This chapter has provided an introduction to the topics considered in this study. High expectations from customers, low growth, and environmental concerns are a few of the challenges agricultural cooperatives face today, along with diminishing profit margins. To be sustainable, agriculture cooperatives need innovative solutions to become more productive in an environmentally, economically, and socially viable manner.

Even though most researchers have uncovered the reality of the relationship between innovation and performance, they did not focus on the influence of strategic innovation on the sustainable development of agricultural cooperatives. Hence, this study examines the impact of integrated innovation strategies on the sustainability of agriculture cooperatives. Thus, it depicts a hypothetical model that combines innovation strategies with sustainability. The study objectives and research questions were discussed, and the format of the thesis was outlined later toward the end of the chapter to acclimate the reader to the accompanying chapters. The next chapter will cover the literature review of the study.

CHAPTER 2: LITERATURE REVIEW

2.1 Introduction

The previous chapter (1) was the introductory part of the study. The research objectives, research questions and problem statement were discussed. This chapter deals with the literature review of the study to help the reader to understand the attributes of innovation, the complications in measuring the success of innovation and the strategies reported to influence sustainable agricultural cooperatives.

A considerable amount of research and discussion has been conducted on the contribution to innovation in general; however, not much research has been done on implementing innovation strategies in agricultural cooperatives. This section outline background and the expectation of the impact of innovation strategies on the sustainability of agricultural cooperatives.

Quinlan (2011) expresses literature review as a study that has happened and confirmed as a viable exploration by a review process and published in journal articles and books. This section examines the articles that served as the primary source for this study.

This section will analyse the current review on the impact of innovation strategies on the sustainability of agricultural cooperatives. The specific types, characteristics and categories of innovation strategies that apply to agriculture cooperatives will also be discussed in this section.

This section will also identify measures, obstacles, and the support available for the innovation strategy implementation in agricultural cooperatives. The literature review section of the chapter is designed to ground the application in theory and provide information on previous research on the subject.

Section 2.1 gives the introduction of this chapter, followed by a discussion of innovation strategies in both sections 2.2.

Section 2.3, 2.4 and 2.5 outlines innovation and sustainability in agriculture cooperatives. Innovation will be categorised by types, characteristics and finally, classifications. The status of agriculture in the Free State and South Africa in general is covered in section 2.6. In section 2.7 and 2.8, innovation in agriculture and the status of agriculture cooperatives in South Africa are discussed. Section 2.9 covered the challenges encountered by agriculture cooperatives while 2.10 covered the effect of innovation strategies on sustainability of cooperatives. The chapter ends with the discussion on support available for agriculture cooperative.

2.2 Innovation Strategy

Innovation is today considered of considerable importance for firms, as levels of competition are swiftly rising, and production methods are rapidly improving. Organisations need to have new ideas that lead to new products, processes, and programmes, and to develop new technologies that improve their performance and competitiveness and lead to products that set them apart from their competitors (Álvarez and Martínez, 2020).

Innovation strategy is innovative direction of company approach to the choice of objectives, methods, and ways to fully utilize and develop the innovative potential of the enterprise. This is the direction given of its boundary, which determines the potential of innovative strategies (Lendel and Varmus, 2011).

Strecker (2009) defined Innovation strategy as the sum of strategic choices a firm makes regarding its innovation activity. Innovation goals (ends) are not included – only means. Innovation strategy is considered a firm wide, cross-functional meta-strategy. Innovation strategies are potential actions that require decisions made by the management and human resources.

Identification of factors determining the innovative activity of enterprises is one of the basic directions of research on growth and economic development. This task is extremely complex, because it is conditioned not only by the singular internal properties of enterprises, but also by the aspects regarding the socio-economic environment (Wziątek-Kubiak, Balcerowicz, and Pęczkowski, 2013).

According to Zartha, Montes, Vargas, Velez, Hoyos, Hernandez, and Novikova (2016), For several years now, at the organisational level there has been growing interest in comprehending the innovation strategy characteristics, particularly how it is materialised in varied enterprises - in other words, how the strategy is formulated and implemented.

According Roliak (2013), the innovation strategy, innovations and innovative processes play a decisive role in the matter of acquiring and maintaining strengths of a company in a battle with the competition. Currently, innovations and the attitude towards innovations mostly determine the positions of big and small companies alike, including start-ups.

Investing in new products, new techniques, and practices worsens the company's short-term financial results. However, this does not mean that the enterprise will get into trouble because of that. In the long run, this investment will bring profits and increase the value of the business (Dobrovič, Kmeco, Gallo, and Gallo, 2019).

According to Expósito and Sanchis-Llopis (2019) Innovation strategy can be described as a plan of company activities and development to encourage, mobilize, motivate, and achieve advancements in technology or service by investing financial and human assets in research and development activities. Product innovations are strongly linked to company performance, while process, marketing, and organisational innovations are less related to productivity (Bartelsman, Falk, and Hagsten, 2019).

Pertuz and Pérez (2020) lamented that the innovation process depends also on the size of enterprises. The ability to successfully implement new ideas consists of a whole range of competencies and skills—from market analysis to project and change management. An effective strategy is to show the ways of creating the uniqueness of the company so that it stands out among competing entities operating on the market. The changing market environment forces enterprises to constantly change and adapt to the requirements and expectations and creates the need for innovation.

A strategy oversees the choices made and how the process is carried out, as it does with most business processes. The Strategy that governs a company's innovation

operations is commonly referred to as an innovation strategy. Innovation strategy aims to assist the agricultural cooperatives in deciding when to abandon the past business practices, pay attention to the present and plan future practices, according to Katz et al. (2010).

Lastly, Katz et al. (2010) offer a wide innovation strategy definition. According to Katz et al. (2010), it is a practical, pre-determined plan leading the distribution of possessions to attain a business's strategic goals and a choice structure, directing an organisation on how and when it ought to forgo the past and embrace new technology meticulously.

According to Dodgson et al. (2008), innovation strategy helps agricultural cooperatives decide the type of innovation that matches their objectives. Dodgson et al. (2008), further broaden their definition of innovation strategy to include a roadmap for allocating resources to fulfil the company's goals. They said innovation strategy directs the way resources should be employed to accomplish a cooperative's innovation goals and gain a competitive edge.

Pisano (2015) uses a typical meaning of Strategy to illustrate an innovation strategy in one of the formulations in the literature. A strategy, as per Pisano, is just a confirmation of a bunch of predictable, commonly supporting arrangements or practices designated at achieving a predefined serious objective.

According to Pavlov (2017), for innovation to be implemented in the business space, the cooperatives must have strategies on how this can happen. The cooperative's innovation strategy relates to actions such as developing and implementing innovation. Pavlov further posits that innovation strategy is a useful element for understanding the product, process, marketing, and organisational innovations in the cooperatives.

According to Pisano (2015), implementation of innovation sometimes fails, and those who succeed in successfully implementing innovation have difficulties sustaining performance. The failure to successfully implement innovation is entrenched in the

absence of a proper innovation strategy. Innovation improvement efforts can be ineffective without a proper innovation strategy.

Pisano (2015) further argues that innovation strategy helps managers design business models that meet competitive needs. Without innovation strategy, the agricultural cooperatives can have conflicting business practices, even though they have a business strategy in place. Innovation strategy is operational support for innovation. The implementation of an innovation strategy enhances the innovation capabilities of cooperative's members.

Innovation strategy helps agricultural cooperative managers identify the competitive needs for innovation and formalise its implementation. A formalised innovation implementation increases the chances of successfully executing innovation strategy. There is no doubt that innovation is an important source of economic growth (Jakimowicz and Rzeczkowski, 2019).

2.2.1 Innovation Strategies in Agriculture Cooperatives

2.2.1.1 Product Innovation Strategy

The term "Product Innovation" is utilised to portray unused or improved product or benefit that is altogether diverse from cooperative's existing products or administrations and has been brought to the market. Product innovation can utilise the information or unused applications, or even combination of existing information and new application (Oslo, 2018).

In the agricultural industry, product innovation refers to both the introduction of novel products and the demonstration of noteworthy enhancements or crucial modifications to the functional attributes of already-available agricultural products. Products that are new to a cooperative are those whose descriptions diverge from those of its current offerings. Variations in materials, methods, and attributes that enhance the product's quality might result in basic alterations or upgrades to currently available items (Oslo, 2018).

Regarding product innovations, Zaefarian, Forkmann, Mitrega, and Henneberg (2017) found two key conclusions. First, wide knowledge is necessary for product improvements. Second, cooperation and knowledge sharing between the company and the collaboration partner are necessary for product breakthroughs.

Product innovation, according to Krasadakis (2020), refers to the launch of a new product (item or service) or the advancement of an already-existing product by incorporating notable enhancements.

According to Kozludzhova (2023), a "product" is anything that can be offered to the market to satisfy specific clients. Krasadakis (2020) bemoaned the fact that the multiple phases associated with the creation and application of innovations can result in a lengthy life cycle for products.

Cooper (2017) defines product innovation as the process of creating a product with the intention of making money, providing a useful service, or being consumed. This covers tangible goods and services as well as product and service combinations. As the end output of a cooperative's manufacturing efforts, a product falls into one of two categories: good or service. Different authors have different opinions about what constitutes a good and a service.

There is a line of contention, which recognises products and services according to their nature, whether tangible or intangible. The product and service can moreover be recognised concurring to whether a product can be stored. Services, unlike products, cannot be stored (Cooper, 2017).
Innovations are one of the key factors for economic growth that lead to increased productivity and the overall economic performance, according to Nihal, et al. (2023).

Product innovation that works produces new goods and services, opens new markets, expands businesses, and adds value for customers. Product innovation raises productivity, reduces costs, increases profits, and creates jobs by improving current goods and procedures. On the one hand, innovative businesses enjoy greater

worldwide market shares, growth rates, and market valuations. Customers of innovative products, on the other hand, benefit from more options, better services, less costs, and superior products (Reguia, 2014).

Innovation frequently entails change that comes about because of coordinated, interconnected adjustments to products and processes, according to Molero (2013). The organization's capacity for adaptation and change is reflected in the innovative products. This pertains to companies that prioritize implementing innovative strategies grounded in creativity, achievement, financial gain, and client contentment. The wide strategic viewpoint of product innovation refers to developing new products that give businesses a competitive edge and long-term growth.

According to Rainey (2009), product innovation can be considered a subset of the strategic management system, which is responsible for providing guidance, strategies, and decisions regarding which options to pursue and how to foster an environment within the organization that facilitates opportunity discovery and challenge response.

Additionally, one may argue that a strategic component of the business's overall plan is product innovation. Its strategic aim determines another facet of product innovation (Farida and Setiawan, 2022).

Oirere (2015) embarked on study research in which he examined the impact of product innovation on productivity and how innovation enhances productivity in enterprises. Oirere concluded that product innovation does not impact the profitability of a business. The study proved that innovation impacts the financials, profit, market share and operational costs of the business.

Product innovation can be measured in various means; these are the input and output measures. Research and Development are the input measures, while the quantity of the new products brought into the market, income, and cooperative performance are the output measures of product innovation. One more likely arrangement of result

measures is licensed innovation, for example, patents and trademarks (Zizlavsky, 2011).

Product innovation can further develop cooperatives' performance in various ways. Innovation strategies affect cooperative performance as it advances market position, thus giving the cooperative the upper hand and predominant performance (Walker, 2004).

When a product accesses the market, it faces restricted competition and consequently gains profit. A relationship subsequently exists between cooperative profitability and product innovation. Finally, cooperatives that present new products frequently accomplish high profitability for an extensive period (Varis and Littunen, 2010).

2.2.1.2 Process Innovation Strategy

However, because process innovation is frequently associated with cost reduction, the effects it has on business performance are not always evident and may take some time to manifest. Researchers agree that process and product innovation are closely related and mutually reinforcing in both scenarios. Improving business processes is necessary for the creation of new goods, and the introduction of new products is a result of the process improvements, according to Hullova et al. (2016).

Examples of process innovation may include the introduction of lean production techniques, the elimination of non-value adding production activities, the acquisition of new machinery and incorporation of cutting-edge production technology.

Researchers Ar and Baki (2011) and Atalay et al. (2013), for example, found that technological innovation, including product and process innovation, has a positive impact on firm performance in the automotive supplier industry. They also found that process innovation is positively related to the performance of the organization, particularly when it comes to the introduction of new production methods and other Research and Development improvements. Its effect on product innovation exhibits a secondary effect, filtering the beneficial effect of process innovation on corporate success.

Oslo Manual (2005) lamented that process innovation implements a new production technique. This includes changes in machinery and equipment used. Process innovation is creating and executing new ideas and techniques in cooperatives. This encompasses a range of innovative practices, such as new management drills, equipment demonstrations, and modifications to the creation cycle (Reichstein and Salter, 2006).

Frishammar et al. (2013) noted that the cooperative begins by defining the process before providing process innovation. Pure execution projects that integrate the definition into the existing processes usually follow this. Strong development projects are occasionally sparked by this execution,

Numerous factors, including the strategy or business technique, expense centre, and the participation of management and members in the innovation process, affect the cooperative's capacity to achieve process innovation (Reichstein and Salter, 2006).

Process innovation can be justified in several ways, the most well-known of which is competitive cooperatives that manufacture comparable goods. By providing cooperative benefits like cost efficiency, speed of development, and consistency in quality, process innovation can put an end to competition (Bellgran and Säfsten, 2005).

Reichstein and Salter (2006) conclude that process innovation has the potential to yield competitive advantages and go on to say that innovation is a key component of effective production. The cooperative's ability to acquire, assimilate, modify, and utilize pertinent resources, methods, and data for the process innovation process should be evident as part of its process innovation capacity. Cooperatives that develop and implement novel process technology have a competitive edge and are protected against replication.

Process innovation fosters more creative product development projects and supports the cooperative's efforts to improve its offerings (Reichstein and Salter, 2006). Frishammar et al. (2012) confirmed that the following elements are critical to process innovation success: advanced environment, top management responsibilities and

viewpoints, coordinated effort across internal subunits and stakeholders, and vital arrangement. Partnerships

2.2.1.3 Marketing Innovation Strategy

Marketing innovation, according to Ungerman, Dedkova, and Gurinova (2018), is the process of coming up with novel ideas, products, services, or technology based on the market while keeping the demands of the client in mind. It should be mentioned that marketing innovation is regarded as non-technological, as opposed to product and process innovation.

These days, the data analytics, and other customer-related technologies may be the driving forces behind and provide support for such marketing innovations, according to Erevelles et al. (2016). The introduction of novel distribution or promotion strategies, changes to logistics, the use of creative pricing strategies, or the execution of pertinent, state-of-the-art marketing initiatives are a few examples of marketing innovation.

Modern research has also shown interest in the relationship between marketing innovation and corporate performance. For instance, Gupta et al. (2016) demonstrated that marketing innovations, particularly when customer information is considered during their design, result in higher firm competitiveness. Ungerman et al. (2018) corroborated this notion, indicating that marketing innovation strategy has a positive impact on several business performance metrics, such as corporate culture, employee productivity, and competitiveness.

Marketing innovation strategy in the organisation is the implementation of marketing methods that changes product packaging, promotion, costing and pricing. Marketing innovation strategy aims to meet or exceed customer or client needs, open new markets, product positioning on the market, and increase sales. This type of innovation involves implementing marketing methods that were not used by the agricultural cooperative. Marketing innovation strategy is a concept that signifies a shift from the cooperatives' current marketing techniques (Oslo Manual, 2005).

Innovative marketing techniques can improve a business's cost-effectiveness, sales, and competitiveness, claim Kamp and Parry (2017). Marketing innovation is a systematic way of assessing methods, new approaches, and new agreements that provide access to market for the product. It improves or introduces new value setting methodology, new advancements, new conveyance channels, and promoting data systems.

According to Falk (2013), cooperatives that innovate in their marketing strategies are more likely to survive a crisis. According to Bartoloni and Baussola (2016), marketing innovation is the application of a different advertising strategy that involves significant modifications to product arrangement, packaging, pricing, and promotion.

Marketing innovation strategy assist in creating a competitive advantage. The capacity to approach the market, communicate products that will satisfy consumers' demands, and keep existing customers is known as a marketing innovation strategy. Marketing innovation strategy can be beneficial in utilisation of advertising methods that can change the packaging of the product and its and pricing.

Marketing innovation, according to Karlsson and Tavassoli (2016), places a product in new markets and meets or surpasses consumer expectations. It also helps cooperatives keep a competitive edge.

2.2.1.4 Organisational Innovation Strategy

Camison and Lopez (2014) define innovation strategy from various perspectives related to the contexts of every business segment. In the context of organisation, innovation strategy is the application of new methods in the business practices, workplace, and external relationships of organisations.

According to the socio-technical system theory, adjustments to organisational resources must also be made to the management system to adapt to changes in the technological system and meet changing demands. The provision and implementation of work resources in this regard are contingent upon organisational innovation (Azar and Chiabuschi 2017).

Quintana (2018) argues that to attain higher organisational performance, companies must have a better understanding of how to deal with changes and uncertainties in their environment while integrating one or more types of innovation. According to Subramaniam and Youndt (2005), competent workers possess a wide range of talents and are more willing to learn new things, expand organisational capabilities, and encourage innovative ways of thinking (Nieves and Quintana 2018).

An organisation's primary resources are people with the necessary skills, knowledge, and experience (Nieves and Quintana 2018). Accordingly, encouraging administrative adjustments for organisational innovation is essential to the effective deployment of innovation work resources (Azar and Chiabuschi 2017).

According to Azar and Chiabuschi (2017), organisational innovation fosters a welcoming and pertinent atmosphere that makes it easier for workers to embrace resources that can improve organisational performance at the same time. However, there has not been much study done in public-sector organisations on the mediating role that work resource performance plays in the relationship between organisational innovation and organisational work performance. Additionally, academics contended that organisational innovations continue to be underestimated in terms of their significance for modifications to work resources (Azar and Chiabuschi 2017).

Process innovation, according to Hervas-Oliver et al. (2014), is positively correlated with the performance of the business and it is only practical when organisational innovation strategies are into practice, particularly when it comes to implementing organisational mechanisms for learning new information. Furthermore, Ali et al. (2016) discovered a direct correlation between organisational creativity and a firm's ability to assimilate technological information, both of which enhance overall organisational performance.

Wang et al. (2015) conducted a study and proved the beneficial correlation between organisational performance and innovation, particularly for businesses with high network centrality and those functioning in knowledge-intensive networks.

The agriculture cooperatives' business practices incorporate innovative organisational techniques using organisational innovation approach. The goal of organisational innovation strategy is to lower supply and operating costs while improving the performance of the cooperatives. This kind of innovation entails introducing organisational strategies into the cooperative that had not been employed previously. For agricultural cooperatives looking to revamp their output, improve the calibre of products they produce, and stay competitive, the introduction of improved or new management skills is crucial (Mol and Birkinshaw, 2009).

According to Camisón and Villar-López (2014), there is insufficient research on organisational innovation strategies, and it is not obvious how they affect innovation and financial results. Mol and Birkinshaw (2009, 1270) are cited, who clearly advocate for increased observational validation of the impact of organisational changes on financial improvement.

This was supported by Armbruster et al. (2008) who conducted a thorough analysis of the relationship between organisational innovation and financial performance, demonstrating a positive consequence for firms' competitive advantage. Hamel (2009) also lamented that organisational innovation has a favourable impact on competitive advantage.

According to Laforet (2013), organisational innovation influences organisations and improves productivity, profit margin, market share decision-making, but it has little effect on labour retention or operational competence.

Within the workplace, innovation encompasses implementing novel approaches to assigning responsibilities, fostering employee decision-making, and generating fresh concepts for organizing corporate operations. The use of improved strategies for setting up and organizing ties with various cooperatives or public organisations, such as outsourcing services and collaboration with clients or research institutes, is the final example of innovation in organisational procedures. Implementing novel strategies for structuring standard operating procedures and corporate processes is considered organisational innovation, according to the OECD (2005).

2.3 Sustainability

To attain sustainable development, agricultural cooperatives need to promote and incorporate new methods into their internal economic operations. The impact of innovation methods on the long-term viability of agricultural cooperatives in the Lejweleputswa district is investigated in this study.

Sustainability is a concept that relates to the utilisation of resources and the effect of human activity on the environment and society. It involves creating and maintaining conditions that support the well-being and diversity of present and future generations. Sustainability has three core aspects: **economic**, **environmental**, and **social**. It requires an understanding and respect for the interdependence of all life on Earth, a recognition of the legacy and on-going effects of human actions, and a commitment to act deliberately and wisely.

2.4 Sustainable Agriculture

Doval (2018) defines sustainable agriculture as farming practices that allow the production of animals or crops without endangering human or environmental systems. It attempts to provide for the current food and textile needs of society without endangering the capacity of the next coming generations to provide for own needs. This entails guarding against detrimental consequences on the land, water, biodiversity, downstream resources, and people who live or work nearby or on the farm (Willsher, 2022).

Doval (2018) goes on to say that those who engage in sustainable agriculture want to incorporate three primary goals into their work: social and economic equality, economic profitability, and a healthy environment. These professionals employ techniques to improve soil health, reduce water usage, and lessen pollution on farms. With the least amount of harm to the environment, farmers may produce food and profit through sustainable farming practices.

Dubey (2023) claims that one of the main causes of biodiversity loss, environmental degradation, and water use in South Africa is agriculture. Thus, it is crucial to make

sure that sustainable farming practices are used to preserve the biodiversity and soils surrounding these vital places. The goal of sustainable agriculture is to preserve the planet's capacity to support future generations while producing enough resources to support the world's current population. It covers techniques such as agroforestry, permaculture, and organic farming.

Maintaining ecological health, generating profit, and advancing socioeconomic fairness are the cornerstones of sustainable agriculture. It works hard to preserve and promote biodiversity. The focus of sustainable agriculture is growing a variety of crops, such as heritage plants, which are frequently climate-adapted. Sustainable agriculture promotes the use of polyculture, in which several crops are cultivated together, as an alternative to industrial monoculture, which relies on a single crop (Dubey, 2023).

2.5 Relationship between innovation and sustainability

The relationship between these two concepts is such that innovation often drives sustainability. For example, innovative technologies can lead to more efficient use of resources, reducing environmental impact and promoting sustainability. According to Kuzma, Padilha, Sehnem, Julkovski and Roman (2020), the relationship between sustainability and innovation has been the focus of various studies.

On the other hand, the need for sustainability can also drive innovation, as businesses and societies look for new ways to reduce their environmental footprint. However, it is important to note that not all innovation leads to sustainability.

According to Schilirà (2019), infrastructure, trained labour, adequate financial resources, good organisational and managerial principles, and sound organisational and managerial practices are just a few of the requirements for innovation's success in sustainable business. Some new technologies or processes may increase resource consumption or have other negative environmental impacts. Therefore, it is crucial to consider the potential sustainability implications of any innovation.

Fundamentally, innovation acts as a catalyst for economic expansion and sustained competitiveness between countries and businesses, which makes it a potent tool for opening new markets and promoting sustainable growth on a worldwide scale.

A bibliometric examination and visual analysis of the connection between innovation and sustainability were carried out in a different study. The primary goal was to record the intellectual framework, volume, and paths for knowledge development empirically. According to Maier, Maier, Aşchilean, Anastasiu, and Gavriş (2020), there has been a notable surge in the number of publications on innovation and sustainability published in the past ten years, from 2010 to 2019, when compared to the time prior to 2010.

Fu, Sial, Arshad, Comite, Thu, and Popp (2021) state that innovation and sustainability are intertwined, especially when it comes to social, economic, and environmental development. One important strategy for attaining sustainability is innovation. Businesses that are moving toward sustainability go through several phases of transition, such as seeing compliance as a chance, transforming value chains into sustainable ones, inventing sustainable goods and services, coming up with fresh business concepts, and building platforms for next practices.

While innovation and sustainability can mutually reinforce each other, careful consideration is needed to ensure that innovation efforts are aligned with sustainability goals. Innovation is the progression of developing new ideas, products, and methods; while sustainability is the ability to maintain certain processes or states in a long period.

In the context of business and economics, sustainability often refers to the capacity for enduring economic growth without harming the environment or depleting resources. There is a relationship between sustainable performance and innovation performance, as measured by research and development investment (Dicuonzo, Donofrio, Ranaldo, and Dell'Atti, 2022).

2.6 Agriculture

2.6.1 Status of Agriculture in South Africa

According to Statistics SA (March 2021), a census report released in March 2021 arrived at the flowing conclusions regarding agriculture in South Africa.

2.6.1.1 Number of farms

According to Statistics SA (2020), in 2017, there were 40 122 farming units operating in the commercial agriculture industry. Livestock farming accounted for the greatest proportion of farms with 34 percent, followed by blended farming with 31 percent, lastly and field crops with 21 percent.

Free State was the province with the most farms in 2017, with most farms accounting for about 20 percent of the national total, the Western Cape followed with 17 percent, Northwest province 12.3 percent, and Northern Cape province with 12 percent. The provinces with few farms were Gauteng with 5.7 percent of the total national farms, Mpumalanga with 7 percent, and Limpopo with 7.6 percent.

2.6.1.2 Land use

According to the survey conducted by Statistic SA, the land used for commercial agriculture was 46,4 million hectares in September 2018, 37.9 percent of South Africa's land area. The commercial agricultural land was made up of grazing land and arable land. Arable land was used for crop production, while grazing land was utilised for livestock farming (Statistics SA, 2020).

The Northern Cape region represents the biggest piece of South Africa's agricultural land with 37.1 percent, trailed by the Free State with 16.4 percent, the Eastern Cape with 12.3 percent, and the Northwest with 11.5 percent. The least were recorded in Gauteng at 0.8 percent and Limpopo with 3.7 percent (Statistics SA, 2020).

2.6.1.3 Employment

According to the Statistics SA (2020) report's findings, the number of employees in commercial agriculture on 30th June 2018 was 757 628, which was a 1.6 percent decrease from 28th February 2007. In mixed farming, the number of people employed was 185 863 and in animal farming, 162 116. In 2018, the Western Cape was the biggest employer with 24.7 percent, Limpopo was 12.9 percent, and KwaZulu-Natal 12.7 percent of the national percentage. Gauteng and Northwest had the least

percentage of employees with 4.8 percent and 7.6 percent of all commercial agriculture employees, respectively.

Grain, oilseeds, and sugarcane were the most planted field crops in 2007/2017. The grain planted increased three (3) fold between 2007 and 2017. All significant field crops were planted on dry land, implying that their essential wellspring was rain. Sunflower seeds yielded the highest proportion of the total field crop in 2017 with 99.2 percent, followed by soya beans with 93.7 percent, maize with 89.4 percent, sugarcane with 80.2 percent, and wheat with 73 percent (Stats SA, 2020).

2.6.2 The status of agriculture in the Free State province.

The Free State is known as South Africa's breadbasket since it supplies an enormous piece of the country's rural produce. Despite the district's assorted cultivating exercises, maize is its primary item, and the area is called South Africa's maize capital. Agribusiness is significant for various reasons, including food security, employment, and the economy. As a result, keeping agrarian land from being changed over into metropolitan and urban-related regions is vital. This industry benefits from the compounding phenomenon made by agro-handling and the travel industry, which is discussed in the following section. Water system plans are significant in agribusiness since they produce more than dry-land crops.

Normal vegetation covers agriculture terrains utilised for broad agrarian enterprises, for example, native plant reaping, travel industry, crop development, citrus, lucerne, game farming, grape plantations, and escalated stock cultivating on pastures. Grain is the main crop grown in the Lejweleputswa district (IDP, 2020-2021).

A fourth of South Africa’s arable land is found in the Free State province. Farming is important for the prosperity of this area. This area represents 15.2 percent of South Africa’s farming production (Sihlobo, 2019). In the census that was conducted in 2017 for commercial agriculture, Statistics SA shows that the Free State province is in a second spot, after Western Cape province in commitment to farming income of R46,9 billion (Stats SA, 2020).

Summer and winter crops are produced in Western Cape province. Significant oilseed and grain crops are grown in the Western Cape, followed by the Free State with a national production of maize with 44 percent, grain sorghum with 17 percent, groundnuts with 44 percent, sunflower with 53 percent, dry beans with 27 percent and soybeans 38 percent. About 16 percent of South Africa's wheat came from this area as well (DALRRD 2021).

2.7 Innovation in Agriculture

2.7.1 Agriculture Innovation in Brazil

Brazil has emerged as a dominant player in global agriculture due to its innovative and technological advancements. Brazil has converted from being importer of food to one the world's top producers in over the past 40 years. Brazil uses advanced seed technology to improve output and efficiency. This technology is used to maintain soil health and increase crop yield. It also involves growing two or more crops in the same space during a single growing season. Satellite mapping and other technological aids are used for farming and the advanced machinery is used for various farming operations (Gulati, Zhou, Huang, Tal and Juneja, 2021).

Pereira, Martha, Santana, and Alves (2012) state that to sustain good yields, Brazilian farmers also apply fertilizer and crop protection. Strong investments in agritech and tropical agricultural research indicate that Brazil's productivity will rise more in the years to come.

Pereira et al. (2012) noted that there is a lot of interest from an economic, social, and environmental standpoint due to Brazil's experience growing agricultural commodities in warmer climes and its quick successes with low-carbon farming technologies. Over the past 40 years, these advances have significantly changed the industry.

Brazil's agricultural growth plan is still cantered on markets and product diversification and ongoing trade expansion. Brazil has been able to accomplish a considerable increase in productivity with a minimum expansion in agricultural area by combining this strategy with research and innovation (Valdes, 2022).

2.7.2 Agriculture Innovation in China

China has advanced agricultural agriculture significantly by utilizing a range of cutting-edge techniques and tools. In the 1960s, China was among the first emerging nations to adopt and expand Green Revolution techniques in rice cultivation. Significant progress has also been made in breeding technologies, leading to a notable rise in animal productivity. Innovative farming techniques that support high-value, sustainable agriculture have been introduced by it. These include agricultural production strategies that are horizontal or vertical that aid in increasing farmers' income (Gulati, Zhou, Huang, Tal, and Juneja, 2021).

Gulati et al. (2021) further lamented that innovations in agricultural inputs—such as irrigation, chemical fertilizer manufacturing and usage, and farm machinery—have been instrumental in helping hundreds of millions of Chinese small farmers increase their productivity. Future agriculture productivity could be drastically altered by these exciting new technologies. Tailored conservation agriculture strategies have been developed over decades of research and invention for different agricultural systems and soil types.

From producing "grain first" to producing higher-value cash and horticultural crops, China's crop sector has gradually changed. To better combine public and commercial Research and Development initiatives, China is also revamping its agricultural innovation system. Over the past few decades, these advances have helped China's agricultural transformation, increasing agricultural production (Gulati et.al, 2021).

2.7.3 Agriculture Innovation in Canada

In terms of agricultural innovation and technical advancement, Canada is a global leader. The relevance of agricultural innovation is acknowledged by the Canadian government since it maintains the industry's competitiveness and long-term viability. The government program gives creative thinkers the chance to develop their innovative goods, technology, and answers to problems facing the agriculture industry (Ottawa, 2022).

A crop-growing method known as "Controlled Environment Agriculture" (CEA) uses indoor technology to grow crops in a highly controlled environment. To cut expenses for CEA facilities and save time on labour-intensive operations, projects funded by the Enhancing Automation in CEA Farming Challenge will develop robotics and automation technology.

Public investments continue to be the main source of funding for agricultural research and development in Canada, but they have been progressively decreasing over the past three decades, according to AIC (2017). The private sector's Research and Development expenditures have either declined or been underinvested. Realizing the full potential of large-scale research is sometimes out of reach for farmers and producers due to issues with rural connectivity and a lack of a shared analytics platform. Lack of skilled labour may be compromising Canada's ability to do research.

These innovations have aided in the creation of economical, sustainable, and effective solutions that guarantee the competitiveness of Canada's agriculture industry.

2.7.4 Agriculture Innovation in India

According to Dubashi, Gupta, Fiocco, Gyal, Tandon and Nathani (2023), India has made significant strides in crop agriculture through various innovative practices and technologies. To promote technology and innovation in the agriculture sector, the Indian government has implemented several policy measures and carried out pilot projects. This involves facilitating digital accessibility via farmer collectivization., development of the “agristack,” digital soil-health cards, National Agriculture Market (eNAM), and Agricultural Accelerator Fund and digital public infrastructure.

Agricultural technology, or AgTech, is crucial to accelerating India's transition into a farming powerhouse, according to Dubashi et al. (2023). In terms of AgTech, India falls behind established farming nations. However, between 2013 and 2020, the number of AgTech start-ups in India expanded from less than 50 to over 1,000, driven by the demand for higher efficiency in the agriculture industry, expanding internet penetration in rural India, and increased farmer awareness.

Dubashi et al. (2023) further noted that in India, the sector of agritech is flourishing thanks to the many entrepreneurs utilizing technology like satellite imagery, machine learning, and data analytics, among others, to help farmers increase their yield. These developments have aided in the creation of economical, sustainable, and effective solutions that guarantee the competitiveness of India's agriculture sector.

2.7.5 Agriculture Innovation in South Africa

The agriculture industry in South Africa is crucial to both generating jobs and guaranteeing food security. However, it requires innovation that will lower costs, raise yields, and adapt to environmental changes to be productive, sustainable, and competitive. Agri-tech startups, like Aerobotics in Cape Town, utilize machine learning and artificial intelligence to extract data from satellite and drone photos. The business provides farmers with reports on pests and disease prevention strategies (Hakutizwi, 2018).

Precision farming is now essential for preserving a competitive edge in the cutthroat international agriculture market, not just a "nice-to-have." A management system, or set of tactics and equipment, that enables farmers to maximize and enhance soil quality and output is referred to as "precision farming." These comprise satellite photos, drones that collect data, data analytics, remote sensing, Internet of Things (IoT) technologies, artificial intelligence, and the usage of GPS systems and precision equipment to help manage field variances (Hakutizwi, 2018).

These innovations have aided in the creation of economical, sustainable, and effective solutions that guarantee the competitiveness of South Africa's agriculture industry.

2.8 Cooperatives

2.8.1 The status of Agriculture Co-operatives in South Africa

Farming cooperatives in South Africa predominate 25 percent of all other cooperatives. Cooperatives are dynamic in at least 20 areas, of which 17 percent are

in the service sector, 12 percent in trading, 6 percent in clothing and textile, 6 percent in construction and 5 percent in manufacturing (Munjezi, 2011).

South African history demonstrates that cooperatives owned by white people contributed a huge part to the economy of South Africa. In 1993, there were around 250 cooperatives with resources that amount to R12,7 billion and an annual turnover of R22,5 billion. These were accomplished because of some interventions by the government at that point (DAFF, 2011).

Just 78 white farming and rural cooperatives delivered R6.7 billion in income in 2005, had R5.4 billion in resources, and 203,207 members (Satgar, 2010). Nonetheless, black farmers did not get a similar type of help, which prompted them to be barred from participating in the standard economy.

According to DAFF (2012), the Cooperative Data Analysis System contains 836 agricultural cooperatives (Codas). Thirty-six percent of cooperatives on Codas are in KwaZulu-Natal. Regarding commodities, most cooperatives are engaged in what is known as "multipurpose" or "mixed farming." Cooperatives have an average sale of about R43 million in terms of financial performance. The DAFF has provided grants totalling R35 million to 65 cooperatives. Cooperatives in the sector created a total of 2 389 job opportunities.

Approximately 65 percent of this (1 858) consists of permanent jobs, while the remaining 33 percent (981) are temporary jobs. This is no surprise given the province's financial and political support for cooperatives. According to a recent DTI study, agricultural cooperatives account for approximately 25% of all registered cooperatives and account for up to 80% of total cooperative GDP contributions.

2.8.2 The role of Agriculture Cooperatives

Agriculture cooperatives in South Africa play a vital role in communities by rendering improvement of the social and economic lifestyle of the community (DAFF, 2012). Agriculture cooperatives enable individuals to enhance their standard of living and improve their economic and social opportunities by helping themselves to reduce

neediness. Agriculture cooperatives are seen to have a prospective influence on social development and the reduction of poverty (Philip, 2003).

Agrarian cooperatives in South Africa assume a significant part in producing and distributing food and promoting food security and poverty reduction in the communities. Creating productive employment, generating several incomes, and helping to reduce poverty are some of the contributions made to the country by agriculture cooperatives (SEDA, 2013). Moreover, agriculture cooperatives advance farming efficiency by getting inputs for a minimal price; they encourage feasible farming methods and foster individuals' administration and cooperative management skills (DTI 2011).

Lejweleputswa district in the Free State province has rural areas where communities' living conditions are inadequate and sub-standard. By accelerating economic growth, this condition can be improved. The necessity for this research originates from the need to sustain agricultural cooperatives to address the lack of job difficulties and the need to implement innovation strategies that can enhance the development and sustainability of agriculture cooperatives. Communities, especially in rural areas, must become self-reliant, and sustainable agriculture cooperatives can increase rural income and reduce rural poverty by creating jobs.

2.8.3 Challenges encountered by Agriculture Co-operatives in South Africa.

The common issue facing South African cooperatives is the new Cooperatives Act no. 6 of 2013. The Cooperatives Act became law in 2005 and was amended in 2013 (Van der Walt, 2006). The then South African Department of Agriculture, Forestry and Fisheries (DAFF, 2010) recognised a few normal difficulties encountered by farming cooperatives in the country. Some of those challenges encountered are as follows:

- One of the major restrictions preventing cooperatives' capability to alleviate poverty and generate employment has been identified as a lack of access to financial support. Cooperative members, specifically in rural regions, have many commercial concepts, but they lack the necessary funds to put them into action.

- Lack of capacity is a major restraining issue in agriculture cooperatives. Ineffective management, poor governance, and a lack of essential business skills plague many cooperatives. Cooperative members' low literacy levels exacerbate this problem, leaving cooperatives unable to administer themselves effectively and efficiently.
- Exclusive captivity and male dominance are two further issues that agricultural cooperatives face. According to the research, regardless of how large female members are in numbers, males rule administrative and authority occupations.
- Cooperatives' inability to expand market access and scale up their business activity. Because of an absence of abilities and capacity, confined admittance to financing, and an absence of information and linkages, most existing agriculture cooperatives cannot achieve economies of scale.
- inadequate access to markets has also been identified as a limiting issue.

2.9 Challenges encountered by Agriculture Co-operatives in Lejweleputswa.

During the group discussions with Agriculture Cooperatives in Lejweleputswa, the following challenges were identified:

2.9.1 Pricing competition

Pricing Competition can indeed pose a significant challenge to cooperative innovation. Hyo (2023) asserts that research and development (Research and Development) investments are frequently substantial when it comes to innovation. A cooperative may have less money available for these vital investments if its rivals are waging a pricing war. Cooperatives may be forced to prioritize short-term survival over long-term innovation due to intense pricing rivalry. This might inhibit innovation and keep the cooperative from creating new goods or services.

Hyo (2023) bemoaned the possibility that, in a highly competitive pricing market, the risks linked to innovation would be viewed as excessively high. Therefore, cooperatives may decide to use less creative, safer tactics. To spur innovation, cooperatives frequently rely on member cooperation. However, members might not have the time or resources to properly contribute to collaborative innovation activities if they are distracted with pricing difficulties (Yang, 2022).

To overcome these challenges, cooperatives need to strike a balance between competitive pricing and investment in innovation. They might also benefit from forming alliances with other firms to share the risks and costs of innovation. Cooperatives must find a balance between investing in innovation and offering competitive prices to overcome these challenges. To split the costs and risks of innovation, they might potentially profit from forging alliances with other businesses (Yang, 2022).

2.9.2 Product quality competition

Competition in product quality can, in fact, provide a serious obstacle to cooperative innovation. Research and development (Research and Development) expenditures associated with producing high-quality products are frequently substantial, according to Karaman and Lahiri (2014). A cooperative may have less money available for these important investments if it is involved in a pricing war with rivals. Customers may view the cooperative's products as inferior even though they are not if rivals provide high-quality goods at cheaper costs.

Furthermore, Karaman and Lahiri (2014) contend that cooperative market share is impacted by quality competition. The cooperative may lose market share if consumers prefer rival brands that provide better-quality goods. A cooperative's ability to survive could be threatened by fierce competition for quality. quality. A cooperative may not be able to pay its operational expenses if low sales volumes prevent it from generating adequate revenue.

Cooperatives may rush to get their innovation patent protected to obtain a competitive advantage. This could result in expensive and time-consuming legal challenges over intellectual property rights (Freire and Gonçalves, 2021).

Cooperatives must concentrate on their distinctive advantages—such as quality, service, and community involvement—to overcome these obstacles. They may also consider tactics like focus, differentiation, and cost leadership.

2.9.3 Innovation by Competitors

According to Zhang, Xu, Wang, and Zhang (2022), the innovative organisations that work with rivals may be impacted by their competitive pressure and skills, which is detrimental to eco-innovation of the organisations. Within the innovation ecosystem, innovative organisations collaborate to co-create value, which benefits both parties, but also presents a conflict between value ownership and competitiveness (Zhao, 2021).

Zhang, Xu, Wang, and Zhang (2022) state that collaborative innovative firms with rivals may be impacted by information spillovers and mutual competitive pressure, which is detrimental to the eco-innovation of the firms. Within the innovation ecosystem, innovative organisations collaborate to co-create value, which benefits both parties, but also presents a conflict between value ownership and competitiveness (Zhao, 2021).

In conclusion, innovative competitors can drive cooperatives to improve their own innovation efforts, but they can also create challenges that cooperatives need to navigate carefully.

2.9.4 Market Share

Market share can indeed pose a significant challenge to cooperative innovation. Here are some ways it can impact them:
Larger, more dominantly positioned corporations are a common rival for cooperatives. cooperatives. Because of this, cooperatives may find it challenging to establish a presence in the market and offer novel goods or services. Smaller cooperatives might not have as many resources as their larger rivals. rivals. This may limit their capability for innovation by preventing them from making investments in Research and Development (Okem,2016).

According to Okem (2016), customers may view a cooperative as less dependable or less capable of providing innovative, high-quality goods or services if it has a tiny market share. A cooperative may experience financial sustainability issues if it is

unable to secure a sizable market share. share. Its capacity to invest in innovation may be hampered by this (Okem, 2016).

Okem and Tshishong (2016) argued that companies holding greater market shares could have more chances for joint ventures and alliances, which can spur innovation. innovation. Smaller market share cooperatives might pass up these chances.

To overcome these challenges, cooperatives need to focus on their unique strengths such as quality, service, and community involvement. They can also consider strategies like cost leadership, differentiation, and focus strategies.

2.9.5 Lack of qualified staff

The lack of qualified members can indeed pose a significant challenge to cooperative innovation. Here are some ways it can impact them:
As per Freire and Gonçalves (2021), cooperatives depend on the combined expertise and abilities of their constituents. Insufficient qualifications among members may impede the cooperative's capacity to innovate. Collaboration among members of cooperative is necessary for innovation. innovation. Members might not be able to make a meaningful contribution to collaborative innovation projects if they are not qualified or possess the requisite abilities.

Further, Freire and Gonçalves (2021) contended that competent individuals are frequently required to comprehend and apply new technology. The cooperatives may find it difficult to stay up to date with technology improvements without them, which would limit their ability to innovate. To meet market demands, cooperatives may find it challenging to produce novel products or services due to a shortage of qualified members. Innovation is a key component that cooperatives use to their advantage when competing. competing. Cooperatives may find it difficult to provide distinctive goods or services that set them apart from rivals if they lack competent members.

To overcome these challenges, cooperatives can invest in training and development programs for their members, recruit new members with the necessary qualifications, and collaborate with external partners or institutions.

2.9.6 Lack of finance

Lack of adequate finance can indeed pose a significant challenge to cooperative innovation. Here are some ways it can impact them:

Investing much in research and development (Research and Development) is often necessary to achieve innovation. A cooperative may find it difficult to make these important investments if it does not have enough funding.
To purchase and use new technologies, adequate funding is frequently required. required. Without it, cooperatives could find it difficult to stay up to date with technology developments, which would limit their ability to innovate. It frequently takes large financial resources to introduce new products or enter new markets. markets. Thus, a cooperative's capacity to grow or diversify may be constrained by a lack of funding (Esho and Verhoef, 2018).

Esho and Verhoef (2018) went on to say that a cooperative may have trouble remaining financially sustainable if it is unable to bring in enough money through other means. This can make it harder for it to make innovative investments. Additionally, to encourage greater creative activity, team collaborations are being required more and more frequently. But these partnerships frequently call for financial resources, which some cooperatives might not have (Vivona, Demircioglu, and Audretsch, 2022).

In conclusion, lack of adequate finance can pose a significant barrier to cooperative innovation. Cooperatives need to explore various sources of funding and consider financial planning as a key part of their innovation strategy.

2.9.7 Cost of access to market

The cost of access to market can indeed pose a significant challenge to cooperative innovation. Here are some ways it can impact them:
Shiferaw, Hellin, and Muricho (2011) stated that breaking into new markets frequently necessitates a significant financial investment. Expensive entry costs might constrain a cooperative's potential for innovation by preventing it from growing or diversifying. Shiferaw et al. (2011) further noted that antitrust and competition issues may also have

an impact on the price of entry into the market. market. For example, established market competitors may use anti-competitive tactics to raise the cooperative's market entry costs if they perceive the cooperative's novel product or service as a threat. Vivona, Demircioglu, and Audretsch, (2022) argued that the cost of acquiring and implementing new technologies can also be a significant barrier to market access. Without adequate finance, cooperatives may struggle to adopt new technologies that could enhance their competitiveness and innovation potential.

According to Vivona et al. (2022) a major obstacle to market access may also be the expense of obtaining and adopting new technology. Cooperatives may find it difficult to implement new technology that could improve their capacity for innovation and competitiveness if they lack sufficient funding.

In conclusion, the cost of access to market can pose a significant barrier to cooperative innovation. Cooperatives need to explore various strategies and funding sources to overcome these challenges.

2.10 The effect of innovation strategies on sustainability of cooperatives

According to InnoSuTra (2007), developing innovation presents businesses with both obstacles and possibilities. Agriculture cooperatives can benefit from innovation initiatives that help them make the most of these possibilities. Multiple opportunities for innovation are created by changing customer needs, rivals, technology, and a diversified marketplace. Innovation can reduce production costs, open new markets, and boost competitiveness.

Furthermore, innovation may help businesses achieve long-term success by boosting profitability, creating jobs, and expanding market share and growth. During group discussions with the study population group, the following factors were observed to be the determinants of successful implementation of innovation strategies in agriculture cooperatives.

2.10.1 Increased Turnover

The study conducted by Oirere (2015) regarding the impact of innovation on financial performance concluded that innovation has effect on the financial performance or sales turnover of a cooperative. Increased turnover can indeed be a measure of successful implementation of innovation in crop farming. Turnover, in this context, refers to the total sales generated by a farm over a certain period. If an innovation leads to increased productivity, efficiency, or access to new markets, it can result in increased turnover for the farm.

For example, an innovation that increases crop yields could lead to more produce being sold, thereby increasing turnover. Similarly, an innovation that reduces production costs could increase the farm's profit margin, leading to higher turnover even if the amount of produce sold remains the same.

However, it is important to note that turnover is just one measure of success. Other factors, such as sustainability, resilience, and social impact, are also important when evaluating the success of an innovation in crop farming. Therefore, while increased turnover can be a positive outcome, it should not be the only criterion used to measure success. It is crucial to take a holistic and context-specific approach when measuring the success of agricultural innovations.

2.10.2 Increased Market Share

According to Sharma (2009), product innovation strategy is essential for sustainability of cooperatives as it initiates market share performance. Market share is a portion of revenue that a particular crop or cooperative can obtain to the total sales of similar crop produced by competitors. Implementation of product innovation strategy helps to maintain or increase market share, thereby gaining new customers and retaining the existing ones (Lee, 2020).

Increased market share can be a significant indicator of the successful implementation of innovation in crop farming. In the context of crop farming, an increase in market share could mean that a farm's produce is selling more than that of its competitors.

This could be due to various factors such as improved crop yield, better quality produce, or successful marketing strategies, all of which could be the result of effective innovation.

For instance, if agriculture cooperative implements a new technology that improves the quality of its produce, and as a result, more consumers choose their products over others, the farm's market share would increase. Similarly, an innovation that allows a farm to produce a unique crop not offered by other farms could also lead to an increased market share.

However, it is important to note that while increased market share is a positive outcome, it should not be the only measure of success. The sustainability of the farming practices, the impact on the local community and environment, and the overall profitability of the farm are also important considerations when evaluating the success of an innovation in crop farming. Therefore, a holistic approach should be taken when measuring success.

2.10.3 Reduced Operational Costs

Oirere (2015), outlined that innovation reduces the operating cost in business operations. Absolutely, reduced operational costs can be a significant measure of the successful implementation of innovation in crop farming. Operational costs refer to the expenses associated with the day-to-day functioning of a business. In the context of crop farming, this could include costs for seeds, fertilizers, water, labour, machinery, and more.

Innovations in crop farming often aim to increase efficiency and productivity, which can lead to a reduction in these operational costs. For example, an innovation might involve the use of a new type of machinery that requires less fuel, a new farming technique that requires less water, or a new type of crop that requires less fertilizer.

If the implementation of such an innovation leads to a noticeable reduction in operational costs while maintaining or increasing yield, it can be considered successful. However, it is important to note that the reduction in operational costs

should not compromise the sustainability of the farming practices or the quality of the crops.

So, while reduced operational costs can be a positive outcome, it should not be the only criterion used to measure success. It is crucial to take a holistic and context-specific approach when measuring the success of agricultural innovations. This includes considering factors such as the impact on the environment, the well-being of the farming community, and the resilience of the farming system to shocks and stresses.

2.10.4 Increased Profit Share

Innovative cooperatives acquire increased profit margins as compared to non-innovative cooperatives. Innovation can also make a company's production process more efficient, pushing down production costs and resulting in higher profit margins if the competitors fail to innovate at the same pace (Ferrer, 2017). Increased profit margins can indeed be a significant measure of the successful implementation of innovation in crop farming. Profit margin is a key profitability metric for a company and is the ratio of net income to revenue. In the context of crop farming, innovations can lead to increased profit margins in several ways:

- **Increased Productivity**: Innovations that lead to increased crop yields can result in more produce being sold, thereby increasing revenue and potentially profit margins, assuming costs remain constant.
- **Reduced Costs**: Innovations that reduce operational costs, such as those that decrease the need for water, fertilizers, or labour, can increase profit margins by reducing the total cost of producing the crops.
- **Premium Pricing**: Innovations that improve the quality of the crops or that make the farming practices more sustainable can allow farmers to charge a premium price for their produce, thereby increasing profit margins.

- **Value-Added Products**: Innovations that enable farmers to process their crops into value-added products, such as turning tomatoes into tomato sauce, can also increase profit margins.

However, while increased profit margins are a positive outcome, they should not be the only measure of success. The sustainability of the farming practices, the impact on the local community and environment, and the resilience of the farming system to shocks and stresses are also important considerations when evaluating the success of an innovation in crop farming. Therefore, a holistic approach should be taken when measuring success.

2.10.5 Developed new markets.

Marketing innovation positions the product and address customer needs. As business dynamics change daily, so are innovation strategies (Leunendonk, 2016).

The development of new markets can be a significant measure of the successful implementation of innovation in crop farming. Innovation can lead to the development of new markets in several ways:

- **New Crop Varieties**: Innovations that lead to the development of new crop varieties can open new markets. For example, a farmer who innovates by growing a crop that is not typically grown in their region could gain access to a new market.
- **Value-Added Products**: Innovations that enable farmers to process their crops into value-added products can create new markets. For instance, a farmer who starts producing and selling jam made from their own fruit could tap into a new market.
- **Sustainable Practices**: Innovations in sustainable farming practices can also lead to the development of new markets. There is a growing demand for sustainably produced food, and farmers who can innovate in this area can gain access to these markets.
- **Technology**: Technological innovations can also lead to new markets. For example, innovations in packaging and distribution could allow farmers to sell their produce in areas they were previously unable to reach.

However, it is important to note that while the development of new markets is a positive outcome, it should not be the only measure of success. The sustainability of the farming practices, the impact on the local community and environment, and the resilience of the farming system to shocks and stresses are also important considerations when evaluating the success of an innovation in crop farming. Therefore, a holistic approach should be taken when measuring success.

2.10.6 Developed new markets externally.

Werwardena (2003) defines innovation strategies as evaluation of new techniques, new deals that provided access to international market. The development of new external markets can be a significant measure of the successful implementation of innovation in crop farming. Innovation can lead to the development of new external markets in several ways:

- **Export Opportunities**: Innovations that improve the quality or yield of crops can open new export opportunities. For example, a farmer who can grow a high-quality crop that is in demand in other countries could gain access to these external markets.
- **Online Sales**: Technological innovations can also lead to new markets. For instance, the use of online platforms for selling produce can allow farmers to reach customers beyond their immediate geographical area.
- **Sustainable Practices**: Innovations in sustainable farming practices can lead to the development of new markets. There is a growing international demand for sustainably produced food, and farmers who can innovate in this area can gain access to these markets.
- **Value-Added Products**: Innovations that enable farmers to process their crops into value-added products can create new markets. For instance, a farmer who starts producing and selling jam made from their own fruit could tap into a new market, both locally and internationally.

However, it is crucial to note that while the development of new external markets is a positive outcome, it should not be the only measure of success. The sustainability of the farming practices, the impact on the local community and environment, and the

resilience of the farming system to shocks and stresses are also important considerations when evaluating the success of an innovation in crop farming. Therefore, a comprehensive approach should be taken when measuring success.

2.10.7 Newly improved products or services.

According to Baregheh et al. (2009), innovation changes ideas into improved products that can compete in the market. An upgrade in product innovation enhance increase in sales and profit margins and thus gives the cooperative a competitive advantage (Porumboi, 2021).

The development of newly improved products or services can indeed be a significant measure of the successful implementation of innovation in crop farming. Innovation can lead to improved products or services in several ways:

- **Improved Crop Varieties**: New methods of plant breeding may lead to the new crop varieties with improved yield, better taste, or more resistance to pests and plant diseases.
- **Value-Added Products**: Innovations that enable farmers to process their crops into value-added products can create new opportunities. For instance, a farmer who starts producing and selling jam made from their own fruit could tap into a new market.
- **Sustainable Practices**: Innovations in sustainable farming practices can lead to the development of products that are more appealing to environmentally conscious consumers. For example, produce grown using organic or regenerative farming practices can command a premium price in the market.
- **Technological Innovations**: Technological innovations can lead to improved services. For example, the use of precision farming technologies can lead to more efficient use of resources, resulting in cost savings for farmers.

However, it is important to note that while the development of newly improved products or services is a positive outcome, it should not be the only measure of success. The sustainability of the farming practices, the impact on the local community and environment, and the resilience of the farming system to shocks and stresses are also

important considerations when evaluating the success of an innovation in crop farming. Therefore, an integrated approach should be taken when measuring success.

2.10.8 Improved marketing of goods or services.

Gupta et al. (2016) defined marketing innovation as improving a new product and a new value setting methodology. The improved marketing of goods or services can indeed be a significant measure of the successful implementation of innovation in crop farming. Innovation can lead to improved marketing in several ways:

- **Digital Marketing**: Technological innovations can open new avenues for marketing. For example, the use of social media or online platforms can help farmers reach a wider audience and market their products more effectively.
- **Branding and Packaging**: Innovations in branding and packaging can make a product more appealing to consumers, thereby improving its marketability. For example, sustainable or biodegradable packaging can appeal to environmentally conscious consumers.
- **Direct-to-Consumer Sales**: Innovations that enable direct-to-consumer sales, such as farmers' markets or online sales, can improve the marketing of agricultural products by eliminating middlemen and increasing the share of the final retail price that goes to the farmer.
- **Value-Added Products**: The development of value-added products, such as turning crops into jams, sauces, or other processed foods, can open new marketing opportunities. These products often have higher profit margins and can be marketed to different consumer groups.
- **Certifications**: Gaining certifications such as organic, fair trade, or geographical indications can also improve the marketing of agricultural products. These labels can make a product more appealing to certain consumer groups and can often command a higher price in the market.

However, it is important to note that while improved marketing is a positive outcome, it should not be the only measure of success. The sustainability of the farming

practices, the impact on the local community and environment, and the resilience of the farming system to shocks and stresses are also important considerations when evaluating the success of an innovation in crop farming. Therefore, a comprehensive approach should be taken when measuring success.

2.10.9 Increased flexibility and responsiveness of the cooperative

An increased level of process innovation empowers the evolvement of the cooperative's product and creates more innovative projects in product research and development (Reichstein and Salter, 2006). Increased flexibility and responsiveness of a cooperative can indeed be a significant measure of the successful implementation of innovation in crop farming. Innovation can lead to increased flexibility and responsiveness in several ways:

- **Improved Communication**: Innovations in communication technology can enable better and faster exchange of information within the cooperative, allowing it to respond more quickly to changes in market conditions or farming challenges.
- **Efficient Decision-Making**: Innovations in data collection and analysis can lead to more informed decision-making, increasing the cooperative's ability to adapt to new situations.
- **Diversification**: Innovations that enable the cooperative to diversify its crop production can increase its flexibility, making it less vulnerable to fluctuations in the market for a single crop.
- **Supply Chain Management**: Innovations in supply chain management can improve the cooperative's ability to respond to changes in demand, ensuring that crops get to market in the most efficient way possible.

However, it is important to note that while increased flexibility and responsiveness are positive outcomes, they should not be the only measures of success. The sustainability of the farming practices, the impact on the local community and environment, and the resilience of the farming system to shocks and stresses are also

important considerations when evaluating the success of an innovation in crop farming. Therefore, a holistic approach should be taken when measuring success.

2.10.10 Alliance with other cooperatives or institutions

Frishammar et al. (2012) explain these success factors as a coordinated effort among internal subunits and stakeholders. Formation of alliances with other cooperatives or institutions can indeed be a significant measure of the successful implementation of innovation in crop farming. Innovation can lead to such alliances in several ways:

- **Shared Resources**: Innovations that enable cooperatives to share resources, such as machinery or storage facilities, can lead to alliances. These alliances can increase efficiency and reduce costs for all involved parties.
- **Knowledge Sharing**: Innovations in communication and information technology can facilitate knowledge sharing between cooperatives or institutions. This can lead to improved farming practices and increased productivity.
- **Market Access**: Alliances can help cooperatives gain access to new markets or negotiate better terms with suppliers or buyers. This can be particularly beneficial for small-scale farmers who may otherwise struggle to compete in the market.
- **Policy Influence**: By forming alliances, cooperatives can have a greater influence on agricultural policies. This can lead to more favourable conditions for innovative farming practices.

However, it is important to note that while forming alliances is a positive outcome, it should not be the only measure of success. The sustainability of the farming practices, the impact on the local community and environment, and the resilience of the farming system to shocks and stresses are also important considerations when evaluating the success of an innovation in crop farming. Therefore, a comprehensive approach should be taken when measuring success.

2.11 Support needed by Agriculture Cooperatives

Support needed for agriculture cooperatives in Lejweleputswa can be either non-financial or financial support or both.

2.11.1 Non-Financial and Financial Support

Cooperatives must comply with various statutory provisions under the Co-operatives Act, No. 14 of 2005. This includes, among other things, the annual submission of specific information to the Registrar. If the relevant information is not submitted for a period of two (2) years, the cooperative will be de-registered. The non-financial support program aims to educate and train performing cooperatives and cooperatives in general on the need to adhere to cooperative legislation standards.

The Department of Agriculture and Rural Development and several government organisations such as SEDA, NYDA, and LDA, among others, through one-on-one interactions with cooperatives utilising various media such as seminars, information pamphlets, and more, do this. Special accounting standards for cooperatives were created and conveyed through various media concerning accounting and auditing (DTI 2012).

2.12 Conclusion

This section discussed the origin of agricultural cooperatives, their role, and the sustainability of such a system. The researcher reports on innovation and the beliefs regarding the strategies used to sustain agricultural cooperatives. The local and national innovation trends, strategies, and sustainability of agricultural cooperatives were detailed. A comprehensive discussion of integrating innovation strategies in an agricultural environment was then offered. This was done because the sustainability of agricultural cooperatives is directly influenced by innovation. The next chapter (3) will reveal the research methodology used to conduct this study.

CHAPTER 3: RESEARCH DESIGN AND METHODOLOGY

3.1 Introduction

The previous chapter dealt with the literature review of the study. Innovation strategies in agricultural cooperatives were widely discussed. The obstacles, measures of innovation strategies, origin and history of agricultural cooperatives were also examined. Chapter (3) discusses the method that was used in the study. The construction of the questionnaires, as well as the reasons behind them, will be explored. The methods and strategies used for data collection, analysis, and sampling will be discussed.

In this chapter, the organisation of the research study is discussed. The study area, the design of the research study, and data collection tools utilised for research are also discussed. The usage of secondary documentation of the study and sampling design utilised for the study are also covered. Furthermore, the chapter outlines the analysis of the research study, which is followed by an ethical consideration and the pilot study undertaken.

3.2 Organisation of the research study

A case study was carried out as the first phase of this research. The case study was used to examine different types of innovation strategies in the agriculture cooperatives, the measures of innovation strategies' success and the challenges these cooperatives are encountering in implementing innovation strategies. The second phase of the study entailed a literature review of the secondary documentation that was previously investigated and is relevant to this research study.

During the third phase of the study, government officials and government agency officials were interviewed to investigate the type of assistance they provide to agricultural cooperatives in Lejweleputswa. The three (3) phases were concluded by determining the effect of integrated innovation strategies on the sustainability of agriculture cooperatives.

3.3 Study area

The section below discusses the profile of Lejweleputswa District Municipality to allow a better understanding of the origin of this study.

3.3.1 Description of the study

The research was led in the Lejweleputswa district. The district is situated in the Free State, and it shares the borders with Lesotho. The district capital is Welkom. The district has five (5) municipalities: Nala, Matjhabeng, Tokologo, Masilonyana and Tswelopele. Nala share borders with Northwest province. Lejweleputswa District Municipality covers about 31 930 km2 of land with a total population of 627 626 people. Table 1.1 below illustrates the local municipalities within Lejweleputswa District and the population thereof, and Figure 1.1 shows the map of the district.

Table 3.1 Lejweleputswa Local Municipalities

Local Municipality	Population	Percentage in District (%)	Area ($km^{2)}$
Matjhabeng	406 461	64.76	5 155
Nala	81 220	12.94	4 129
Masilonyana	63 334	10.00	6 796
Tswelopele	47 625	7.60	6 524
Tokologo	28 986	4.62	9 326

According to Table 1.1, Matjhabeng Local Municipality covers a 5 155 km^2 area with 406 461 residents, contributing to 64.76% of the population in Lejweleputswa District. Nala Local Municipality covers an area of 4 129 km^2 with 81 220 residents, which contributes to 12.94 % of the population in Lejweleputswa District. Masilonyana Local Municipality covers a 6 796 km^2 area with 63 334 residents, contributing to 10.00% of the population in Lejweleputswa District.

Tswelopele Local Municipality covers a 6 524 km^2 area with 47 625 residents, contributing to 7.60% of the population in Lejweleputswa District. Tokologo Local Municipality covers 9 326 km^2 area with 28 986 residents, which contributes to 4.62% of the population in Lejweleputswa District.

Fig 3-1 Study area

***Source**:* Municipalities.co.za

3.3.2 Profile of Lejweleputswa District Municipality

The Lejweleputswa District Municipality, which covers 32 287 km2 in the northwestern region of the Free State province, is a Class C municipality. Northwest and Northern Cape provinces encircle Lejweleputswa on all sides. Lejweleputswa is bordered by the following municipalities: Fezile Dabi, Thabo Mofutsanyana, Xhariep, and the Mangaung metropolitan area. The district's population was 634 462 persons in 2019, with a 1.5 percent annual growth rate. This corresponds to 22% of the province's total population. The district had 229 267 homes in 2019, one of the most densely populated municipalities in the Free State province, with a population density of 20.1 people per square meter. Lejweleputswa's economy is based on farming and mining. Lejweleputswa is in the centre of the Free State's goldfields, and it has a high concentration of gold resources. Gold and diamonds are the minerals that are mined. These are precious metals that can be used for various purposes, the most popular of which is jewellery creation. The area is a large producer of maize, sunflower seeds, and oil in terms of agriculture.

The tertiary sector contributes 58% of the district's total gross value added (GVA) (trades: 23 percent, transportation: 4.0 percent, finance: 10 percent, and public services: 21 percent). In 2019, the unemployment rate in Lejweleputswa was 50.9 percent. The biomass-fuel factory in Bothaville is one of Lejweleputswa's monetary sources, which focuses on assembling and subsequently supporting modern industrial advancement in the area.

3.3.3 Lejweleputswa Synopsis

Lejweleputswa District is situated in the northeastern section of the Free State and covers approximately 32 288 square kilometres. Lejweleputswa, one of the province's four (4) district municipalities, was founded in 2000. Lejweleputswa is bordered by North-West province, Thabo Mofutsanyana and Fezile Dabi District municipalities,

3.3.3.1 Masilonyana Local Municipality

The local municipality of Masilonyana is named after a neighbouring mountain. It is one of the district's five (5) municipalities, which cover a total area of 6 618 km2. Masilonyana is located between the Free State's largest municipality, Mangaung Metropolitan, and Matjhabeng, the second-largest municipality. Former Transitional Local Councils such as Brandfort, Soutpan, Theunissen, Verkeerdevlei, and Winburg were merged to become the Masilonyana municipality. Masilonyana is an area with a high rate of unemployment. Two (2) toll plazas on two (2) key provincial routes are in the municipality; the Brandfort and Verkeerdevlei Plaza on ZR Mahabane and N1 routes, respectively.

Theunissen is also home to three (3) mines located between Welkom and Bloemfontein. Masilonyana is proud of the Voortrekker Monument, a well-known heritage landmark, having various game reserves scattered across its cities. The Florisbad National Quaternary Research Station is one of the municipality's most popular tourist attractions. It was here that the first human skull was discovered. Soutpan also has cooperatives that generate salt from the salt lakes. Brandfort, Soutpan, Theunissen, Verkeerdevlei, and Winburg are all important towns.

Agriculture, mining, and community services are the three most important economic sectors.

3.3.3.2 Tokologo Local Municipality

The Setswana word for "freedom" inspired the name Tokologo Local Municipality. It results from the oppressed people's unyielding struggle, culminating in their liberation on 27 April 1994. Tokologo Local Municipality is in the western part of the Lejweleputswa district. Tokologo is one of the district's five (5) municipalities, with almost one-third of the district's total land area (9 326 km2).

Boshoff, the municipality capital, is in the centre of the municipality, while Dealesville is to the east and Hertzogville is to the north. Boshoff, Dealesville, and Hertzogville are the most important towns, and agriculture is the most important economic activity.

3.3.3.3 Tswelopele Local Municipality

The Sesotho word for "progress" inspired the name Tswelopele local municipality. This stems from the noticeable delivery of services and infrastructure in the region from 1994. Tswelopele is home to about 47% natural environment; two (2) of them are the Sandveld Nature Reserve and Bloemhof Dam. Bultfontein and Hoopstad are the largest settlements, with a combined land area of 6 524 km2. The main source of revenue is agriculture.

3.3.3.4 Matjhabeng Local Municipality

Matjhabeng means "where countries meet" in Sesotho. It comes from the migrant labour system, which brought individuals worldwide together to work in the Goldfields mines, including Lesotho, Mozambique, and others. Matjhabeng municipality forms a boundary with Nala, Masilonyana, Tswelopele, and Moqhaka to the west. Matjhabeng is the Free State Province’s mining capital and has only one land-based protected area known as the William Pretorius Nature Reserve.

Matjhabeng Municipality is home to 5.5 percent of wetlands, and Welkom, Virginia, Allanridge, Odendaalsrus, Hennenman, and Ventersburg are some of the most important towns. Mining and manufacturing are important economic activities, and the

area serves as Lejweleputswa's educational, major economic and leisure center, with all the facilities needed to sustain economic development.

3.3.3.5 Nala Local Municipality

Nala is a Sesotho name that means "plenty of plenty." The name was derived from the financial flourishing of space and the high availability of maize commodities in the region. The region is part of South Africa's "maize-triangle" and plays an important role in processing meat and dairy items. Nala Local Municipality was formed by combining Bothaville and Wesselsbron areas. Bothaville area is in the direction of 50 kilometers to Klerksdorp, 80 kilometers to Welkom, and 200 kilometers to Gauteng.

Wesselsbron/ Monyakeng is in the direction of approximately 70 kilometers to Bothaville, about 35 kilometers to Odendaalsrus /Welkom and 55 kilometers to Hoopstad. Nala is situated in a substantial agricultural area. Wesselsbron is adjacent to Welkom and Odendaalsrus, and Bothaville is nearby the gold mining communities of Orkney. There are three (3) important rivers in Free State Province, two (2) of them flow via Nala Municipality. These are Vals River and Vet River. The Vals River flows through Bothaville to the Vaal River, and the Vet River run via the Wesselsbron area to the Vaal River, which forms the municipality's southern boundary. Both rivers are critical for the water supply to Wesselsbron and Bothaville.

The sensitive wetland system south of Wesselsbron is the only significant natural feature. Agriculture is the main economic activity, with key towns including Bothaville and Wesselsbron. Like the rest of the province of Free State, the district is primarily rural, with agriculture accounting for approximately 85 percent of the land.

3.3.4 Gender, Age and Race

Females outnumber males in Lejweleputswa District Municipality by 50.31 percent (319 172) to 49.69 percent (315 291). The district's median age is 27, slightly higher than the Free State's figure of 26 and around 10% more than the national average of 25. The young age group (25-44 years) working makes up most of the population, accounting for 178 111 people (28.07%). Toddlers and kids (0-14 years) form a total

percentage of 27.53%. The age category with the fewest people is old age (above 65 years), with only about 48 508 people (7.7 percent). The inhabitants of Lejweleputswa District Municipality in 2019 were 89% African, 8% White, and 2 % Coloured.

3.3.5 Lejweleputswa Households

In 2019, there were 229 267 houses in the district, resulting in a population density of 20 persons per km2. As per Community Survey (2019), children lead 863 homes, while women lead 85 898 households (39.4%).

3.3.6 Employed/Unemployed

Lejweleputswa employed 142,000 people in 2019, accounting for 18.30 percent of employment in the Free State Province (779 000) and 0.88 percent of employment in South Africa (16.4 million). From 2009 to 2019, the annual unemployment rate in the Lejweleputswa district was 1.63 percent. In 2019, the commercial sector employed approximately 28,400 people in the Lejweleputswa district municipality, accounting for 20 percent of jobs in the district. Compared to other sectors, the public sector employs the second most people at 26,400 (18.6 percent).

The electricity sector employs the fewest people in Lejweleputswa District Municipality, employing 1 320 (0.9 percent), followed by the transportation sector, which employs 5 560 people (3.9 percent). The number of people working in both the formal and informal sectors in Lejweleputswa fell by 17 720 between 2008 and 2018. Job losses in the mining and agricultural sectors were primarily to blame for this decline. Lejweleputswa had 137 000 unemployed people in 2019. Various jobless individuals in Lejweleputswa represent 33.20 percent of the absolute number of jobless individuals in the Free State province.

Matjhabeng has the most elevated pace of 55.3 percent when comparing joblessness rates in the Lejweleputswa region in 2019; the local municipality of Tokologo had the least joblessness rate of 26. percent.

3.3.7 Drivers of Lejweleputswa district economy

The economy of Lejweleputswa is based on agricultural farming and mining industries. Lejweleputswa has a high concentration of gold deposits and is central to the Free State's goldfields. Regarding agricultural farming, Lejweleputswa produces a lot of corn (maize) and sunflowers.

As the primary sector of the Lejweleputswa economy, mining and farming contributed 29 percent of the district's GVA. Secondary sector activities (manufacturing: 7%, electricity: 1%, and construction: 6%) accounted for 14% of the Lejweleputswa district's GVA. Tertiary sector accounts for 58% of the Lejweleputswa district's gross value added (GVA) (trade: 23%, transportation: 4.0%, finance: 10%, and community services: 21%). Tertiary economic activities include finance, insurance, real estate, and business services.

3.4 Research design

Brynard and Hanekom (2006) defined research design as a technique through which investigators solve challenges to push the limitations of knowledge. Both authors further detailed that research entails elucidating relevant facts to draw conclusions. According to Mouton (2001), the research design is a blueprint for how the study should be carried out.

3.4.1 Research Methods

As per Henning, Van Rensburg, and Smit (2004), the research method is the scientific approach utilised by the investigator to find answers to the inquiries presented. The researcher's overall point of view, or reasoning of life, impacts the research process (Best and Kahn, 2003). Both qualitative and quantitative methodologies were utilised for this study, bringing about a blended or mixed research study.

3.4.1.1 Phenomenology (qualitative research)

The focal point of phenomenology study is based on investigating the lived life experience according to the viewpoint of those living such life experiences (Quinlan 2011). In phenomenology, research objectivity is out of reach. The benefit of this

subjective exploration is that the discoveries have better legitimacy, and it permits the turn of events and exact comprehension of peculiarities.

The qualitative approach according to Welman and Kruger (2001) is a method for interpreting the meanings that individuals make of their lives in their natural contexts. According to Leedy and Ormrod (2005), the qualitative method is grounded on the view that social relations formulate a unified arrangement of relationships in a specific location. The qualitative approach is a method of gathering and evaluating data on a phenomenon without regard for the statistics involved. As a qualitative approach considers an individual's thoughts and perceptions it is said to be subjective. The qualitative approach is ideal for humanities study because of its subjective aspect.

A qualitative technique is acceptable because of the study's aim, namely implementation of innovation strategy, primarily affects cooperative productivity and profitability. However, some quantitative features were included, such as numbers, tables, and graphs. Simple mathematics can be utilised in a qualitative investigation, according to researchers (Babbie, 2007). According to Silverman (2001), counting techniques can be used to survey a large corpus of data that would otherwise be lost in a more intensive qualitative study. As a result, in a qualitative investigation, numbers aid comprehension.

3.4.1.2 Positivist (quantitative research)

Positivist research is quantitative and includes the usage of statistics to analyse social phenomena. The quantitative method uses statistical tools to focus on measures and sums of the qualities demonstrated by the people and occasions that the researcher investigates (Thomas, 2003). Even though the study will be primarily qualitative, statistics, totals, and percentages will be required to interpret the events and situations appropriately.

According to Silverman (2001), simple counting procedures can provide a way to review the entire body of data, which is normally lost in extensive, qualitative research. The researcher seeks to watch and report on participants' behaviour without affecting it in any manner; hence the descriptive study approach will be used in this research.

The data collection method utilised in the research is questionnaires or scales to decide conclusions and views of people targeted by the researcher. This review used charts, tables, graphs, and percentages.

3.4.1.3 Mixed method

A Mixed method technique empowers the investigator to separate satisfactory data from fundamental information. This method offers a more far-reaching scientific procedure than what quantitative or qualitative alone offers, and it permits the researcher to utilise the capacity of both quantitative and qualitative methods (Ouwuegbuzie and Teddie, 2003).

Mixing of quantitative and qualitative techniques is for an assortment of purposes like:

(a) Triangulation – accomplish or guarantee confirmation of information

(b) Complementarity – to explain or elaborate on the outcomes of investigations; and

(c) Advancement/ Development – to direct the utilisation of extra sampling and information assortment and analysis methods (Sandelowski, 2000).

Mixed method research involves the method of research by which “quantitative” and “qualitative” methods are used in combination (Caracelli and Greene, 1997). Quantitative and qualitative data sets can be integrated by using both numbers and words in one data set, or data can be used to convert qualitative data into quantitative data or quantitative data be converted into qualitative data (Caracelli and Greene, 1997).

According to Creswell and Plano-Clark (2007), mixed-method is a flexible strategy for broadening the scope of investigations and increasing their analytical capability. The following are the general mixed methods procedures:

- Identify the mixed methods study's main characteristics.
- Determine the criteria for choosing a mixed-methods study.
- Determine when quantitative and qualitative data will be introduced into the study process.
- Determine whether the study will employ a theoretical viewpoint.

As mentioned, the study was both a qualitative and quantitative study. Before moving on to the second phase of the project, the case study was utilised to determine the sort of support agriculture cooperatives receive and the problems they have in adopting innovative strategies, thereby identifying additional questions and types of assessment. The case study was conducted in five (5) local municipalities in the Lejweleputswa district, namely, Matjhabeng, Nala, Tokologo, Tswelopele and Masilonyana.

According to Yin, every model in a multiple-case study should be scrupulously picked with the goal that it either predicts comparative results or predicts various outcomes, however, for predictable reasons (2009). The researcher interviewed a total of 139 participants from 25 different agriculture cooperatives. The case study emphasised the presence of the agriculture cooperatives in the various communities and rural areas and outlined in detail the challenges they encountered.

The case study findings were compared to discover common and unique aspects of innovation techniques, and they were thoroughly examined to have an enhanced knowledge of the conditions in which agriculture cooperatives operate. The study's second phase included a review of the district's secondary documents (rules and regulations) and a brief examination and analysis of support available in government structures to develop and promote agriculture cooperative innovation.

In the last phase of the study, the government officials from the local Department of Agriculture and Rural Development and other government agencies such as the Municipality Local Economic Development (LED), Department of Economic, Small Business Development, Tourism and Environmental Affairs (DESTEA), Small Enterprises Development Agency (SEDA), Small Enterprise Funding Agency (SEFA), Free State Development Corporation (FDC), National Development Agency (NDA), and Local Development Agency (LDA) were supposed to be interviewed in order to find out what kind of support they give to agricultural cooperatives in the Lejweleputswa district.

The interview questions were developed using the data from the first and second rounds of the research and were prepared to be asked objectively. However, the participants were reluctant to participate in the study as the internal information of their departments is considered confidential, and the employees of such departments are not allowed to divulge such information. The researcher used the available information for the public, which is accessible on these departments' websites. The three (3) phases were ended by determining the impact of integrated innovation methods in agriculture cooperatives on sustainability.

3.5 Data collection

This section discusses the data collection instrument and the use of secondary documentation.

3.5.1 Data collection tool

Data was collected using various communication techniques throughout the study's many phases. A standardised questionnaire was used to collect data during the case study.

3.5.2 Questionnaires

As per Gay and Airasian (2003), questionnaires are tools that seek to acquire analogous data from all respondents selected for the trial, of which all must answer the same questions. Questionnaires are tools that try to find analogous data from all partakers selected for the sample, given that all participants must answer the same questions (Gay and Airasian 2003).

However, Thomas (2003) defines a questionnaire as "any collection of questions that participants in a survey are requested to respond by checking one possible option provided with a question or by writing an answer." The researcher's goal in this study was to collect data that could be verified for consistency and comparability. As a result, the questionnaire was the best acceptable instrument for this research.

3.5.3 Features considered when the questionnaire was established.

According to Babbie and Mouton (2002), a questionnaire should be straightforward, easy to use, intelligible, and not threatening. Furthermore, according to Bedward (2009), a questionnaire's items should not be confusing. In the case of this specific study's questionnaire, it was considered that an experience in farming cooperatives research and investigations was commonly imperfect. As a result, the questionnaires were written so that the language and structure were simple to grasp, and the admin was simple. It is also tough to persuade some cooperative members to cooperate. Non-return, lost surveys and reluctance to complete questionnaires are all issues that some cooperatives face (Bedward, 2009).

The researcher had to go to farms to encourage and inspire cooperative members who had been chosen to participate in the study to fill out and submit surveys on time. Because the participants' cooperation was gained, this initiative generated positive outcomes. The questions for this study were also simple to administer. The participants' responses were simple to obtain and recorded in a basic layout. The way data was acquired allowed easy and faster examination and analysis. The investigator also verified that the questionnaires covered all components of the study.

The items had to cover all areas that potentially impact agricultural cooperatives' innovation because the surveys were the primary data collection methods. This was a challenging process because too many questions could deter people from filling it out, especially when some of the cooperative members were illiterate. As a result, the questionnaires needed to be thorough, addressing all topics without being excessively long. The researcher considered the study objectives and the reviewed literature when creating the questionnaire for the research project.

3.5.4 Construction of questionnaires

For this research study, two (2) collections of questionnaires were utilised. One collection was used for the agricultural cooperatives’ members and another for government officials. The first set of questionnaires was divided into six (6) sections as follows:

Section A:

This section involved demographic questions.

Section B:

This section involved types of innovation strategies.

Section C:

This section covered variables that measures successful implementation of innovation strategies.

Section D:

This section covered challenges to innovation strategies as observed by each respondent.

Section E:

This section involved support for innovation strategies.

These questionnaires were plotted on the Likert scale with a five (5)-point scale as follows:

Table 3.2 Likert scale

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1	2	3	4	5

Data was collected from multiple sources (data triangulation) to confirm the same facts. Because different sources of information give different proportions of a similar occurrence, data triangulation addresses construct validity issues (Yin, 2009). The information gathered was organised into a database that allows other researchers to access it without relying on printed reports. The case study database will enhance the overall case study's reliability (Yin, 2009).

These were followed by interview questionnaires directed at government officials in the local Department of Agriculture and Rural Development and other government

agencies such as LED, DESTEA, SEDA, SEFA, NEF, NDC, LDA and FDC. The second set of questionnaires contained fourteen (14) interview questions directed to the government and government agency officials. However, the officials could not respond to the questions as the data of their departments were deemed to be confidential. Therefore, the information that is available to the public was used instead.

3.6 Use of secondary documentation

The improved literature review served as a reference for developing questions and directing face-to-face interviews with participants. The effectiveness of this study hinged on current information about farm cooperatives in the Lejweleputswa district and specific areas under investigation.

3.7 Sampling design

A sample of the population was appropriate for the study's purposes.

3.7.1 Target population

A population is characterised as an assortment of all cases that meet a particular arrangement of models (Anderson, 2000). Motseke (2000) indicated that the population alludes to all individuals from a genuine or non-existent gathering of individuals, occasions, or goals who share normal highlights and to whom the researcher looks to sum up the examination discoveries. Dark (2004) and Gay and Airasian (2003) define the population as collective components that the researcher is keen on and to whom the study discoveries will be applied.

The target population was 150 members from different agriculture cooperatives rendering services to five (5) municipalities of the Lejweleputswa district, namely, Matjhabeng, Tokologo, Tswelopele, Nala and Masilonyana. However, only 139 participants from agriculture cooperatives responded to the survey. The study focused on members of such cooperatives. Lejweleputswa officials in the LED office, DESTEA, SEDA, SEFA, NEF, NDA, LDA, and FDC were incorporated because they work with agribusiness cooperatives and thus have data that is pertinent to this study.

3.7.2 Sampling method

As indicated by Brynard and Hanekom (2006), sampling is a technique for choosing a little gathering determined to decide the provisions and qualities of a bigger gathering. As per Quinlan (2011), the researcher can decide how representative the sample is of the whole population by investigating the sample. Quinlan (2011) further states that a major examining proportion is needed for a little population, while a decreased example proportion is needed for an enormous population. Since it is difficult to secure every information available due to time, cash, or access limitations, a testing technique is utilised to lessen the measure of information by choosing information from this proportion instead of every case and component (Saunders, Lewis, and Thornhill, 2009).

Because there was no selection frame, this study used a non-probability sampling technique. The method of heterogeneity sampling was applied. Heterogeneous sampling is applied when an investigator wants to encompass all the respondents' perspectives without worrying about proportional representation. The goal was to collect a diverse range of ideas rather than focusing on the average or modal. A vast and diverse spectrum of people was included in this sample form (Trochim, 2006).

3.8 Analytical Methods

The following analytical methods were used to determine Validity and Reliability of research data.

3.8.1 Confirmatory factor analysis (CFA)

The hypothesised innovation model was evaluated for validity and reliability using confirmatory factor analysis (CFA). A statistical method called confirmatory factor analysis (CFA) is used to determine whether measures of a construct agree with what the researcher believes to be the nature of that construct (or factor). This factor analysis is most frequently employed in social science studies. CFA's goal is to determine if the data conform to a measurement model that has been proposed based on theory and/or prior analytical study.

When using CFA, the researcher first formulates an a priori hypothesis regarding the factors they think underlie the measures utilised. Based on these assumptions, the researcher may place restrictions on the model. The researcher is forcing the model to be compatible with their hypothesis by putting these restrictions on it. After that, model fit metrics may be calculated to evaluate how well the suggested model represents the covariance among each item or measure in the model. The model will be rejected if the constraints placed on it show inconsistencies with the sample data, as indicated by the results of statistical tests of model fit.

3.8.2 Composite reliability (CR)

Like Cronbach's alpha, composite reliability is a statistical indicator of internal consistency in scale items. It is a ratio of the whole variation in the real score to the total variance in the scale score. It is possible to conceptualize it as an indicator of the shared variation between the observable variables that is utilised to represent a latent construct.

While there is disagreement on the appropriate threshold, a fair range is 0.60 and above for composite reliability. It is contingent upon the quantity of items present on your scale, though. Reliability levels are higher for bigger numbers of scale items and lower for smaller numbers of scale items.

3.8.3 Average Variance Extracted (AVE)

In a measurement model, the convergent validity of a construct was evaluated using Average Variance Extracted (AVE). The average of the squared factor loadings of the indicators used to measure the construct is called AVE. The AVE is a metric that expresses how much variance a concept captures in comparison to how much variance is caused by measurement error. Higher numbers indicate better convergent validity. The range is 0 to 1. By comparing the AVE with the squared correlation coefficients between the construct and other constructs in the model, discriminant validity may be evaluated. Discriminant validity is proven if the AVE is higher than the squared correlation coefficient.

3.8.4 Root Mean Square Error of Approximation (RMEA)

A statistical indicator of how well a model fits the data is the Root Mean Square Error of Approximation, or RMSEA. Better fit is indicated by lower values of the RMSEA, which spans from 0 to 1. Excellent, good, and poor fit are indicated by values of 0.01, 0.05, and 0.08, respectively. If it is more than 0.10, it is deemed inappropriate (Xia and Yang, 2018).

3.8.5 Non-normed Fit Index (NNFI (TLI)

The Tucker-Lewis index, often called the non-normed fit index (NNFI), is an incremental measure of a statistical model's goodness of fit. It considers the number of parameters in the model as well as the strength of the correlations found in the data. Some of the negative bias problems are addressed by the NNFI, yet occasionally NNFI values will go outside of the 0 to 1 range. If it falls between 0.9 and 0.95, is poor if it is less than 0.8, is suffering between 0.8 and 0.9, and is very good if it is equal to or greater than 0.95.

3.8.6 Normed Fit Index (NFI)

Bentler-Bonett Normed Fit Index is another name for the Normed Fit Index (NFI). The gap between the chi-squared values of the null model and the suggested model is analysed. NFI has a propensity toward prejudice. As per Portela (2012), a score is classified as very excellent if it is equal to or higher than 0.95, good if it falls between 0.9 and 0.95, suffering if it falls between 0.8 and 0.9, and terrible if it falls below 0.8.

3.8.7 Comparative Fit Index (CFI)

An indicator of how well a model fits the data statistically is the comparative fit index, or CFI. It is a statistical model's incremental goodness of fit metric that accounts for the number of parameters in the model as well as the strength of the data correlations. Higher values on the CFI scale, which goes from 0 to 1, suggest a better fit. Good fit is defined as a value of 0.90 or higher, excellent fit as a value of 0.95 or higher, poor fit as a number falling between 0.8 and 0.9, and bad fit as a value less than 0.8.

3.8.8 Chi-square

A statistical test called chi-square is used to assess if a categorical variable's frequency distribution deviates from expectations. It is employed to test theories regarding a categorical variable's distribution. Pearson's chi-square tests come in two varieties: the chi-square test of independence and the chi-square goodness of fit test. To determine if the frequency distribution of a categorical variable deviates from your expectations, apply the chi-square goodness of fit test (Gunzler and Morris, 2016).

A better fit, or a lower discrepancy between the expected and actual covariance matrices, is indicated by values that are closer to zero. A sizable chi-squared test, on the other hand, coupled with a tiny p-value suggests that the model does not match the data.

3.8.9 P-value

A hypothesis is checked against observed data using a statistical measure known as the p-value. Assuming that the null hypothesis is true, it computes the probability of obtaining the observed results.

The researcher is more likely to reject the null hypothesis if the p-value is less. Researchers must determine the difference between the observed and predicted frequencies of a set of variables or events to calculate the p-value.

3.8.10 Goodness of Fit Index (GFI)

A measurement of the degree of fit between the proposed model and the actual data is called the goodness of fit index (GFI). For a satisfactory fit, the absolute fit index requires values greater than 0.9.

3.8.11 Adjusted Goodness of Fit Index (AGFI)

It is a metric for a statistical model's goodness of fit. It is a relative indicator of how much of the variance is explained by the model as opposed to how much is explained by a null model. The GFI is adjusted for the number of indicators of each latent variable by the Adjusted Goodness of Fit Index (AGFI). Higher numbers on the AGFI scale,

which goes from 0 to 1, denote greater match. Good fit is indicated by a value of 0.90 or higher, while excellent fit is indicated by a value of 0.95 or higher.

3.8.12 SEM model

A statistical technique called structural equation modelling (SEM) is used to evaluate and quantify intricate correlations between latent and observable variables. When using SEM, a hypothesis is created by the researcher on the connections between latent and observable variables. After that, the researcher fits a model to the data and evaluates how well the model fits the data to test the hypothesis.

Several metrics, including the previously mentioned Chi-square, Root Mean Square Error of Approximation (RMSEA), Normed Fit Index (NFI), Non-normed Fit Index (NNFI), Adjusted Goodness of Fit Index (AGFI), and Comparative Fit Index (CFI) can be used to evaluate the model's goodness of fit.

3.9 Ethical Consideration

The identification, advancement, and use of huge moral standards to an assortment of issues, including gathering information from people, creatures, and the environment, are all essential for research morals. The fundamental rationale for adding ethics in research, according to Chodakufa (2009), is to try to eradicate any conceivable mischief to study participants. Furthermore, Roberts-Lombard (2002) believes that ethical considerations are essential in defining whether a study succeeds or fails. The study aimed to gather data that can be administered and used to help the study participants.

As a result, research ethics are critical since they serve to ensure the safety of research participants. Chodakufa (2009) supports this position by stating that a study should not hurt, compel, or deceive subjects. Furthermore, study participants must be prepared to participate and be educated about the study's goal before agreeing to participate. The researcher obtained authorisation from the cooperative's chairperson for this study. Before the researcher scheduled the interviews, all the participants in the study agreed to participate.

This study's ethical concerns are significant, especially regarding the respondents' privacy and confidentiality. It was clarified to the participants that the gathered data would be used for this study, and private subtleties of the respondents would not be uncovered at some random time later. As some of the data were received by email, such information will only be accessed by the researcher and stored on a hard drive and not accessed by anyone during and after the study. Information received as hard copies will be kept safe and not be shared with anyone.

A permission form was given to participants before they could begin the study. Research ethics depends on the recognition, development, and application of high moral standards for a wide range of problems, such as collecting data from humans, animals, and the environment. According to Chodakufa (2009), the main justification for incorporating ethics into research is to attempt to eliminate any potential misbehaviour among study participants. Moreover, according to Roberts-Lombard (2002), ethical issues are crucial in determining the success or failure of a study. The goal of the study was to collect information that may be utilised to benefit the research subjects.

3.10 Pilot study

A pilot study with 20 participants was conducted for this study, and the feedback was used to develop the final questionnaire. According to Quinlan (2011), a pilot study is a test of the research project. This pilot study was conducted with a small portion of participants. The respondents appeared to be the same as the real participants in the study, but they did not participate in it. The first analysis of pilot test data was carried out to guarantee that the information gathered allowed the investigatory questions to be answered, according to Saunders et al. (2009).

3.11 Summary and conclusion

The research technique and design used to perform the empirical component of the study were provided in this chapter. The data gathering and methodologies utilised in the study were also discussed. The ethical considerations imposed during the data collection phase were also presented in this chapter (3). The research findings from

this study are presented in the following chapters. The breakdown and clarification of the study results emphasised in Chapters 4, 5, 6, 7 and 8 are steered by the study techniques in this chapter (3).

CHAPTER 4: EXAMINING THE TYPES OF INNOVATION STRATEGIES THAT IMPACT THE SUSTAINABILITY OF AGRICULTURE COOPERATIVES

4.1 Introduction

This chapter (4) and the following three (3) chapters were written in an article format. to make reading easier for potential users of the research findings.

4.2 EXAMINING THE IMPACT OF PRODUCT AND PROCESS INNOVATION STRATEGIES ON SUSTAINABILITY OF AGRICULTURE CO-OPERATIVES IN LEJWELEPUTSWA DISTRICT

4.2.1 Abstract

Product and Process innovation strategies are systematic approaches to identifying unmet customer needs in each market and identifying areas for process improvement. Both innovation strategies help in selecting which unmet needs and areas needs to be targeted for sustainability. Product and Process innovation strategies help cooperatives to grow market share and profits through reliably successful product and process innovation.

The study was carried out to examine the implementation of product and process innovation strategies on sustainable agriculture cooperatives in Lejweleputswa district. The descriptive study analysis was conducted on 139 cooperative members from 25 different agriculture cooperatives. Data were collected using survey questions that were standardised. Likert scales with 5 points were used to assess these survey questions. Collected data sets were analysed using SPSS version 28 software.

The data was found to be reliable as a Cronbach's alpha was found to be 0.927 and 0.861. The average correlation coefficient was observed to be 0.6 which denotes an overall positive correlation between variables. The one sample test was used to determine the p-value (Sig-value), which was found to be less than 0.05. Thus, the null hypothesis was rejected by the researcher. Results also denoted a positive correlation between the variables of marketing innovation strategies.

From the results it was concluded that the implementation of product and process innovation strategies is significantly low in most agriculture cooperatives in Lejweleputswa district.

Keywords: Product and Process innovation strategies, Agricultural Cooperatives, Sustainability

4.2.2 Introduction

Developing both product and process innovation strategies involve determining cooperative objectives, always understanding the market, and seeking new ways to provide value to customers. Product innovation strategy encourages a pro-innovation mindset within cooperative members and provides a means of guaranteeing that concepts are brought forth, refined, and put to the test—not overlooked.

This study looked at how agricultural cooperative sustainability was affected by the application of product and process innovation strategies. The process of developing a new product or enhancing an existing one to creatively satisfy the needs of consumers is known as "product innovation". It involves identifying customer’s needs, researching market trends, designing, and developing new products, and launching them in the market, thus making improvements to existing products to better meet customer need and preferences and stay competitive in the market.

The process of continuously enhancing a product's forms, features, quality, and other elements to raise user pleasure is known as product innovation. Process innovation is the deployment of a recently conceived or created distribution plan, production method, or supporting activity. The first development of process innovation can be attributed to the crop farming cooperative and other cooperatives or institutions. Process and Product innovation are the activities that are new to the farming cooperative; however, these are not necessarily new to the market.

The Free State province's Lejweleputswa district municipality served as the study's location. The study investigated the issue of low innovation awareness and ignorance

when it comes to innovation implementation. According to the study, cooperatives do not have the right procedures in place to deal with innovation. Members of agricultural cooperatives typically struggle to pinpoint innovative tactics that will keep their organisations viable. Additionally, the cooperative members do not follow through on ideas, which stifles originality and creativity.

A gap exists, which demotivates members with highly innovative ideas that could improve the cooperative's viability. Koch (2011) asserts that members serve as the cooperative's hand in directing and coordinating its commercial operations. Therefore, there will not be any sustainability in business operations if member do not apply new products and processes within their agricultural cooperatives.

4.2.3 Objective

The objective of the study was to examine the implementation of a product and process innovation strategy for the sustainability of agricultural cooperatives in the Lejweleputswa district.

4.2.4 Hypothesis

The implementation of product and process innovation strategy is significantly low in most agriculture cooperatives in Lejweleputswa district.

4.2.5 Theoretical background

When a product or benefit that is entirely different from the cooperative's current offerings is introduced to the market, it is referred to as "product innovation" (Oslo, 2018). Product innovation can make use of knowledge, underutilised applications, or even a mix of new applications and preexisting information.

Presenting new products as well as major enhancements or crucial modifications to the functional features of current items is all part of product innovation. Items or services classified as "new" deviate from the cooperative's current product line. Variations in materials, methods, and attributes that enhance the product's quality might result in basic alterations or upgrades to currently available items (Oslo, 2018).

In their study, Zaefarian et al. (2017) found two key conclusions about product innovations. First, wide knowledge is necessary for product improvements. Second, cooperation and knowledge sharing between the company and the collaboration partner are necessary for product breakthroughs.

According to Krasadakis (2020), product innovation refers to the launch of a new product or the advancement of an existing product by incorporating notable enhancements. Krasadakis (2020) bemoaned the fact that the multiple phases associated with the creation and application of innovations can result in a lengthy life cycle for products.

According to Kozludzhova (2023), a product is something that can be presented to the market to meet clients' need. The creation of a product with the intention of generating income, utility, or consumption is known as product innovation. This covers tangible goods and services as well as product and service combinations. A product produced by a cooperative can be categorised as either a good or a service (Cooper, 2017).

Different authors have different opinions about what constitutes a product vs a service. There is a point of disagreement that categorises products and services based on whether they are physical or not. The ability to store the good or service is another way to identify it. Services cannot be kept like products can (Cooper, 2017).

Product innovation that works produces new products, opens new markets, and meet customers' desire. Product innovation increase productivity, escalate profits, and reduce operational costs. Innovative organisations have the advantage of access to international markets and an increase market share. Customers of innovative products, on the other hand, benefit from more options, better services, less costs, and superior products (Reguia, 2014).

Innovation, according to Molero (2013), frequently entails change that comes about because of coordinated, interconnected adjustments to products and processes. Product innovation is a symbol of an organisation's capacity for adaptation and change. It describes companies that prioritize bringing about change that is founded on innovation, achievement, financial gain, and client satisfaction.

According to (Farida and Setiawan, 2022), product innovation strategy is considered a strategic component of the organisation’s overall plan. The wide strategic viewpoint on developing new products that gives businesses a competitive edge and long-term growth is known as product innovation; product innovation deals with choices, tactics, and direction that establish what options to pursue and how to foster an environment in the company that facilitates opportunity detection and challenge resolution.

Optimising the organisation's value proposition is one of the main objectives of product innovation The value proposition is a crucial viewpoint for new product development. When buying goods and services, customers look for value and the advantages of creative solutions (Küfeoğlu, 2022).

Frishammar, Kurkkio, Abrahamsson, and Lichtenthaler (2012) state that great development projects can occasionally be sparked by this execution. The ability of agricultural cooperatives to innovate their processes is dependent on several factors. For example, regarding the business approach or strategy that the cooperative requires, where their expenses are allocated, and how involved the directors and members are in the innovation process (Reichstein and Salter 2006).

If agricultural cooperatives are to stand out from their competitors, these kinds of innovation are essential. The agricultural cooperative needs to consistently work on new or developed goods and services if it wants to remain competitive. Increases in sales, market share, and profit follow any advancement in product innovation.

Innovation, growing market share, and product development are all correlated, according to Iwu's (2010) findings. The study found that product development and innovation can be used as a tool to improve the life cycle of a product, which can lead to an increase in market share.

Hullova et al. (2016) confirmed that since process innovation is frequently associated with cost reduction, the effects it has on business performance are not always evident and may take some time to manifest. Researchers agree that process and product innovation are closely related and mutually reinforcing in both scenarios. Improving

business processes is necessary for the creation and the introduction of new products is a result of the process improvements.

Process innovation can take several forms, such as implementing lean manufacturing methods, getting rid of production tasks that do not add value, buying new equipment, and utilising production technologies. In their studies Ar and Baki (2011) and Atalay et al. (2013) found that process innovation is related to organisations' performance.

Lee et al. (2019) revealed an indirect effect by arguing that process innovation's valuable effects on organisation performance are interceded by its impact on product innovation. Love and Roper (2009) started a descriptive study to investigate how these innovative techniques affect sustainability. According to the results, innovators who adopt innovation experience better earnings than non-innovators who do not. Innovative techniques can boost a business's income in a variety of ways. For example, they can lower costs and employee attrition, differentiate a product, and sustain the business. Innovation is a vital component of any successful business.

4.2.6 Description of the study area

The Lejweleputswa district served as the research site. Lejweleputswa is in the Free State province. The local municipalities of Matjhabeng, Nala, Tokologo, Tswelopele, and Masilonyana make up Lejweleputswa district. Nala and the Northwest Province are adjacent. Lejweleputswa is home to 627,626 people and has an area of 31,930 km^2.

4.2.7 Sampling Procedure

A total of 139 people were contacted from a survey population, with the goal of reaching 150 crop agricultural cooperative members from 25 agricultural cooperatives. The district of Lejweleputswa is home to 100% of the responders.

Sampling, according to Brynard and Hanekom (2006), is a technique that chooses a smaller sample to reveal features of a larger group. The investigator could ascertain the sample's representativeness of the population by doing study on it. The study design that used was quantitative, and surveying methods were also used.

Quantitative research has the advantage of objectively examining social issues. Rather of concentrating on the mean or mode, the researcher aimed to gather a diverse range of opinions. The selection comprised a diverse range of responders (Trochim, 2006).

It was not possible to collect all the cooperatives' accessible data for secondary research due to time and access constraints. Sampling was used to limit the amount of information by using data from the sub-group instead of analysing all cases.

4.2.8 Data collection

Data were collected using survey questions that were standardised. Likert scales with five points were used to assess these survey questions. The information was gathered through closed-ended inquiries. The researcher considered the study objectives and the assessed literature when he began creating the questionnaire for the project (Quinlan, 2011).

4.2.9 Data Analysis

Following the original data collection from the participants, the information was examined to determine whether the questionnaires had been correctly filled out. Following cleaning and coding, the data was exported to SPSS.

According to Saunders, Lewis, and Thornhill (2016) a statistical software package that can be used to perform inferential and descriptive statistical analyses, present data in tabular or graphical format, import data from pre-existing sources like spreadsheets or databases, and produce output suitable for inclusion in final reports is the Statistical Package for Social Sciences (SPSS) version 28.

The data was analysed using a descriptive analysis technique as this is an exploratory study. The data analysis yields descriptive statistics for calculating the frequencies and percentages that make up the measures of central tendency as well as the test for the hypothesis, which was examined using a variety of methods including P-value and Z-value. To verify the accuracy and dependability of the data, exploratory factor analysis was employed.

Moreover, internal reliability was tested with the statistical software employing Cronbach's Alpha Coefficients. These findings were recorded and graphically presented using a table. Microsoft Excel was then used to evaluate the data and interpret the findings. The participants' disagreement and agreement with the aspects of innovation strategies were indicated by the percentages and frequencies.

4.2.10 Findings

Several statements about process innovation efforts carried out by their cooperatives were distributed to the respondents. They were asked to express how much each statement agreed or disagreed with them. Five (5) options were shown to them, ranging from Strongly Disagree to Disagree to Sometimes to Agree.

4.2.11 Reliability Statistics

Table 4.1: The Reliability Statistics

Data Variable	Cronbach's Alpha Based on Standardised Items	Number of Items
Product Innovation	0.927	8
Process Innovation	0.861	6

According to Pandey and Pandey (2015), reliability is defined as "consistency throughout a series of measurements," and research should genuinely aim to maximize reliability while minimizing bias. The researcher was dedicated to applying the selected methodology strictly and made sure that the study's conclusions upheld the values of scientific objectivity and honesty to guarantee that this research project satisfies the requirements of reliability, validity, and trustworthiness.

Excellent response rates were noted by the researcher, who then conducted further reliability tests for the product and process innovation strategies. These tests yielded satisfactory results, as indicated in Table 4.1 above, about 0.927 and 0.861, respectively.

Table 4.2: Inter-Item Correlation Matrix

	PN1	PN2	PN3	PN4	PN5	PN6	PN7	PN8	PC1	PC2	PC3	PC4	PC5	PC6
PN1	1	.780**	.601**	.475**	.493**	.629**	.475**	.698**	.271**	.189*	.228**	.155	.158	.290**
PN2		1	.639**	.571**	.573**	.740**	.512**	.769**	.245**	.169*	.216*	.155	.153	.250**
PN3			1	.687**	.630**	.594**	.652**	.687**	0,069	.186*	.171*	.063	.191*	.169*
PN4				1	.659**	.544**	.696**	.597**	.181*	.198*	.152	.184*	.218**	.138
PN5					1	.531**	.728**	.532**	.199*	.199*	.211*	.171*	.240**	.180*
PN6						1	.411**	.716**	.125	.112	.141	.082	.63	.159
PN7							1	.518**	.198*	.220**	.264**	.241**	.221**	0,147
PN8								1	.162	.186*	.171*	.119	.183*	.199*
PC1									1	.556**	.578**	.532**	.589**	.546**
PC2										1	.483**	.459**	.561**	.478**
PC3											1	.518**	.477**	.470**
PC4												1	.414**	.484**
PC5													1	.462**
PC6														1

PN- Production innovation

PC- Process innovation

The table above shows the correlation between variables on process and product innovation. The findings shows that there is an overall positive correlation, thus the researcher denotes that during the past 12 months the introduction of a new product or services that was developed by the cooperative itself or by other cooperatives has

positive correlated with process innovation. The average correlation coefficient is 0.6 which denotes an overall positive correlation between variables.

4.2.12 The one sample test

To ascertain whether there is a statistically significant difference between all the groups regarding their perceptions of the impact of applying product and process innovation strategies on the sustainability of agriculture cooperatives in the Lejweleputswa district, the researcher conducted a single sample test at the 5% level of significance. As indicated in Table 4.3 below, there is a statistically significant difference among the indicators regarding how they view the impact of implementing product and process innovation strategies on the sustainability of agriculture cooperatives in the Lejweleputswa district. This difference is due to the sig-value (0.00) < 0.05 from the t-test statistical tables and the assumed probability.

Table 4.3: The One sample test

				95% Confidence Interval of the Difference	
t	Degrees of Freedom	Sig. (2-tailed)	Mean Difference	Lower	Upper
27.707	138	.000	2.669	2.48	2.86
23.546	138	.000	2.562	2.35	2.78
25.976	138	.000	2.389	2.21	2.57
27.136	138	.000	2.403	2.23	2.58
25.227	138	.000	2.475	2.28	2.67
24.366	138	.000	2.633	2.42	2.85
26.322	138	.000	2.482	2.30	2.67
25.117	138	.000	2.590	2.39	2.79
28.821	138	.000	1.993	1.86	2.13
28.662	138	.000	2.166	2.02	2.32
27.540	138	.000	2.029	1.88	2.17
32.449	138	.000	2.187	2.05	2.32
25.926	138	.000	2.094	1.93	2.25
31.116	138	.000	2.209	2.07	2.35

Sample test-0.05

4.2.13 Descriptive Statistics

The respondents' average mean score for the introduction of a new or improved product or service was 3.72, indicating that their choice was above average, according to descriptive statistics on the application of product and process innovation strategies on the sustainability of agriculture co-ops in the Lejweleputswa district. These findings show that throughout the previous 12 months, the cooperative launched new goods and services that were created by your cooperative as well as other cooperatives that were the first in the district and new to the market.

The results also demonstrate that, because of profitability, new and enhanced supporting activities for the process that the cooperative and other cooperatives developed were brought to the market, positively influencing the agricultural cooperatives' ability to remain sustainable. With a grand mean statistic of 2.58 and a standard deviation of 1.136, the product and process innovation strategy on the sustainability of agriculture cooperatives through the introduction of new or improved products or services shows that more than 50% of respondents agreed that their cooperatives had introduced a new or improved product or service in the previous year.

This suggests that the respondents strongly agree with the null hypothesis put forth. The overall mean of the cooperatives that introduced new products or services that were developed by their cooperative staff and that were developed by other cooperatives and that were new to the market was noted to be above average. The respondents gave a positive response, as evidenced by the platykurtic and positive skewness statistical values for the kurtosis and skewness, respectively. This suggests that these innovation initiatives have a beneficial impact on the sustainability of agricultural cooperatives.

Table 4.4: Descriptive Statistics of product and process innovation practices in agriculture cooperatives.

	Mean	Mode	Standard deviation	Strongly disagree. (%)	Disagree (%)	Some times (%)	Agree (%)	Strongly disagree (%)
PRODINN01	2.72	2	1.136	13.7	35.3	18.7	23.7	8.6
PRODINN02	2.61	2	1.283	8.6	30.9	12.2	20.9	25.2
PRODINN03	2.44	2	1.084	29.5	45.3	16.5	7.2	1.4
PRODINN04	2.45	2	1.044	28.8	46	16.5	7.2	1.4
PRODINN05	2.53	2	1.157	32.4	35.3	18.7	10.8	2.9
PRODINN06	2.68	2	1.274	24.5	28.8	20.9	18	7.9
PRODINN07	2.53	2	1.112	25.9	41.7	18	11.5	2.9
PRODINN08	2.64	2	1.216	20.1	36	15.8	20.9	7.2
PROCEINN1	2.04	2	0.815	27.3	46.8	1.1	9.4	1.4
PROCEINN2	2.22	2	0.891	24.5	44.6	20.1	7.9	2.9
PROCEINN3	2.08	2	0.869	29.5	47.5	13.7	9.4	0
PROCEINN4	2.24	2	0.795	26.6	48.9	17.3	5.8	1.4
PROCEINN5	2.14	2	0.952	26.6	49.6	16.5	5	2.2
PROCEINN6	2.26	2	0.837	2.3	43.9	18	10.1	5.8

Grand Mean =2.58

4.2.14 Discussion

Most respondents believe that throughout the previous 12 months, there was no improvement in the quality of the products or services offered by their agricultural cooperatives. The agricultural cooperative's latest products need to be better for it to remain competitive. This suggests that there is no improvement in the quality of the crop products produced by the Lejweleputswa cooperatives' product offering. Sales, market share, and profit all rise in response to improved products.

According to most respondents, their farm cooperatives have not introduced any newly created services or products in the last 12 months. According to Katz, du Preez, and Schutte (2010), innovation is defined as the productive refinement and application of novel and innovative ideas that offer new goods, procedures, and supplementary methods to the cooperative. Unquestionably high levels of productivity are likely to be achieved by agricultural cooperatives that apply innovation tactics in the introduction of new goods and services (Dwyer and Mellor 1993).

According to most respondents, their cooperative did not create a new product by altering an existing one. Throughout the previous 12 months, their cooperatives have not worked with any other cooperatives to develop new products.

Most of the participants expressed ignorance regarding any novel goods or services created by other cooperatives during the previous year. Varis and Littunen (2010) state that cooperatives that introduce new products usually have sustained high profitability.

A greater number of participants expressed the opinion that their agricultural cooperatives had not released any new products in the previous 12 months. Innovation, according to Baregheh, Rowley, and Sambrook (2009), is the process by which companies turn concepts into new goods that help agricultural cooperatives succeed in the marketplace. These findings also show that most respondents thought that no product had been developed recently and that no product had been the first in their district in the previous 12 months, apart from those that were new to their cooperatives.

4.2.15 Conclusion and Recommendation

The results suggest that agricultural cooperatives do not have a desire to adopt tactics for product innovation. Most the Lejweleputswa district's agricultural cooperatives have a poor opinion on product innovation. The study's findings support the assertion made by the researchers that certain agricultural cooperatives do not incorporate innovation into their routine farming operations. This can be attributed to either a lack of knowledge or an inadequate understanding of the benefits and significance of incorporating product innovation within cooperative business practices.

4.3 EXAMINING THE IMPACT OF ORGANISATIONAL INNOVATION STRATEGY ON THE SUSTAINABILITY OF AGRICULTURE CO-OPERATIVES IN THE LEJWELEPUTSWA DISTRICT

4.3.1 Abstract

Organisational innovation strategies have an impact on competitive advantage of agriculture cooperatives. Organisational innovation influences cooperatives and improves productivity, profit margin, market share decision-making.

The current research was carried out to examine the implementation of marketing innovation strategies on sustainable agriculture cooperatives in Lejweleputswa district. The quantitative and qualitative research analytical study was conducted on 139 cooperative members from 25 different agriculture cooperatives. Data were collected using survey questions that were standardised. Likert scales with 5 points were used to assess these survey questions. Collected data sets were analysed using SPSS version 28 software.

The data was found to be reliable as a Cronbach's alpha was 0.885. The Pearson correlation coefficient was 0.68 on average, denoting that there is a positive relationship between variables of organisational strategies. The p-value (0.026) < 0.05 indicated a statistically significant difference between the variables. The Analysis of Variance (ANOVA) was used to determine the F-value which was found to be less than the degree of freedom, 1.644 and 2.0, respectively. Thus, the researcher hypothesis was accepted.

From the results it was concluded that the implementation of organisational innovation strategies is significantly low in most agriculture cooperatives in Lejweleputswa district.

Keywords: Agricultural Cooperatives, Innovation, Marketing, Sustainability

4.3.2 Introduction

The goal of the organisational innovation strategy is to lower operating expenses while improving the performance of agricultural cooperatives. The application of external interactions and organisational practices which were never employed in the agricultural cooperative is a key component of organisational innovation strategy. Agricultural cooperatives make strategic decisions that impact cooperative processes.

Innovative management strategies are essential for agricultural cooperatives that want to increase output, enhance the quality of their client products, and maintain their competitiveness.

4.3.3 Objectives

The objective of the study was to examine the implementation of organisational innovation strategy on sustainability of agricultural cooperatives in Lejweleputswa.

4.3.4 Hypothesis

The implementation of organisational innovation strategy is significantly low in most agriculture cooperatives in Lejweleputswa district.

4.3.5 Theoretical Background

According to Camison and Villar-Lopez 2014, innovation in organisational contexts is primarily the use of new organisational approaches in the workplace, external relationships, and practices of organisations. Innovation is described from a variety of angles that are specific to each community segment.

According to the socio-technical system theory, adjustments to organisational resources must also be made to the management system to adapt to changes in the technological system and meet changing demands. In this case, organisational innovation is a prerequisite for the work resources that must be made available and put into practice (Azar and Chiabuschi 2017).

Quintana (2018) argues that to attain higher organisational performance, companies must have a better understanding of how to deal with changes and uncertainties in

their environment while integrating one or more types of innovation. According to Nieves and Quintana (2018), competent workers are more willing to learn new things, expand organisational capabilities, and support innovative ways of thinking. They can also accomplish a wide range of talents. People with sufficient skills, expertise, and experience are an organisation's most valuable assets.

The adoption of work resources that concurrently improve organisational performance is facilitated by organisational innovation, which establishes a welcoming and pertinent atmosphere. However, there has not been much study done in public-sector organisations on the mediating role that work resource performance plays in the relationship between organisational innovation and organisational work performance. Additionally, academics contended that organisational innovations continue to be underestimated in terms of their significance for modifications to work resources (Azar and Chiabuschi 2017).

Process innovation, according to Hervas-Oliver et al. (2014), is positively correlated with business performance and is only practical when organisational innovations are put into practice, particularly when it comes to implementing organisational mechanisms for learning new information. Furthermore, Ali et al. (2016) discovered a direct correlation between organisational creativity and a firm's ability to assimilate technological information, both of which enhance overall organisational performance.

Wang et al. (2015) carried out a meta-analysis and reported results showing that organisational innovation and performance are positively correlated, especially for businesses that operate in knowledge-intensive networks and have high network centrality.

4.3.6 Description of the study area

The Lejweleputswa district served as the research site. Situated in the Free State province, which borders Lesotho, lies Lejweleputswa. The local municipalities of Matjhabeng, Nala, Tokologo, Tswelopele, and Masilonyana make up Lejweleputswa

district. Nala and the Northwest Province are adjacent. Lejweleputswa is home to 627,626 people and has an area of 31,930 km^2.

4.3.7 Sampling Procedure

A total of 139 people were contacted from a survey population, with the goal of reaching 150 crop agricultural cooperative members from 25 agricultural cooperatives. The district of Lejweleputswa is home to 100% of the responders.

Sampling, according to Brynard and Hanekom (2006), is a technique that chooses a smaller sample to reveal features of a larger group. The investigator could ascertain the sample's representativeness of the population by doing study on it. For a small population, the investigator required a big examining fraction; for a large population, a more modest proportion was required (Quinlan 2011).

The study design that was used was quantitative, and surveying methods were also used. Quantitative research has the advantage of objectively examining social issues. Rather of concentrating on the mean or mode, the researcher aimed to gather a diverse range of opinions. The selection comprised a diverse range of responders (Trochim, 2006).

4.3.8 Data collection

Data were collected using survey questions that were standardised. Likert scales with five points were used to assess these survey questions. The information was gathered through closed-ended inquiries. The researcher considered the study objectives and the assessed literature when he began creating the questionnaire for the project (Quinlan, 2011).

4.3.9 Analysis

Following the original data collection from the participants, the information was examined to determine whether the questionnaires had been correctly filled out. Following cleaning and coding, the data was exported to SPSS.

According to Saunders, Lewis, and Thornhill (2016) a statistical software package that can be used to perform inferential and descriptive statistical analyses, present data in tabular or graphical format, import data from pre-existing sources like spreadsheets or databases, and produce output suitable for inclusion in final reports is the Statistical Package for Social Sciences (SPSS) version 28.

The data analysis yields descriptive statistics for calculating the frequencies and percentages that make up the measures of central tendency (mean, standard deviation, median, and range), as well as the test for the hypothesis, which was examined using a variety of methods including P-value and Z-value. To verify the accuracy and dependability of the data, exploratory factor analysis was employed.

Moreover, internal reliability was tested with the statistical software employing Cronbach's Alpha Coefficients. These findings were recorded and graphically presented using a table. Microsoft Excel was then used to evaluate the data and interpret the findings. The participants' disagreement and agreement with the aspects of innovation strategies were indicated by the percentages and frequencies.

4.3.10 Findings

Several statements about process innovation efforts carried out by their cooperatives were distributed to the respondents. They were asked to express how much each statement agreed or disagreed with them. Five (5) options were shown to them, ranging from Strongly Disagree to Disagree to Sometimes to Agree.

Table 4.5 below indicates frequencies for cooperative members who answered whether their cooperative introduced the new business practice for operational procedures within twelve months period.

4.3.11 Reliability statistics

According to the definition of reliability, which is "consistency throughout a series of measurements," research should minimise bias and maximize reliability (Pandey and Pandey, 2015). The researcher performed the analysis on the reliability of the data

and the findings show that the data was satisfactory as the Cronbach's alpha value was 0.861. The researcher was dedicated to applying the selected methodology strictly and made sure that the study's conclusions upheld the values of scientific objectivity and honesty to guarantee that this research project satisfies the requirements of reliability, validity, and trustworthiness.

These results show that the researcher has complied with the standards for validity, reliability, and trustworthiness. As a result, the researcher is determined to strictly implement the selected methodology and will make sure that the study's conclusions uphold the values of objectivity and integrity in science.

Table 4.5: Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardised Items	Number of Items
.859	.861	3

4.3.11 Pearson Correlation Coefficients

The table above shows the correlation coefficient among organisational innovative strategies, and it has been observed that the relationship ranges from moderate to positive between the variables. These findings also denote that during the past 12 months, the cooperatives introduced new methods of organizing external relations with other cooperatives, organizing work responsibilities, teamwork, education, and training, which were positively related to the sustainability of the cooperatives.

Table 4.6: Inter-Item Correlation Matrix

	ORGINNOVATVE1	ORGINNOVATVE2	ORGINNOVATVE 3
ORGINNOVATIVE1	1.00	0.694	0.639
ORGINNOVATIVE2	0.694	1.00	0.687
ORGINNOVATIVE3	0.639	0.687	1.00

The table above shows the inter-correlation matrix for the relationship between organisational innovative variables. The correlation coefficient is 0.68 on average, denoting that there is a positive relationship between variables, as shown in Table 4.6 above. The findings show that during the past 12 months, the cooperative introduced new methods of organizing work responsibilities and decision-making that are positively related to the introduction of new methods of organizing external relations with other cooperatives, as indicated by the correlation coefficient value of 0.687.

Table 4.7: The Analysis of Variance (ANOVA)

		Sum of Squares	Degrees of freedom	Mean Square	F-Value	Significant value
Between Items		484.84	138	3.510		
Within People	**Between Items**	0.638	2	0.319	1.644	0.026
	Residual	136.695	276	0.495		
	Total	137.333	278	0.494		
Total		621.717	416	1.495		

Grand Total =2.91

The results of the analysis of variance on variables related to the application of creative organisational strategies for the sustainability of agricultural cooperatives are displayed in the table above. The findings show that the indicators' perspectives on the relationship between organisational innovation and sustainability differ statistically. Based on the assumed probability and the ANOVA statistical tables, the p-value (0.026) < 0.05 indicates a statistically significant difference between the variables.

Table 4.8: Descriptive Statistics

	ORGINNOVATIVE1	ORGINNOVATIVE2	ORGINNOVATIVE3
Valid	139	139	139
Missing	0	0	0
Mean	2.86	2.94	2.94
Standard error of mean	0.109	0.108	0.04
Standard Deviation	1.289	1.270	1.108
Skewness	0.252	0.339	0.212

Table 4.9: The introduction of a new business practice, method of decision and method of organizing external relations with other cooperatives.

	Your cooperative introduced a new business practice for operational procedures	Your cooperative introduced a new method of decision-making (i.e., teamwork, education, and training).	Your cooperative introduced a new method of organizing external relations with other cooperatives
Mean	2.82	2.96	2.89
Mode	2	2	2
Strongly Disagree (%)	15.8	16.5	22.3
Disagree (%)	31.7	37.4	41.7
Sometimes (%)	15.8	15.8	19.4
Agree (%)	21.6	16.5	10.1
Strongly Agree (%)	15.1	13.7	6.5

A range of farm cooperatives were following their traditional methods and had not introduced any new ones, according to field responses. The fact that 15.8% of respondents strongly disagreed that new business practices had been implemented at their companies and 31.7% of respondents disagreed with the statement overall supported this. Making decisions strengthens a company's sustainability and serves as a powerful conduit for efficient business administration.

About 37.5% of respondents disagreed and 16.5% strongly disagreed, indicating that a sizable number of the sample cooperative societies that took part in the study never used new decision-making procedures in their operations. The results about novel organisational strategies indicate a negative correlation between the strategies South African agriculture cooperatives employ to improve sustainability.

While 22.3% of the same respondents strongly disagreed, most respondents (41.7%) disagreed that they presented new techniques for managing external interactions. These agricultural cooperatives are rigidly structured in accordance with antiquated methods of handling external interactions, and they lack flexibility and agility.

Significantly, 19.4% of respondents said that other agriculture cooperatives occasionally propose novel approaches to managing external interactions, while 10.1% and 6.5% strongly agreed. The utilization of press releases, conferences, workshops, media advertising, and marketing tours are common strategies mentioned by those who strongly agreed. These techniques for handling external contacts, however, were specific to some cooperatives and depended on their modifications and communication plans.

Significantly, 19.4% of respondents said that other agriculture cooperatives occasionally propose novel approaches to managing external interactions, while 10.1% and 6.5% strongly agreed. The utilization of press releases, conferences, workshops, media advertising, and marketing tours are common strategies mentioned by those who strongly agreed. These techniques for handling external contacts, however, were specific to some cooperatives and depended on their modifications and communication plans.

Several of the respondents emphasised the use of workshops, consultation procedures, trainings, and teamwork as means of promoting active engagement. These comments demonstrated that diverse approaches were used to managing change or making decisions, and they were provided based on individual experiences inside the corporative setting.

4.3.12 Discussion

The presentation of new practices is important for agricultural cooperatives when they redesign productivity, work on the quality of consumer offerings, and maintain competitiveness, since most respondents disagreed that their cooperatives introduced new business practices (Mol and Birkinshaw, 2009). Incorporating innovative approaches to external relations management has yielded significant benefits in collaboration with public and private sector organisations. Through press releases, media tours, and internet and radio campaigns, the company has been able to maintain stakeholder and client engagement and cultivate trust.

Nearly 50% of the participants stated that their farming cooperatives offered novel approaches to overseeing external interactions with other farming cooperatives. Approaches included exchanging notes on best practices through media tours, exchange visits, and invitations at expos. This is a smart way to maintain the interest of other cooperatives and build a strong brand for the cooperative identity.

The use of improved strategies for setting up and organizing ties with various cooperatives or public organisations, such as collaboration with research institutions or clients and outsourcing services, is considered innovation in organisation techniques, according to the OECD (2005). All cooperatives, whether in agriculture or not, should work feverishly to manage their external relationships with other cooperatives. This offers numerous broad advantages that can lead to strong brand performance, significant revenue turnover, and the imposition of a distinctive value offering on cooperatives.

4.3.13 Conclusion and Recommendation

Based on the findings, it appears that agricultural cooperatives are not motivated to use innovative organisational strategies.

Organisational innovation is not well-regarded by the majority of the agricultural cooperatives in the Lejweleputswa district. The researchers' claim that some agricultural cooperatives do not apply innovation to their everyday farming practices is supported by the study's results. This might be ascribed to a deficiency in information or an insufficient comprehension of the advantages and importance of integrating organizational innovation into cooperative business operations. As a result, these farmers may not realize the potential benefits and positive impact that innovation can have on their farming practices and overall success.

4.4 EXAMINING THE IMPLEMENTATION OF MARKETING INNOVATION STRATEGY ON THE SUSTAINABILITY OF AGRICULTURE CO-OPERATIVES IN THE LEJWELEPUTSWA DISTRICT

4.4.1 Abstract

A marketing innovation strategy is the application of an idea that is distinct from the practices currently in use. It prepares the groundwork for introducing modifications to the cost, pricing, design, and promotion of agricultural products.

The current research was carried out to examine the implementation of marketing innovation strategies on sustainable agriculture cooperatives in Lejweleputswa district. The quantitative and qualitative research analytical study was conducted on 139 cooperative members from 25 different agriculture cooperatives. Data were collected using survey questions that were standardised. Likert scales with 5 points were used to assess these survey questions. Collected data sets were analysed using SPSS version 28 software.

The data was found to be reliable as a Cronbach's alpha was found to be 0.885. The Analysis of Variance (ANOVA) was used to determine the F-value which was found to be less than the degree of freedom, 1.552 and 3.0, respectively. Thus, the hypothesis was accepted. Results also denoted a positive correlation between the variables of marketing innovation strategies.

From the results it was concluded that the implementation of marketing innovation strategy is significantly low in most agriculture cooperatives in Lejweleputswa district.

Keywords: Agricultural Cooperatives, Innovation, Marketing, Sustainability

4.4.2 Introduction

A marketing innovation strategy is the application of an idea that is distinct from the practices currently in use. It prepares the groundwork for introducing modifications to the cost, pricing, design, and promotion of agricultural products.

According to the Oslo Manual (2005), an agricultural cooperative's marketing innovation strategy is the application of new marketing techniques that entail adjustments to pricing, promotion, and product design. The goal of marketing innovation for agricultural cooperatives is to expand their market reach and boost revenue.

4.4.3 Objective

The objective of this research study was to examine the implementation of marketing innovation strategies by agricultural cooperatives for sustainable development.

4.4.4 Hypothesis

The implementation of marketing innovation strategy is significantly low in most agriculture cooperatives in Lejweleputswa district.

4.4.5 Theoretical Background

According to Gupta et al. (2016), using marketing techniques that are novel to agricultural cooperatives is part of a marketing innovation strategy. Marketing innovation is a collection of evaluating strategies, new circulation techniques, and new deals that position a product in a new market. Gupta et al. (2016) further defines marketing innovation as an improvement of a new product, a new value-setting methodology, new advancements, new conveyance channels, and promoting data systems.

Accordingly, marketing innovation is defined by Ungerman et al. (2018) as the process of coming up with novel ideas, products, services, or technology based on the market while also considering the demands of the client to find inventive ways to solve

business challenges. It should be mentioned that marketing innovation is regarded as non-technological, as opposed to product and process innovation.

These days, customer relationship management (CRM) systems, big data analytics, and other customer-related technologies may be the driving forces behind and provide support for such marketing innovations. The introduction of novel distribution or promotion strategies, adjustments to logistics, creative pricing strategies, or the execution of pertinent, state-of-the-art marketing initiatives are a few instances of marketing innovation, according to Erevelles et al. (2016).

One area of current research focus is the effect of marketing innovation on firm performance. Gupta et al. (2016), for instance, demonstrated how marketing innovations, particularly those that effectively incorporate customer intelligence into their design, boost a company's competitiveness. Ungerman et al. (2018) provided more support for this notion, stating that marketing innovation improves several business performance metrics, such as corporate culture, staff productivity, and competitiveness.

According to Kamp and Parry (2017), marketing innovation strategies may enhance a company's performance in terms of cost savings, increased sales, and competitiveness.

4.4.6 Description of the study area

The Lejweleputswa district served as the research site. Situated in the Free State province, which borders Lesotho, lies Lejweleputswa. The local municipalities of Matjhabeng, Nala, Tokologo, Tswelopele, and Masilonyana make up Lejweleputswa district. Nala and the Northwest Province are adjacent. Lejweleputswa is home to 627,626 people and has an area of 31,930 km^2.

4.4.7 Sampling Procedure

A total of 139 people were contacted from a survey population, with the goal of reaching 150 crop agricultural cooperative members from 25 agricultural cooperatives. The district of Lejweleputswa is home to 100% of the responders.

Sampling, according to Brynard and Hanekom (2006), is a technique that chooses a smaller sample to reveal features of a larger group. The investigator could ascertain the sample's representativeness of the population by doing study on it. For a small population, the investigator required a big examining fraction; for a large population, a more modest proportion was required (Quinlan 2011).

The study design that was used was quantitative, and surveying methods were also used. Quantitative research has the advantage of objectively examining social issues. Rather of concentrating on the mean or mode, the researcher aimed to gather a diverse range of opinions. The selection comprised a diverse range of responders (Trochim, 2006).

4.4.8 Data collection

Data were collected using survey questions that were standardised. Likert scales with five points were used to assess these survey questions. The information was gathered through closed-ended inquiries. The researcher considered the study objectives and the assessed literature when he began creating the questionnaire for the project (Quinlan, 2011).

4.4.9 Analysis

Following the original data collection from the participants, the information was examined to determine whether the questionnaires had been correctly filled out. Following cleaning and coding, the data was exported to SPSS.

According to Saunders, Lewis, and Thornhill (2016) a statistical software package that can be used to perform inferential and descriptive statistical analyses, present data in tabular or graphical format, import data from pre-existing sources like spreadsheets or databases, and produce output suitable for inclusion in final reports is the Statistical Package for Social Sciences (SPSS) version 28.

The data analysis yields descriptive statistics for calculating the frequencies and percentages that make up the measures of central tendency (mean, standard deviation, median, and range), as well as the test for the hypothesis, which was

examined using a variety of methods including P-value and Z-value. To verify the accuracy and dependability of the data, exploratory factor analysis was employed.

Moreover, internal reliability was tested with the statistical software employing Cronbach's Alpha Coefficients. These findings were recorded and graphically presented using a table. Microsoft Excel was then used to evaluate the data and interpret the findings. The participants' disagreement and agreement with the aspects of innovation strategies were indicated by the percentages and frequencies.

4.4.10 Findings

Several statements about process innovation efforts carried out by their cooperatives were distributed to the respondents. They were asked to express how much each statement agreed or disagreed with them. Five (5) options were shown to them, ranging from Strongly Disagree to Disagree to Sometimes to Agree.

Table 4.5 below indicate frequencies for cooperative members who answered whether their cooperative introduced the new business practice for operational procedures within 12 months period.

Table 4.10: Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardised Items	Number of Items
.884	.885	4

The findings from the research study denotes that the value for the Cronbach alpha based on standardised items value is 0.885 which denotes that the findings were satisfactory, thus the data was reliable and valid.

Table 4.11: Inter-Item Correlation Matrix

	MARKINNO01	MARKINNO02	MARKINNO03	MARKINNO04
MARKINNO01	1.00	0.638	0.705	0.750
MARKINNO02	0.638	1.00	0.618	0.656
MARKINNO03	0.705	0.618	1.00	0.583
MARKINNO04	0.750	0.656	0.583	1.00

Table 4.12: The Analysis of Variance

		Sum of Squares	Degrees of Freedom	Mean Square	F-Value	Significant Value
Between People		630.946	138	4.572		
Within People	**Between Items**	2.466	3	0.822	1.552	0.201
	Residual	219.284	414	0.530		
	Total	221.750	417	0.532		
Grand Total		852.696	555	1.536		

The average mean score for the participants and the analysis of variance on the influence of implementing novel market strategies on the sustainability of agriculture cooperatives in Lejweleputswa district can be found in Table 4.12 above. The results indicate that cooperatives have implemented new strategies for product placement and sales channels during the last 12 months, including direct selling, exclusive retailing, the first-time use of franchising or distribution licenses, and fresh ideas for production display.

Table 4.13: Changes to the packaging

	Strongly Disagree	Disagree	Sometimes	Agree	Strongly Agree
Changes to the packaging	15.1	30.9	16.5	21.6	15.8
New method for product placement to the market	13.7	31.7	16.5	22.3	15.8
New method for product promotion	14.4	29.5	16.5	18.7	20.9
New methods of pricing	12.9	29.5	23.7	21.6	12.2

As demonstrated by 30.9% of the respondents, the majority did not agree that their firms had implemented new packaging techniques, and half of this group strongly disagreed with the same question. This implies that they did not wish to alter the packaging component because their previous packing techniques were effective for them. While many respondents, as indicated by 21.6%, agreed and 15.8 strongly agreed that they always employed new packaging skills, other agriculture cooperatives, as indicated in the above table, occasionally introduced new packaging skills, and found success with it. The rates for cooperative members who responded to a question about whether their cooperative has developed a novel technique for product placement are shown in Table 4.13.

Effective product placement is essential in the marketplace. Regarding product placement in the market, 13.7% of research participants strongly disagreed and 31.7% of respondents stated that they had never brought anything novel in this regard. Additionally, it was found that 22.3 of the agricultural cooperatives that took part in the study employed novel approaches to product placement in the marketplace; 16.5% of them said they occasionally used these techniques, and 15.8% of them strongly agreed with the statement. The responses provided illustrate the range of experiences and the workings of South African agricultural cooperatives.

According to the study's findings, many agricultural cooperatives rarely employ promotional techniques. 29.5 percent disagreed overall, with 14.4% strongly disagreeing. The disagreements and extreme disagreements among these respondents were almost identical in their arguments on how infrequently promotions were made. Furthermore, since 16.5% of respondents said their cooperatives occasionally held promotional events, and 20.9% of survey participants strongly agreed, compared to only 18.7% who agreed, the study also showed that agriculture cooperatives were not homogenous in their operations.

The most often used promotional techniques for agriculture cooperatives were the usage of discounts and cash on delivery, according to the key points cited. These provided a range of ways for the public to learn about their products and enabled most agriculture cooperatives to increase the profits on their capital investments.

Results from the field indicate that most agriculture cooperatives were still utilizing the previous pricing index because 12.9% of research participants strongly disagreed with the question, and about 29.5% of respondents disagreed. Product pricing strategies have a critical role in encouraging customers to verify affordability, which in turn minimizes the need to return purchases made when they turn out to be more expensive than planned.

In contrast, 21.6 percent of respondents said they occasionally altered the pricing index, 12.2% of research participants agreed, and 23.7% of respondents said they occasionally did so. The respondents made it clear that location and supplier needs had an impact on price index adjustments. High-priced goods also draw a distinct pricing index to stay sufficiently competitive in the market.

4.4.11 Discussion

A claim that cooperatives made changes to their product packaging is disputed by most respondents. According to Gupta, Malhotra, Czinkota, and Foroudi (2016), marketing innovation is the enhancement of a new product, a new approach to defining values, new developments, new distribution channels, and data systems for promotion. The Reliability of new sales channel methods presented to cooperatives

was disputed by most members. It is a collection of assessment plans, fresh approaches to distribution, and fresh agreements that place a product in a new market, according to Gupta et al. (2016).

4.4.12 Summary and Conclusion

The findings imply that there is no desire within agricultural cooperatives to implement product innovation strategies. It can be concluded that most of the agricultural cooperatives in Lejweleputswa district have negative perception towards marketing innovation.

CHAPTER 5: THE CHALLENGES FACED BY AGRICULTURE COOPERATIVES IN LEJWELEPUTSWA DISTRICT FOR SUSTAINABLE DEVELOPMENT

5.1 Abstract

This study investigated the challenges agricultural cooperatives face in the Lejweleputswa District Municipality in the Free State Province of South Africa. The objectives were to identify the challenges encountered by agriculture cooperatives for to implement innovation strategies for sustainability. The quantitative and qualitative research analytical study was conducted on 139 cooperative members from 25 different agriculture cooperatives. Data were collected using survey questions that were standardised. Likert scales with 5 points were used to assess these survey questions. Collected data sets were analysed using SPSS version 28 software.

The descriptive statistics was used to analyse the findings of the study and the results were illustrated graphically. The one-sample t test was also used to determine the mean, standard deviation, and the p-values of the results. The highest-rated challenge was price competition (mean = 3.99 ± 0.901), followed by the cost of access to new markets (mean = 3.92 ± 0.941), and then lack of adequate finance (mean = 3.91 ± 1.011). All the mean values were significantly higher than 3, and p-values were found to be all less than 0.05, thus indicating that respondents agree with the discussed challenges.

The conclusion brought forward was that there are indeed challenges that hinders innovation implementation in agriculture cooperatives, with the highest-rated being price competition, then cost of access to new markets and then lack of adequate finance.

Keywords: Sustainability, Challenges, Innovation Strategies, Agricultural Cooperative

5.2 Introduction

This section examines sustainability challenges in agriculture cooperatives and was written in the style of an article. The articles will be peer-reviewed by the various publishing companies that received the journals. This chapter focuses on specific traits of the study portrayed in the literature review chapter, i.e., innovation strategies, sustainability, and the obstacles to innovation strategies.

The problem statement is that agriculture cooperatives come across social, environmental, and economic challenges that lessen the sustainability of agriculture cooperatives in Lejweleputswa district municipality. The major goal of this study is to make original research more accessible and add to the body of knowledge by providing numerous lessons.

Previous studies revealed that there are challenges that impede the sustainability of agriculture cooperatives. However, the solutions specific to agriculture cooperatives were not well researched and reviewed. The researcher concludes this study with a recommendation that innovation strategies must be implemented to account for the challenges in agriculture cooperatives in the Lejweleputswa district.

This chapter examines the challenges that agricultural co-operatives are encountering to be sustainable. Factors seen as challenges are illustrated graphically according to members' responses. The study findings revealed that the highest-rated challenges were price competition, cost of access to new markets, and lack of adequate finance.

5.2 Objective

The study has the following objective in cognisance:

- To investigate the challenges encountered by agricultural co-operatives for sustainable development.

5.3 Theoretical background

Social, economic, and environmental challenges tend to hinder the sustainable development of Agriculture Cooperatives. It is crucial for agriculture cooperatives to

be aware of and plan for these challenges. Building a strong sustainability culture in the cooperative not only helps to avoid these sustainability challenges but also ensures that sustainability is a strategic focus for every cooperative. The trick, however, is to learn how to develop a culture of sustainability within the cooperative. Nonetheless, some factors will present a challenge to sustainable development.

As discussed in the literature review chapter (2), (DAFF 2010) recognised a few normal challenges encountered by agriculture co-operatives in South Africa and obviously in the Lejweleputswa District. Some of the sustainable development challenges encountered include the following:

- The absence of adequate funding is recognised as key requirements restricting the capacity of cooperatives to generate jobs. Individuals from cooperatives, especially in the rural crop cooperatives, have business thoughts yet come up short on the assets and resources to execute their thoughts.

- The absence of administration skills in cooperatives is likewise a challenging variable. Numerous cooperatives experience the effects of powerless administration and Lack of administration and management skills. The illiterate individuals from cooperatives contribute to this issue, which results in cooperatives not being able to deal with their administrative activities adequately and effectively.

- Male control and domination are likewise normal difficulties confronting agricultural cooperatives. Albeit, the report shows that female individuals are, in the greater part, males' rule regarding administrative and positions of authority.

- Powerlessness by cooperatives to increase their business practices and extend market access. Most agriculture cooperatives cannot make economies of scale inferable from frail capacity, helpless admittance to back and absence of data and linkages; and

- Lack of access to markets by smallholder agricultural cooperatives has likewise been viewed as a restricting component.

The literature revealed that challenges encountered by agriculture cooperatives in developing countries are the same as that in developed countries. The main difference is that those challenges negatively impact the cooperatives in developing countries. The social, environmental, and economic challenges hinder the profitability and sustainability of agriculture cooperatives. These are factors like economy, competition, and government regulations. According to Urban and Naidoo (2012), competition from well-developed cooperatives is the main challenge facing agriculture cooperatives.

Mbonyane and Ladzani's (2010) previous studies have discovered that farmers with technical skills find encounter challenges in soft business skills like bookkeeping. Poor infrastructure, lack of equipment and access to local markets also impede the sustainability of agriculture cooperatives. Even though there are government institutions providing soft business skills training and advisory services for agriculture cooperatives, a gap is still there. This is because agriculture cooperative members and managers do not see the need to upgrade their skills (Ahmed, 2009).

The sustainability of agriculture cooperatives is endangered by challenges occurring in functional farming business areas. Lack of managerial and market research skills are seen as challenges for sustainability of SMMEs, including agriculture cooperatives in developing countries (Schwartz and Hornych, 2010).

Urban and Naidoo (2012) lamented that one of the main challenges facing agriculture cooperatives is competition from developed cooperatives. Lack of farming resources and the access to funding by hinder cooperatives competitiveness. Als, legal and regulatory procedures are challenges to agriculture farmers who mostly do not understand the law and end up being penalised (Fumo and Jabbour, 2011).

According to Okpara (2011), lack of economic and regulatory policies also hinders agriculture businesses' development. According to Oreku, Kimeli and Mtenzi (2009), access to market information is another challenge phased by agriculture cooperatives. Such cooperatives do not have access to media such as telephones and emails.

During the interview and site visit of crop farm cooperatives in Lejweleputswa, the researcher identified challenges in agriculture cooperatives. These challenges are classified as social, economic, and environmental factors in table 5.1 below:

Table 5-1 Challenges encountered by agriculture cooperative.

Challenges	Classification
Price Competition	Economic
Cost of access to markets	Economic, Environmental
Lack of adequate finance	Economic
Market Share	Economic
Lack of qualified members	Social
Product quality	Environmental
Product demand	Social

The challenges indicated in table 5.1 above are analysed under section 5.5 of the chapter as per participants' responses.

5.4 Research Methodology

This section outlines the method used by the researcher to examine the factors that pose challenges in implementing innovation strategies for sustainable development.

5.4.1 Study area and data collection

The research was done in the Lejweleputswa District Municipality. The district consists of five (5) local municipalities: Matjhabeng, Nala, Tokologo, Tswelopele and Masilonyana. Nala shares the borders with Northwest Province. As illustrated in Fig 5.1 below, the cooperatives in the sample were from five (5) local municipalities, and the sample was spread evenly across the five (5) municipalities.

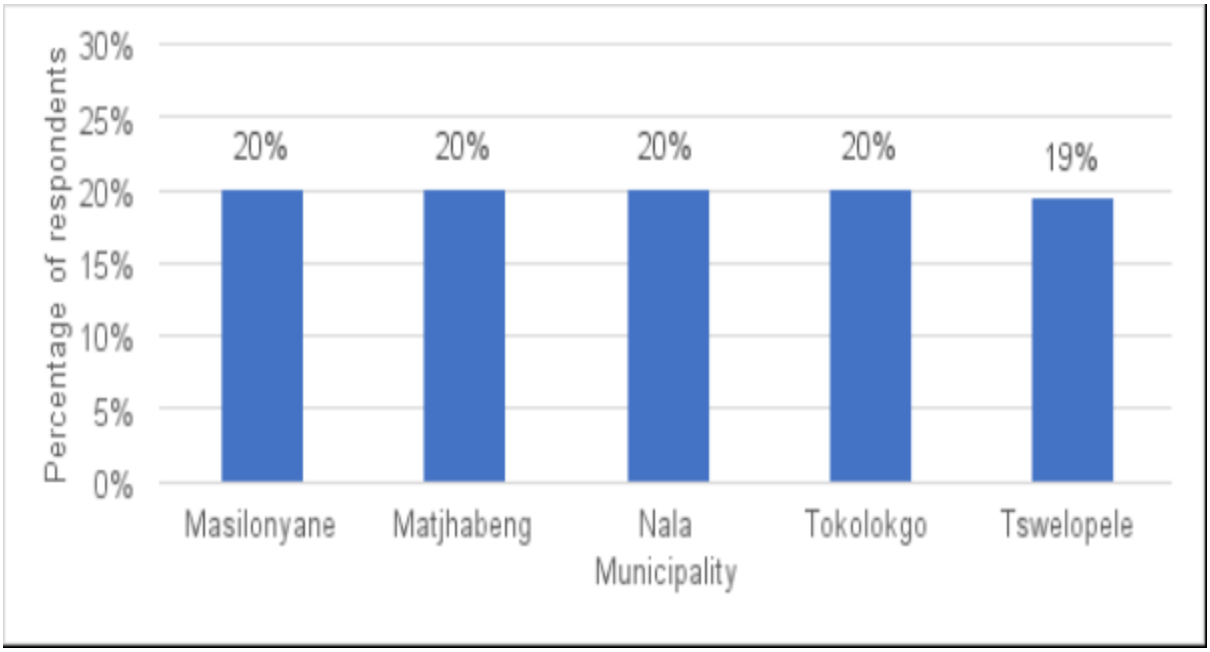

Figure 5-1 Local Municipality

The sample consisted of 139 respondents from twenty-five (25) agriculture cooperatives in Lejweleputswa district municipality. The cooperatives and frequency of surveyed respondents are summarised in Table 5.2. All respondents were members of the cooperatives that are into crop production.

Table 5-2 Cooperatives in the sample

Cooperative names	Frequency of respondents	Percent of respondents
Cooperative A	6	4.3%
Cooperative B	6	4.3%
Cooperative C	5	3.6%
Cooperative D	5	3.6%
Cooperative E	6	4.3%
Cooperative F	5	3.6%
Cooperative G	5	3.6%
Cooperative H	7	5.0%
Cooperative I	5	3.6%
Cooperative J	6	4.3%
Cooperative K	5	3.6%
Cooperative L	6	4.3%
Cooperative M	5	3.6%

Cooperative N	5	3.6%
Cooperative O	5	3.6%
Cooperative P	5	3.6%
Cooperative Q	6	4.3%
Cooperative R	6	4.3%
Cooperative S	5	3.6%
Cooperative T	6	4.3%
Cooperative U	6	4.3%
Cooperative V	6	4.3%
Cooperative W	5	3.6%
Cooperative X	5	3.6%
Cooperative Y	7	5.0%
Total	139	100.0%

5.4.2 Cooperative composition

The cooperatives had on average of nine (9) members with both genders ranging from two (2) to nine (9) members per cooperative. This is illustrated in table 5.3 below.

Table 5-3 Cooperative composition

	N	Minimum	Maximum	Mean	Std. Deviation
Number of members	139	5	16	9.04	3.061
Male members	139	2	9	4.44	2.075
Female members	139	2	9	4.59	1.825

5.4.3 Data Analysis

The research study used qualitative and quantitative research methods. The quantitative research strategy utilising surveys was embraced because numbers permit more accuracy in announcing results. Communication methods were utilised to accumulate information through the various phases of the research. Information gathered during the contextual analysis was gathered utilising an organised survey.

To make the raw data intelligible and easier to read, descriptive statistics like the frequency distribution mean and standard deviation were employed. Data were cleaned, coded, and exported to SPSS (Statistical Product and Service Solutions) software after completing the data collection. Frequency distribution was used for all demographic questions, and bar charts visualised the results. The percentages were used to gauge how much respondents agreed with the challenges' dimensions.

One sample t-test was also applied to determine the mean and the standard deviation of the responses. Cooperative respondents were given several statements regarding sustainability challenges found in their cooperatives. Respondents were approached to demonstrate how much they concur or contradicted each statement. They were given five (5) choices: Strongly Disagree, Disagree, Sometimes, Agree to Strongly Agree. The situation is illustrated in figure 5.2 up to figure 5.8.

5.4 Findings and Discussions

This section analyses the research findings from different agriculture cooperatives. Findings were illustrated graphically, followed by a discussion of each factor.

5.5.1 Pricing Competition

Figure 5.2 reflect responses on pricing competition as a challenge in agricultural cooperatives in the Lejweleputswa District area. Findings are presented graphically to illustrate frequencies and percentages of respondents on whether they agree or disagree that pricing competition affects sustainability.

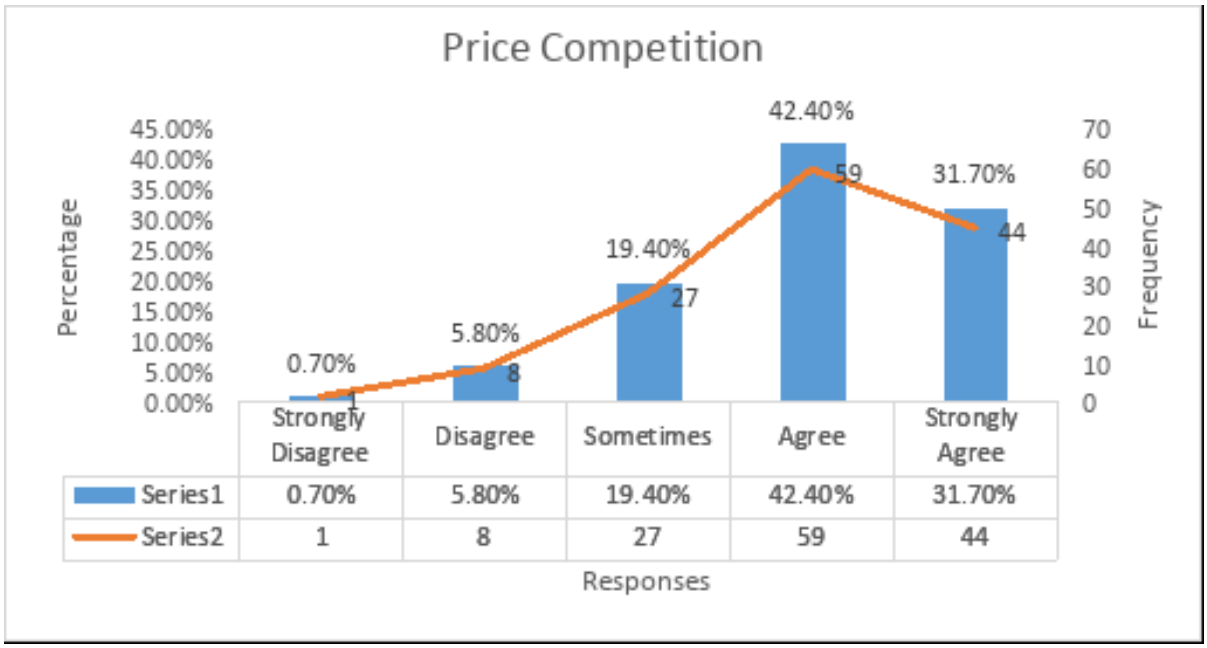

Figure 5-2 Price competition

From figure 5.2, frequencies are illustrated as Series 2 and percentages are deduced as Series 1 in the bar charts above. It is indicated that about 42.4% of agriculture cooperatives respondents agreed that strong price competition poses a challenge to sustainable development. About 31.7% of respondents strongly agreed with the statement, 19.4% believed that this happens sometimes, while 5.8% of respondents disagreed, and 0.7% strongly disagreed.

These results show that most cooperatives participants agreed to have price competition challenges in the Lejweleputswa district. Pricing problems distress the business processes of cooperatives by deterring innovation and sustainability. Cooperatives may be forced to prioritize short-term survival over long-term innovation due to intense pricing rivalry. This might inhibit innovation and keep the cooperative from creating new goods or services (Hyo, 2023).

There is strong price competition with other cooperatives. Cooperatives that are more innovative sell their products at competitive prices. They are using pricing strategy to take advantage of emerging agriculture cooperatives that are not very

informative/financially competent or lack training and experience in costing and pricing skills. According Bonnici (2015), pricing strategy is an approach that helps figure out what a cooperative will charge for its products. Pricing strategy plays an important role in the agriculture business development and long-term sustainability.

5.5.2 Competition on product quality

Figure 5.3 reflects responses on the competition for quality of products as one of the major challenges in agricultural cooperatives in the Lejweleputswa district. Findings are presented graphically to illustrate frequencies and percentages of respondents on whether they agree or disagree that competition on the quality of their agricultural products affect sustainability.

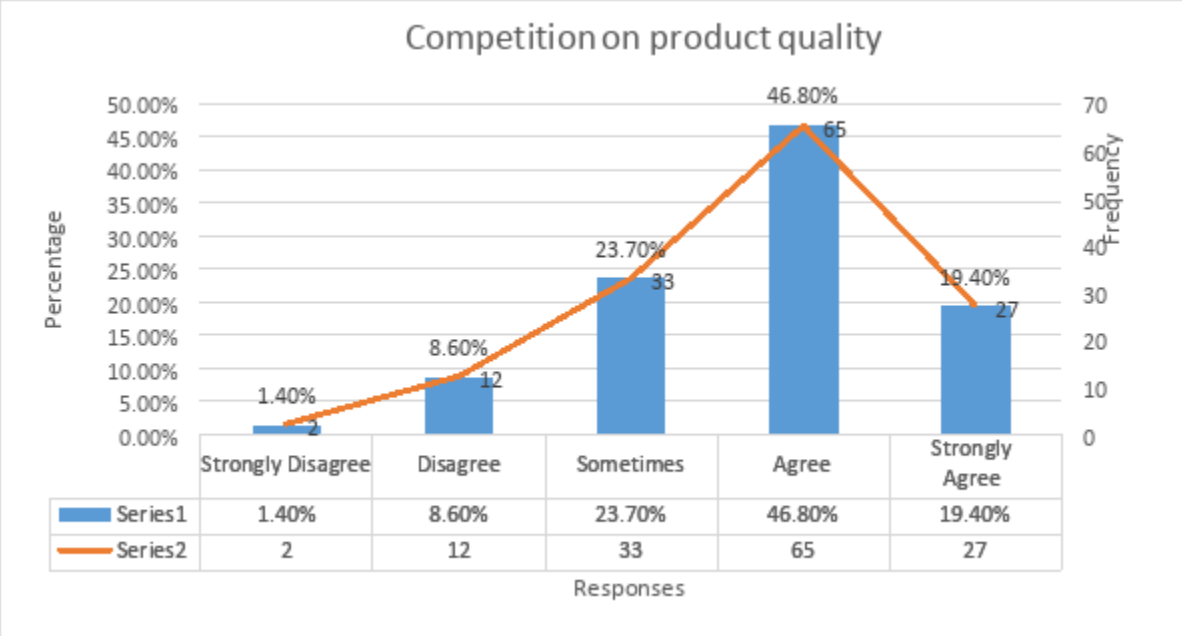

Figure 5-3 Competition on quality

Figure 5.3 illustrates responses to competition on product quality. Frequencies are demonstrated as Series 2, and percentages are comprehended as Series 1 in bar chats. About 46.8% of agriculture cooperatives respondents agreed that competition on the quality of products is a challenge in their agricultural cooperatives, followed by

23.7% who responded as “sometimes.” About 19.4% strongly agreed, 5.8% disagreed, and 1.4% strongly disagreed.

This finding means that most respondents agreed that competition on the quality of agricultural products poses a challenge to sustainability, thereby hindering sustainability. Competition in product quality can, in fact, provide a serious obstacle to cooperative innovation. Research and development (Research and Development) expenditures associated with producing high-quality products are frequently substantial, according to Karaman and Lahiri (2014).

Crop quality is an important component of a winning competitive strategy. By reducing expenses and raising revenues, quality may boost output and profitability. The agricultural cooperatives in the research study lack business management skills and therefore show ignorance in building the brand and maintaining the quality of their crop.

5.5.3 Lack of product demand

Figure 5.4 reflect responses to the Lack of product demand is one (1) of the major challenges in agricultural cooperatives in the Lejweleputswa district are. Findings are presented graphically to illustrate frequencies and percentages of respondents on whether they agree or disagree that the Lack of demand for their agricultural products affects sustainability.

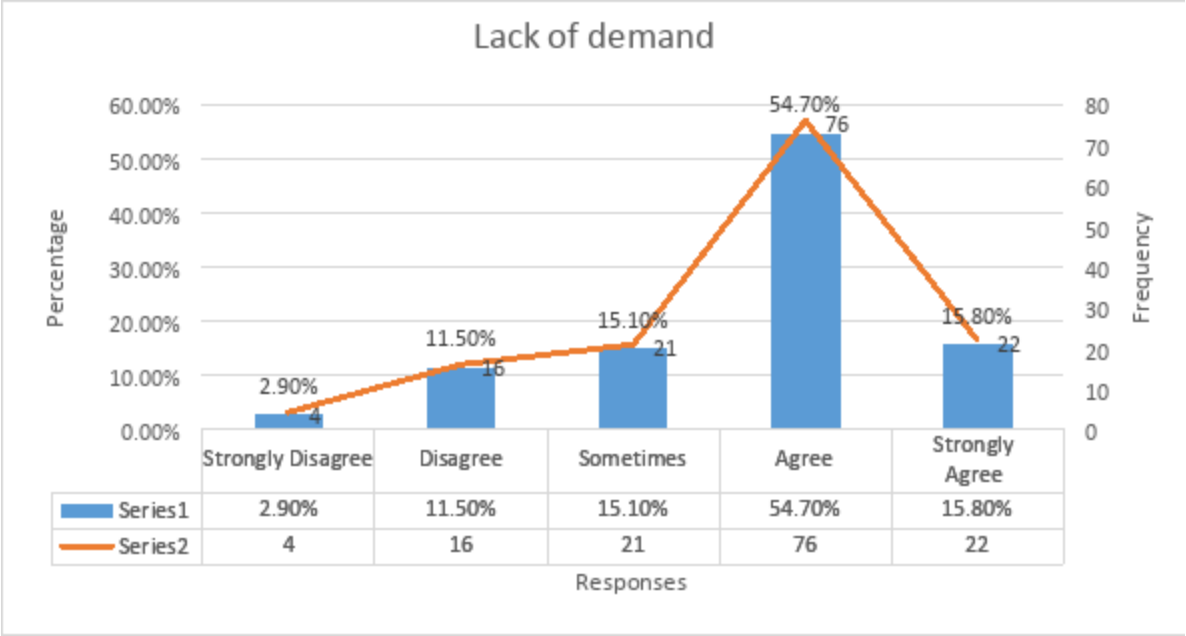

Figure 5-4 Lack of demand

Figure 5.4 illustrates responses to the Lack of demand for the product. Frequencies are demonstrated as series 2, and percentages are comprehended as series 1 in bar chats. It is construed from figure 5.4 that 54.7% of respondents agreed with this challenge, followed by 15.8% who strongly agreed, 15.1% indicated that it sometimes occurs, while 11.5% disagreed with this challenge, and 2.9% of respondents strongly disagreed with it.

A lack of demand for products might be due to socio-economic factors like high prices and job losses by the consumers. This finding suggests that most cooperatives members believe that the Lack of demand for their agriculture products poses a challenge to innovation and sustainability. Lack of product demand due to seasonal crop products can affect the morale and consistent passion for farming of cooperative members who rely entirely on farming for their means of survival. This is an environmental challenge that leads to cooperatives not being profitable.

Furthermore, Karaman and Lahiri (2014) contend that cooperative market share is impacted by quality competition. The cooperative may lose market share if consumers

prefer rival brands that provide better-quality goods. A cooperative's ability to survive could be threatened by fierce competition for quality. quality. A cooperative may not be able to pay its operational expenses if low sales volumes prevent it from generating adequate revenue.

5.5.4 Innovation by competitors

Figure 5.5 reflect responses on innovation by competitors as one of the challenges in their agricultural cooperatives. Findings are presented graphically to illustrate frequencies and percentages of respondents on whether they agree or disagree that innovation by competitors affect sustainability, thereby resulting in a challenge to initiate innovation strategies.

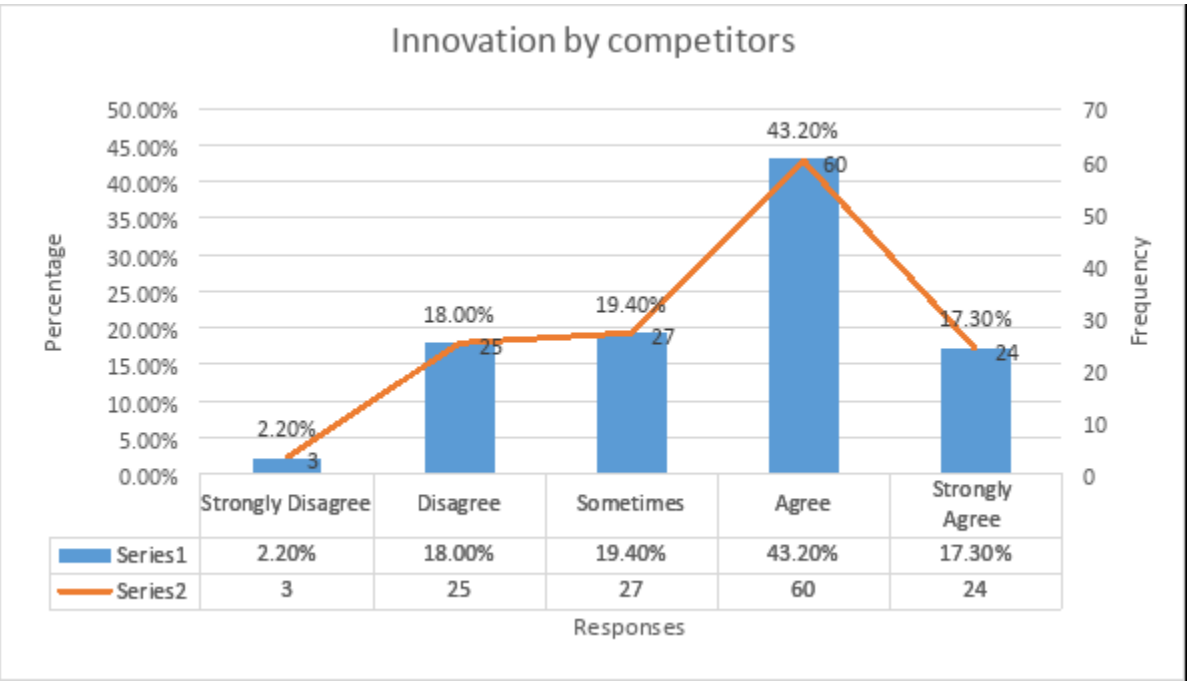

Figure 5-5 Innovation by competitors

Figure 5.5 illustrates responses to innovation by competitors. Frequencies are demonstrated as Series 2 and percentages are comprehended as Series 1 bar charts.

It is deduced from figure 5.5, that 43.2% respondents agreed that innovation by competitors is challenge in their cooperatives; 19.4% respondents replied that it is

sometimes the case; 18% of respondents disagreed that this is challenge, while 17.3% respondents strongly agreed, followed by 2.2% respondents who strongly disagreed. This means that lot of respondents agreed that innovation by competitors poses a risk to innovation and sustainability of their cooperatives. This thus clarifies the relationship between innovation and sustainability. When the cooperative is not sustainable it is hard or difficult to implement innovation strategies.

5.5.5 Market Share

Figure 5.6 reflects on responses to market share as being one of the challenges in their agricultural cooperatives. Findings are presented graphically to illustrate frequencies and percentages of respondents on whether they agree or disagree that market share affect sustainability of their cooperatives, thereby resulting in a challenge to initiate innovation strategies.

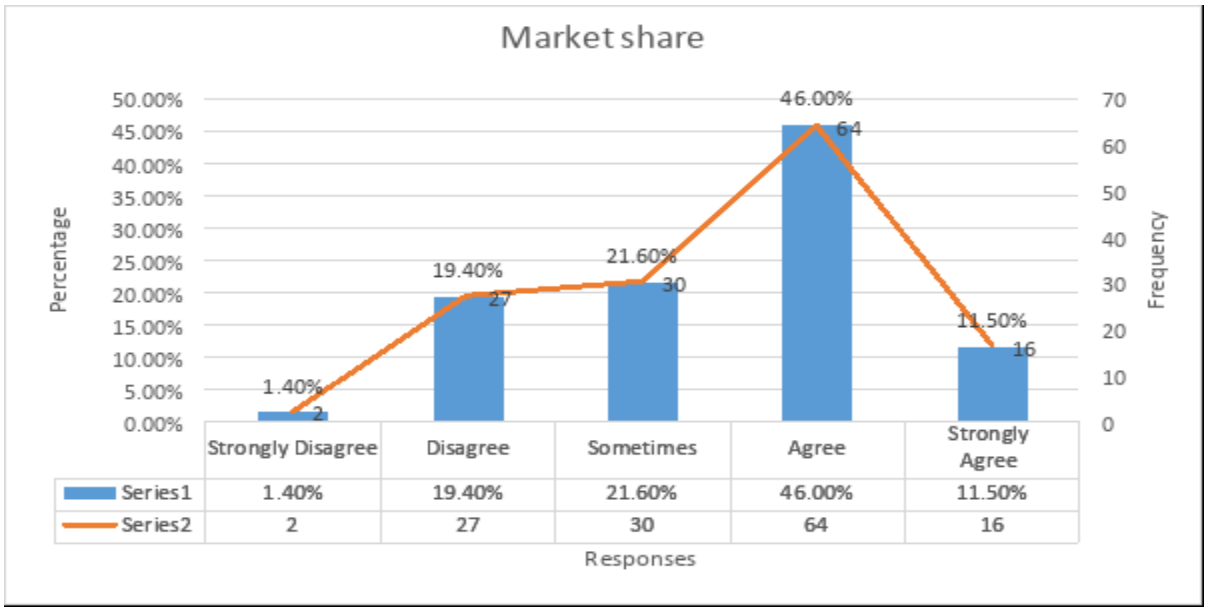

Figure 5-6 Market Share

Figure 5.6 illustrates responses on market share. Frequencies are demonstrated as Series 2 and percentages are comprehended as Series 1 bar charts. According to

figure 5.6, about 46% respondents agreed that market share dominated by competitors is a challenge to their cooperatives; 21.6% respondents strongly agreed followed by 19.4% respondents replying that it is sometimes the case; About 11.5% respondents disagree while 1.4% respondents strongly disagree.

This means that the more of respondents agreed that their cooperatives only have a small portion of market share in the local market. This low market share affect sustainability of the cooperative negatively and therefore results in a challenge to initiate innovation strategies. According to Okem (2016), customers may view a cooperative as less dependable or less capable of providing innovative, high-quality goods or services if it has a tiny market share.

5.5.6 Lack of qualified persons

Figure 5.7 reflects responses to a lack of qualified members as one of the challenges in their agricultural cooperatives. Findings are presented graphically to illustrate frequencies and percentages of respondents on whether they agree or disagree that the Lack of qualified cooperative members affect sustainability cooperatives, thereby resulting in a challenge to initiate innovation strategies.

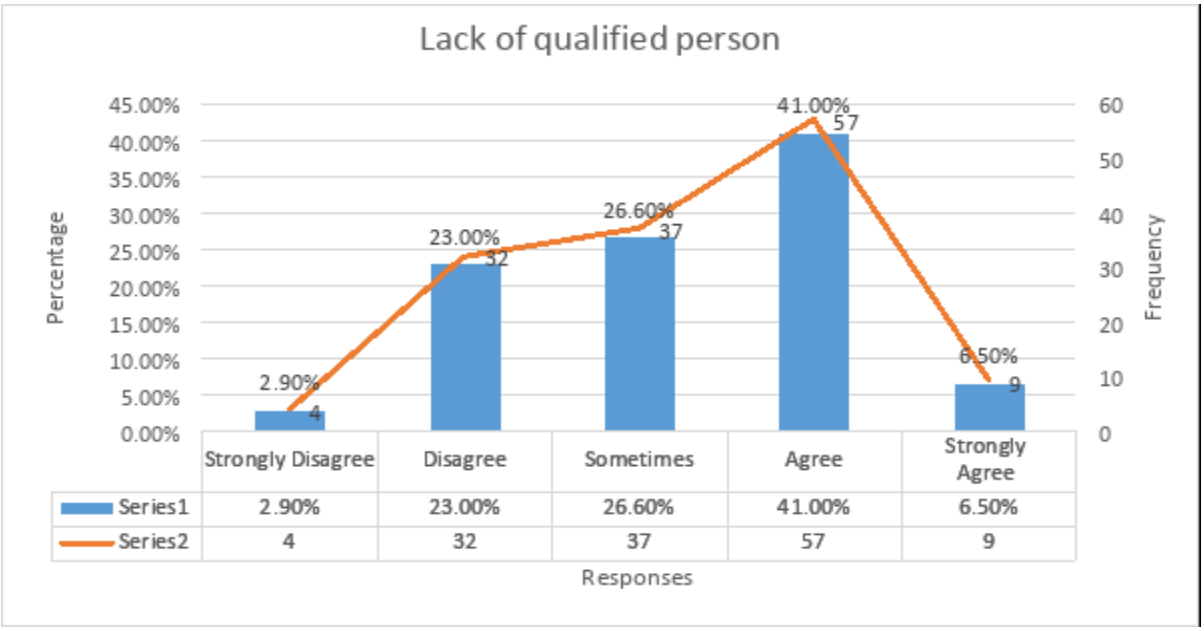

Figure 5-7 Lack of qualified members

As illustrated in figure 5.7, about 41% of the respondents agreed that a lack of qualified cooperative members poses a challenge to sustainability; 26.6% of the respondents replied that it only happens sometimes; 23% of respondents disagree with the statement, while 6.5% respondents strongly agreed and only 2.9% members strongly disagreed. This suggests that more respondents agreed that a lack of qualified cooperative members is challenging. The implication of not having qualified members in the cooperative is that most of the resources are outsourced, resulting in production delays, which in turn affects sustainable developments.

This delays profitability as they depend on the availability of extension officers and other advisors nominated by the local government to advise or do research for them. According to Mbonyane and Ladzani (2010), farming entrepreneurs with technical backgrounds may find challenges in financial management of farming business. Poor financial management skills make it difficult for farming cooperatives to succeed (Tushabomwe-Kazooba, 2006).

As per Freire and Gonçalves (2021), cooperatives depend on the combined expertise and abilities of their constituents. Insufficient qualifications among members may impede the cooperative's capacity to innovate.

5.5.7 Lack of adequate finance

Figure 5.8 reflects responses on Lack of adequate finance as one of the challenges in their agricultural cooperatives. Findings are presented graphically to illustrate frequencies and percentages of respondents on whether they agree or disagree with the statement that Lack of finance affects sustainable developments in their agricultural cooperatives, thereby resulting in a challenge to initiate innovation strategies.

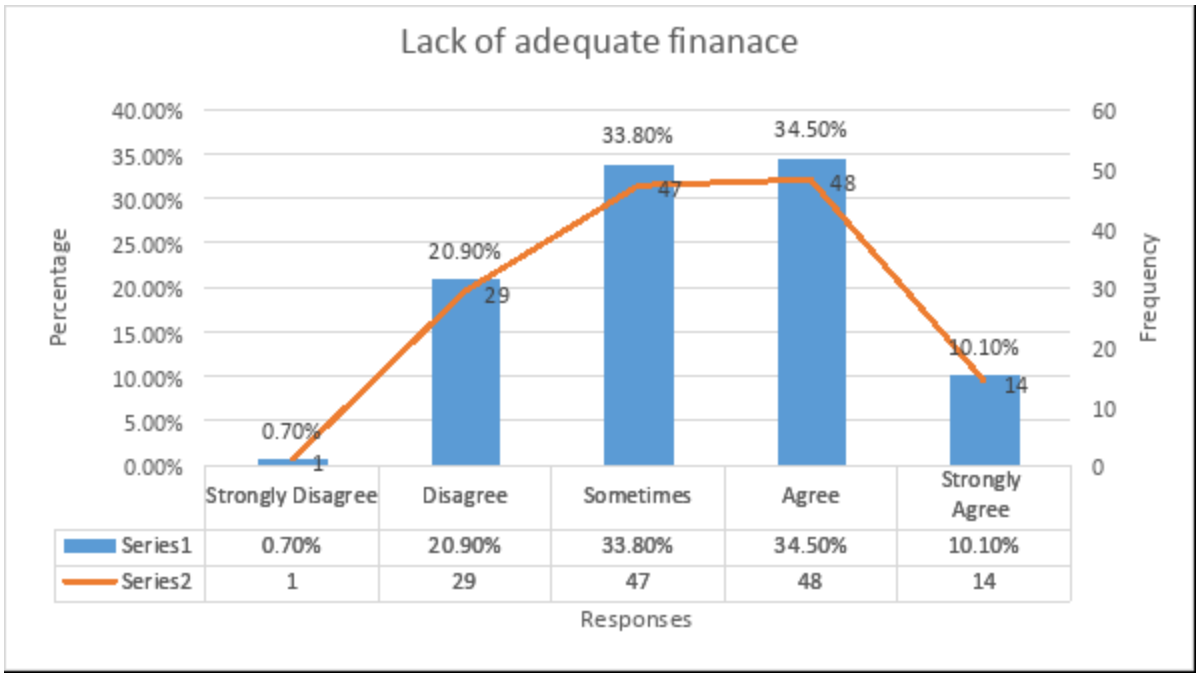

Figure 5-8 Lack of adequate finance.

As demonstrated in figure 5.7, about 34.5% of respondents agreed that the Lack of adequate finance or inability to access finance is a challenge to sustainable development in agricultural cooperatives; this is followed by 33.8% of respondents who said this happens only sometimes, 20.9% respondents disagreed to the statement, 10.1% strongly agreed while only 0.7% strongly disagreed.

To purchase and use new technologies, adequate funding is frequently required. required. Without it, cooperatives could find it difficult to stay up to date with technological developments, which would limit their ability to innovate. It frequently takes large financial resources to introduce new products or enter new markets. markets. Thus, a cooperative's capacity to grow or diversify may be constrained by a lack of funding (Esho and Verhoef, 2018).

Urban and Naidoo (2012) stated that the Lack of access to finance by cooperatives in developing countries hinders competitiveness. Most respondents believed that a lack of access to funding has a detrimental impact on agricultural cooperatives' long-term

development in the Lejweleputswa district, delaying or preventing the implementation of innovative ideas.

5.5.8 Cost of access to market

Figure 5.9 illustrates the responses on the cost of access to the Market as one of the challenges in their agricultural cooperatives. Findings are presented graphically to illustrate frequencies and percentages of respondents on whether they agree or disagree that the cost of access to the Market affects the sustainability of their cooperatives, thereby resulting in a challenge to initiate innovation strategies.

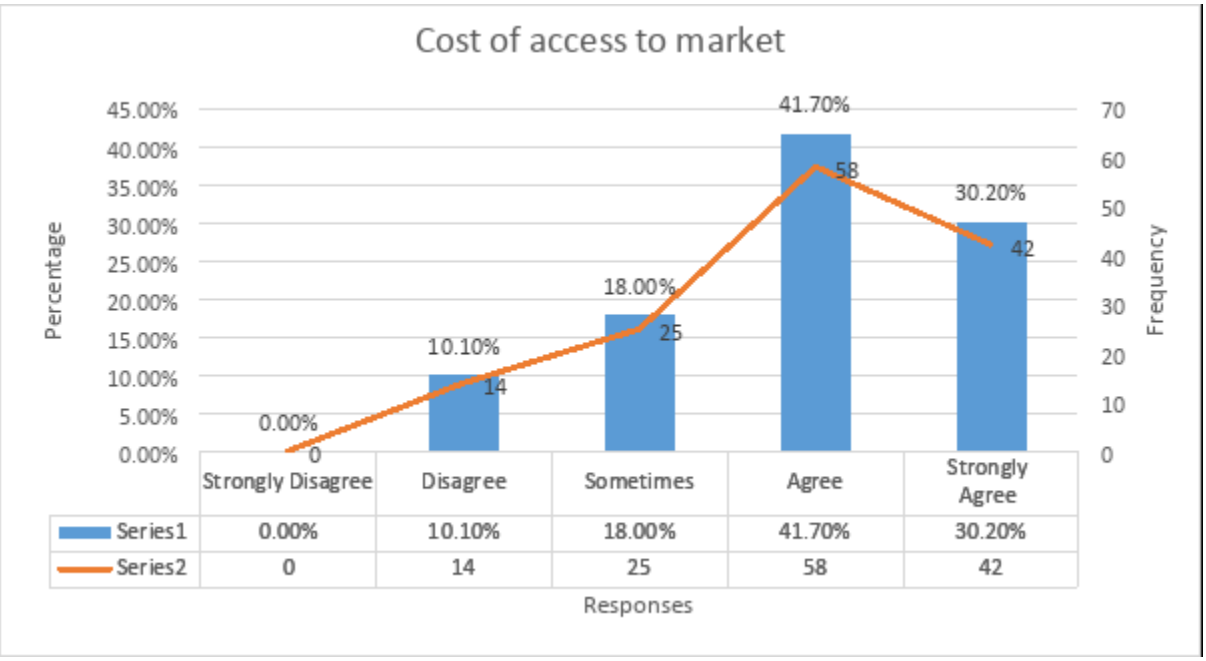

Figure 5-9 Cost of access to market.

From figure 5.8, it is illustrated that the high cost of access to new markets is a challenge to sustainability. About 41.7% of respondents agreed and 30.2% of respondents strongly agreed; 18% of respondents said sometimes, and 10.1% disagreed. This shows that more of the respondents agreed that the high cost of access to the market is a challenge to sustainable development in agricultural cooperatives and thus hinders the implementation of innovation strategies. Shiferaw,

Hellin, and Muricho (2011) state that breaking into new markets frequently necessitates a significant financial investment. Expensive entry costs might constrain a cooperative's potential for innovation by preventing it from growing or diversifying.

5.6 One sample t-test

Furthermore, one sample t-test was conducted to assess whether the respondents agreed or disagreed with having observed the following obstacles or challenges for innovation in their cooperative in the preceding 12 months. The one sample t-test was against the mid-point of the scale, sometimes (3). A mean rating significantly higher than 3 means that the respondents agreed significantly to having experienced the challenges. The results are presented in Table 5.3 below.

Table 5-4 One sample t-test of challenges

One-Sample Statistics				Test Value = 3		
	N	Mean	Std. Deviation	t	df	P-value. (2-tailed)
Strong price competition.	139	3.99	0.901	12.900	138	0.000
High cost of access to new markets.	139	3.92	0.941	11.541	138	0.000
Lack of adequate finance.	139	3.91	1.011	10.658	138	0.000
High cost of meeting government regulations or legal requirements.	139	3.78	1.142	8.019	138	0.000
Dominant market share held by competitors.	139	3.75	0.971	9.082	138	0.000
Lack of qualified personnel.	139	3.75	0.979	9.013	138	0.000
Strong competition on product quality, reputation, or brand.	139	3.74	0.919	9.501	138	0.000
Lack of demand.	139	3.69	0.969	8.399	138	0.000
Innovations by competitors	139	3.55	1.044	6.257	138	0.000

Notes: 1 = Strongly disagree and 5 = Strongly agree.

The results from table 5.3 show that the highest-rated obstacle was price competition (mean = 3.99 ± 0.901), followed by the cost of access to new markets (mean = 3.92 ± 0.941), and then Lack of adequate finance (mean = 3.91 ± 1.011). The respondents

significantly agree that all listed in Table 5.3 were challenges as the mean values were all significantly higher than 3, as shown by mean values greater than 3 and p-values less than 0.05.

5.7 Discussion and Conclusion

Factors discussed in the sections above are found to be challenges in the sustainable development of agricultural cooperatives and, as a result, are hindering innovation. To account for this, cooperative members need to apply and implement innovation strategies to sustain the normal day to day operations of agricultural cooperatives. Most respondents believe that the top three (3) challenges that pose a risk to sustainability are Price Competition, followed by the cost of access to the Market, and then Lack of adequate financing.

5.8 Recommendation

The researcher recommends that agriculture cooperatives implement innovation strategies for the sustainability of their cooperatives. As indicated in the introductory chapter, for agriculture cooperatives to achieve sustainable development, it is required that members and managers encourage and engage innovative practices internally within their business operations. The next chapter will examine the measures of successful implementation of innovation strategies in agriculture cooperatives.

CHAPTER 6: MEASURING INNOVATION STRATEGIES SUCCESS

6.1 Abstract

This PhD study was carried out to examine factors that determines successful implementation of innovation strategies in agriculture cooperatives of Lejweleputswa district. This study followed a qualitative and quantitative research design, and in-depth interviews were used to gather data from the respondents. Agriculture Cooperatives members in the Lejweleputswa District Municipality were the target population. A sample of 139 respondents was drawn using the descriptive sampling method. The respondents who participated in the study were from crop agricultural farming.

The findings indicated that RSMEA, NNFI and CFI were within the acceptable ranges for good model fit at 0.049, 0.953 and 0.957, respectively. This implies that the hypothesised model was a good fit for collected data. All the retained items had a factor loading greater than 0.6; thus, indicating that all constructs were valid. The convergent and discriminant validity were also met. Descriptive statistics was also used to analyse key variables that measures successful implementation of innovation strategies, and the results were illustrated graphically.

It was concluded that the successful implementation of innovation strategies can be measured across all agriculture cooperatives.

Keywords: Measures, Implementation, Innovation strategies, Agriculture Cooperatives

6.2 Introduction

This chapter (number 6) was written in the style of an article. The reason for using this style is to make reading easier and to address the problem of well-researched matters not reaching readers due to many pages, which may discourage potential users and further research of the research findings. The articles will be peer-reviewed by the various publishing companies that received the journals.

In this section, the researcher focused on the factors that serve as measures for implementing innovation strategies in agriculture cooperatives successfully. These factors result in sustainable development, thus attesting to the relationship between innovation strategies and sustainability.

Innovation is pivotal in driving achievement and sustainability in farming cooperatives. While implementing innovation, it is essential to know about and plan for the challenges as discussed in the previous chapter (Chapter 5). Having a solid innovation culture in the agricultural cooperative assists with staying away from cooperative challenges. The challenge, however, is to learn how to develop an innovation culture within the agricultural cooperative itself. Conversely, some factors will pose challenges in the implementation and execution phases of the innovation process.

Measuring innovation is fundamental for constantly improving the success of the business. However, factors like sales volume or revenue may not give the cooperative the best insight into success. The number of new ideas generated, and the actual percentage of time spent on innovation implementation should be measured instead.

Much research has been focused on associating innovation with financial performance measures in the past decade. In their study, Hirshleifer, Hsu and Li (2012) lamented that there is a relationship between innovation and the financial performance of the business. A research study that also focused on innovation and performance was conducted by Klingenberg, Timberlake, Geurts, and Brown (2013).

There has been little empirical work analysing the measures of successful implementation of innovation strategies. It remains unclear what factors are seen as

measures for innovation strategy in agriculture cooperatives. This chapter (6) aims to add to the body of knowledge by providing lessons on factors that are seen to be measures of successful implementation of innovation strategy.

6.3 Theoretical background

The study conducted by Oirere (2015) regarding the effect of innovation on financial performance concluded that innovation has a favourable impact on the financial performance or sales turnover of a cooperative. Increased turnover can indeed be a measure of successful implementation of innovation in crop farming. An innovation that increases crop yields could lead to more produce being sold, thereby increasing turnover. Similarly, an innovation that reduces production costs could increase the farm's profit margin, leading to higher turnover even if the amount of produce sold remains the same.

The variables discussed in this section are not the only factors measuring of success of innovation. Other factors, such as sustainability, resilience, and social impact, are also important when evaluating the success of an innovation in crop farming. The sustainability of the farming practices, the impact on the local community and environment, and the overall profitability of the farm are also important considerations when evaluating the success of an innovation in crop farming.

The other factors to be considered are the impact on the environment, the well-being of the farming community, and the resilience of the farming system to shocks and stresses. The sustainability of the farming practices, the impact on the local community and environment, and the resilience of the farming system to shocks and stresses are also important considerations when evaluating the success of an innovation in crop farming.

Since product innovation is vital for the sustainability of cooperatives; it is a critical driver for performance and market share. Market share is a portion of revenue that a particular crop of agriculture cooperative can obtain to the total sales of similar crop produced by competitors. Implementation of product innovation strategy helps to

maintain or increase market share, thereby gaining new customers and retaining the existing ones (Lee, 2020).

Oirere (2015), outlined that innovation reduces the operating cost in business operations. Absolutely, reduced operational costs can be a significant measure of the successful implementation of innovation in crop farming. Operational costs refer to the expenses associated with the day-to-day functioning of a business. In the context of crop farming, this could include costs for seeds, fertilizers, water, labour, machinery, and more.

According to Ferrer (2017), Increased profit margins can indeed be a significant measure of the successful implementation of innovation in crop farming. Innovation can also make a cooperative's production process more efficient, pushing down production costs and resulting in higher profit margins if the competitors fail to innovate at the same pace. Profit margin is a key profitability metric for a cooperative and is the ratio of net income to revenue.

Marketing innovation positions the product and address customer needs. As business dynamics change daily, so are innovation strategies. The development of new markets can be a significant measure of the successful implementation of innovation in crop farming. Innovation can lead to the development of new markets in several ways (Leunendonk, 2016).

Werwardena (2003) defines innovation as evaluating strategies, new circulation techniques, and new deals that position a product in a new global market. The development of new external markets can indeed be a significant measure of the successful implementation of innovation in crop farming.

According to Baregheh et al. (2009), innovation changes ideas into improved products that can compete in the market. An improvement in product innovation prompts an increase in sales, market share, and profit margins and thus gives the cooperative a competitive advantage (Porumboi, 2021).

The development of newly improved products or services can indeed be a significant measure of the successful implementation of innovation in crop farming. Innovation can lead to improved products or services in several ways.

Gupta et al. (2016) defined marketing innovation as improving a new product and a new value setting methodology. The improved marketing of goods or services can indeed be a significant measure of the successful implementation of innovation in crop farming. Innovation can lead to improved marketing in several ways.

Technological innovations can open new avenues for marketing. For example, the use of social media or online platforms can help farmers reach a wider audience and market their products more effectively. Innovations in branding and packaging can make a product more appealing to consumers, thereby improving its marketability. For example, sustainable or biodegradable packaging can appeal to environmentally conscious consumers.

According to Reichstein and Salter (2006), an increased level of process innovation empowers the evolvement of the cooperative's product and creates more innovative projects in research and development. Increased flexibility and responsiveness of a cooperative can indeed be a significant measure of the successful implementation of innovation in crop farming. Innovation can lead to increased flexibility and responsiveness in several ways. Innovations in communication technology can enable better and faster exchange of information within the cooperative, allowing it to respond more quickly to changes in market conditions or farming challenges.

Formation of alliances with other cooperatives or institutions can indeed be a significant measure of the successful implementation of innovation in crop farming. Frishammar et al. (2012) explain these success factors as a coordinated effort among internal subunits and stakeholders. Innovation can lead to such alliances in several ways: Innovations that enable cooperatives to share resources, such as machinery or storage facilities, can lead to alliances. These alliances can increase efficiency and reduce costs for all involved parties. Alliances can help cooperatives gain access to

new markets or negotiate better terms with suppliers or buyers. This can be particularly beneficial for small-scale farmers who may otherwise struggle to compete in the market.

Literature review of the study showed that the following variables are relevant to be used in measuring the success of innovation strategies implementation in agriculture cooperatives:

- Increased Turnover
- Increased Market Share
- Reduced Operational Costs
- Increased in Profit Margins
- Developed New Markets locally/internally.
- Developed New Markets externally.
- Newly Improved Products
- Improved Marketing of Products
- Increased Flexibility
- Alliance with other cooperatives

6.4 Objective

The objective of this study was to examine variables that measure the success of innovation strategies in agriculture cooperatives.

6.5 Research Methodology

6.5.1 Study area and data collection

The research was done in the Lejweleputswa district. The district consists of five (5) Local Municipalities, namely, Matjhabeng, Nala, Tokolokgo, Tswelopele and Masilonyana. Nala Local Municipality share borders with Northwest Province. Lejweleputswa District covers about 39 130 km2 of land with a population of about 657 019.

6.*5.2* Data Analysis and collection

The researcher targeted 150 participants from 25 agriculture cooperatives in the Lejweleputswa district; however, only 139 participants responded to the survey and interviews. The sample was therefore made up of 139 respondents. All respondents were members of the cooperatives that are involved in crop production. The research study used both qualitative and quantitative research methods.

A quantitative exploration method survey was taken on the grounds that the utilisation of numbers permits more prominent accuracy in announcing results. The quantitative research technique was applied because the application of numbers allows for better accuracy in reporting results. Furthermore, the communication method was used to gather data throughout the research phases and data was collected using a structured questionnaire.

To make the raw data accessible and easier to read, descriptive statistics such as the frequency distribution mean were used. The collected data was cleaned, coded, and exported to SPSS software. Descriptive analysis was used to analyse the study results. The frequencies and percentages were used to determine how respondents agreed with the dimensions. Cooperative respondents were given a few statements regarding variables that measure success of innovation in agriculture cooperatives. Respondents were approached to demonstrate how much they concur or contradicted each statement. Respondents were given five (5) choices: Strongly Disagree, Disagree, Sometimes, Agree, and Strongly Agree. The situation is illustrated in Fig 6.1

The gathered information was formed into a proper data set, hence permitting different researchers to audit it straightforwardly and not be restricted to a composed report. The contextual investigation information base will expand the unwavering quality of the whole contextual investigation (Yin, 2009).

6.6 Findings and discussion

6.6.1 Reliability Statistics

The validity and reliability of data assessing tools are fundamental to intelligent and social assessment (Brynard and Hanekom, 2006). Brynard and Hanekom further express that validity insinuate the tools' limit to measure what they ought to measure. Quinlan (2011) argues that validity relates to how clever and critical the assessment being alluded to is factual. The four (4) procedures to study the credibility of the assessment tool are content validity, criterion validity, concurrent validity, and face validity (Brynard and Hanekom, 2006).

Content validity insinuates the rightness and respectability of the requests associated with an outline survey, while face validity relies upon the enthusiastic judgment of the researcher and the respondents. Criterion validity incorporates testing if a tool decided for data combination gauges what it is expected to check, and Concurrent validity suggests a degree to which an assessment technique uncovers the information it was planned to uncover. Confirmatory factor analysis (CFA) was conducted to assess the validity and reliability of the research study. The hypothesised model of the study with factor loadings is presented in Figure 6.1.

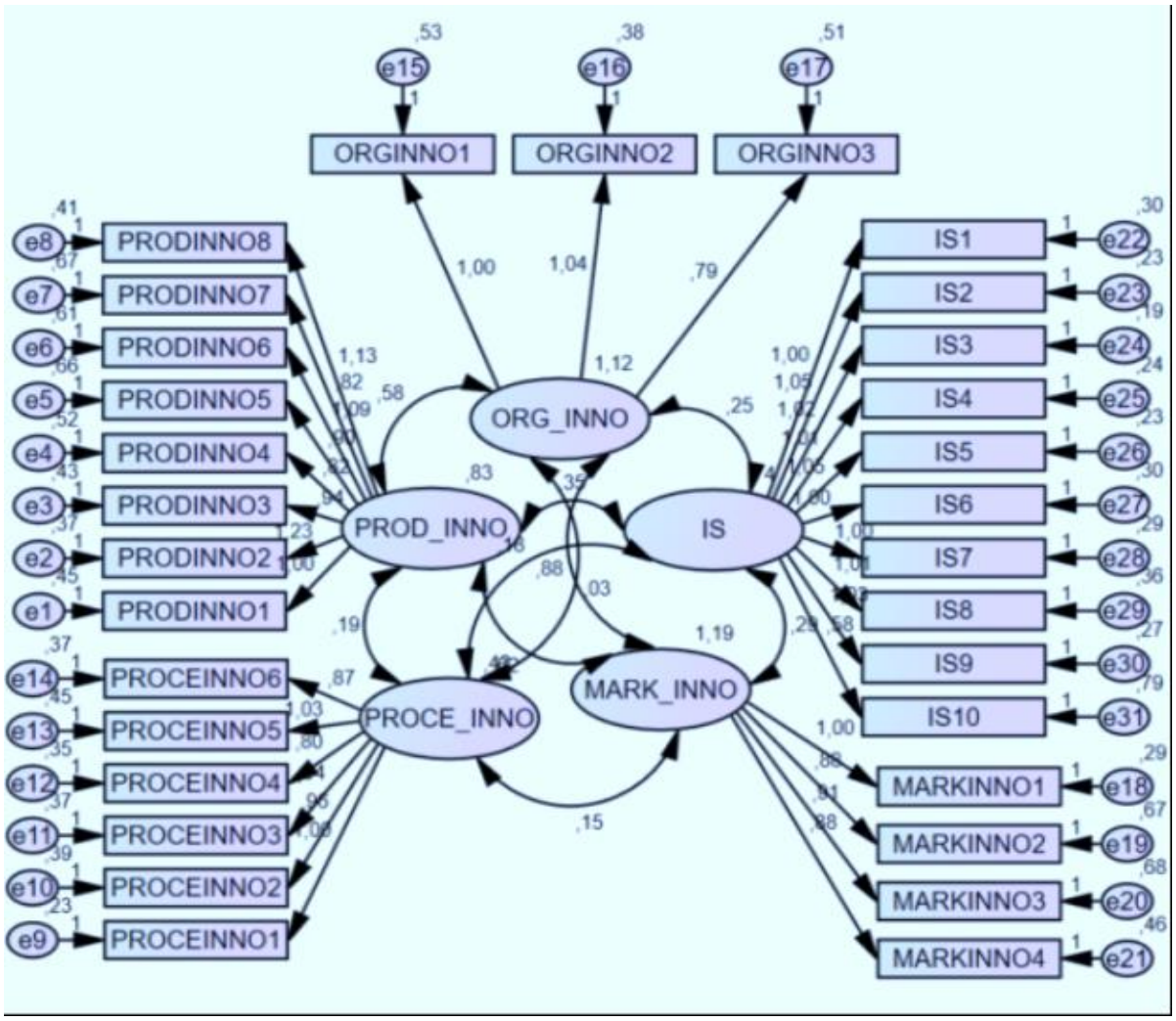

Figure 6-1 Hypothesised Model

The factor loadings are the weights shown on the single-headed arrows. These are also shown in Table 8.1. It can be noted from the results that all items loaded highly onto their respective factors except for IS10 (Increased flexibility/responsiveness of agricultural cooperative), which had a factor loading less than 0.6. This item was pruned from the model as the factor loading was below the minimum acceptable factor loading of at least 0.6.

Table 6-1 Factor loadings for the hypothesised model.

			Estimate
PRODINNO1	<---	PROD_INNO	0.806
PRODINNO2	<---	PROD_INNO	0.880
PRODINNO3	<---	PROD_INNO	0.795
PRODINNO4	<---	PROD_INNO	0.721
PRODINNO5	<---	PROD_INNO	0.711
PRODINNO6	<---	PROD_INNO	0.787
PRODINNO7	<---	PROD_INNO	0.672
PRODINNO8	<---	PROD_INNO	0.850
PROCEINNO1	<---	PROCE_INNO	0.806
PROCEINNO2	<---	PROCE_INNO	0.707
PROCEINNO3	<---	PROCE_INNO	0.713
PROCEINNO4	<---	PROCE_INNO	0.660
PROCEINNO5	<---	PROCE_INNO	0.709
PROCEINNO6	<---	PROCE_INNO	0.681
ORGINNO1	<---	ORG_INNO	0.823
ORGINNO2	<---	ORG_INNO	0.872
ORGINNO3	<---	ORG_INNO	0.760
MARKINNO1	<---	MARK_INNO	0.897
MARKINNO2	<---	MARK_INNO	0.763
MARKINNO3	<---	MARK_INNO	0.767
MARKINNO4	<---	MARK_INNO	0.817
IS1	<---	IS	0.846
IS2	<---	IS	0.882
IS3	<---	IS	0.898
IS4	<---	IS	0.871
IS5	<---	IS	0.883
IS6	<---	IS	0.845
IS7	<---	IS	0.850
IS8	<---	IS	0.825
IS9	<---	IS	0.864
IS10	<---	IS	0.493

6.6.2 CFA Model

The final pruned model after eliminating IS10 is illustrated in Figure 6.2.

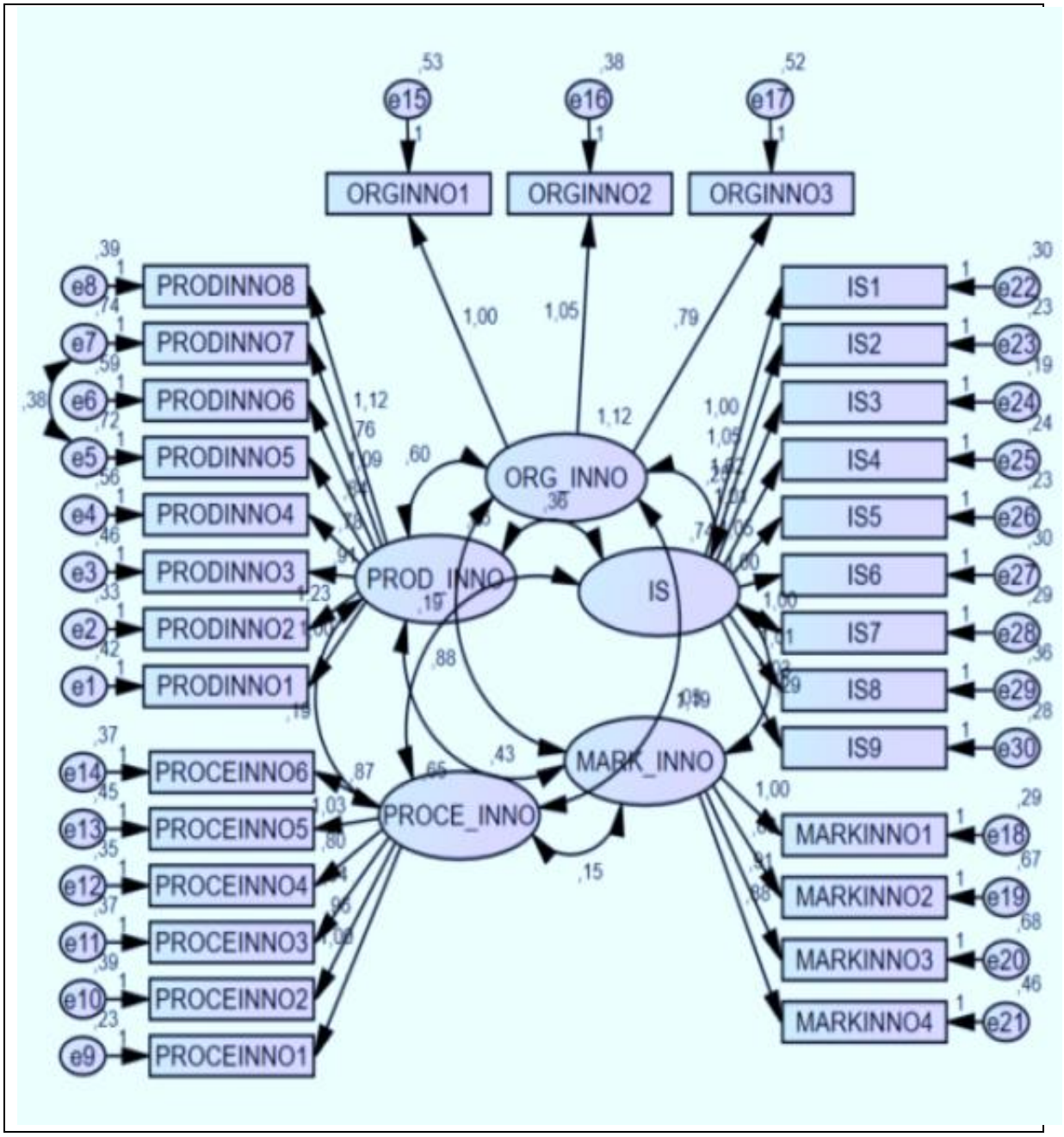

Figure 6-2 Final CFA Model after pruning.

6.6.3 Model Fit indices

The model Fit indices are presented in Table 6.2 below. It can be noted that the RSMEA, the Non-normed Fit Index (NNFI), and the Comparative Fit Index (CFI) were within acceptable ranges for good model fit. This indicates that the model was a good fit for the data. The Normed Fit Index (NFI) was slightly below the acceptable level. On the other hand, the Chi-square, p-value, the Good Fit Index (GFI), and the Adjusted Goodness of Fit Index (AGFI) were outside the acceptable ranges, but this should be treated with caution as the sample size influences them.

Table 6-2 Model Fit Indices

Absolute Fit Indexes	Acceptable Value	Value	Outcome
RSMEA	RSMEA<0.08	0.049	Acceptable
NNFI (TLI)	>0.9	0.953	Acceptable
CFI	>0.9	0.957	Acceptable
NFI	>0.9	0.851	Slightly below the acceptable range
Chi-square, p-value	< 0.05	0.000	Outside acceptable range
GFI	>0.9	0.798	Below acceptable range
AGFI	>0.9	0.762	Below acceptable range

6.6.4 Construct composition

Table 6-3 shows the final construct composition with factor loadings, Composite Reliability (CR), and Average Variance Extracted (AVE). All the retained items had a factor loading greater than 0.6. This indicates that all the constructs were valid. The reliability was acceptable as all the CR values were greater than 0.7. There was also

convergent validity as the AVE values were greater than the minimum acceptable value of at least 0.5.

Table 6-3 Final construct composition

Item	Description	Factor Loading	CR	AVE
Product Innovation			0.922	0.599
PRODINNO1	In the past 12 months, the cooperative introduced a new product.	0.818		
PRODINNO2	During the past 12 months, the cooperative introduced a new product developed by the cooperative itself.	0.893		
PRODINNO3	During the past 12 months, the cooperative introduced a new product by modifying the product originally developed by other co-operatives.	0.779		
PRODINNO4	During the past 12 months, your cooperative introduced a new product developed with other co-operatives.	0.697		
PRODINNO5	During the past 12 months, your cooperative introduced a new product developed by other cooperatives.	0.678		
PRODINNO6	During the past 12 months, your cooperative introduced a product that was new to the market.	0.796		
PRODINNO7	During the past 12 months, your cooperative introduced a product that was only new to your cooperative	0.633		
PRODINNO8	During the past 12 months, your cooperative introduced a new product that was a first in your district.	0.858		
Process innovation			0.861	0.510
PROCEINNO1	During the past 12 months, your cooperative introduced a distribution method.	0.806		

PROCEINNO2	During the past 12 months, your cooperative introduced a new supporting activity for the business process.	0.707		
PROCEINNO3	During the past 12 months, your cooperative introduced a new supporting activity for the business process that was developed by your cooperative in modifying services originally developed by other cooperatives.	0.713		
PROCEINNO4	During the past 12 months, your cooperative introduced new or improved supporting activities for the business process that was developed by the cooperative together with other cooperatives.	0.659		
PROCEINNO5	During the past 12 months, your cooperative introduced new or improved supporting activities for the business process that was developed by another cooperative	0.708		
PROCEINNO6	During the past 12 months, your cooperative introduced supporting activities for the new process to the market.	0.682		
Organisational Innovation			0.860	0.672
ORGINNO1	During the past 12 months, your cooperative introduced a new business practice for operational procedures.	0.823		
ORGINNO2	During the past 12 months, your cooperative introduced a new method of decision-making (i.e., teamwork, education, and training).	0.873		
ORGINNO3	During the past 12 months, your cooperative introduced a new method of organising external relations with other cooperatives.	0.760		
Marketing innovation			0.886	0.661
MARKINNO1	During the past 12 months, your cooperative introduced changes to the packaging of a product	0.897		
MARKINNO2	During the past 12 months, your cooperative introduced a new			

	method for product placement to the market.	0.764		
MARKINNO3	During the past 12 months your cooperative introduced a new method for promotion	0.768		
MARKINNO4	During the past 12 months your cooperative introduced new methods of pricing products.	0.817		
Innovation Success			0.963	0.744
IS1	Increased turnover.	0.845		
IS2	Increased market share.	0.884		
IS3	Reduced operational costs	0.897		
IS4	Increased profit margins	0.871		
IS5	Developed new markets within Free State.	0.884		
IS6	Developed new markets outside Free State.	0.845		
IS7	New or significantly improved product	0.849		
IS8	Improved marketing of products	0.825		
IS9	Increased flexibility/responsiveness of your cooperative.	0.860		

6.6.5 Correlation Matrix

The results presented in Table 6.4 shows that there was good discriminant validity as the square root of the AVE of each factor was higher than the correlation between that factor and other factors. Thus, both convergent validity and discriminant validity were met.

Table 6-4 Correlation Matrix

	1.	2.	3.	4.	5.
1. Process Innovation	0.714				
2. Organisational Innovation	0.046	0.820			
3. Innovation success	0.331	0.274	0.863		
4. Marketing Innovation	0.205	0.763	0.314	0.813	
5. Product Innovation	0.307	0.611	0.449	0.641	0.774

Notes: values off the diagonal are the square root of average variance extracted

6.6.6 The SEM Model

An SEM model was fitted to test the study's hypotheses. The model was fitted with items that were retained in the final CFA. The SEM model is illustrated in Figure 6.3.

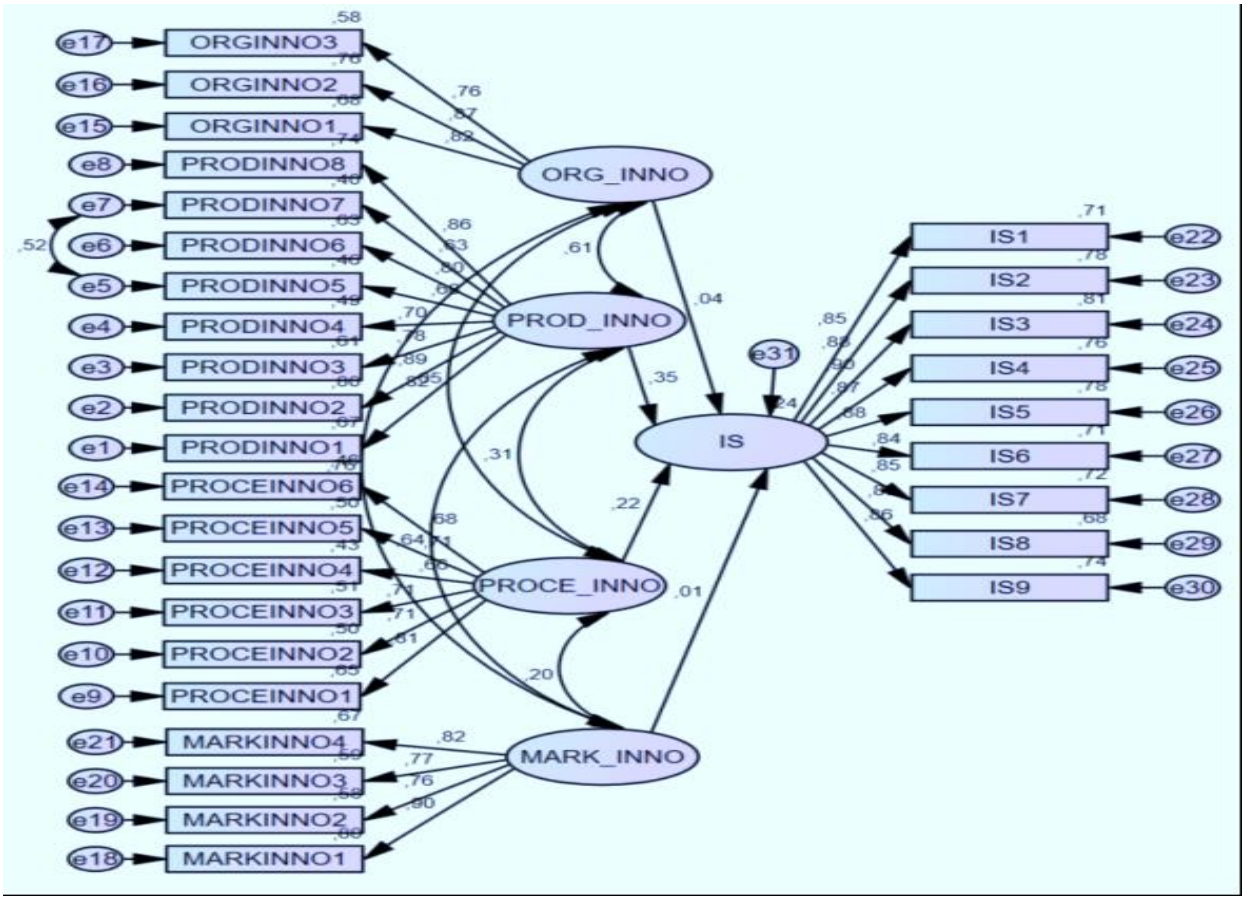

Figure 6-3 SEM Model

6.6.7 The SEM Model Fit indices

The model Fit indices for the SEM model are presented in Table 8.5. The indices still syndicate that their model was a good fit for the data, as with the final CFA.

Table 6-5 Model Fit Indices

Absolute Fit Indexes	Acceptable Value	Value	Outcome
RSMEA	RSMEA<0.08	0.049	Acceptable
NNFI (TLI)	>0.9	0.953	Acceptable
CFI	>0.9	0.957	Acceptable
NFI	>0.9	0.851	Slightly below the acceptable range
Chi-square, p-value	< 0.05	0.000	Outside acceptable range
GFI	>0.9	0.798	Below acceptable range
AGFI	>0.9	0.762	Below acceptable range

6.6.8 SEM Regression weights.

Table 6.6 presents the SEM regression weights. The r-square value of 0.245 indicates that the combination of organisational innovation, product innovation, process innovation and marketing innovation explains 24.5% of the variation in innovation success.

Table 6-6 SEM Model - Regression Weights

Hypotheses / Path Analysis			Estima-tes	Standardised Estimates	T-value	P-value	R-Square
Organisatio-nal Innovation	[redacted]	Innovation success	0.034	0.041	0.264	0.792	0.245
Marketing Innovation	[redacted]	Innovation success	0.011	0.014	0.088	0.929	
Process Innovation	[redacted]	Innovation success	0.289	0.220	2.349	0.019	
Product Innovation	[redacted]	Innovation success	0.324	0.348	2.858	0.004	

The results show that Product Innovation (β = 0.348, t-value = 2.858, p-value = 0.004) and Process Innovation (β = 0.220, t-value = 2.349, p-value = 0.019) had positive and significant impact on innovation success. The impact was positive because the coefficients were greater than zero and were significant because the p-values were less than 0.05.

Organisational Innovation (β = 0.041, t-value = 0.264, p-value = 0.792), and Marketing Innovation (β = 0.014, t-value = 0.088, p-value = 0.929) had a positive but insignificant impact on innovation success. The impact was insignificant as the p-values were greater than 0.05.

6.*6.9* Descriptive Statistics

The below figure 6.4 illustrate key variables that can be measures of successful implementation of innovation strategies in agriculture cooperatives. Findings are presented in graphical form to illustrate percentages of respondents on whether they agree or disagree with the dimensions.

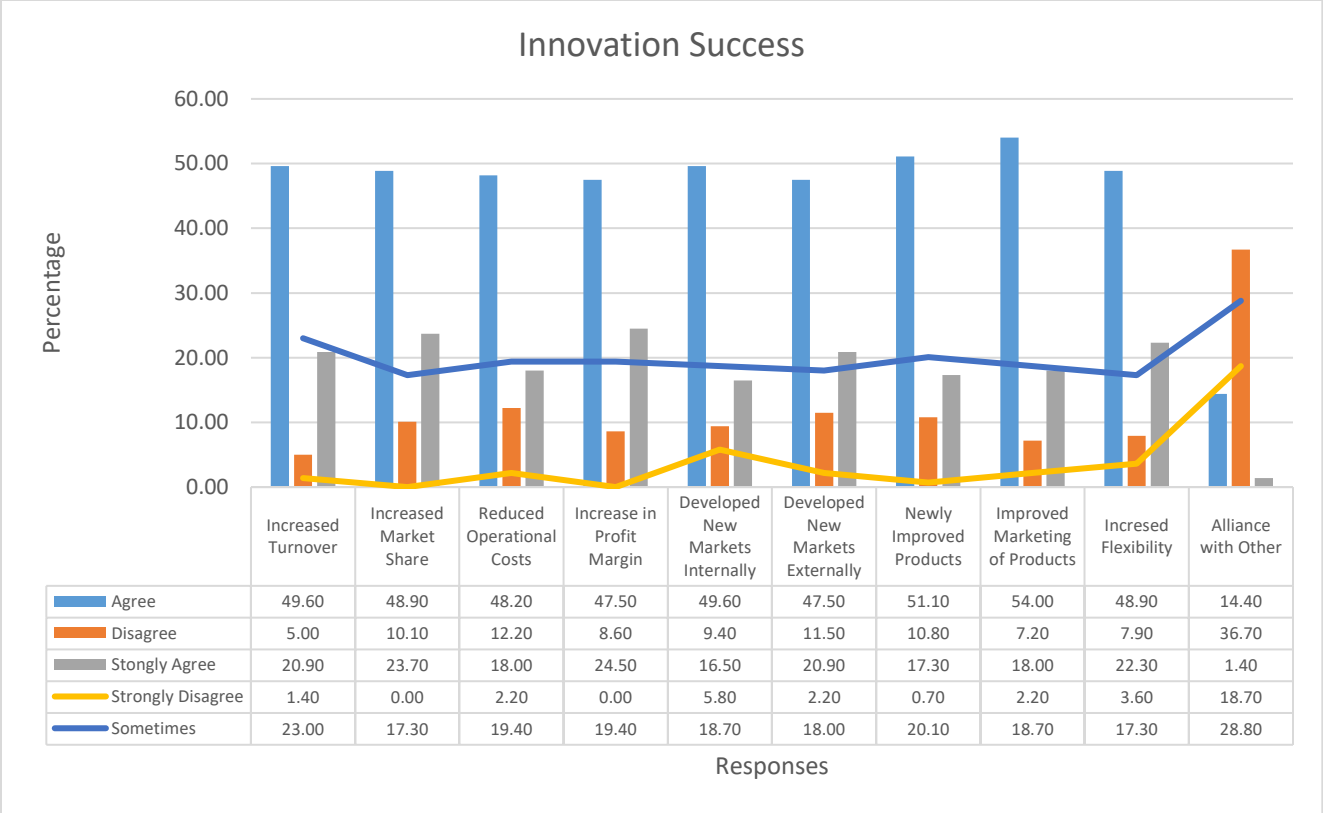

Figure 6-4 Innovation success

6.6.9.1 Increased turnover

Figure 6.1 reflect responses on increased turnover as one of the measures for the success of innovation strategy implementation in agricultural cooperatives in the Lejweleputswa district municipality. Findings are presented in graphically to illustrate percentages of respondents on whether they agree or disagree that an increase in sales of their agricultural products can be seen or observed as a success of innovation strategies.

As seen on figure 6.3, 49.6% of the respondents agreed with the statement and only 5% disagreed. This result shows that most cooperative respondents agreed that an increase in sales is a determinant factor for successful implementation innovation strategies. This shows that innovation strategies influence the performance of cooperatives in the farming agriculture sector. The study conducted by Oirere (2015) regarding the effect of innovation on financial performance concluded that innovation

has a favourable impact on the financial performance or sales turnover of a cooperative.

6.6.9.2 Increased Market Share

Table 6.4 reflect responses on increased market share as one of the measures for innovation strategy success in agricultural cooperatives in the Lejweleputswa district municipality. Findings are presented graphically to illustrate frequencies and percentages of respondents on whether they agree or disagree that an increase in market share can be seen or observed as a success of innovation strategy in their agricultural products.

The results show that 48.9% of the respondents agreed that an increase in market share indicates the success of innovation strategies in a cooperative, and only 10.1% disagreed.

Product innovation is vital for the sustainability of cooperatives, and it is a critical driver for performance and market share (Sharma, 2009). Market share is a portion of revenue that a particular crop or cooperative can obtain to the total sales of similar crop produced by competitors. Implementation of product innovation strategy helps to maintain or increase market share, thereby gaining new customers and retaining the existing ones (Lee, 2020).

6.6.9.3 Reduced Operational Costs

The results show that 48.2% of the respondents agreed that reduced operational costs measure the success of innovation strategies in a cooperative, while 12.2% disagreed and 2.2% strongly disagreed. The results show that most cooperatives members agreed that a reduction of operational costs measures the success of innovation strategies in agricultural cooperatives. This is also according to Oirere (2015), who outlined that innovation reduces the operating cost in the business operation.

6.6.9.4 Increased profit margins

Results indicate that 47.5% of the respondents agreed that an increase in profit margins measures the success of innovation strategies in a cooperative, and 8.6% disagreed. These results imply that an increase in profit margin measures the success of innovation strategy implementation in agriculture cooperatives. Innovative cooperatives acquire increased profit margins as compared to non-innovative cooperatives. Innovation can also make a company's production process more efficient, pushing down production costs and resulting in higher profit margins if the competitors fail to innovate at the same pace (Ferrer, 2017).

6.6.9.5 Developed new markets in Free State province.

Figure 6.1 illustrates that most of the respondents, 49.6% agreed that developed new markets within the district indicate the success of innovation strategies, followed by 18.7% who believed that it is sometimes the case, 16.5% strongly agreed, 9.4% disagreed, and 5.8% strongly disagreed. These results imply that a developed new market measures the success of innovation strategy in agriculture cooperatives.

The new market results from product innovation; therefore, a cooperative that implements product innovation will have advanced profitability. Role of marketing innovation strategy is to access new markets and increase revenue. Marketing innovation positions the product and address customer needs. As business dynamics change daily, so are innovation strategies (Leunendonk, 2016).

6.6.9.6 Developed new markets outside Free State province.

As deduced from Fig 6.1, 47.5% of the respondents agreed that developed new markets outside the district indicate the success of innovation strategies, and only 2.2% strongly disagreed. This implies that most respondents agreed that developed new markets outside the district measures the success of innovation strategies. Werwardena (2003) defines innovation as evaluating strategies, new circulation techniques, and new deals that position a product in a new global market.

6.6.9.7 Newly improved products or services

Figure 6.1 illustrate that 51.1% of the respondents agreed that new or improved products and services indicate the success of innovation strategies, and 10.8% disagreed. These results show that most respondents agreed that new or improved products or services in a cooperative measure the success of innovation strategies.

According to Baregheh et al. (2009), innovation changes ideas into improved products that can compete in the market. An improvement in product innovation prompts an increase in sales, market share, and profit margins and thus gives the cooperative a competitive advantage (Porumboi, 2021).

6.6.9.8 Improved marketing of goods or services.

According to figure 6.10, about 54% of the respondents agreed that new or improved marketing of products and services indicates innovation strategies' success, 18.7% believed it is sometimes the case, 18.7% strongly agreed, 7.2% disagreed, and 2.2% strongly disagreed. These results show that most respondents agreed that the existence of new or improved marketing of products or services cooperative measures the success of innovation strategies. Gupta et al. (2016) defines marketing innovation as improving a new product and a new value setting methodology.

6.6.9.9 Increased flexibility and responsiveness of the cooperative

From figure 6.11, 48.9% of the respondents agreed that flexibility and responsiveness in the cooperative indicate the success of innovation strategies, only 7.9% disagreed. An increased level of process innovation empowers the evolvement of the cooperative's product and creates more innovative projects in product research and development (Reichstein and Salter, 2006).

6.6.6.10 Alliance with other cooperatives or institutions

Figure 6.12 illustrates that 36.7% of the respondents disagreed that alliances with other cooperatives measure the success of innovation strategies, whilst 14.4% agreed with the statement. The results indicate that most respondents disagreed that alliance with other cooperatives measures the success of innovation strategies. Frishammar

et al. (2012) explain these success factors as a coordinated effort among internal subunits and stakeholders.

6.7 Summary and the Conclusion

This section of the chapter focused on specific traits such as innovation strategies, sustainability, and the success of innovation strategies. Factors that measure success of innovation strategies in agriculture cooperatives were discussed. The second objective of this chapter will follow this section.

CHAPTER 7: SUPPORT FOR INNOVATION BY GOVERNMENT STRUCTURES

7.1 Abstract

This paper is part of a PhD research project done in the Lejweleputswa district in the Free State province and focuses on integrated innovation strategies for the sustainability of agriculture cooperatives. The current study was carried out to examine support available for agriculture cooperatives to implement innovation strategies for sustainability.

The quantitative and qualitative research study was conducted on 139 cooperative members from 25 different agriculture cooperatives. Data was collected using survey questions that were standardised. Likert scales with 5 points were used to assess these survey questions. Collected data sets were analysed using SPSS version 28 software.

Descriptive statistics analysis was used to analyse the results and were illustrated graphically. It was observed that only 40.29% agreed to have received financial support from FDI's and only 58.27% agreed to have received non-financial support from government agencies.

The paper concludes that the required support is partially available and not easily accessible. The researcher is of the recommendation that assisting agriculture cooperatives should be prioritised, as this will help improve the social and economic eminence of the communities in rural areas that depend on farming for economic sustenance.

Key words: Agricultural Cooperatives, Finance Development Institutions (FDI), Government agencies, Government agencies

7.2 Introduction

The previous chapter discussed the matrix of successful implementation of innovation strategies for sustainability of agriculture cooperatives in Lejweleputswa. The assistance that is presently available and given to agriculture cooperatives and the institutions in the Lejweleputswa district that has the potential to assist agriculture cooperatives will be discussed in this chapter. This study addresses the issue of governmental support for agriculture cooperatives in the Free State province, with particular emphasis on the Lejweleputswa District Municipality.

The South African government and its respective agencies were established to provide support and assistance to agriculture cooperatives and has implement programmes designed to support and sustain these cooperatives. The inability to get funds that agriculture cooperatives require to grow and expand is a well-documented issue that many cooperatives face. The chapter will go over the challenges surrounding funding access.

7.3 Objectives

The chapter's objective was to examine the support available for agriculture cooperatives from the government and government agencies so that agriculture cooperatives can access resources to ease the implementation of innovation strategies thereby enhancing sustainability.

7.4 Theoretical background

Access to money is said to be the greatest constraint to cooperative growth and development in developing nations. Many financial institutions regard financing businesses, particularly micro-enterprises, and cooperatives, to be risky — a scenario that is increasing as global economy shifts. This remark is backed up by Yongqiang (2012), who points out that low-income businesses have trouble getting financial support. Profit-oriented cooperatives in the agriculture sector are also said to be having difficulty in obtaining financing.

As competition for funding and support grows, financial institutions are under even more pressure to help profit-oriented firms. Kira (2013) supports the preceding assertion by stating that due to deteriorating accessibility, access to finance has become an impossible process. Despite being regarded as a critical component for agricultural cooperatives' growth and sustainability, the barriers to obtaining the necessary funds continue to climb.

Cooperatives' long-term viability will be hampered by a lack of considerable finance and financial help. As a result, financial aid tailored to cooperatives is required. Financing institutions should consider the different characteristics of each cooperative and help them by targeting their precise needs. Due to their lack of recognition by government agencies for what they have to offer, barriers to funding can even hinder cooperatives from going further and becoming sustainable enterprises.

According to Ogawa and Suzuki (2000), banks are not prepared to lend to low-income enterprises like crop farmers since the types of loans necessary are too few, and the procedure of making such loans is costly for them. What makes matters worse is that most business funders perceive low-income cooperatives as unfit to save since they lack a record of accomplishment and do not have business goals.

Commercial banks, which are known to be the top drivers of economic development by mobilising capital and providing loans to productive initiatives, ignore lending to poor agriculture co-operatives. Additionally, agriculture co-operatives are frequently excluded due to strict lending criteria, collateral requirements, and lengthy procedures.

According to the findings of a Christianson (2003) study, which looked at South African regulations on export-oriented small businesses, 27 out of 30 participants cited their relationship with their banks as the most significant stumbling block. As a result, many enterprises, particularly agricultural cooperatives, have sought financial assistance from the informal funders, including moneylenders and the stokvels. In 1995, the government recognised the difficulty of funding and established a plan to grow and promote small enterprises including agricultural cooperatives. Despite their efforts,

agricultural cooperatives have difficulty in acquiring financial assistance (Pretorius and Shaw, 2004).

Agricultural cooperatives lack the documentation that the banks and FDI require. A business plan is a necessary document required by all funding institution. It is a crucial copy in implementing business partnerships between parties, although it becomes outdated as early as it is printed (Pretorius and Shaw 2004).

According to Shaw (2002), all financial institutions demand a business plan to examine and analyse the risks and prime factors linked to skills and knowledge and the kind of business prior to providing cash. Monetary establishments like banks are often not ready to interface adequately with agricultural cooperatives and do not want to face risks, regardless of how little is needed (Pretorius and Shaw 2004).

The following part will look at training as a type of help that agriculture cooperatives require. It has been proven that the progress and productivity of agricultural cooperatives can contribute significantly to employment creation, sustainability, and economic well-being. As previously stated, the South African government developed regulations, programs, and institutions to promote the cooperatives' necessary expansion. The FDI are mandated by the government to develop agricultural cooperatives.

According to Mayrhofer and Hendriks (2003), education and training can help people start and grow businesses, especially in the Lejweleputswa district, where there is a lack of cooperative training. In their review directed among SMMEs, Bowen, Morara and Mureithi (2009) resolute whether there was a connection between productivity and training in small enterprises. Their review uncovered that 51% of enterprises who underwent business training were admirably doing well in their businesses; whilst sixty percent (60%) of the enterprises who did not attend any training at all announced that their businesses were performing ineffectively, while just 39% revealed they were doing well in their businesses even without attaining any business training.

A need for enterprise management skills and training – which encompasses elements such as budgeting, inventory, and trading – is a major contributor to failing business,

according to Mbonyane (2006). Due to the various characteristics of cooperatives, their training requirements may vary. It is critical to consider the operating situation of various cooperatives, as cooperative training requirements differ from those of other small enterprises.

Before attempting to provide training, government institutions and agencies must investigate and recognise the needs of cooperatives to provide efficient and appropriate training that can be used to develop the cooperative into a successful and profitable enterprise. The following section will look at the support given to farm cooperatives and if that support is beneficial in promoting innovation of agriculture cooperatives.

7.5 Assistance offered to agricultural cooperatives.

Cooperatives can be supported in various ways, the most well-known of which are financial aid and training. Mole (2002) defines business support as a strategy used by the government and its agencies to help and train enterprises. The International Finance Corporation (IFC) (2006) define business support services as non-monetary interventions provided to cooperatives at various phases of commercial needs and are intended for talent transfer and business counselling. These non-monetary interventions are at times offered concurrently with loans and other monetary services.

These services are significant because they can help cooperatives manage their businesses more efficiently, and if used correctly, they can also provide access to capital and serve as an alternative type of collateral. Business development support include variety of strategies that can be used to provide resources that will allow agricultural cooperatives to survive and grow. Different support services will be addressed in the following section. These include both financial and non-financial assistance.

7.5.1 Micro-finance assistance

Microfinance is defined as the arrangement of suitable monetary intervention to many low-pay, financially-drew enterprises determined to reduce neediness (Adekunle,

2011). Financial backing for any business is critical for growth and long-term viability. As a result, financial help in the form of micro-finance may be a suitable kind of financial support for agriculture cooperatives. Micro-finance is a technique that offers financial services to businesses that do not have access to commercial banks and funding institutions. Micro-Finance Institutions (MFIs) offer various financial services including credit, insurance and business development services including business management training (Chijoriga, 2000).

Micro-finance is excellent for agricultural cooperatives because it substitutes conventional credit; it requires no collateral and has fewer application materials (Adekunle, 2011). Micro-finance has simple and flexible payback terms and helps cooperative members in times of need. Micro-finance is also appropriate for agricultural cooperatives because it can be a major component in poverty alleviation.

7.5.2 Non-financial support services

According to Ligthelm (2004), cooperatives have inadequate development prospects and require support that is distinct from that provided to most SMMEs. Ligthelm went on to say that cooperatives should be aided by group initiatives targeted at developing external resources such as basic infrastructure. The following section will concentrate on the FDI that operate in Lejweleputswa and the Free State province. It will detail the targeted groups and how they provide help to each of them.

7.6 FDIs operating in the Free State province.

Government of the Free State province established financing development organisations to support cooperatives. These FDIs operate in various parts of the Free State, with some having branches in the Lejweleputswa District. Only FDIs operating in the Free State province in the Lejweleputswa District will be investigated in this study.

7.6.1 Industrial Development Corporation (IDC)

The IDC is a state-owned financing development institution established in 1940. Its goal is to aid Africa’s long-term economic development. It also encourages economic

proclivity and entrepreneurship by promoting the creation of competitive businesses based on strong business concepts. The objectives of the Shared and Accelerated Growth Initiative of South Africa (ASGISA) are aligned with those of the IDC (DTI, 2004). It gives funds to help businesses create jobs, invest, and grow. Nevertheless, it focuses mostly on small and medium-sized enterprises and cooperatives for funding opportunities.

7.6.2 Department of Economic, Small Business Development, Tourism and Environmental Affairs (DESTEA)

SMME development and support remain the centre of the operations of DESTEA. DESTEA programmes aim to enrich the community of Free State and Lejweleputswa with business development, access to market, and extensive experience in the enterprise and cooperative development.

Low level of compliance to rules and regulations is by far one of the contributing factors to the low success rate of funding applications by the agricultural cooperatives. Most agriculture cooperatives do not register Companies and Intellectual Property Commission (CIPC), South African Revenue Services (SARS), and the Department of Labour for UIF. To ensure that agricultural cooperatives in the Lejweleputswa district access different programmes for sustainable development, DESTEA creates awareness and support agricultural cooperatives with compliance.

DESTEA point of service centres assist agriculture cooperatives with the following:

· Cooperative registrations

· Basic Business skills training

· Stokvel training

· Access to local markets

· Broad Based Black Economic Empowerment (BBBEE) Affidavits

· Central System Database (CSD) registration

· Awareness campaign of available financial incentives

7.6.3 National Development Agency (NDA)

NDA is an agency for the National Assembly of the Republic of South Africa. It was formed in 1999 as government's critical response to poverty in South Africa. In discharging its mandate, NDA enhances the capacity of civil society sector by ensuring that communities can tackle the threat of poverty and unemployment. NDA and Department of Trade and Industry (DTI) has entered a memorandum of understanding (MOU) that intends to provide cooperatives with business support. This MOU is a collaborative relationship that seek to achieve developmental objectives by engaging in sustainable cooperative strategies that support local economic development.

The NDA facilitate development of business plans for agricultural cooperatives requiring financial support and assist with the registration and training. The NDA is responsible for providing various services, including project management training for agricultural cooperatives, and knowledge management. NDA also monitor and evaluate performance and productivity of cooperatives so that they meet the required standards.

7.6.4 Lejweleputswa Development Agency (LDA)

LDA is an agency owned by the Lejweleputswa District Municipality. LDA finance its operations through grants from the Lejweleputswa District Municipality (LDM) and the Industrial Development Corporation (IDC).

Lejweleputswa Development Agency is currently embarking on a peri-urban farming project in the district to execute its mandate to develop and diversify the economy in the area. The project was implemented on five thousand (5 000) hectares of land from local municipalities, where local cooperatives, upcoming farmers and entrepreneurs will be empowered. Production of the project is focused on the crop. This will benefit agriculture cooperatives within the Lejweleputswa district municipality.

7.6.5 Lejweleputswa Local Economic Development Office (LED)

Lejweleputswa LED is working in partnership with other departmental agencies like SEDA to provide non-financial business development support like training and

workshops. It also facilitates lease agreements for the emerging agricultural cooperatives.

7.6.6 National Empowerment Funding (NEF)

NEF is a South African government institution founded in 1998 to offer black economic empowerment operations funding. Its goal is to promote a competitive and efficient economy that can generate jobs and give impeded individuals chance to purchase state-owned resources and private enterprises. NEF provides funding to historically disadvantaged people who seek to start businesses, develop established ones, or buy shares in white-dominated companies (DTI, 2005).

7.6.7 Free State Development Corporation (FDC)

By offering financial and non-financial services, FDC is tasked with establishing and developing sustainable agriculture cooperatives in the Free State province. Its mission is to boost provincial growth while also advancing the strategic goal of supporting long-term economic development. It does, however, only provide financial assistance to agricultural cooperatives that meet certain criteria. In the Free State, FDC addresses the financial gaps created by race and gender variables in “the agriculture cooperatives” (FDC 2007).

FDC also help agricultural cooperatives that do not have any collateral by accepting shares if the cooperative has the potential for development and profitability. FDC also provides subsidies for specialised services like rental rates for new cooperatives. The FDC also aids with the transition from informal to formal cooperatives. FDC assist non-registered agriculture cooperatives that need help in becoming legally operational.

7.6.8 National Youth Development Agency (NYDA)

The NYDA, previously known as the Umsobomvu Youth Fund, was founded in 2001 for unemployed youth and women of South Africa who pursue business ownership. The flood of youngsters into the labour market because of the recent economic slump has caused crisis in several countries, including South Africa. South Africa has a huge

population of youths aged 14 to 35 (approximately 42 percent of the overall population) who are unemployed (Stats SA, 2012).

The NYDA ensures that youth development is prioritised by its stakeholders. Since its foundation, the NYDA has moved its fundamental mission from financial aid to business training and skills development, resulting in grants to young entrepreneurs. This allows young entrepreneurs to access both non-financial and financial help. Individuals or youth cooperatives are claimed to be eligible for grants ranging from R10 000 to R50 000.

7.6.9 Small Enterprise Development Agency (SEDA)

SEDA's role in business support services is discussed in this section. SEDA is the department of small business development agency. SEDA was established in 2005 with a mandate to assist small and medium enterprises, including cooperatives with business development support. SEDA was set up with a command of helping business-minded people to start their businesses while likewise creating jobs (DTI, 2005).

Seda was commanded to plan and carry out a standard public delivery network for South Africans to provide support services to cooperatives and SMMEs, particularly in rural regions. The emphasis was on start-ups and the existing cooperatives and SMMEs. SEDA provides non-monetary support programmes included training, mentoring, and coaching of the cooperatives and SMMEs, developing a business plan, and designing marketing materials.

7.6.10 Small Enterprise Finance Agency (Sefa)

SEFA was launched and founded in 2012. The Industrial Development Corporation (IDC) small business-funding portfolio was merged with the South African Micro-Finance Apex Fund (SAMAF) and Khula to become SEFA. SEFA's objective is to address the small enterprises' inability to obtain funding for start-up businesses. This is done by enabling access to capital for small enterprises and cooperatives, thereby contributing to job creation and economic growth. SEFA provide business loans, joint

venture capital, non-financial support, and institutional indemnities, to put it another way.

7.6.11 The Department of Agriculture and Rural Development support

The Department of Agriculture and Rural Development has the following support systems available for agriculture cooperatives in the Lejweleputswa district.

- Land reallocation for the farming turn of events
- Integrated food security and nourishment program
- Irrigation, revitalisation, and advancement
- Comprehensive Farming Help Program
- Micro-Farming Help Programme

7.6.11 .1 Land reallocation for farming turn of events

Cooperatives who need to farm may apply for land reallocation, however they need to make a commitment, either in real money or in labour, to at least R5 000 – the sum is more if the award is bigger. Awards differ from at least R20 000 to a limit of R100 000. Agricultural cooperatives that previously utilised public land possessed by neighbourhood authorities can apply for the program to acquire extra land. Youth, women, and people with disabilities are encouraged to apply.

7.6.11.2 Integrated food security and nourishment program.

This program assists cooperatives as rural assistance: seedlings, implements, and fertilizers. The objective is to give recipients the implements they need to create their own food. Cooperatives that need to start a limited scale farming in rural regions are welcome to apply.

7.6.11.3 Irrigation, revitalisation, and advancement

Water accessible for agriculture and farmers is restricted, and acceptable administration practices are crucial for capitalising on the available water. Small-scale water systems can significantly contribute to food security and destitution mitigation. The revitalisation of under-used water system plans, and the advancement of new

water system plans in regions where sufficient water is accessible can improve the lives of local communities.

7.6.11.4 Comprehensive Farming Help Program

Cooperatives that gain land through land and farming programs need support to utilise such land profitably. This program offers support services to impeded land proprietors to advance in farming. The programme covers technical support, business development services, training, and infrastructure support.

7.6.11.5 Micro-Farming Help Programme

Most emerging agriculture cooperatives cannot get cash from commercial banks since they have no insurance and credit record that banks need as a standard practice. This programme was made to help agriculture cooperatives to get cash advances of up to R100 000. It also helps emerging agriculture cooperatives get to a more extensive scope of monetary services like reserve funds, credit, and protection services. Recipients of credits should demonstrate that they can reimburse the advances. The cooperatives are required to provide a business plan to do so.

Although cooperatives in South Africa have a variety of funding options, Thaba and Mbohwa (2015) contended that in South Africa, certain individuals began cooperatives to get free government grants. Members often do not know what to do with their free grants after receiving them. Thaba and Mbohwa (2015) went on to say that many cooperatives they visited during their research were failing, despite receiving free government grants. They were unmistakably mishandling government assets and resources by neglecting to utilise them for a helpful turn of improvement and development.

7.7 Research Methodology

7.7.1 Study area and data collection

The research was carried out in the municipality of Lejweleputswa. The Free State Province is home to the Lejweleputswa District Municipality. The province shares a border with Lesotho, and the district capital is Welkom. Lejweleputswa District

Municipality consists of five (5) local municipalities: Matjhabeng, Nala, Tokolokgo, Tswelopele and Masilonyana. Nala Local Municipality share borders with Northwest province. Lejweleputswa District Municipality covers about 39 130 square km of land with a total population of 657 019 people.

Qualitative data is used in this section. It includes an organised questionnaire supplemented by meetings and interviews. The quantitative research procedure utilising a survey was also embraced because the utilisation of numbers permits more noteworthy accuracy in detailing results. Data assembled during the relevant analysis was accumulated utilising a coordinated survey.

7.7.2 Data Analysis

All collected data was analysed using frequency distribution and then illustrated graphically. The percentages were utilised to indicate the rate at which respondents agreed or disagreed with the aspects of support available for sustainability and innovation.

7.7.3 Findings and discussion

The findings are based on the question related to support provided to agriculture cooperatives in the past twelve (12) months and are illustrated in a graphical presentation**.** Results presented in figure 7.1 indicates responses on whether the cooperative received any financial support from the government and its agencies in the past twelve (12) months.

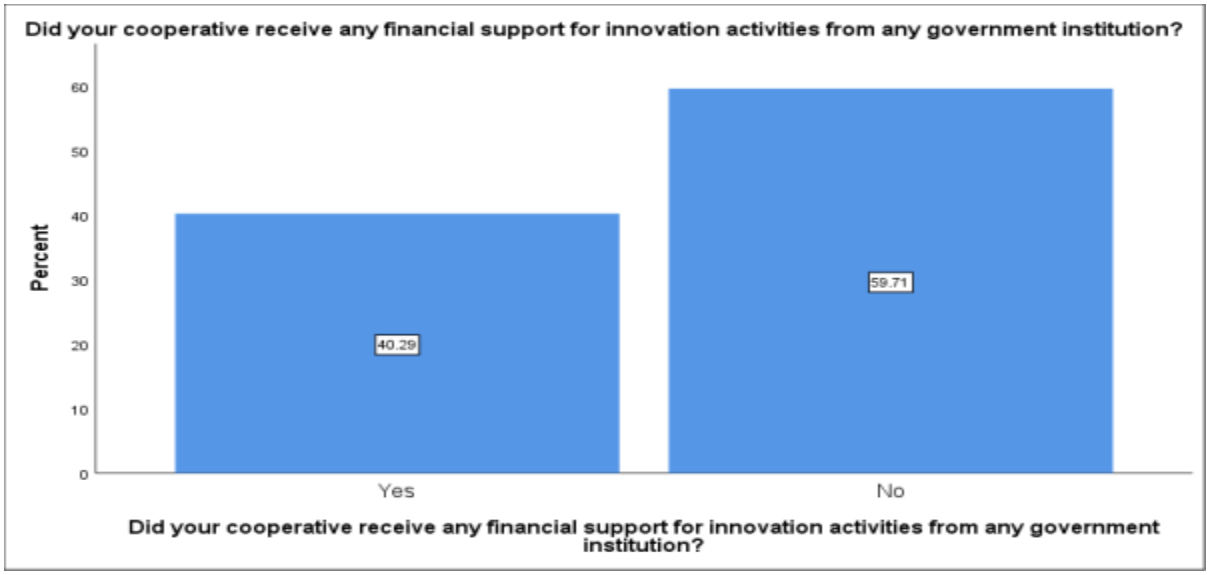

Figure 7-1 Financial support from the government

From figure 7.1, it is evident that only 40.29% of the cooperatives in the study received financial support for innovation activities and sustainable development. This could be that only 40.29% met the financing requirements, while the remaining 59.71% did not meet the requirements.

Results presented in figure 7.2 indicates responses on whether the cooperative received any non-financial support from the government and its agencies in the past twelve (12) months.

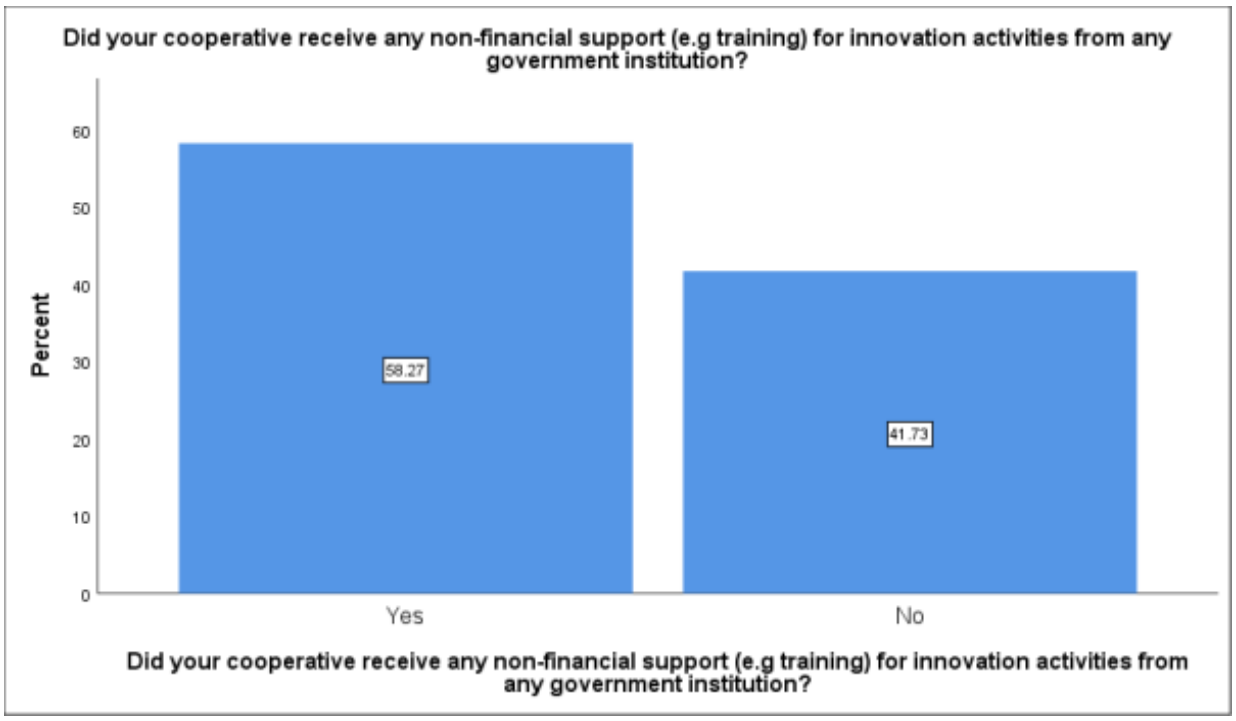

Figure 7-2 Non-financial support from the government

From figure 7.2, it is evident that only 58.27% of the cooperatives in the study received non-financial support for innovation activities and sustainable development. This could be that the remaining 41.73% could not access non-financial support programmes due to ignorance, or the government agencies and institutions could not access their locations.

7.8 Summary and Conclusion

This study addresses the issue of governmental support for agriculture cooperatives in the Free State province, particularly with emphasis on the Lejweleputswa District Municipality. The government and its respective agencies were established to provide support and assistance to agriculture cooperatives. The government should implement intensive programmes to support and sustain these cooperatives.

The main difficulties experienced by agricultural cooperatives, such as country bylaws, inability to obtain capital, and a lack of appropriate training, must be resolved to help agriculture cooperatives become innovative and sustainable. Support should be tailored to meet the core and critical needs of agriculture cooperatives. The finance

development institutions in Lejweleputswa and the Free State province are structured to assist primarily profit-driven corporations while disregarding agricultural cooperatives. As a result, creating a financial institution that focuses solely on agricultural cooperatives and works to improve and preserve them is critical.

Agricultural cooperative support should be prioritised because it will help improve the socioeconomic position of rural areas and their families. It will also generate many jobs and lessen unemployed people's reliance on government assistance.

CHAPTER 8: Policy recommendation for innovation strategies implementation

8.1 Introduction:

The following section is divided into two sections.

Section 1 will exhibit a recommended policy control framework and section 2 entails recommended innovation strategy policy.

8.2 Policy Control Framework

A policy control framework is a written or structural document that outlines the guiding concepts, objectives, regulations, and standards for cooperative's policies. It also outlines the tasks, duties, and powers associated with creating, implementing, modifying, and assessing policies. The policy management process is guided by a policy framework, which also guarantees internal and external standard compliance, consistency, and relevance.

The signatories hereof, being duly authorised thereto, authorise the execution and implementation of the provisions detailed herein on behalf of the parties represented by them.

Table 8-1 Policy signatories

Approval Process	Position and Responsibility	Date
Originator:	Cooperative Secretary	TBA
Recommended by Secretary	Recommended by Secretary to members	TBA
Recommended by members	Recommended by Members to Directors	TBA
Recommended by Directors	Recommended by Directors to Board	TBA
Board:	Board of Directors	TBA

8.2.1 Effective Date

This Policy will be effective from the date of approval by the cooperative Board of Directors unless otherwise resolved by the Board.

8.2.2 Policy Version

Policy Version refers, in the context of policy management, to the several versions of a policy that are produced as modifications are made. Knowing which version of the policy is in effect at any given time, or which version was in effect at a specific point in time, is crucial when policies are reviewed and modified on a regular basis. Policy version will be determined by the Cooperative secretary whenever a policy is reviewed.

Table 8.2: Policy version

Version	Date	Prepared / revised by	Business unit	Status
1	Current Year	Secretary	Research and Development	Approved/ or to be revised
2	After 3 years	Secretary	Research and Development	Approved/ or to be revised
3	After 3 years	Secretary	Research and Development	Approved/ or to be revised

8.2.3. Policy Owners

Responsibility for this policy lies with cooperative secretary. In addition, the following authorizations shall be applicable:

- The secretary will be responsible for maintaining and monitoring compliance to this Policy.
- Cooperative members and directors to review and recommend the Policy.
- Board to approve the Policy.
- Cooperative treasury responsible for execution of this Policy.

8.2.4 Approval and Review Process

This Policy is to be reviewed every three (3) years by cooperative secretary or as and when required.

8.2.5 Inter-related Policies and Procedures

The guidelines that direct the operations of a cooperative organisation are known as cooperative policies and procedures. Customers, staff, and residents all have an equal voice in the cooperative's operations and a portion of its surplus, or profits. Agricultural cooperatives collaborate to create, refine, or sell agricultural goods and provide members with agricultural inputs and services.

The recommended policy should not be executed in isolation. It should be supported by the following policies, frameworks, and procedures that play an important role in agriculture cooperatives.

- The Cooperative Act, No. 14 of 2005,
- The Cooperative condonium policy
- The cooperative board of directors' policy
- The basic cooperative policy

Table 8.3 below define the meaning of the above policies.

Table 8.3 Glossary of Terms

Phrase	Meaning
The Cooperative Act, No. 14 of 2005,	The act addresses the creation and registration of cooperatives, the appointment of a cooperatives advisory board, the dissolution of cooperatives, and related topics.
Cooperative condonium policy	A cooperative condominium policy, sometimes referred to as co-op or condo insurance, protects the liability and personal property of owners of cooperative apartments or condos.
Cooperative committee policy	The collection of guidelines that direct the committee's operations inside a cooperative organisation is known as its cooperative committee policy. Together with upholding the cooperative's vision, mission, and goals, the committee is usually in charge of upholding the good governance standards that are founded on cooperative values and principles.
Cooperative board policy	The rules and guidelines that direct the board of directors of a cooperative organisation are called cooperative board policies. In addition to the cooperative's own vision, mission, and goals, the board of directors is normally in charge of upholding good governance norms founded on cooperative ideals and principles.
The basic cooperative policy	A set of guidelines that directs its operations. This policy is founded on the seven cooperative principles, which are recommendations for members to properly apply and incorporate the fundamental cooperative values throughout their entire company.

SECTION 2: Policy

8.3 Introduction

Agriculture Cooperatives should commit to implement Innovation Strategy Policy that complies with the Cooperative Act. This Policy will create an environment that will enable agriculture cooperatives to attain sustainability by implementing innovation strategies. The Policy will describe the process to be used by cooperatives in making sustainability decisions.

8.3.1 Policy Objective

To formulate a Policy that serves as guidance to agriculture cooperatives regarding the implementation of integrated innovation strategies with a view to achieving sustainability.

8.3.2 Challenges

During the interview and site visit of crop farm cooperatives in Lejweleputswa, the researcher identified challenges in agriculture cooperatives. The identified challenges were classified as social, economic, and environmental challenges and are illustrated in table 8.2 below:

Table 8-4 Challenges encountered by Agriculture Cooperatives

Challenges	Classification
Price Competition	Economic
Cost of access to markets	Economic, Environmental
Lack of adequate finance	Economic
Market Share	Economic
Lack of qualified members	Social
Product quality	Environmental
Product demand	Social

8.3.3 Policy Recommendation

Policy is recommended in line with strategies that were discussed in the study, namely Product, Process, Organisation and Marketing Innovation Strategies.

It is recommended that:

8.3.3.1 Product Innovation Strategies

It is recommended by the researcher that Lejweleputswa agriculture cooperatives should:

- Introduce a new product within 12 months of its inception.
- Introduce a new product developed by the cooperative itself.

- Introduce a new product by modifying the product originally developed by other cooperatives.
- Introduce a new product developed with other cooperatives.
- Introduce a new product that is new to the market.
- Introduce a new product that is only new to own cooperative.
- Introduce a new product that will be the first in Lejweleputswa district.

8.3.3.2 Process Innovation Strategies

It is recommended by the researcher that Lejweleputswa agriculture cooperatives should:

- Introduced a new distribution method.
- Introduce a new supporting activity for business process.
- Introduce a new supporting activity for business process that was developed by cooperative in modifying service originally developed by other cooperatives.
- Introduce a new or improved supporting activities for business process that was developed by the cooperative together with other cooperatives.
- Introduce a new or improved supporting activities for business process that was developed by another cooperative.
- Introduce supporting activities for process that was new to the market.

8.3.3.3 Organisational Strategies

- Cooperative should introduce a new business practice.
- Cooperative should introduce a new methods decision making.
- Cooperative should introduce a new method of organising external relations.

8.3.3.4 Marketing Innovation Strategies

- Cooperative should introduce significant changes to packaging.
- Cooperative should introduce a new method for product placement.
- Cooperative should introduce a new technique for product promotion.
- Cooperative should introduce a new method of pricing.

8.3.5 Policy Scope

Innovation strategies should be implemented collaboratively by all members to ensure sustainability in line with this policy.

8.3.6 Implementation Process

The following steps will provide guidelines on implementing Innovation strategy policy.

- Determine what should be accomplished with new ideas and how they fit with cooperative's plan.
- Understand what customers want and keep track of what competitors are doing.
- Clearly define how cooperative's new idea will be helpful and different from others.
- Determine what skills and tools members need to be good at coming up with new ideas.
- This means coming up with ideas, writing them down, deciding if they are good, and choosing which ones to do first.
- Ensure that new ideas help cooperative goals.
- Ensure every member in the cooperative knows the plan for coming up with new ideas and how it affects their job.
- Regularly check to see if your new ideas are working and make changes if needed.

8.3.7 Policy execution

The cooperative Secretary will initiate the innovation policy and recommend to the members; the cooperative members will then discuss the need to implement the policy and recommend the implementation to the directors. The directors will analyse the risk involved in implementing the innovation strategy policy and then recommend the implementation to the board of directors which will review and approve the policy. Then finally, the cooperative treasury will then execute the recommended policy.

8.3.8 Monitoring and Evaluation

Monitoring and evaluation of cooperative innovation policies is essential for development, implementation, and provision in an efficient manner. Achieving

significant long-term objectives depends on making sure that policy decisions are supported by credible evidence of what works. Policy makers should assess how integrated innovation strategies evolves over time (monitoring), how successfully implementation was executed and whether the outcomes were different from what was anticipated (evaluation), and whether changes in well-being that arise from implementation were solely attributable to them (impact evaluation).

The following variables should be evaluated annually to determine successful execution of the recommended policy:

- Increased Turnover
- Increased Market Share
- Reduced Operational Costs
- Increased in Profit Margins
- Developed New Markets locally/internally.
- Developed New Markets externally.
- Newly Improved Products
- Improved Marketing of Products
- Increased Flexibility
- Alliance with other cooperatives

8.3.9 Conclusion

In conclusion, the researcher is suggesting that cooperative secretary should be responsible to maintain and monitor compliance to this policy and treasury should be responsible for the execution of this Policy. Transgression of this Policy should constitute misconduct, and the cooperative Disciplinary Code of Conduct should then apply.

Recommendations for further study

This study gratified the contribution of innovation toward the sustainability of agriculture cooperatives. In this research study, it was noticeable that agriculture cooperatives in the Lejweleputswa district municipality do not apply innovation strategies in their business operations. There were indications of a positive impact of innovation strategies in some cooperatives. This is, however, not sufficient as most cooperatives are not entirely interested or are arrogant to embark on an innovation journey.

It is thus recommended to further this study by including commercial farming and doing a thorough study on innovation strategy execution. It would be imperious to conduct a comprehensive investigation of the successful execution of innovation strategy locally in Lejweleputswa and the entire Free State province. Further research and development in designing innovation models may have the capability to sustain agriculture cooperatives in the Free State province in the future.

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Appendices

APPENDIX A: Letter of Consent

No.5 Congo Street
Doorn, Welkom
9460

Dear Sir/ Madam

I am a PhD student enrolled at The University of the Free State. I am involved in a research project which is attempting to research: **"Integrated Innovation Strategies on Sustainability of Agriculture Cooperatives in Lejweleputswa District, Free State Province, South Africa."** The targeted population for the study is Agriculture Cooperatives from five local municipalities of Lejweleputswa district namely, Matjhabeng, Nala, Masilonyana, Tokolokgo and Tswelopele. The research project is likely to provide interesting and useful information which could be of a supportive nature to Agriculture Cooperatives in Lejweleputswa district, Free State province.

I have been given a permission to undertake the study by SEDA Research and Development unit. Your agriculture cooperative has been selected to participate in this study. I will be grateful if you could be of assistance with this research project by completing and answering enclosed questionnaires. The name of your cooperative and your position will remain anonymous and will not be shared with your competitors or anyone without your consent. Please note that you are not forced to take part in this survey.

I will appreciate if you could complete and return the completed questionnaires to me by email to sgantsho@seda.org.za or deliver it to SEDA Lejweleputswa office in a sealed envelope. Submission should not be later than 20th July 2021.

For any questions and clarity feel free to contact me at 081 547 7721

Kind Regards

Siyaze Gantsho

APPENDIX B: Consent to participate.

CONSENT TO PARTICIPATE IN RESEARCH STUDY

Study Title: Integrated Innovation Strategies on Sustainability of Agricultural Cooperatives in Lejweleputswa District, Free State Province, South Africa

Investigator: Siyaze Gantsho

Written Consent

I confirm that the necessity of informed consent has been explained by the researcher to me as the participant. I understand that my participation is voluntary, and that I am not obliged to answer all questions. The purpose of the research study and the risk implications were explained to me by the researcher. The procedures as well as the time frame have been explained to me. I understand the issues of confidentiality as explained by the researcher.

I comprehend that I am allowed to decline to participate or pull out from the review whenever without giving a reason.

I understand that my information will be treated as confidential, and I will not be identified by any individuals in the study group and report.

I agree to participate in the study and confirm that my information can be utilised in the final research report and publications.

Participant Name _____

Participant Signature_____

APPENDIX C: Research Project Questionnaire 1

TOPIC: Integrated Innovation Strategies on Sustainability of Agricultural Cooperatives in Lejweleputswa District, Free State Province, South Africa

May you kindly answer below questions?

SECTION A. Demographic:

Name of the
Cooperative…….....
..

Position (e.g Director/ Manager/ Member)
……

Age……

Gender……

Type of agriculture (e.g farming):
……

Local municipality……

Number of females members……

Number of male members……

Year of registration: .....

Is the cooperative Primary or Secondary: .....

Number of cooperative members (Including Directors.....

Year of establishment: .....

Contact number (Optional)……

SECTION B. Types of Innovation Strategy

1. Product (good or service) innovation

A product innovation is the introduction of a new product with new characteristics or intended uses.

Answer the following questions by choosing one of the options provided:

Statement	Strongly disagree	Disagree	Sometimes	Agree	Strongly agree
In the past 12 months, the cooperative introduced a new product.					
During the past 12 months, the cooperative introduced a new product developed by the cooperative itself.					

During the past 12 months, the cooperative introduced a new product by modifying the product originally developed by other co-operatives.					
During the past 12 months, your cooperative introduced a new product developed with other co-operatives.					
During the past 12 months, your cooperative introduced a new product developed by other cooperative.					
During the past 12 months, your cooperative introduced a new product/ service that was new to the market.					
During the past 12 months, your cooperative introduced a new product only new to					

your cooperative					
During the past 12 months, your cooperative introduced a new product/ service that was a first in your District.					

2. Process innovation

Process innovation is the implementation of a new process.

Answer the following questions by choosing one of the options provided:

Statement	Strongly disagree	Disagree	Sometimes	Agree	Strongly agree
During the past 12 months your cooperative introduced a distribution method.					
During the past 12 months your cooperative introduced a new supporting activity for business process.					
During the past 12 months your cooperative introduced a new supporting activity for business process that was developed by your cooperative in modifying service originally developed by other cooperatives.					
During the past 12 months your cooperative introduced a new or improved supporting activities for business					

process that was developed by the cooperative together with other cooperatives.					
During the past 12 months your cooperative introduced a new or improved supporting activities for business process that was developed by another cooperative					
During the past 12 months your cooperative introduced supporting activities for process that was new to the market.					

3. Organisational Innovation

An organisational innovation is a new organisational method in business practices.

Answer the following questions by choosing one of the options provided:

Statement	Strongly disagree	Disagree	Sometimes	Agree	Strongly agree
During the past 12 months your cooperative introduced a new business practice					
During the past 12 months your cooperative introduced a new methods decision making					
During the past 12 months your cooperative introduced a new method of organising external relations					

4. Marketing innovation

A marketing innovation is the implementation of strategy that differs from existing.

Answer the following questions by choosing one of the options provided:

Statement	Strongly disagree	Disagree	Sometimes	Agree	Strongly agree
During the past 12 months your cooperative introduced significant changes to packaging					
During the past 12 months your cooperative introduced a new method for product placement					
During the past 12 months your cooperative introduced a new technique for product promotion					
During the past 12 months your cooperative introduced a new method of pricing					

SECTION C. Measuring Innovation Strategies

5. Measuring success of Innovation Strategies

Strategies for reaching your cooperative's goals.

Answer the following questions by choosing one of the options provided:

In your cooperative success for innovation is measured by:

Statement	Strongly disagree	Disagree	Sometimes	Agree	Strongly agree
Increased turnover.					
Increased market share.					
Reduced operational costs					
Increased profit margins					
Developed new markets within Free State.					
Developed new markets outside Free State.					
Significantly improved products.					
Improved marketing of products.					
Increased flexibility					
Alliances with other cooperatives					

SECTION D. Obstacles for Innovation Strategies

6. Obstacles

Obstacles for reaching agriculture cooperative's goals.

Answer by choosing one of the options provided:

During the past 12 months the following were observed to be obstacles for innovation in our cooperative:

Statement	Strongly disagree	Disagree	Sometimes	Agree	Strongly agree
Price competition.					
Product quality					
Demand.					
Innovations by rivals.					
Dominant market share by rivals.					
Lack of qualified personnel.					
Lack of access to funding.					
Regulations or legal procedures					

SECTION E. Support for Innovation Strategies

8. Cooperatives support for innovation

Statement	Yes	No
During the past 12 months, did your cooperative receive any financial support from any government institution?		
During the past 12 months, did your cooperative receive any non-financial support from any government institution?		

APPENDIX D: Research Project Interview Questionnaire 2

TOPIC: Integrated Innovation Strategies on Sustainability of Agricultural Cooperatives in Lejweleputswa District, Free State Province, South Africa

Good day. My name is SK Gantsho. I am conducting an interview for a PhD thesis and would appreciate your views.

Who to interview:

LED	DESTEA	SEDA	SEFA	NEF	NDA	LDA	FDC

Respondent interviewed:

_____

Respondent's position: _____

1.Do you recognise Agriculture Cooperatives as part of the SMMEs in Lejweleputswa District?

_____
_____
_____
_____

2. Do you see the Agriculture Cooperatives contributing to the economy of Lejweleputswa district?

_____
_____
_____
_____
_____
_____

3. Do you have the most recent statistics of the existence of Agriculture Cooperatives in Lejweleputswa district?

_____
_____
_____

4.How many Agriculture Cooperatives have you managed to assist in the past 12 months? _____

5.What kind of assistance was offered?

_____
_____
_____
_____
_____
_____
_____
_____

6.Do you believe that assistance of Agriculture Cooperatives could have a positive impact on the economy of the Lejweleputswa district?

7.What are the roles and responsibilities of your organisation/department in the operation of Agriculture Cooperatives?

8.What are challenges facing Agriculture Cooperatives?

9.What is done to address the challenges faced by Agriculture Cooperatives?

10. What recommendations can be made to address the challenges faced by Agriculture Cooperatives to improve their productivity?

11. What type of assistance is given to Agriculture Cooperatives in terms of funds?

12. What type of assistance is given to Agriculture Cooperatives in terms of skills development?

13. What type of assistance is given to Agriculture Cooperatives in terms of technical support?

14. Is there any training offered to empower Agriculture Cooperatives?

_____
_____
_____
_____
_____
_____