



GRADUATE SCHOOL OF BUSINESS & LEADERSHIP

**A Sustainability Model for Agricultural Cooperatives in
KwaZulu-Natal**

By

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DEDICATION

I dedicate this final product to my mother Mrs Nester Mathe as well as my late grandparents, Mr Daniel Xaba and Mrs Emellinah Xaba. They prepared me to face challenges with faith and humility

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ABSTRACT

The high attrition and stagnant rate of agricultural cooperatives in the Province of KwaZulu-Natal has raised concerns, given that they are recognised globally and in South Africa for their significant role in promoting impoverished communities' social and economic development. This challenge has become a threat to community development by hampering the growth of the agricultural cooperatives. Accordingly, this study aimed to investigate the challenges that hinder the growth of agricultural cooperatives and assess factors that contribute to their growth. The study utilised clustered sampling to ensure the representation of all districts and was conducted in nine districts of KwaZulu-Natal Province. The sample comprised 367 respondents who were members of agricultural cooperatives from 99 cooperatives in the province. Quantitative research was employed using questionnaires, and the data were analysed using SPSS (Version 25.0.). Sustainability models used in the study included pictorial visualization, quantitative, physical, conceptual, standardising, egg of sustainability, and prism models.

The literature gap in a sustainability model that considers the combined behaviour of resource management, good governance, sustainability monitoring, market access, and social and economic aspects in agricultural cooperatives has been addressed. The study revealed several factors contributing to agricultural cooperatives' demise, including a lack of good governance, leadership, technical skills, business management expertise, conflict management abilities, cohesion among members, and sustainable farming methods. These deficiencies suggest that the agricultural cooperatives under review could be more sustainable. Therefore, the study recommends adherence to cooperative principles, capacity building of cooperatives in all aspects of business, including environmental training, the appointment of boards to inculcate governance systems, the institutionalisation of social responsibility programs, and redefining the government's relationship with agricultural cooperatives. The study contributes to the body of knowledge by developing a model that enhances the sustainability of agricultural cooperatives in KwaZulu-Natal, thereby increasing their success rate.

Keywords: Agricultural cooperatives, Sustainability models, good governance, Social and economic development.

ACRONYMS AND ABBREVIATIONS

ANC	African National Congress
ARC	Agricultural Research Council
CDA	Cooperative Development Agency
CIS	Cooperative Incentive Scheme
CSATs	Climate Smart Agricultural Technologies
DAFF	Department of Agriculture, Forestry and Fisheries
DARD	Department of Agriculture and Rural Development
DRDLR	Department of Rural Development and Land Reform
DTI	Department of Trade and Industry
FAO	Food Agricultural Organization
GDP	Growth Development Plan
ICA	International Cooperative Alliance
ILO	International Labour Organization
KZN	KwaZulu-Natal
MDG	Millennium Development Goal
MFC	Motloulela Farming Cooperative
MTEF	Medium Term Expenditure Framework
NDP	National Development Plan
OSCA	Owen Sitole College of Agriculture
PFMA	Public Finance Management Act
PGDP	Provincial Growth Development Plan
RASET	Radical Agrarian Socio-Economic Transformation
RSA	Republic of South Africa
SA	South Africa
SDG	Sustainable Development Goal

SMEs	Small Medium Enterprise
SONA	State of Nation Address
SOPA	State of Province Address
SS	Social Sustainability
STAT SA	Statistics South Africa
UKZN	University of KwaZulu- Natal
UN	United Nations
USDA	United States Department of Agriculture
WCDoA	Western Cape Department of Agriculture
WCED	World Commission on Environment and Development

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1. Introduction and Background

1.1. Introduction

Human beings' highest socio-economic accomplishments have become conceivable through community mobilisation for a collaborative effort. Cooperatives are considered part of the lawful methods of organising communities into activities to stimulate any country's social and economic status (Mohlala, 2020). The International Cooperative Alliance (ICA) (2024) records that cooperatives play a pivotal role in the global economy, far from being peripheral. They engage over 12% of the world's population through 3 million entities, showcasing their significance. The top 300 cooperatives boast an impressive, combined turnover of \$2.4 trillion, per the 2023 World Cooperative Monitor. They fuel sustainable economic growth and secure stable, quality employment, offering jobs to 280 million people worldwide, representing 10% of the global workforce. The cooperative model has been hailed due to its ability to diminish poverty, and unemployment and improve food security, hence the call for the registration of more cooperatives by the United Nations (UN), the Food and Agricultural Organization (FAO), International Labour Organization (ILO) and ICA (Barati, 2017).

Cooperatives cut across all segments of the economy and offer a crucial structure for mobilising human and capital resources (Maria, Darma, & Nurfadillah, 2019). The cooperative as a collective model resonates well with the agricultural sector due to its capacity to organise farmers into economic activities that culminate in cost reduction, resource mobilization, increased bargaining and market power for farmers (Simamba, 2018; Waweru, 2018). The socio-economic role of agricultural cooperatives worldwide cannot be overemphasized (Malherbe, 2020). For instance, Xaba (2020) postulates that agricultural cooperatives are vital in the economic situation of South Africa due to their capacity to ignite inclusive economic growth and sustainable development. Although the role of agricultural cooperatives in more and less developed countries is significant, the theoretical discussions in literature still reveal that most of these agricultural cooperatives, particularly in developing countries, are characterized by stagnation. The sustainability of agricultural cooperatives outside government financial support is uncertain, with the majority reflected on paper without any significant economic activity occurring on the ground (Mushonga, 2018). This is not exceptional with the agricultural cooperatives found in South Africa and KwaZulu-Natal (KZN) in particular.

Therefore, the current study assumes that the sustainability of agricultural cooperatives is crucial for empowering their members and communities within which they operate by providing affordable goods and services (ICA, 2015). Hence, the study aims to suggest a sustainable model for the KwaZulu-Natal (KZN) agricultural cooperatives. The chapter looks at the background to the study, the problem statement, the study's rationale, the research aims, objectives and questions. In addition, the scope, limitations, delimitation of the study and outline of the thesis.

1.2. Background to the study

As the introduction has alluded, agricultural cooperatives are recognised as a vital conduit for creating jobs, alleviating poverty, and generating income worldwide (FAO, 2018). In addition, Malomane (2017) also asserts the huge responsibility agricultural cooperatives take in securing food, job creation, and economic empowerment of the rural people and providing further credence to agricultural cooperatives' significance in improving communities' socio-economic status. South African agricultural cooperatives are instrumental in eradicating poverty and improving food security and job creation (Xaba, 2020). In the State of the Nation Address 2018, President Cyril Ramaphosa acknowledged the agricultural sector's contribution to the national economy substantially within the second and third quarters of 2017. KwaZulu-Natal (KZN) government also fully supports cooperative development due to their ability to reach all communities to positively contribute to the growth of the province and the nation (Provincial Growth Development Plan, 2018).

The KwaZulu-Natal Poverty Eradication Master Plan (2014) seeks to empower vulnerable cooperatives towards self-sustainability, move them away from dependency on the state, and restore their dignity and humanity. One of the critical expectations through the formation of agricultural cooperatives is that they grow and become self-reliant to help the government fulfil its constitutional obligation of public service transformation and citizens' right to food (Constitution of the Republic of South Africa of 1996). In addition, the National Development Plan (NDP) towards 2030, the Sustainable Development Goals (SDG) and the Universal Declaration of Human Rights further amplify the individuals' right to access sufficient food. According to Gonzalez (2018), agricultural cooperatives are a crucial tool in achieving SDGs, given their ability to balance the economic needs of their members with their social and environmental concerns. Specifically, the second sustainable development goal (SDG2) seeks to end hunger, achieve food security, promote sustainable agriculture, and

improve nutrition (Saleh & Hamzah, 2017). Agricultural cooperatives play a critical role in meeting this goal by focusing on small farmers, encouraging them to pool their resources together, and operating in a manner that does not perpetuate gender inequalities or exacerbate the impoverishment of rural communities.

In South Africa, most agricultural cooperatives are located in rural areas, which empowers local farmers, enhances their livelihoods, and eliminates poverty and hunger. Achieving these goals requires providing access to credit, markets, and training to ensure agricultural cooperatives succeed. In this way, agricultural cooperatives can help to eliminate poverty and hunger among small farmers, ultimately contributing to sustainable development. However, there is a consensus in the literature that sustainability challenges of agricultural cooperatives include but are not limited to poor funding, mismanagement of resources, lack of training, lack of project close monitoring, poor governance, lack of infrastructure, poor cooperative management skills, conflicts among members are (Ojha, 2019). Against this background, the envisaged research study intends to turn some of these challenges into success to ensure that KZN agricultural cooperatives are more sustainable.

The importance of the sound agricultural sector in the province of KwaZulu-Natal cannot be over-emphasised, as approximately 66 per cent of agricultural households are in KZN, followed by the Eastern Cape and Limpopo (Lehohla, 2016). Furthermore, the capacity of the agricultural sector to carry out its duty as a catalyst in regional development relies on the development, execution, and monitoring of new models, which support the progression of rising commercial farmers (Provincial Growth Development Plan, 2019).

A contextual limitation exists in prior research studies since the studies on agricultural cooperatives between the 1980s and 2000 often focused on funding aid, pesticides and seedlings (Sishi, 2022). However, current studies have a different discussion as the narrative promoted is around the transformation of the agricultural sector, industrial agriculture, green revolution, role of small-scale farmers in land reform, agri-business, commercialisation of small-scale farmers, mechanisation, climate change, skills development, monitoring and evaluation (Nduta, 2018).

The study relates to other studies in that there have been studies concerning issues around cooperatives' sustainability. For example, a study by Mabunda (2017) investigated the challenges of the lack of sustainability of art and craft cooperatives. In addition, another study by Okem (2016) looked at implementing cooperative policies in KwaZulu Natal.

Furthermore, Khan, Yaaco', Abdullah, and Abu Bakar Ah, (2016) explored factors affecting the performance of cooperatives in Malaysia. Finally, Bernardo (2016) looked at the role of agricultural cooperatives and farmer organisations in adopting sustainable agricultural practices in Uganda.

Numerous studies were conducted to recognise cooperatives' potential in the alleviation of poverty, improvement of sustainable livelihood, job creation and economic growth (Mabunda, 2017; Tshimangadzo, 2016; Wangling, 2017). However, there is a gap in the literature for a sustainability model which looks at the combined behaviour of resource management, good governance, sustainability monitoring, market access, and social and economic aspects in agricultural cooperatives. Analysing the factors that affect sustainability will allow the researcher to obtain variables to plug into the proposed model.

1.2.1. Overview of the Agricultural Sector in South Africa

The South African agricultural sector is dualistic, as an advanced commercial farming sector exists in conjunction with a less developed communal farming sector. The communal farming sector makes up the bulk of smallholder farms (Mutero & McCartney, 2015). Although SA is seen as a large country, Boshoff (2019) postulates that only 13% of the land surface is appropriate for crop production, with only 2% to 3% truly being regarded as having high potential. The 13% is spread across the areas of the Eastern Cape referred to, as well as large areas of KwaZulu-Natal, Mpumalanga, Limpopo, the coastal areas of the Western Cape, and Gauteng.

Stats SA (2018) records the statistics on land use (as opposed to farm size) that the total land utilised for commercial agriculture is 46.4 million hectares, which signifies 37.9% of the total land area of South Africa (122.5 million hectares). Commercial agricultural land comprised mainly grazing land (36.5 million hectares) and arable land (7.6 million hectares). Grazing land is for livestock and game farming, whereas arable land is utilised for crop production. South Africa is a water-stressed country with a normal annual rainfall of 500 mm (60% of the world average), and this poses a threat to the agricultural sector (Sibisi, 2020).

Although in South Africa, the agriculture sector is a key focus of the New Growth Path and is instrumental in terms of food security, producing a variety of products, from beef and poultry to maize, fruit and vegetables, The General Household Survey 2016 data shows that 13.7% of South Africa's population with inadequate access to food (Stats SA, 2017). In the same vein, Raidimi and Kabiti (2019) underscore the importance of agriculture in improving the

livelihoods of communities by providing for over 60% of employment throughout the country.

As confirmed by Wegerif (2022), the South African Minister of Agriculture, Ms Thoko Didiza, mentioned that the agricultural sector, like all other sectors in the globe, is in a precarious condition due to the adverse effects of Covid-19. Even though the SA agricultural sector is rebooting itself amid Covid-19, its linkages with other economic sectors derail its performance. Stats SA (2020) showed the declining share of the agricultural sector in the Gross Domestic Product of South Africa from 2.5% in 2015 to 0.3% in the second quarter of 2020. In renewing the agricultural sector, more recently, State President Cyril Ramaphosa, in the State Of the Nation Address (SONA) (2021), reiterated the government's commitment to prioritise the establishment of agri-parks to transform rural economies where cooperatives are expected to contribute and benefit significantly.

Godo, Hora and Tamiru (2022) assert that the performance of agricultural cooperatives in developing economies such as South Africa is greatly influenced by motivational factors such as government policies, regulatory frameworks and market factors. Similarly, the National Development Plan (NDP) (2030) also amplifies the agricultural sector's revitalisation and transformation through the land reform programme. However, the envisaged land and land reform programme in South Africa has become a contentious issue, with land addressing the two functions of redress for past and future development. Although land and land reform are gaining renewed traction in South Africa, there are uncertainties about whether the programme will enable the agricultural sector to thrive (Ryan, 2017). The importance of the sound agricultural sector in the province of KwaZulu-Natal cannot be over-emphasised as, according to Masipa (2017), almost two-thirds of agricultural households are in KZN, followed by the Eastern Cape and Limpopo.

1.2.2. Benefits of Agricultural Cooperatives

Agricultural cooperatives are defined differently by different scholars. However, there is a consensus that agricultural cooperatives refer to the practice of farmers and agricultural producers working together to achieve common goals (Ajates, 2020). These cooperatives may take various forms but typically involve pooling resources and sharing knowledge to enhance productivity, improve market access, and mitigate risks. Thus, agricultural cooperatives are more likely to succeed in communities where land is owned by the state or King leasing it to community members under agricultural cooperatives.

There are many different agricultural cooperatives, including marketing, supply, and service cooperatives. Marketing cooperatives involve groups of farmers or producers working together to market and sell their products. This can help them achieve economies of scale, negotiate better prices, and access markets that might otherwise be out of reach (Ishak, Omar, Sum, Othman, & Jaafar, 2020). On the other hand, supply cooperatives involve farmers and producers pooling their resources to purchase inputs such as seed, fertiliser, and machinery. This can help them achieve bulk discounts and ensure a reliable supply of high-quality inputs (Ishak et al., 2020). Service cooperatives are designed to provide various types of services to members, such as credit, insurance, and training (Yanbykh et al., 2019).

Agricultural cooperatives have been around for centuries, but their importance has grown significantly in recent decades as agriculture has become increasingly industrialised and globalised (Mcata, 2018). In many countries, small farmers and producers face significant challenges competing with larger, more established players. Thus, agricultural cooperatives provide a way for these smaller players to band together and gain some of the benefits of scale. In sum, agricultural cooperatives provide hope for small agricultural farmers to survive in the global market economy, which commercial agricultural organisations dominate.

One of the key benefits of agricultural cooperatives is that they can help reduce risk. Small farmers and producers often face significant risks of weather, pests, and market fluctuations. These challenges are common to subsistence and small farmers, but commercial farmers have the resources and knowledge to tackle such challenges (Yanbykh et al., 2019). Working together, small farmers can share these risks and develop strategies to mitigate them. For example, if a group of farmers all plant different crops, they may be less vulnerable to a single bad season affecting a single crop (Ortmann & King, 2006). Similarly, if a group of farmers sell to the same buyer, they may be able to negotiate better prices and have more leverage if the buyer tries to change the contract terms (Ortmann & King, 2006).

Another benefit of agricultural cooperatives is that they can provide a way for farmers and producers to access resources that might otherwise be out of reach. For example, a small group of farmers might not be able to afford a modern irrigation system or a new piece of machinery, but if they pool their resources, they may be able to make the investment crop (Ortmann & King, 2006). Similarly, a group of farmers might be unable to afford the marketing and distribution infrastructure necessary to sell their products in a global market.

However, if they work together, they may be able to tap into these resources. However, trust is needed between small farmers for agricultural cooperatives to succeed.

In addition to these practical benefits, agricultural cooperatives can have social and environmental benefits, thereby contributing to sustainable development. By working together, farmers and producers can share knowledge and skills, build networks, and strengthen their communities (Teodosio, 2009). They can also work together to promote sustainable agriculture practices that benefit the environment and the people who depend on it. In summary, agricultural cooperatives are a valuable tool for farmers and producers who want to achieve common goals, mitigate risk, and access resources that might otherwise be out of reach. They are key to achieving collective goals or the general will of society instead of the will of a few individuals (Gordon, 2009). They can take many different forms and provide benefits to members that go beyond purely economic concerns. As agriculture continues to face significant challenges related to climate change, market volatility, and other factors, agricultural cooperatives will likely play an increasingly important role in helping small farmers and producers succeed (Ortmann & King, 2006).

1.3. Preliminary literature review

1.3.1 Agricultural cooperatives

Agricultural cooperatives refer to farmers and other agricultural producers working collectively to achieve common goals, such as improving crop yields, sharing resources, and increasing profits (Mdluli, 2019). Therefore, agricultural cooperatives follow the concept of communal sharing. This can involve forming cooperative organisations, sharing equipment and labour, and collaborating on marketing and distribution. By working together, Xaba (2020) asserts that agricultural cooperatives can help small-scale farmers compete with larger agricultural businesses and promote more sustainable and equitable farming practices. In this study, the concept of agricultural cooperatives will refer to small farmers who join together to meet the challenge of commercial agricultural organisations.

According to Zegeye and Chipfupa (2018), agricultural cooperatives can be defined as member-owned businesses that pool the market power of individuals who may lack the capacity to succeed independently. Similarly, Ojha (2019) characterises agricultural cooperatives as member-based, democratically managed legal entities that strive to promote their members' social and economic well-being.

In addition, Sims and Kienzle (2017) contend that agricultural cooperatives serve as a platform for delivering various services to members, including providing agricultural inputs, implements, mechanisation, loans, extension services, education, and marketing. Meanwhile, Yadav (2018) describes agricultural cooperatives as businesses owned and controlled by five or more producers who voluntarily operate the enterprise on a non-profit or cost-sharing basis. Consequently, agricultural cooperatives have become a means by which farmers can meet their economic and social needs while minimising expenses and spreading risks, as noted by Nuhanovic-Ribic (2015).

Lerman (2013) identifies two types of agricultural cooperatives: production and service cooperatives. Production cooperatives involve cooperative members working together to engage in agricultural farming jointly. In contrast, Chambo (2009) characterises service cooperatives as entities that supply farm inputs such as fertilisers, machinery, and seeds and processing, storage, and marketing services. For this present study, we will examine the sustainability of production cooperatives compared to service cooperatives.

1.3.2. Sustainability

Agricultural cooperatives operate within a framework that requires a harmonious balance between economic, social, and environmental needs. Candemir, Duvaléix, and Latruffe (2021) posit that sustainability is defined by the ability to progress without compromising the needs of future generations. Therefore, sustainable development is premised on balancing developmental and environmental concerns. It is imperative to scrutinise how cooperatives responsibly conduct their operations to ensure that their activities do not harm the environment.

In South Africa, cooperative sustainability necessitates engagement in environmental impact assessments (EIA) to ensure compliance with governmental regulations on environmental pollution (Marcis, de Lima, and da Costa, 2019). Environmentally conscious cooperatives are expected to cultivate responsibly by employing clean energy sources like solar and wind-powered energy to generate water for irrigation. Depending on the available budget and market dynamics, some agricultural cooperatives may implement greenhouses to conform to climate change demands (Candemir et al., 2021). Alternatively, other cooperatives may collect water through boreholes and create dams to protect the environment.

In certain instances, governments are encouraged to incentivise or reward agricultural cooperatives that exhibit environmentally friendly practices. This could serve as a catalyst for other cooperatives to embrace eco-friendly farming practices.

1.3.3. Governance

In sustainable agricultural cooperatives, governance is a critical aspect that ensures the achievement of their objectives and mission. According to Richter and Hanf (2021), governance refers to the cooperative's ability to function sustainably and remain accountable. However, good governance is highly preferred, which encompasses the transparency of the cooperative's operations and their alignment with its objectives. This study considers good governance as a key aspect of the nature of agricultural cooperatives and their management. The study examines if the cooperative's membership is open to any member and if it has a bureaucratic structure with clear roles and responsibilities for leaders or directors. Additionally, Richter and Hanf (2021) associate good governance with allowing members to participate directly in decision-making processes that affect the cooperative.

1.3.4. Business management

Effective business management is a critical element for ensuring the success of agricultural cooperatives. According to Mdluli (2019), business management involves efficiently administrating a business enterprise. Business management encompasses the strategies and techniques employed in managing a business, including proper accounting and auditing systems that enhance competitiveness and sustainability. In this study, agricultural cooperatives are recognised as organisations that require proficient business management skills for success. As noted by Mabunda (2017), agricultural cooperatives that engage in member training and monitoring already demonstrate effective business management practices and are more likely to prosper. Therefore, agricultural cooperatives must identify and manage risks, maintain accurate financial records, and report their profits and losses regularly. These practices enable agricultural cooperatives to identify gaps and improve their operational systems, enhancing market competitiveness.

1.3.5. Human resource management

The concept of human resources in the context of cooperatives pertains to the management of its members and is essential for its sustainability. Effective human resource management requires various skills (Kenkel & Crossan, 2019). Agricultural cooperatives, for example, need to establish policies that promote the well-being of their members, which may include providing access to training, markets, and credit facilities to enable small farmers to succeed

(Kenkel & Crossan, 2019). Additionally, since disputes can arise in any business operation, cooperatives should have clear rules for resolving disputes among members fairly and equitably. Boland, Hogeland, and McKee (2011) further note that human resource management involves transparent recruitment policies and cooperative leaders who promote, support, and market the cooperative to ensure members can achieve their goals.

1.3.6. Sustainable Development

According to Brundtland Commission (1987), sustainable development is about meeting the needs of the present without compromising the ability of future generations to meet their own needs. In defining sustainability, Brundtland Commission emphasises that when society strives to define and realise their quality of life, the opportunities of future generations should not be destroyed. The World Commission on Environment and Development (WCED) (1987) concurs with Brundtland's definition of sustainable development when defining it as the development that meets the needs of the present without compromising the ability of future generations to meet their needs. Altwegg, Roth and Scheller (2003) also state that the aspect of fairness among and between present and future generations should be considered in using environmental, economic and social resources.

Mugambiwa and Tirivangasi (2017) present social, economic and environmental challenges correlated to sustainable development; these challenges entail climate change, the need to feed a quickly growing population, high poverty rates and environmental degradation. The definition acknowledges that further development is necessary to meet the needs of the present without compromising the needs of the future generation. However, this process has to be realised in a way that respects the limitations imposed by the state of technology and social organisation on the environment's ability to meet present and future needs (WCED, 1987).

Boulanger and Bréchet (2005) describe fundamental principles that should be embraced when dealing with challenging issues of sustainability, namely: interdisciplinary approach; managing uncertainty; a long-range or intergenerational point of view; global-local perspective; and stakeholders' participation.

Murcott (1997) amplifies the three-pillar view ideology of sustainable development. The scholar describes Sustainable development within the framework of nature, social and economy; hence it is the development that synchronises and harmonises economic, social and ecological processes.

According to the WCED (1987), sustainable development is achieved when human activities and doings regarding any system of development, be it social, economic, environmental or political, are aimed at efficient resource utilisation. Sustainable development is the newly emerging area viewed as the heartbeat of the global development agenda, and cooperatives are well-placed to contribute to sustainable development's triple bottom line of economic, social and environmental objectives (ILO, 2015). Congruently, Ibourk and Aynaou (2023) also aver that the 2030 Agenda for Sustainable Development accentuate the integration of models for cooperative organisations as a vital aspect of sustainable development strategies in developing countries. In the context of the current study, the literature underscores that the sustainability of agricultural cooperatives cannot be realised in isolation from the sustainable development pillars such as the social, economic and agricultural environment.

1.3.7. Monitoring

“Monitoring is a continuous function that uses the systematic collection of data on specified indicators to provide management and the main stakeholders of an ongoing development intervention with indications of the extent of progress and achievement of objectives and progress in the use of allocated funds” (OECD 2002a:21, 27). Correspondingly, Kusek and Rist (2004) define monitoring as a constant role that uses logical data collection on identified indicators to display the scope of progress or achievement of an institution, project, or program.

1.4. Problem statement

Cooperatives play an integral role across different parts of the globe; through sustainable agricultural cooperatives, the improvement of food security, employment opportunities, and the economy, amongst several advantages that have been recorded over the years (ICA, 2020; FAO, 2018). Hence, regarding the South African perspective, the National Development Plan (2021) put agricultural cooperatives in the heartbeat of the country's economy and job creation. Similarly, the KwaZulu-Natal Provincial Growth Development Plan (2019) also recognises the duty of agricultural cooperatives to improve livelihoods, especially in rural areas. However, like most countries worldwide, South Africa records increasing survival challenges of agricultural cooperatives (Xaba, 2020; Borda-Rodriguez et al., 2016). Wessels and Nel (2016) identify critical challenges in state-supported cooperatives, including ineffective resource management, inadequate monitoring, and limited market access,

hindering their sustainability and success in South Africa. Dube (2016) also laments the declining share of agricultural cooperatives in the Gross Domestic Product of South Africa from 2.5% in 2015 to 0.3% in the second quarter of 2020. The agency reports that only 32% of the 1,788 cooperatives listed in the DAFF's database are active (Komape, 2018).

Statistics South Africa (2018) shows more allocations of government resources to already staggering agricultural cooperatives as many exhibit poor growths, some close off, and few commercialise. Thaba and Mbotha (2015) caution that small-scale farmers will continue to die or underperform if new sustainability models are not developed for agricultural cooperatives. The PGDP (2019) also calls for developing new models for revitalising cooperatives and small-scale farmers to play a meaningful role in transforming the agricultural sector. That will be one of the study's contributions.

The South African government's goal of increasing the economy, food security, and employment rate is threatened by the high stagnation rate of agricultural cooperatives unless new sustainability models are established (Daff, 2018). Preliminary research was conducted on the two agricultural cooperatives on the South Coast of KZN Province. The research looked at the sustainability aspect of two cooperatives. One is state-funded, and the other is a non-governmental agricultural cooperative. The challenges of state-funded agricultural cooperatives observed are lack of resource management, project close monitoring, and market access. On the other hand, the research also showed that non-governmental-funded cooperatives are more successful than state-funded ones. Hence, the envisaged study aims to change some of the challenges to the success of agricultural cooperatives.

1.6. Aim of the study

The study aimed to investigate the challenges that hinder the growth of cooperatives and assess factors that contribute to their growth by developing a model of sustainability. In achieving this, the study measured agriculture cooperatives' business commitment to various sustainability aspects.

1.7. Research Objectives

The following are the key study objectives:

- I. To determine whether agricultural cooperatives have monitoring mechanisms to ensure sustainability in KwaZulu-Natal.

- II. To examine the relationship between resource management and sustainability of agricultural cooperatives in KwaZulu-Natal.
- III. To assess the relationship between the agricultural environment and sustainability of agricultural cooperatives in KwaZulu-Natal.
- IV. To explore the impact of good governance on the sustainability of agricultural cooperatives in KwaZulu-Natal.
- V. To explore the social and economic factors that impact the sustainability of agricultural cooperatives in KwaZulu-Natal.
- VI. To suggest a model to enhance the sustainability of agricultural cooperatives in KZN.

1.8. Research Questions

- I. Are there monitoring mechanisms available for agricultural cooperatives in KwaZulu-Natal to ensure their sustainability?
- II. What is the relationship between resource management and the sustainability of agricultural cooperatives in KwaZulu-Natal?
- III. What is the relationship between the environment and the sustainability of agricultural cooperatives in KwaZulu-Natal?
- IV. What good governance aspects exist that impact the sustainability of agricultural cooperatives.
- V. What social and economic factors impact agricultural cooperatives' sustainability in KwaZulu-Natal?

1.9 Brief research methodology

Research methodology encompasses the methods the researcher employs to gather and analyse data. Typically, researchers adopt one of three data collection approaches: qualitative, quantitative, or mixed methods (Creswell, 2013). As Martin and Bridgmon (2012) assert, qualitative research involves interpreting and describing human behaviour to make sense of the world. This approach seeks to answer questions related to the how, when, and why of human behaviour, and data is non-numerical, open to interpretation, and subjective (O’Cathain et al., 2010). On the other hand, quantitative research concerns numeric data that can be quantified and analysed using statistical methods. Researchers typically use this approach to test hypotheses and answer questions that can be measured through numerical data. In contrast, the mixed methods approach combines qualitative and quantitative methods

to gain a more comprehensive understanding of the research topic by overcoming the limitations of each approach.

This study employed a quantitative approach to data collection and analysis. This approach was deemed more suitable for the study given the large sample size of 367 people from 99 agricultural cooperatives in KwaZulu-Natal province, which allowed for generalisation to the total population of 1278 (Martin, 2021). Chapter three of this study provides a detailed description of the research methodology. The rationale for choosing this approach over the qualitative or mixed methods approach is that it allowed for more precise and objective data analysis, essential for generalising findings to the population under study. Moreover, statistical tests facilitated hypothesis testing, a critical component of quantitative research (Creswell, 2013).

1.10 The rationale of the study

The proposed study sought to assist agricultural cooperatives in plugging their business plans into the sustainability model to enhance the success rate. The study's findings are critical towards influencing the policy formulation process to resolve blockades towards the sustainability of agricultural cooperatives. The study's novelty lies in the ability to suggest a model that enhances the sustainability of agricultural cooperatives in KZN, which will contribute to the body of knowledge. There is a gap in the literature for a sustainability model which looks at the combined behaviour of resource management, good governance, sustainability monitoring, market access, and social and economic aspects in agricultural cooperatives.

1.11. Scope

The study is restricted in terms of geographical, conceptual and methodological aspects to attain the study's objective within the time and budget framework. The research is delimited in KZN only in terms of geographical delimitation. Conceptually it is confined only to factors such as performance monitoring, resource management, governance, and social and economic impact. Methodologically, the research focused on agricultural cooperatives with more than three years of establishment.

1.12. Context of the study

South Africa records increasing survival challenges of agricultural cooperatives (Ashley, 2016). For instance, only 32% of the 1,788 cooperatives listed in the Department of Agriculture, Forestry and Fisheries (DAFF) database are active (Komape, 2018). More resource allocation to the staggering cooperatives but with limited success (DRDLR, 2018). Hence, the Provincial Growth Development Plan (PGDP) (2019) also calls for new models to solve the sustainability problem of South African agricultural cooperatives.

Preliminary research was conducted on two agricultural cooperatives on the South Coast of KZN. The research looked at the sustainability aspects of two cooperatives. One is state-funded, and the other is a non-governmental agricultural cooperative. The challenges of state-funded agricultural cooperatives were poor resource management, the negative effects of climate change and lack of good governance. The research also showed that non-governmental funded cooperatives are more successful than state-funded.

1.13. Limitations of the study

The study targeted agricultural cooperatives that have received support from either government or private organisations. The research instrument utilised in this study comprises questionnaires to solicit information from all 176 supported agricultural cooperatives. Due to various challenges, the study considered only 99 agricultural cooperatives and 367 samples (members of agricultural cooperatives). Furthermore, the research is limited to agricultural cooperatives from the KwaZulu-Natal Department of Agriculture and Rural Development (DARD). This may restrict the research's ability to conclude about other agricultural cooperatives that are not supported.

1.14. Delimitation of the study

The present study is delimited to the analysis of agricultural cooperatives exclusively. While a diverse range of cooperatives spans sectors, including finance, healthcare, and housing (Kumar et al., 2015), this research exclusively targets agricultural cooperatives. Specifically, the study is limited to agricultural cooperatives in the KwaZulu-Natal province, South Africa. The decision to focus on this region was based on the fact that the province boasts ample study samples that can effectively address the research objectives. Moreover, the researcher's familiarity with the region, having grown up in KwaZulu-Natal, provides a valuable

understanding of the challenges encountered by agricultural cooperatives in the area. As such, this study provides an in-depth analysis of the specific context of agricultural cooperatives in KwaZulu-Natal to provide insight into the factors that affect the sustainability of these cooperatives.

1.15. Outline of the thesis

This thesis is structured into six chapters, structured as follows:

Chapter 1 provides the introduction and background to the study. This chapter provides a summary of the study, the motivation, and the rationale behind the study. The historical background of the study is discussed in detail to provide readers with enough details on the importance of agricultural cooperatives in South Africa and when and why they were introduced. The chapter is like a roadmap of the study as it discusses its research problem and significance. The main concepts of the study are also discussed to clarify the meaning of cooperation in the South African context.

Chapter 2 reviews the literature linked to the study focusing on the overview of cooperatives. It provides a description of cooperatives in general and agricultural cooperatives. It engages case studies on agricultural cooperatives across the globe, providing insight into their impact in addressing food security and socio-economic challenges. It concludes by reflecting on the advantages of agricultural cooperatives in the South African context.

Chapter 3 further reviews literature focusing on the sustainability of agricultural cooperatives. It unpacks the concepts of sustainability and sustainable development and discusses agricultural cooperatives and sustainable development in South Africa. The chapter concludes by discussing the main theories used to guide the study. A conceptual framework for the sustainability of agricultural cooperatives was discussed, incorporating social, economic, environmental, and business monitoring mechanisms, resource management and governance issues.

Chapter 4 provides a methodology for the study. This chapter discusses the methods used by the study to collect primary and secondary data related to the study. The study is quantitative research. Therefore, the chapter discusses the sampling techniques, sample size, limitations of

the study as well as the ethical considerations of the study. The chapter is crucial in summing up how credible and reliable is the primary data of the study.

Chapter 5 provides the presentation of the findings. This chapter summarises the study's findings obtained through a quantitative approach. The chapter provides demographic data, business management and monitoring mechanisms, environmental management, and sustainability of agricultural cooperatives in South Africa and the importance of good governance for the success of agricultural cooperatives. The chapter presents and analyses data by comparing it to the secondary literature of scholars reviewed in chapter two.

Chapter 6 provides a discussion of the findings. This chapter discusses the study's main findings by combining the secondary literature and primary literature on business management and monitoring mechanisms, environmental management, and the suitability of agricultural cooperatives in South Africa. These findings are discussed through the theoretical and conceptual theories of the study discussed in chapter two.

Chapter 7 presents the summary, conclusion, and recommendations of the study. The chapter summarises the study's findings by linking them to the research objectives or main questions. The chapter explains how the research objectives were met by reviewing secondary and primary data. The chapter is important because it explains the importance of the research and its contribution. It concludes by providing recommendations for the study and for future studies on agricultural cooperatives in South Africa.

1.16 Chapter Summary

The study's background, problem statement, rationale, aim and objectives were all presented in this chapter. The study's limitations, delimitations, and the thesis's basic outline are also provided. The literature reviewed for the study is discussed in the following chapter.

2. Literature Review

2.1. Introduction

This chapter discusses the literature that provides a global overview of cooperatives, including their formation rationale and contribution to enhancing the socio-economic status of individuals worldwide. Examining agricultural cooperatives' operations across multiple continents helps reflect and comprehend diverse contexts. By considering the lessons learned by agricultural cooperatives in different countries, the chapter will reflect on how various aspects of South African agricultural cooperatives can benefit from their experiences in shaping their business interests. The chapter begins by conceptualising cooperatives and presents various global overviews of agricultural cooperatives. The researcher has reviewed case studies from Asia, Europe, Africa, North America, and South America to gain in-depth insights into the available information on agricultural cooperatives. Hence, this study utilizes various case studies to provide comprehensive insights into the existing information on agricultural cooperatives.

The literature chapter will further explore monitoring mechanisms for agriculture cooperatives and examine the relationship between resource management and sustainability. In terms of ethics and governance, the literature will explore the impact of good governance on the sustainability of agriculture cooperatives. The concept of sustainability will be explored considering economic, social and agricultural environmental factors that impact agricultural cooperatives.

2.2. The origins of the cooperative movement

Guatemala (2015) points the history of cooperatives in England back to the Industrial Revolution as it gave rise to the emergence of cooperative societies in the world. Mazzarol (2009) shows that since 1498, there has been some determination made at the formation of cooperative society which include the establishment of Shore Porters in Aberdeen and the Fenwick Weavers Society in Scotland. The formation of the Rochdale Society of Equitable Pioneers in 1844 is viewed as the foundation of the current cooperative (Satgar 2011, Towsey 2010). The Rochdale Society constructed a small consumer store for its members to purchase flower and sugar and subsequently extended to housing (Zeuli and Cropp 2004). Zeuli (2004) also substantiates the assertion that cooperatives around the world were inspired by Rochdale

society and are built on the principles, which the Rochdale society established. On the same note Ajayi (2022) claims that the development of the modern cooperatives was interpreted as a response to the harsh socio-economic conditions prompted by the effects of the industrial revolution.

However, Tchami et al. (2007) view Industrial revolution as the main contributing factor towards the formation of cooperatives as skilled artisan and unskilled laborers lost their jobs due to retailed of production. Supporting the above assertion, Okem (2016) postulates that the advent of modern cooperatives was due to the threatening socio-economic conditions aggravated by industrial revolution. On the other hand, Hart (1995) cites various reasons behind the formation of cooperatives. The reasons include the need for better housing, jobs, food, education and social related necessities. According to Okem (2016), the cooperative sector is an indispensable and integral part of the global economy.

Congruently, in the African perspective, according to Cooperative Development Institute (2011), the formation of cooperatives in Africa was prompted by the loss of employment by the factory workers coupled with the disadvantaged position of small-scale producers. Hence the Cooperative model of economic organization was seen as the sole solution to safeguard the collective interest of the poor and vulnerable. Similarly, Jarka et al. (2003) argues that for the cooperatives to have more power during the bargaining process the peasants were mobilized to act against capitalistic exploitation. De Peuter and Dyer-Witthford (2010) also assert that the advent of cooperatives was in the late 19th centuries in defiance of the abusive capitalist method. The advent of cooperatives according to the above authors was instrumental in terms of addressing the socio-economic wellbeing of people globally. Okem (2016) states that the cooperative movement is one of the most organized social forces on the African continent. Wanyama (2016) adds that the cooperative movement in Africa plays a crucial role in economic and social transformation and in many parts of Africa it constitutes a parallel cooperative sector and economy.

Mhembwe (2017) states that in Malawi cooperatives were started so that farmers can improve their livelihood to have access to capital and markets. However, these cooperatives faced problems, which include lack of market access, poor governance and lack of managerial skills. Mohlala (2020) further mention that the government of Kenya developed a number of initiatives to promote cooperatives, such as the establishment of the Ministry of Cooperatives and Marketing, which was developed to specifically focus on the development

of cooperatives in Kenya. Okem (2016) adds that the government of Kenya also provides a favorable environment through a legislative framework, a cooperatives policy, and a strategy. The legislation is implemented at all levels, including national, district and local levels. Barati (2017) also confirms the meaningful role played by cooperatives in nourishing rural livelihoods and fighting poverty in Africa. In countries such as India and Iran cooperative sector is one of the biggest economic sectors assigned with the duty to develop the livelihoods of rural communities by improving agricultural sector (Komape, 2018). Whereas in Nigeria cooperatives are regarded as a conduit for quick access to financial resources with reasonable interest rate (Sofoluwe, Ogunola, and Hassan, 2020). However, Iyer, Gopal, Dave and Singh (2021) caution about government's lack of understanding of cooperatives' characteristics to the extent of imposing regulations hindering the success of cooperatives. For instance, in many developing countries such as Indonesia, the government has performed as both initiator and demolisher.

In the South African context, Rena (2017) posits that, cooperatives were firstly formed in the agricultural sector in the beginning of the 19th century. Farmers started to mobilizing themselves into societies in the four main colonies namely: Natal, the Cape Province, the Transvaal and the Orange Free State. Although the principles of cooperation have been modified over time, the South African cooperatives in many ways are influenced by the same principles of "Rochdale Society of Equitable Pioneers, Ltd". Affirming the foregoing narrative is Hoyt (1989) who claims that modern cooperative started in Europe and spread to other industrializing countries including South Arica during the late 19th century as a self-help method to counter extreme conditions of poverty.

While various conceptualizations of cooperatives exist, there has been a growing acceptance of the International Cooperative Alliance's (ICA) definition. ICA defines a cooperative as a self-governing group of individuals who voluntarily come together to meet their common economic, social, and cultural needs through a jointly owned and democratically controlled enterprise (ICA, 2015; ICA, 2011). This definition is based on seven fundamental principles developed by the Rochdale Pioneers in 1844, which have become the cornerstone of the cooperative movement worldwide (ICA, 2015). Similarly, Bonner, Baumann, and Dalal (2002) define a cooperative as an association of individuals collaborating to achieve social and economic benefits through shared advantages.

Briscoe (1991) asserts that a cooperative is a business organisation democratically owned and managed by its clients, producers, or employees. Peng (2017) concurs with Briscoe's definition, describing a cooperative as a member-owned, member-used, and member-controlled enterprise that equitably distributes benefits based on use or patronage. Xangyu, Jing, and Feng (2018) also describe cooperatives as mutual aid economic organisations voluntarily joined and democratically managed by the producers and service users for the same agricultural production and operation.

The United States Department of Agriculture (USDA) in 1987 emphasized the general principle of cooperatives, including user ownership, user control, and the proportional distribution of benefits, providing support for Peng's (2017) and Briscoe's (1991) definitions. However, the ICA's (2011) definition's novelty and strength lies in its incorporation of social and cultural elements of the cooperative movement, extending beyond solely economic aspects. Therefore, this proposed study will focus on the ICA's definition of cooperatives as it includes crucial features for the sustainability of agricultural cooperatives.

2.3. Principles of cooperatives

Prakash (2003) presents nine cooperative principles, in terms of the 1995 ICA statement of the cooperative identity which should be implemented by cooperatives including agricultural cooperatives. These cooperative principles are as follows: (1) voluntary and open membership, (2) democratic member control, (3) member economic participation, (4) autonomy and independence, (5) education, training, and information, (6) cooperation among cooperatives, and (7) concern for the community.

According to Malherbe (2020), cooperative principles are essential for the governance of member organizations, and they are widely applied in many regions. However, for a cooperative to achieve sustainability, it must fully adhere to these principles, as asserted by Mushonga (2018) and Novkovic (2021). Moreover, Waikato (2018) postulates that an ideal agricultural cooperative should incorporate and implement cooperative principles in its cooperative law to function without governance snags. Conversely, Ortmann & King (2006) caution that agricultural cooperatives that do not comply with cooperative principles will find it challenging to exist. Gena (2015) contends that cooperative principles are the lifeblood of a successful agricultural cooperative, while Chakraborty (2021) adds that the principles lay the foundation for a cooperative to adapt and survive. Puri and Walsh (2018), agree with Lemmi,

(2020) that cooperatives principles should be the overarching factor for their success and sustainability.

However, Malherbe (2020) warns that the interpretation and application of cooperative principles into governance instruments of agricultural cooperatives may not always be effective. The above scholar adds that legislation and cooperative constitutions sometimes fail to provide a sound governance system to safeguard members. The compliance of cooperative members with these ethics. Nevertheless, Prakash (2003) warns that the following cooperative principles should be implemented in their purest form, and care should be taken to ensure that they are accurately interpreted and applied.

2.3.1. Open and voluntary membership

The concept of voluntary and open membership is a core principle of the cooperative movement, according to the International Cooperative Alliance (ICA, 2015). The principle requires cooperatives to refrain from discriminating against people based on their gender, social, racial, political, or religious status (Okem, 2016). Simamba (2018) further emphasizes that cooperatives should be welcoming to old, new, and potential members without any discrimination. Similarly, Twagirumukiza (2016) asserts that cooperatives should be voluntary organizations that allow people to join voluntarily and commit to achieving shared economic, social, and cultural goals.

According to ICA (2015), any person who can use the services provided by the cooperative and is willing to accept the responsibilities of membership can join the cooperative. These responsibilities include contributing funds, time, inputs, and other resources necessary for the cooperative's operation. Rena (2017) suggests that cooperatives should have at least five members, and this principle should apply. However, Malherbe (2020) cautions that although this principle promotes free entry and exit, it does not necessarily mean that cooperatives should admit an unlimited number of members. Depending on their capacity and nature, some cooperatives may only allow a certain number of members (Mohlala, 2020).

Iliopoulos and Valentinov (2018) warn against the unrestricted entry and exit of members into cooperatives, noting that the radical and dynamic changes in the business environment create persistent member heterogeneity issues worldwide. In contrast, Grashuis and Lee Cook (2020) argue that although heterogeneity in membership is widely criticized, it can help cooperatives engage effectively in collective action and share experiences, opinions, and innovations.

In the context of agricultural cooperatives in KwaZulu-Natal, it is unclear whether they adhere to the fundamental principle of voluntary and open membership. Mushonga (2018) emphasizes that to achieve sustainability, agricultural cooperatives must embrace cooperative principles, including the principle of voluntary and open membership. Therefore, it is necessary for agricultural cooperatives to embrace this principle to realize sustainability and growth.

2.3.2. Democratic processes by cooperative members

Agricultural cooperatives are organisations that are self-governing and controlled by their members, who actively participate in the decision-making process and policy formulation (ICA, 2015). Members have equal voting rights and elect representatives who are answerable to them. This principle of democratic member control is essential to the cooperative movement and ensures commitment to fulfilling the needs of its members (Mhembwe, 2017).

While members have a responsibility to ensure good governance, it may not be practical for all members to manage the business conjointly, hence the appointment of directors to oversee the governance of the cooperative business (Mangla, Kumar, & Barua, 2015). Nevertheless, the principle of democratic control ensures that the cooperative is not taken over by members with higher assets or outsiders such as governments and development organizations (Okem, 2016). The independence of cooperatives is crucial to their success, as it allows them to operate as business organisations owned by community members and funded by members' contributions and retained earnings (Gotyi, 2019).

The International Labour Organization (ILO) cautions against any direct government control of cooperatives as it goes against the global support for self-help fundamentalism, which develops cooperatives from the bottom-up approach (ILO, 2010). Instead, the ICA (2007) recommends that cooperatives utilize surpluses to improve their operations, pay out proportionately to members' contributions, and channel surpluses towards community development programs.

However, the nature of the relationship between agricultural cooperatives and the government in the Province of KwaZulu-Natal is unclear. There is a risk that the government may use a top-down approach to limit the independence of cooperatives and hamper them from realizing their full potential (Mohlala, 2020). Therefore, there is a need for agricultural cooperatives in KwaZulu-Natal to adhere to the principle of democratic member control and

to maintain their independence as self-governing organisations owned by community members.

2.3.3. Member economic participation

The concept of user-owned and operated cooperatives is rooted in the idea that members are required to contribute equally to the cooperative, as explained by the International Cooperative Alliance (ICA) in 1995. However, the amount of contribution depends on the type of cooperative and the sector in which it operates, as pointed out by Novkovic, Puusa, and Miner (2022). Qu et al. (2020) further emphasize that cooperatives are established from the joining fees, shares, and members' funds, and each member is required to pay a joining fee.

The ownership and control of cooperatives lie in the hands of their members, according to ICA (1995). Therefore, the economic benefits are utilized by the members, as also noted by Okem (2016). The surplus generated can be used for the development of the cooperative by setting up reserves, and part of it can be distributed to members in proportion to their transactions with the cooperative. Additionally, it can be used to support other initiatives approved by the members, as stated in ICA News (1995). The primary purpose of cooperatives is to meet the needs of the people rather than generate a return on capital invested, as argued by Mhembwe (2018). However, the agricultural cooperatives in South Africa, including those in KwaZulu-Natal, are often unable to address the needs of their members and communities, as pointed out by Mohlala (2020).

Although cooperatives are expected to be self-sustaining, many agricultural cooperatives in KwaZulu-Natal are dependent on government funding for their survival, as highlighted by Okem (2016) and Mushonga (2019). This overdependence on government funding renders these cooperatives non-viable, unsustainable, and unable to promote community development. It raises questions about the sufficiency and meaningfulness of members' contributions towards the survival of cooperatives. It is also unclear whether all members, especially those in impoverished communities, contribute to the joining fees required for the cooperative to function.

To address this issue, Malomane (2019) suggests that smallholder farmers should explore the possibility of establishing a Cooperative Financial Institution (CFI) and, ultimately, a cooperative bank owned by all smallholder farmers to provide funding for their survival.

Verhees, Sergaki, and van Dijk (2015) highlight the importance of member contributions as it enhances active member participation and the well-being of the cooperative.

In summary, agricultural cooperatives are founded on the principle of user-ownership and control. Members contribute to the cooperative through joining fees, shares, and funds, and the generated surplus is used to develop the cooperative or support other initiatives approved by the members. While the primary goal of cooperatives is to meet the needs of the people, most agricultural cooperatives in KwaZulu-Natal are dependent on government funding for their survival, which raises questions about the sufficiency and meaningfulness of members' contributions. The establishment of Cooperative Financial Institutions (CFI) and the active participation of members can provide a viable alternative to government funding for the survival of agricultural cooperatives.

2.3.4. Autonomy and independence

Agricultural cooperatives are independent and self-help organizations controlled by their members, according to the ICA (2015) and Saleh and Hamzah (2017). This autonomy provides assurance that cooperatives are not influenced into satisfying the needs and aspirations of external agents at the expense of members' needs and aspirations, as noted by Maiwashe (2017). Therefore, Kumar (2015) suggests that the government's role should be limited to providing an enabling environment for the growth of cooperatives as self-governed organizations, with favourable tax policies that inspire investing profits back into cooperatives to solidify the cooperative movement, according to Okem (2016).

The Report of an Expert Group Meeting held in Ulaanbaatar, Mongolia (2002), suggests that governments should develop national cooperative policies that safeguard and enhance the capacity of cooperatives to aid their members in attaining their individual goals while also contributing to society's broader goals, according to the United Nations (2002).

However, according to Gotyi's (2019) study, the majority of cooperatives in the Chris Hani District Municipality were established by the government, forfeiting their autonomy and independence, contrary to the ICA (2013) cooperative principle that supports the formation of cooperatives by communities. Thaba et al. (2015) also lamented the lack of cooperatives' autonomy and independence as a result of government and agency interference, ultimately causing a high failure rate among cooperatives. Shava and Hofisi (2019) underline the lack of autonomy among cooperatives in South Africa, causing cooperatives to lose direction for their goal.

Onyeze, Ochiaka, & Okonkwo (2018) concluded that the funding dispatched by the government to cooperatives is a gift that requires something in return, resulting in government control. Rwekaza, Kayunze, and Kimaryo (2018) caution that the government should not limit its role to the regulation and taxing of members' produce but should also create an enabling environment for cooperative businesses to flourish.

Considering the above, the government needs to reconsider its relationship with cooperatives and create an enabling environment for cooperatives to thrive without taking ownership of the cooperative business. Cooperatives need to be continuously trained to fully comprehend their ownership rights, which will avert external interference from the government and agencies.

2.3.5. Education training and information

The importance of education and training for cooperative members is highlighted in the fifth principle of the cooperative movement. The International Cooperative Alliance (ICA) emphasizes the need for education and training for cooperative members, appointed representatives, directors, and employees to enable them to participate actively in the management and functionality of their organization (ICA, 2015). Mohlala (2020) argues that education and training empower cooperative members to make informed decisions and participate actively in the development of their organization. Similarly, Mhembwe et al. (2017) suggest that cooperative members should receive continuous training on leadership and management programs to enable them to expand and diversify their business operations.

However, Ingutia and Sumelius (2022) note that the lack of skilled management, capital, corrupt practices, and a lack of commitment from both members and management often results in the absence of education and empowerment services for cooperative members. Consequently, poor management and training are cited as major challenges leading to the demise of cooperatives (Zantsi, 2021).

The ICA (2015) defines education in the cooperative context as the understanding of cooperative principles and values and their application in the day-to-day operations of a cooperative business. Anania and Rwekaza (2018) posit that cooperative education and training systems are empowering tools for capacity building among cooperatives and achieving desired ends, including the better provision of services to fulfil members' needs. Tchami (2007) underscores the importance of capacity building for cooperative members, managers, and representatives to grow their businesses. Okem (2016) further maintains that

education and training empower cooperative members to make well-informed decisions for the sustainability of their business.

The success of the cooperative movement is dependent on the education and training of cooperative members and the implementation of cooperative principles, practices, and methods as a means of running a business (Anania & Rwekaza, 2018). Gimenes, Tapia, Erlaine, and Gimenes (2018) contend that cooperative training is a necessary tool for attaining excellence in management and competitiveness. Thus, Mabunda (2017) urges policy makers and agencies to develop sufficient developmental programs to improve the sustainability of cooperatives. Anania and Rwekaza (2018) also suggest that the provision of education and training enhances the performance of various types of organizations, including cooperatives. However, Kinyuira (2017) notes that many cooperatives lack a clear strategic focus on cooperative education and assume that seeking services, attending occasional meetings, and viewing cooperatives solely as a business is sufficient.

Furthermore, Idrus, Ahmar, and Abdussakir (2018) highlight that empowering employees through education and training leads to job satisfaction, which, in turn, leads to optimal productivity. Thus, education and training are essential not only for the sustainability of cooperatives but also for the satisfaction and productivity of employees.

2.3.6. Cooperative among cooperatives

The cooperative movement has been a longstanding approach to promoting collaboration and mutual support among members, particularly in the agricultural sector. Agricultural cooperatives have been used as a means to increase the bargaining power of small-scale farmers and provide them with access to markets, credit, and technical assistance. The sixth principle of the cooperative movement emphasizes the importance of promoting cooperation among cooperatives through networking, as outlined by the International Cooperative Alliance (ICA, 2015).

In recent years, scholars have examined the benefits of cooperation among cooperatives, particularly in the agricultural sector. Mohlala (2020) argues that collaboration between cooperatives can lead to increased knowledge sharing, improved competitiveness, and enhanced market opportunities. This sentiment is supported by Okem (2016), who emphasizes that cooperation among cooperatives can provide a strong network and strategic positioning to harness the benefits of economies of scale. Similarly, Mhembwe et al. (2017)

contend that the viability and sustainability of the cooperative movement are enhanced through support and opportunities that emerge from collaboration among cooperatives.

In the context of KwaZulu-Natal Province, where smallholder agricultural cooperatives face stiff competition from well-resourced commercial farmers, collaboration among cooperatives can provide benefits such as subcontracting services to other cooperatives in the network, resulting in better profits, reduced transaction costs, and guaranteed business opportunities. According to Zhang, Luo, and Li (2021), the cooperative model, especially in agriculture, provides a parallel supply chain network that unites farmers' power and helps them achieve economic benefits.

To support the importance of cooperation among cooperatives, Nuhanović-Ribić (2015) argues that a strong social capital in the form of a cooperative enterprise can lead to better overall performance in the long run. The Department of Agriculture and Rural Development (DARD) Annual Report 2016/17 highlights the clustering of agricultural cooperatives into Communal Estates in KwaZulu-Natal Province with the aim of promoting collaboration and strengthening the cooperative movement. However, the report does not indicate whether the strategy yielded the intended results.

Okem (2016) concludes that training and support provided to cooperatives should focus on highlighting the benefits of networking to implement cooperation among cooperatives. The author also suggests providing support to groups of cooperatives to create networking opportunities that foster collaboration among cooperatives. Overall, cooperation among cooperatives can lead to increased market access, bargaining power, and competitiveness for smallholder farmers in the agricultural sector.

2.3.7. Concern for community

Agricultural cooperatives have become a significant instrument for social and economic development across the globe. The cooperative movement is built on principles and values that prioritize the social aspect of the business, emphasizing the sustainable development of communities in economic, social, and cultural terms. As such, cooperatives are seen as agents of social change that aim to improve the socioeconomic status of their members and the communities in which they operate.

The International Cooperative Alliance (2007) views cooperatives as an economic model rooted in grassroots, which must have a strong concern for the immediate community in which they operate. Similarly, scholars such as Shava and Hofisi (2019), Mushonga (2018),

and Mhembwe et al. (2017) argue that the implementation of cooperative movement principles and values is non-negotiable for agricultural cooperatives to become sustainable. They suggest that cooperatives have the capacity to create more significant social and economic spinoffs within a community than non-cooperative firms. In addition, Tang, Sipiläinen, and Fu (2020) emphasize that social responsibility is a natural duty of cooperatives, and accomplishing social obligation is of great significance to the sustainable development of cooperatives and society.

Moreover, cooperatives are guided by ethical values such as honesty, openness, social responsibility, and caring for others. The International Cooperative Alliance (2007) asserts that fundamentally, a cooperative exists to advance the socioeconomic status of its members, while the South African Cooperatives Development Policy (2005) highlights the importance of cost-effective, efficient, and easily administrative self-help economic projects such as cooperatives in poverty-stricken communities. Similarly, Gotyi (2019) postulates that the development of cooperatives focuses on historically disadvantaged communities as a tool to alleviate poverty and match the first and second economies through job creation.

The values of self-help, self-responsibility, democracy, equality, equity, and solidarity underpin the cooperative movement. These values ensure that cooperatives not only focus on the economic aspect of members but also on the empowerment of members to become active agents for social change in their community. The social responsibility of cooperatives is further affirmed by Zhang, Luo, and Li (2021), who argue that cooperatives exist to achieve economic or social benefits for farmers.

The cooperative model is a social development strategy that assists people, especially women, in working towards the sustainability of their livelihoods. The sustainable development of communities depends on the capability of cooperatives to support those communities to grow in a sustainable way, as emphasized by Dufays, Shea, Huybrechts, and Nelson (2020). Therefore, the social aspect of agricultural cooperatives is crucial to achieving their economic goals and empowering members to become active agents for social change in their community.

2.4. Cooperative ethics and values

2.4.1. Ethics

Agricultural cooperatives have become an increasingly popular economic model globally. To ensure their success and sustainability, ethical standards and values have been put in place to guide their functionality. These standards and values are expected to be upheld by cooperative members to promote collective societal interest and minimize conflicts that may arise. The ICA 2015 developed a set of ethical principles that govern the operation of all cooperatives worldwide. Bernardo (2016) emphasizes the importance of cooperatives adhering to these standards to remain credible and successful.

Simamba (2020) defines cooperative ethics as the minimum standards of conduct that cooperative members are expected to uphold, including honesty, openness, social responsibility, and caring for others. The compliance of cooperative members with these ethics helps prevent self-serving interests at the expense of the community. Similarly, the ICA (1995) asserts that cooperative values, including self-help, self-responsibility, democracy, equality, equity, and solidarity, serve as benchmarks through which members should work towards serving the societal interest rather than individual interests. This promotes the collective welfare of members and the community at large, reducing the likelihood of dysfunctional conflicts within cooperatives. In summary, adherence to ethical standards and values in agricultural cooperatives is crucial for their success and sustainability. By promoting collective societal interests, cooperatives can minimize conflicts and ensure the well-being of their members and communities.

2.4.2. Values

Tshishonga and Bandyambona (2016) argue that to address socio-economic matters, South African cooperatives must embrace the values of the cooperative movement. Martin (2021) outlines five values recognized by the International Cooperative Alliance (ICA) in 1995 that are expected to underpin all actions of cooperatives. These values include self-help, democracy, equality, equity, and solidarity.

The value of self-help obligates members of cooperatives to have the determination and capacity to advance their standards of living through shared action instead of depending on external resources and individual efforts. ILO (2014) supports this, stating that cooperative members should have the determination and ability to advance their living standards through combined action, as opposed to individual efforts and depending on external resources.

Democracy is another important value, as members are the basic components of the cooperative and have the right to partake, be listened to, be knowledgeable and be involved in decision-making. As cooperatives are organized around the principles of democracy, members have the right to partake, be heard, be informed and be involved in decision-making. This stems from the fact that a member is a basic unit and source of authority in the cooperative (ICA, 2015). Equality ensures that members have the same rights and chances to partake in and improve the use of society's resources without any partialities, which assists in the improvement of mutual understanding and solidarity and reinforces the ethical conduct of members.

Equity advocates for the equitable distribution of proceeds and control in the cooperative society without any form of discrimination. Lund (2013) emphasizes that since cooperatives are organized around democratic principles, the cooperative society must share income and power in a fair manner without any form of discrimination. Hence, rewards for active participating members should be equitably distributed through patronage bonuses, dividends, allocation of capital reserves, and an increase in services or reduction in charges (ICA, 2015).

Solidarity is the last value that cooperatives should draw strength from by collaborating with other cooperatives and taking shared responsibility for the well-being of the members. Simamba (2020) highlights the importance of cooperatives' compliance with these values to enhance work ethics and sustainable performance. Mangla, Kumar and Barua (2015) also agree that these values govern the operations of cooperative businesses. There is a consensus in the literature that the good performance of agricultural cooperatives depends on the presence of good governance elements. The proposed study aims to understand the governance aspects that impact the sustainability of agricultural cooperatives in KwaZulu-Natal.

2.5. The Design of the Co-Operative Institutional Model

The International Co-operative Alliance (ICA) defines a cooperative as an autonomous association of individuals who voluntarily join together to meet their economic, social, and cultural needs and aspirations through a jointly-owned and democratically-controlled enterprise (ICA, 2015). This implies that cooperatives are network-structured organizations and electoral associations, which naturally have a representative structure and delegation of control rights (Taylor, 2015). Unlike investor-owned firms, where governance rights are

determined by the number of shares owned, Lund (2013) argues that cooperative patrons have common governance rights through an equitable one-member, one-vote standard. As per ICA (2015), cooperatives are democratic organizations that are owned and controlled by their members, who formulate policies and make decisions for the organization. Taylor (2015) highlights the pluralist approach to membership involvement, which can result in the development of organizations that are better connected to stakeholder needs and local circumstances, thus enhancing organizational robustness.

2.5.1. Structure of Cooperatives: Internal and External

Cooperatives are formal organizations that have an internal and external structure guiding their operations (Simamba, 2018).

2.5.1.1. Internal Structure of Cooperatives

The internal structure of cooperatives is composed of three crucial layers: members, board of directors, and staff.

Members

All cooperatives are made up of general membership who own and control the affairs of the organization. However, since it is impractical for all members to run the cooperative at the same time, the members delegate their power to the board of directors, whom they elect from amongst themselves during annual general meetings (ICA, 2015). The board of directors is thus responsible for representing and protecting the interests of the members.

Board of Directors

The board of directors is elected from the general membership during annual or special general meetings and is responsible for ensuring that the cooperative's strategic direction is achieved (South African Co-operatives Act, 2013 as amended). The board of directors also assesses managers' performance and delegates some of their powers to the cooperative's staff. According to Zivkovic, Hudson, Johnson and Park (2016), the board of directors must also appraise management's performance.

In discharging their duties, the board of directors must work within the legal framework, as highlighted by Henry (2012) and Mohlala (2020). Failure to adhere to the legal framework may result in poor governance, which can lead to the demise of cooperatives, as seen in the case of agricultural cooperatives in South Africa (Xaba, 2020). The lack of good governance has been attributed to the failure of cooperatives in South Africa, and there is a need to assess

the impact of good governance on the sustainability of agricultural cooperatives in KwaZulu-Natal.

Staff

The employees of the cooperative society work on a daily basis and are accountable to the board of directors on behalf of the general membership (ICA, 2015). Zantsi (2021) contends that for agricultural cooperatives to thrive, managers or extension specialists should be hired to share their sound entrepreneurial and farming skills for the sustainability of the business.

Cooperatives have an internal structure that is composed of members, board of directors, and staff. The board of directors is responsible for ensuring that the strategic direction of the cooperative is achieved, and they delegate some of their powers to the cooperative's staff. Good governance is crucial for the sustainability of cooperatives, and adherence to the legal framework is important in ensuring good governance. The employment of managers or extension specialists can also contribute to the sustainability of cooperatives.

2.5.1.2. *External Structure of the Cooperative Movement*

The cooperative movement is an alternative economic system that is aimed at promoting self-reliance and mutual aid among individuals or groups. It is organized into three levels of cooperatives, namely, primary, secondary, and tertiary, which work together to achieve common goals. In addition, the International Cooperative Alliance (ICA) serves as the external structure of the cooperative movement, providing support, advocacy, and networking opportunities to cooperatives worldwide (Simamba, 2018). The external structure of the cooperative movement, with a focus on the primary, secondary, and tertiary levels, and the challenges and opportunities associated with their operations.

Primary Cooperative Society

The primary cooperative society is the basic building block of the cooperative movement, consisting of ten or more individuals who voluntarily come together to form a cooperative enterprise. The Cooperatives Act and By-Laws provide the legal framework for the formation and operation of primary cooperatives with 10 or more members. The membership of a cooperative society is open to anyone who wishes to use the services offered by the cooperative, regardless of their gender, race, religion, or political affiliation (South African Government Co-operatives Act, 2005). The primary cooperative society is owned and controlled by its members, who contribute to its capital and benefit from its services. The

primary cooperatives address the needs of their members, such as access to credit, markets, and inputs, while promoting democratic decision-making and member participation.

Secondary Cooperatives

The sixth cooperative principle, "cooperation among cooperatives," encourages primary cooperatives to collaborate and form secondary cooperatives. The secondary cooperative society is also referred to as the District Cooperative Union (DCU), whose primary function is to synchronize the activities of primary cooperatives in the district. The DCU provides services such as marketing, input supply, and credit, which may not be feasible for individual primary cooperatives to offer. The DCU also promotes the development of new primary cooperatives and provides training and technical assistance to their members (Lolojih, 2009).

Tertiary Cooperatives and the International Cooperative Alliance

At the provincial level, the District Cooperative Unions come together to form a tertiary cooperative which is normally called a federation to coordinate the activities of the District Cooperative Unions. The apex body is then formed at the national level, as stated in the South African Co-operatives Act 6 of 2013. Additionally, the cooperative movement has an external structure at an international level, which is the International Cooperative Alliance (ICA).

The ICA is a non-governmental organization established in 1895 to promote and support the cooperative movement globally. It is the apex body of the cooperative movement and represents over 1 billion cooperative members worldwide. The ICA provides a platform for cooperatives to share best practices, advocate for the interests of cooperatives at the international level, and build partnerships with other organizations. Through the ICA, cooperatives also have access to funding, technical assistance, and other resources to support their growth and development.

Hybrid Structures and Changing Ownership Structures

Currently, the organizational form of cooperatives is changing its direction to be hybrid structures, which combine elements of both traditional cooperatives and modern business structures. Many cooperatives are introducing managerial entrepreneurship to become more competitive and international. In line with this, the International Labour Organization (ILO) records that cooperatives are leaning towards product-based as opposed to being region-based. This has an effect on member representation.

In light of these changes, cooperatives' ownership structures are changing to attract more equity capital. For example, federated cooperatives are fading or becoming farmer-owned as opposed to user-owned. These changes reflect the need for cooperatives to remain competitive in the global market and attract the necessary capital to support their growth and development.

2.5.2. Challenges and Opportunities in the Cooperative Movement

The organizational form of cooperatives is changing, with many cooperatives introducing managerial entrepreneurship to become more competitive and international. Cooperatives are learning towards product-based as opposed to being region-based, which influences member representation. Ownership structures are changing to attract more equity capital, with federated cooperatives fading or becoming farmer-owned as opposed to user-owned (Karakas, 2019). In the context of KwaZulu-Natal, networking is central to successful cooperative activity. However, Okem (2016) reveals a different scenario of the cooperatives failing to engage in any meaningful networking activities as a result of mistrust and contestation for government grants. Given the vast geographical area and rural nature of the KwaZulu-Natal province, the existence and functionality of the external structures of cooperatives can go a long way in terms of coordinating the activities of agricultural cooperatives instead of waiting for government support. Moreover, these external structures should be empowered to assist primary cooperatives with funding, bankable business plans, securing of sustainable markets, capacity building, and monitoring and evaluation. Lastly, if these external structures can be established or resuscitated in the whole country, they may avert the corrupt relationship between government and cooperatives.

The cooperative movement has a three organizational structure at the primary, secondary, and tertiary cooperative levels, which are complemented by an external structure at an international level, the International Cooperative Alliance. The movement's organizational form is changing, with cooperatives introducing hybrid structures and changing their ownership structures to remain competitive in the global market. In KwaZulu-Natal, the existence and functionality of external structures can go a long way in coordinating the activities of agricultural cooperatives and addressing challenges such as mistrust and contestation for government grants. Overall, the cooperative movement presents significant opportunities for sustainable development and poverty alleviation, but it requires a supportive regulatory environment and effective external structures to realize its full potential.

2.6. Promotion of cooperatives as a form of business enterprise

The declaration of 2012 as the “International Year of Cooperatives” by the United Nations affirmed the narrative that cooperatives are globally regarded as a form of business enterprise (Mushonga, 2018). This marked a monumental development in the history of cooperatives, placing cooperatives back at the centre of political, economic and social programmes to empower ordinary citizens (ILO, 2015).

The ensuing International Summits of Cooperatives hosted by the International Cooperative Alliance (ICA) and held in Quebec City, Canada, in 2012 acknowledged cooperatives as one of the global interventions for realising some of the United Nations’ Sustainable Development Goals by 2030. According to the ICA (2016), the cooperative sector is relatively large, boasting a billion memberships compared to 328 million people who own shares worldwide. This proves to be a momentous role cooperatives play in the international economic landscape to ignite entrepreneurship. Although agricultural cooperatives in Africa currently face economic challenges, they have shown a sound record of resilience amid unfavorable conditions caused by imperfect markets. Hence, the growth form of cooperative industry in the African continent is fluctuating, which has heightened the public discourse on the efficacy of these enterprises in addressing the socioeconomic situation of their members and communities (Mushonga, 2018).

Agricultural cooperatives are instrumental in the efficient and well-coordinated process of the global food system (ICA, 2020). In addition, agricultural cooperatives produce more than 50% of the food in Europe and 35% in the US (ICA, 2020, 2021). Ngalande (2018) avers that most of the population in Zambia relies on agriculture for their economic livelihood. Hence, agricultural cooperatives are put at the centre of economic development.

From the South African perspective, the establishment and promotion of a flourishing cooperative sector have been at the centre of the African National Congress (ANC) government in the fight against poverty, unemployment, and high inequality since 1994 (Republic of South Africa, 2013). In achieving the above goal, the South African Cooperative Framework was developed, which led to the launch of the cooperative strategy (2004-2014) by the Department of Trade and Industry (DTI). The strategy's objective was to ensure the presence of strong, viable, self-reliant, autonomous, and self-sustaining cooperative enterprises (DTI, 2013). To ensure that cooperatives are adequately nurtured and supported, several policies and programmes were adopted. These policies include but are not limited to

the Cooperative Development Policy for South Africa of 2004, the Cooperatives Act (Act 14 of 2005), the Broad-Based Black Economic Empowerment and the Employment Equity Act No. 27 of 2014 fall, National Development Plan (NDP), PGDP mandate the South African government to economically transform and support the emerging black-owned cooperatives (DTI, 2018).

In 2012, the Integrated Strategy on the Development and Promotion of Cooperatives (2012-2022) was launched to give recognition and allow cooperatives to flourish in all sectors of the economy through financial and non-financial support (Okem, 2016). The Cooperative Incentive Scheme (CIS) was subsequently introduced with a 100% grant to improve the sustainability and competitiveness of cooperative enterprises by reducing their operational costs. In 2005, after the policies promoting cooperative enterprises, South Africa saw an exponential increase in the registration of cooperatives where the government provided over R5.28 Billion in direct financial support and other support such as grants and loans (Komape, 2018). Moreover, some support mechanisms include training, extension support, inputs and equipment. The Province of KwaZulu-Natal's commitment to supporting cooperatives is reflected in the PGDP 2019, Radical Agrarian Social Economic Transformation (RASET) 2018, KZN Agricultural Policy Action Plan 2014-2019, Provincial Funding Policy 2016, and DARD Strategy for Agrarian Transformation 2016.

According to Okem (2016), South Africa has the best legal framework for developing cooperatives, especially since the dawn of democracy. The above assertion is also recorded in the Stat SA (2020) that there is an ongoing increase in government support for the weak cooperatives. However, although most South African cooperatives enjoy government support, Mchunu, in the state of the province address (2018), shows a minimal contribution of the agricultural sector to the economic situation of the KZN Province.

Compliance with cooperative principles and ethics is critical for agricultural cooperatives to improve their governance matters; it also helps prevent self-serving interests at the expense of the community. Moreover, cooperatives, like any other formal organization, have an internal and external structure that guides their operations and assists them in securing sustainable markets, funding, and capacity building.

2.7. The global overview of agricultural cooperatives

The formation and operation of agricultural cooperatives have been widely documented in the literature as a means to enhance farmers' production and sales of agricultural products (Nefale, 2016). These agricultural cooperatives vary in size and structure across different nations and regions worldwide, but they all aim to provide farmers with better market access, negotiating power, and access to inputs and services (Omar, 2014). Furthermore, agricultural cooperatives have the potential to promote sustainable development by fostering environmental, social, and economic sustainability. However, the success of these cooperatives is influenced by several factors, such as the legal framework, organizational structure, managerial capability, and member participation.

The history of cooperative societies can be traced back to the industrial revolution in England, which prompted the formation of cooperative societies worldwide (Gutema, 2015). Mazzarol, Limnios, and Rebound (2009) suggest that cooperative societies have existed since 1498, with the establishment of the Shore Porters in Aberdeen and the Fenwick Weavers Society in Scotland. The formation of the Rochdale Society of Equitable Pioneers in 1844 is considered the foundation of the modern cooperative movement (Satgar, 2011; Novichenko, 2022). The Rochdale Society initially set up a small consumer store for members to purchase flowers and sugar, which later expanded to include housing (Zeuli and Cropp, 2004).

According to Bennett (2017), the formation of cooperatives was driven by various factors, such as the need for better housing, jobs, food, education, and social necessities. Okem (2016) asserts that the cooperative sector is an essential component of the global economy and is faced with collaborating across national borders to achieve its members' objectives. Zeuli (2004) supports the notion that the Rochdale Society inspired cooperatives worldwide and established the principles on which modern cooperatives are built. Similarly, Ajayi (2022) argues that modern cooperatives were developed in response to the adverse socioeconomic conditions arising from the effects of the industrial revolution.

However, Tchami et al. (2007) view the industrial revolution as a significant contributing factor to the formation of cooperatives. They argue that skilled artisans and unskilled labourers lost their jobs due to retail production, leading to the creation of cooperatives. Okem (2016) further posits that the advent of modern cooperatives was prompted by the harsh socio-economic conditions resulting from the industrial revolution, with smallholder

farmers struggling to compete in this new epoch and forming cooperatives to avert exploitation by the industrialist system.

2.7.1. Agricultural Cooperatives in Russia

The present research investigated agricultural cooperatives in Russia, a transcontinental nation extending from East Europe to Asia. Agricultural cooperatives in Russia have a long-standing history dating back to the early 20th century; however, they faced suppression during the Soviet era, and it was only in the 1990s that they began to re-emerge as a form of agricultural organization. Since then, the number of agricultural cooperatives in Russia has steadily increased, emphasising small and medium-sized farms (Nilson et al., 2016).

Despite some successful cases, agricultural cooperatives in Russia have encountered various challenges in terms of success, including weak legal and regulatory frameworks, inadequate financing, and limited technical and managerial capacity. Nonetheless, some cooperatives have established successful businesses, particularly in the dairy and meat sectors (Yanbykh, Saraikin and Lerman, 2019). To promote the development of agricultural cooperatives, the Russian government has implemented various legislative mechanisms, including the Federal Law on Agricultural Cooperatives, which was adopted in 2001 (Antonova, Nilsson and Potapova, 2022). This law outlines the legal status of agricultural cooperatives, regulates their establishment and operation, and provides for state support measures such as subsidies and tax incentives. Additionally, other legislative measures have focused on improving agricultural cooperatives' access to credit, land, and infrastructure. As Yanbykh, Saraikin, and Lerman (2019) pointed out, access to credit is a determining factor for the success of both commercial farmers and agricultural cooperatives.

2.7.1.1. Challenges faced by agricultural cooperatives in Russia.

Agricultural cooperatives in Russia face a variety of ongoing challenges. According to Antonova, Nilsson and Potapova (2022), the robust agricultural sector in Russia, particularly at the commercial level, presents significant competition for agricultural cooperatives, which can hinder the growth of smaller agricultural businesses and cooperatives. Furthermore, the emergence of large-scale agricultural holdings in recent years has created additional obstacles for smaller cooperatives. However, the recent economic isolation of Russia resulting from the war with Ukraine has impacted the ability of commercial farms to export food, which could present opportunities for agricultural cooperatives (Buckley, 2017).

Access to infrastructure and technology poses a common challenge for rural-based cooperatives in Russia and worldwide. Despite implementing various programs by the Russian government to support agricultural cooperatives, many still face significant obstacles, including high taxes, limited access to subsidies, and bureaucratic red tape, particularly in rural areas (Nilson et al., 2016). In addition, inadequate infrastructure in rural areas, including poor roads, limited water access, and insufficient storage facilities, further exacerbates these difficulties, making it challenging for agricultural cooperatives to transport their goods to market and store them safely (Buckley, 2017).

2.7.1.2. Russia's agricultural cooperatives and economic sanctions

The economic sanctions levied against Russia have significantly impacted its economy, particularly in the agricultural sector. In response, the government has implemented a range of measures to promote domestic agricultural production and enhance food security, including support for agricultural cooperatives (Glauber and Laborde, 2022). Encouraging the growth of cooperatives can enhance the sector's efficiency and competitiveness while expanding market access for small and medium-sized farmers (Suchkov, 2022). In addition, by promoting the formation of cooperatives, the government can address various challenges farmers face, such as limited access to credit, technology, and infrastructure.

Moreover, agricultural cooperatives can boost local food production and reduce dependence on imports, strengthening food security in the country. By offering incentives and support for the development of cooperatives, the government can bolster the agriculture sector's resilience and guarantee a reliable food supply for the populace. As Glauber and Laborde (2022) note, promoting local production is crucial for Russia's survival amid the effects of economic sanctions.

2.7.2. Agricultural cooperatives in Brazil

Agricultural cooperatives are an important aspect of Brazil's agricultural sector, contributing significantly to the country's economic growth and development. Brazil's agricultural sector is one of the largest in the world, with a diverse range of crops and a favourable climate for agriculture (Junior and Wander, 2021). As a result, agriculture accounts for a significant portion of Brazil's GDP, and the sector has experienced strong growth in recent years, with agricultural cooperatives playing a crucial role.

One of the primary reasons for the success of agricultural cooperatives in Brazil is the country's large amount of arable land, which has allowed for the expansion of agricultural production (Junior and Wander, 2021). Additionally, Brazil has invested in research and

development, leading to advanced technologies and farming techniques that boost yields (Junior & Wander, 2021). These innovative strategies have enabled agricultural cooperatives to produce high-quality agricultural products efficiently, improving global market competitiveness.

Brazil's government has also implemented favourable policies supporting agricultural cooperatives, including subsidies for farmers, investment in infrastructure, and trade policies promoting agricultural product export (Diaz et al., 2018). These policies have created a favourable environment for agricultural cooperatives, leading to increased production and exportation of commodities such as soybeans, corn, and sugar. As a result, Brazil is a major exporter of agricultural commodities and has benefited from the growing global demand for these products.

The success of agricultural cooperatives in Brazil has also positively impacted rural areas, where many people rely on agriculture for their livelihoods. The sector has generated employment opportunities and supported rural development, reducing poverty and inequality in these areas (Diaz et al., 2018). Agricultural cooperatives have played a crucial role in this development, supporting small-scale farmers and facilitating their market access.

Agricultural cooperatives have played a crucial role in Brazil's agricultural sector and its economic growth and development. Brazil's favourable climate, research and development, and supportive government policies have enabled agricultural cooperatives to thrive, contributing to increased production and exportation of agricultural commodities. This success has had far-reaching impacts on rural areas, generating employment opportunities and supporting poverty reduction and inequality. As such, agricultural cooperatives are a key component of Brazil's agricultural sector and will continue to play an essential role in the country's economic growth and development.

2.7.2.1. Agricultural cooperatives and poverty reduction in Brazil

Agricultural cooperatives have emerged as a critical driver of economic growth and poverty reduction in Brazil, particularly in rural communities (Junior & Wander, 2021). By collaborating and pooling resources, farmers have achieved economies of scale, reduced costs, and enhanced their bargaining power in the marketplace. This has ultimately led to higher incomes for farmers and a more sustainable agricultural sector. Additionally, cooperatives provide farmers access to credit, markets, and other resources that would be difficult to obtain individually (Cechin et al., 2013). As a result, cooperative farmers in Brazil

have managed to access larger and more profitable markets by cooperating, leading to increased income and improved livelihoods.

Agricultural cooperatives have also been instrumental in promoting rural development and poverty reduction in Brazil. By offering farmers training and technical assistance, cooperatives help improve agricultural productivity and increase incomes (Cechin et al., 2013). This, in turn, contributes to enhanced living standards and more significant economic opportunities for rural communities. Moreover, agricultural cooperatives have the potential to promote social inclusion by providing opportunities for marginalized groups, such as women and small-scale farmers, to participate in the agricultural sector and benefit from its growth (Junior and Wander, 2021). By providing a platform for these groups to work together and share resources, cooperatives can help reduce inequality and promote more inclusive economic growth.

Agricultural cooperatives have proven to be effective in promoting economic growth and poverty reduction in Brazil. By empowering farmers and providing them with the resources and support they need to succeed, cooperatives have helped build a more resilient and sustainable agricultural sector that benefits farmers and the wider economy. As such, they represent an important policy instrument for governments and development organizations seeking to foster inclusive and sustainable economic growth in Brazil and other developing countries.

2.7.2.2. Challenges faced by agricultural cooperatives in Brazil.

Agricultural cooperatives in Brazil have been instrumental in improving the livelihoods of rural communities and contributing to the country's economic growth. Despite their many benefits, however, these cooperatives face several challenges that limit their potential impact. One of Brazil's main challenges facing agricultural cooperatives is limited credit access. Brandao and Breitenbach (2019) noted that cooperatives often struggle to obtain the financing they need to invest in their operations and expand their businesses. This is partly due to a lack of collateral and financial resources, making it difficult for cooperatives to secure loans from banks and other financial institutions. However, this challenge is not unique to Brazil, as agricultural cooperatives in other regions, such as Asia and Africa, face similar constraints.

Another significant challenge is the lack of basic infrastructure in the remote and underdeveloped areas where many agricultural cooperatives in Brazil operate. As Cechin et

al. (2013) pointed out, poor access to roads, electricity, and water supply can make it difficult for cooperatives to transport their goods to markets and obtain the necessary inputs to operate effectively. This can limit their ability to achieve economies of scale and increase their bargaining power.

Finally, some agricultural cooperatives in Brazil may lack the technical capacity needed to compete effectively in the market. Brandao and Breitenbach (2019) highlight that some cooperatives may lack the necessary skills and knowledge to operate effectively due to a lack of training and education or limited access to technology and other resources.

Efforts are being made to address these challenges through targeted policies and programs that support the development of agricultural cooperatives in Brazil. For example, the government has introduced subsidies and other financial support mechanisms to improve access to credit for cooperatives. In addition, infrastructure development initiatives are also being implemented to improve access to basic infrastructure such as roads and electricity.

Furthermore, training and education programs are being offered to improve the technical skills of cooperative members and enhance their competitiveness in the market. While agricultural cooperatives in Brazil face significant challenges, efforts are being made to overcome these obstacles and harness their full potential. With the right policies and programs in place, these cooperatives can continue to play a crucial role in promoting economic growth and reducing poverty in rural communities.

2.7.3. Agricultural cooperatives in Canada

Agricultural cooperatives in Canada have a long and rich history, dating back to the late 19th century (Bennett, 2017). The first agricultural cooperative in Canada, the Cooperative Union of Canada, was established in 1909 and served as an umbrella organisation for a number of smaller cooperatives (Doyon, 2002). In the early days of the Canadian cooperative movement, the focus was primarily on the marketing and distributing of agricultural products, such as dairy, eggs, and grain (Doyo, 2002). Cooperatives provided farmers with a way to pool their resources and market their products more effectively, which helped to increase their profits and reduce their dependence on middlemen. Over time, agricultural cooperatives in Canada expanded their scope to include a range of other services, such as credit, insurance, and farm supplies (Bennett, 2017). These services helped improve farmers' economic stability and contributed to the growth and development of the agricultural sector.

Nowadays, agricultural cooperatives in Canada continue to play an important role in the agricultural sector, particularly in areas such as dairy, poultry, and grain (Bennett, 2017). In addition to marketing and distribution, many cooperatives now provide their members with a range of other services, such as agronomic advice, research and development, and access to new technologies. Just like in Brazil, China and Russia, one notable aspect of the Canadian cooperative movement is its close relationship with the government. The Canadian government has played a key role in supporting the development and growth of agricultural cooperatives, particularly through funding and other forms of assistance (Fulton, 1995). This support has helped to create a favourable environment for cooperatives to thrive and has contributed to their long-term success.

2.7.3.1. Canada and poverty reduction

Agricultural cooperatives in Canada have played an important role in poverty reduction, particularly in rural areas. By providing economic opportunities, promoting sustainable agriculture, and supporting local communities, agricultural cooperatives can help improve the quality of life for impoverished people (Nefale, 2016). One-way agricultural cooperatives help reduce poverty is by providing their members with access to markets and distribution networks (Nefale, 2016). In addition, by pooling their resources and working together, farmers can increase their bargaining power and negotiate better product prices. This can help to increase their incomes and reduce their reliance on middlemen, which can be particularly beneficial for small-scale farmers.

In addition to marketing and distribution, agricultural cooperatives in Canada also provide their members with a range of other services, such as access to credit, technical assistance, and training (Dhakal, 2021). These services can help farmers improve their operations' productivity and profitability, which can contribute to poverty reduction by creating jobs and increasing incomes. Agricultural cooperatives in Canada also play an important role in promoting sustainable agriculture and environmental conservation (Dhakal, 2021). By adopting sustainable practices, such as organic farming or agroforestry, farmers can reduce costs and increase their productivity while protecting the environment (Nefale, 2016). This can be particularly important for small-scale farmers, who may be more vulnerable to climate change and other environmental challenges.

In addition to their economic and environmental benefits, agricultural cooperatives in Canada also contribute to the social and cultural fabric of rural communities. By providing a platform for community members to work together and share resources, cooperatives can help to build

social capital and promote social inclusion. This can particularly benefit marginalised groups, such as women, indigenous people, and youth. Fulton (1995) argues that the role and importance of agricultural cooperatives in Canada's poverty reduction cannot be overstated. By providing economic opportunities, promoting sustainable agriculture, and supporting local communities, cooperatives can help create a more equitable and inclusive society where everyone can thrive.

2.7.3.2. Challenges faced by agricultural cooperatives in Canada

While agricultural cooperatives in Canada have enjoyed a long and successful history, they also face a number of challenges. Some of the key challenges include increasing competition, rapid change in technology, climate change and trade policies, limited access to finance and demographic changes. Nefale (2016) notes that agricultural cooperatives in Canada face increasing competition from other players in the market, including multinational corporations and large-scale industrial farms. This can make it difficult for cooperatives to maintain their market share and compete on price and quality. Climate change also poses a significant challenge to the agricultural sector, and agricultural cooperatives in Canada are not immune (Dhakal, 2021). Climate change can lead to increased weather volatility, impacting crop yields and increasing production costs. In addition, trade policy changes can significantly impact the agricultural sector, and agricultural cooperatives in Canada are not immune (Novkovic and Power, 2005). Such trade policies can impact access to markets and the ability to compete with other players in the market. Moreover, many agricultural cooperatives in Canada face challenges in accessing financing, particularly for large-scale capital projects (Nefale, 2016). This can make it difficult for cooperatives to expand their operations or invest in new equipment and technology. In sum, agricultural cooperatives in Canada face a number of challenges, but they also have a strong track record of adapting and innovating in response to changing conditions (Novkovic and Power, 2005). By working together and leveraging their collective resources and expertise, cooperatives can continue to play a vital role in Canada's agricultural sector.

2.7.4. Agricultural Cooperatives in France

Agricultural cooperatives have a long history in France and play an important role in the country's agricultural sector. In fact, France is home to some of the largest and most successful agricultural cooperatives in the world (Cooperatives Europe, 2016). Agricultural cooperatives in France are typically organised around a specific type of product or crop, such as dairy, wine, or grain. These cooperatives are owned and controlled by their member

farmers, who pool their resources and share in the profits generated by the cooperative. One of the key strengths of agricultural cooperatives in France is their ability to provide farmers with access to markets and resources that they would not have on their own (Peres et al., 2010). By working together, farmers can achieve economies of scale and reduce their costs, which can lead to increased profitability and more sustainable agriculture.

Agricultural cooperatives in France also provide their members with a range of services and support, including technical assistance, training, and access to credits (Dedieu and Courleux, 2011). This helps improve French farmers' productivity and competitiveness and contributes to the overall growth and development of the agricultural sector. Seeberger (2014) notes how in recent years, agricultural cooperatives in France have faced a number of challenges, including changing consumer preferences, increased competition from other countries, and pressure with adopting more sustainable farming practices. However, many cooperatives have responded to these challenges by investing in new technologies and practices and by working to differentiate their products and brands in the marketplace (CICOPA 2018). Thus, agricultural cooperatives continue to play an important role in the agricultural sector in France and are likely to remain a key part of the country's agricultural landscape in the years to come.

2.7.4.1. Poverty Reduction in France

While poverty is not as widespread in France as in some other countries, agricultural cooperatives have played a role in helping to reduce poverty in rural areas (CICOPA, 2018). By supporting small-scale farmers and promoting sustainable agriculture, agricultural cooperatives can help to create jobs, increase incomes, and improve the overall economic well-being of rural communities. In addition, agricultural cooperatives in France provide their members with a range of services and support, including technical assistance, training, and access to credit (CICOPA, 2018). These services can help farmers improve the productivity and profitability of their operations and contribute to the agricultural sector's growth and development. Moreover, agricultural cooperatives can also help to promote social inclusion and reduce inequality by providing opportunities for marginalised groups, such as women and young people, to participate in the agricultural sector and benefit from its growth (Cooperatives Europe, 2016). By providing a platform for these groups to work together and share resources, cooperatives can help to reduce disparities and promote more inclusive economic growth. In recent years, some agricultural cooperatives in France have also developed social and solidarity-based initiatives to reduce poverty and improve the living

conditions of farmers and rural communities (Bijman and Iliopoulos, 2014). These initiatives may include programs to promote organic farming, reduce waste, or support local food systems, among other things. Overall, while the impact of agricultural cooperatives on poverty reduction in France may be relatively modest compared to other countries, cooperatives do promote sustainable agriculture, create economic opportunities, and support rural communities.

2.7.4.2. Challenges of Agricultural Cooperatives in France

Although agricultural cooperatives in France have many strengths and benefits, they also face a number of challenges. Some of the main challenges include strong competition, climate change, an ageing farmer population, regulatory challenges and consumer preferences. Bijman and Iliopoulos (2014) argue that agricultural cooperatives in France face competition from other countries that may have lower labour costs, lower environmental and health standards, and other advantages. This can make it difficult for French cooperatives to compete in the global marketplace, particularly for commodities like grain and sugar. The ageing farmer population also affect the sustainability of these cooperatives. According to CICOPA (2018), many farmers in France are older and may not have the technical skills or resources to take advantage of new technologies and market opportunities. This can make it difficult for cooperatives to attract younger members and adapt to changing market conditions. Just like in North America, France faces the danger of climate change that Canada is currently struggling with. Seeberger (2014) notes that agriculture in France is vulnerable to the effects of climate change, including changing weather patterns and increased risk of pests and diseases. This can increase the cost and risk of production and may make it more difficult for cooperatives to maintain profitability. Moreover, agricultural cooperatives in France are subject to a complex regulatory environment that can be difficult to navigate, particularly for smaller cooperatives (Cooperatives Europe, 2016). Food safety, environmental protection, and labour regulations can add costs and administrative burdens to cooperative operations. Lastly, Seeberger (2014) notes that the changing consumer preferences for organic and locally-sourced foods can create challenges for agricultural cooperatives that may rely on more conventional production methods. Thus, cooperatives may need to invest in new technologies or marketing strategies to adapt to these changes in consumer demand.

Overall, these challenges can make it difficult for agricultural cooperatives in France to maintain their profitability and competitiveness. However, many cooperatives are responding

to these challenges by investing in new technologies, developing new products, and improving their marketing and branding strategies.

2.7.5. Agricultural cooperatives in Vietnam

Agricultural cooperatives from Asia do not operate in the same democratic channels as in Europe or North America. Hence developing countries can learn how such cooperatives operate and their role in uniting communities and alleviating poverty (Zhang, Wang, and Awokuse, 2012). Lerman (2013) notes that, while it is true that many Asian countries are not democratic, agricultural cooperatives can still operate and benefit society in several ways. In fact, in some cases, agricultural cooperatives may be more important in non-democratic countries, as they can help to fill the gap left by weak government institutions and inadequate public services (Lerman, 2013).

In Vietnam the government influences the functioning and sustainability of farmers' livelihoods through agricultural cooperatives. According to Cox and Le (2017) the Vietnamese government policies and institutional support have evolved in shaping the growth and modernization of cooperatives providing members access to markets, credit, and technical resources, enhancing their economic viability. The sustainable development of these cooperatives has been enhanced by a holistic approach that involves factors such as effective management, financial stability, and sustainable agricultural practices (Hong, 2017). The success of Vietnamese cooperatives especially in the vegetable production sectors reveal how the cooperative participation of farmers through governmental support, community engagement, and sustainable practices have been essential towards positive income (Tran et al., 2023). These insights from Vietnam offer valuable lessons for agricultural cooperatives in KZN, hinting that the adoption of a similar integrated approach can enhance their sustainability and economic impact. This can contribute more effectively to the regional agricultural economy. From these insights, cooperatives can help improve their members' well-being and contribute to broader development objectives by promoting community organisation, social and economic empowerment, sustainable agriculture, and social safety nets (Qin et al., 2022).

2.7.6. The case of China

Agricultural cooperatives in China have a long history, dating back to the early 20th century. However, it was not until the 1950s, during the collectivisation period, that agricultural cooperatives became widespread in China (Ito, Bao and Su, 2012). Since then, the Chinese government has consistently promoted cooperatives to increase agricultural productivity,

promote rural development, and improve farmers' livelihoods (Zhang, Wang, and Awokuse, 2012). In recent years, China's agricultural cooperatives have been quite successful, with more than 1.8 million registered cooperatives and over 200 million farmers participating in them (Xinhua, 2017). This success can be attributed to several factors, including favourable legislative policies, such as the Law on Farmers' Specialized Cooperatives, enacted in 2007 and provided a legal framework for establishing and operating agricultural cooperatives (Song et al., 2014). Other government policies, such as subsidies, tax breaks, and technical assistance, have also supported the growth of agricultural cooperatives in China (Ito, Bao and Su, 2012). Additionally, the government has encouraged e-commerce and other digital technologies to help cooperatives connect with markets and increase their efficiency.

The success of agricultural cooperatives in China can also be attributed to their ability to provide farmers with access to credit, markets, and other resources that would be difficult to obtain on their own (Song et al., 2014). By pooling their resources and working together, farmers can achieve economies of scale, reduce costs, and improve their bargaining power. Overall, China's favourable legislative policies, combined with government support and the ability of agricultural cooperatives to provide benefits to farmers, have contributed to the success of these organisations in China (Zhang, Wang, and Awokuse, 2012). To address its challenges, China used a combination of policies and programs that address inequalities in land ownership and access, support smallholder farmers and rural communities, and promote sustainable and efficient agricultural practices (Pepa, 2020).

2.7.6.1. China and Youth Participation in Agricultural Cooperatives

Youth participation in agricultural cooperatives in China has increased over the past few years (Xinhua, 2017). This is due to several factors, such as government policies that promote youth participation in agriculture and rural development, as well as the increasing recognition among young people of the potential benefits of cooperatives, including access to training and information, networking opportunities, and improved market access (Zhang, Wang, and Awokuse, 2012). Additionally, the rise of e-commerce and other digital technologies has made it easier for young people to connect with cooperatives and engage in agricultural activities (Xinhua, 2017). However, there are still challenges to increasing youth participation in cooperatives, including limited access to capital, land, and technology, as well as cultural biases that favour urban lifestyles over rural ones.

Several factors influence farmers' perspectives and participation in agricultural cooperatives in China. For example, farmers join cooperatives if they perceive tangible benefits such as

increased access to markets, improved yields, reduced costs, and better access to credit (Zhang, Wang, and Awokuse, 2012). Farmers are also more likely to join cooperatives if they trust their leaders and believe the cooperative will act in their best interests. In other words, political stability and transparency can encourage the success of agricultural cooperatives. This can be supported by government policies that promote and support cooperatives to ensure that farmers continue to participate. However, Zuhui (2013) emphasises the importance of agricultural cooperatives adhering to sustainable development. This can be achieved through government involvement in providing education and training. According to Zuhui (2013), farmers who receive education and training on the benefits of cooperatives are more likely to join and participate.

2.8. Overview of agricultural cooperatives in Africa

Agricultural cooperatives have the potential to support small-scale farmers and promote sustainable agriculture in Africa. Smallholder farmers in Africa often face significant challenges in accessing markets, inputs, and services, and cooperatives can provide a mechanism for these farmers to undertake activities that enhance their production and marketing collectively. The formation of cooperatives in Africa was prompted by the loss of employment by factory workers coupled with the disadvantaged position of small-scale producers (Rwekaza & Muhihi, 2016). The advent of cooperatives was instrumental in addressing people's socioeconomic well-being globally, as it was seen as a solution to safeguard the collective interest of the poor and vulnerable (De Peuter & Dyer-Witthof, 2010). The cooperative movement is one of the most organized social forces on the African continent and plays a crucial role in economic and social transformation (Okem, 2016; Wanyama, 2016).

However, African cooperatives face challenges, including poor governance and managerial skills, a lack of market access, and limited capital and markets (Mhembwe, 2017). Moreover, despite the meaningful role played by cooperatives in nourishing rural livelihoods and fighting poverty in Africa (Barati, 2017), some governments lack an understanding of cooperatives' characteristics, leading to the imposition of regulations hindering the success of cooperatives (Iyer et al., 2021). For example, in many developing countries such as Indonesia, the government has performed as initiator and demolisher.

Some governments have made efforts to promote cooperatives, such as establishing the Ministry of Cooperatives and Marketing in Kenya, which focuses on developing cooperatives in Kenya (Mohlala, 2020; Okem, 2016). The government of Kenya also provides a favourable environment through a legislative framework, a cooperative policy, and a strategy, which is implemented at all national, district, and local levels (Okem, 2016).

Agricultural cooperatives have the potential to support small-scale farmers and promote sustainable agriculture in Africa. However, cooperatives face various challenges, and governments need to create a favourable environment for cooperatives to thrive. Governments can provide a legislative framework, policies, and strategies that support cooperatives and help small-scale farmers overcome the challenges they face. The Ghana Cooperative Susu Collectors Association (GCSCA), established in 1994, is a successful case study of African agricultural cooperatives that will be discussed in the next section (Addae-Korankye, 2020).

2.8.1. Agricultural cooperatives and poverty reduction in Ghana

The role of agricultural cooperatives in poverty reduction is well documented, and the Ghana Cooperative Susu Collectors Association (GCSCA) provides a great example of how cooperatives can help to alleviate poverty in developing countries. The GCSCA was established in 1984 and operated as a cooperative union for small-scale traders and farmers in Ghana (Addae-Korankye, 2020). One of the key ways the GCSCA has helped reduce poverty is by providing a platform for its members to access credit and financial services. Members can pool their resources and leverage their collective strength through the cooperative to negotiate better terms with financial institutions (Belnye, 2011). This has allowed members to access loans and other financial services that they would not have been able to obtain on their own, which has enabled them to expand their businesses and increase their incomes.

The GCSCA has also successfully promoted social and economic empowerment among its members, particularly women. Through training and education programs, the cooperative has equipped its members with the skills and knowledge needed to manage their businesses effectively and has provided them with opportunities to participate in decision-making processes (Addae-Korankye, 2020). This has helped increase women's bargaining power and led to a more equitable distribution of benefits and resources within the cooperative.

Furthermore, the GCSCA has played an important role in promoting sustainable agriculture and enhancing food security in the communities where it operates (Belnye, 2011). Through

the cooperative, members have been able to access improved technologies, inputs, and extension services, which has led to increased productivity and higher quality produce (Belnye, 2011). This has helped increase members' incomes while also contributing to food security and the sustainable use of natural resources.

It also operates a milk processing plant, which allows members to earn higher prices for their milk. In addition, the cooperative trains its members on milk production and marketing and access to inputs, services, and credit (Addae-Korankye, 2020). As a result, the GCSCA has successfully improved the incomes and livelihoods of its members, as well as enhanced food security in the country. Similar success stories can be found in other African countries like Tanzania, where agricultural cooperatives have helped small-scale farmers to access markets, increase their bargaining power, and improve their productivity and efficiency. Overall, agricultural cooperatives can be vital in promoting sustainable agriculture and supporting small-scale farmers in Africa. By providing a mechanism for collective action, cooperatives can help farmers to overcome the challenges they face and improve their livelihoods.

In sum, the Ghana Cooperative Susu Collectors Association (GCSCA) is a great example of how agricultural cooperatives can play a vital role in poverty reduction. By providing access to credit and financial services, promoting social and economic empowerment, and supporting sustainable agriculture and food security, the GCSCA has helped improve its members' lives and livelihoods. This case study underscores the potential of agricultural cooperatives as a tool for promoting inclusive and sustainable development in developing countries.

2.8.2. Agricultural cooperatives in Tanzania

The history of agricultural cooperatives in Tanzania dates back to the pre-colonial era when smallholder farmers formed informal groups to pool their resources and collectively undertake agricultural activities (Nindi, 1977). During the colonial period, agricultural cooperatives were promoted to increase productivity and improve farmers' welfare. However, the focus was primarily on large-scale commercial agriculture, and smallholder farmers were largely excluded from cooperative development. After independence, the Tanzanian government adopted a socialist policy that emphasised collective ownership and control of the means of production, including agriculture (Omar, 2014). The government established a centralised system of marketing and production cooperatives, which were meant to improve the efficiency of the sector and increase farmer incomes. However, the cooperatives were

poorly managed, and corruption and mismanagement led to their eventual collapse in the 1980s (Omar, 2014).

Since the 1990s, there has been a resurgence of agricultural cooperatives in Tanzania, particularly in the coffee, tea, and dairy sectors (Nefale, 2016). The government has also adopted policies to support the development of agricultural cooperatives, including the Cooperative Societies Act of 2003, which provides a legal framework for the establishment and operation of cooperatives (Omar, 2014). However, agricultural cooperatives in Tanzania still face a range of challenges. These include limited access to finance and credit, poor infrastructure, inadequate technical and managerial capacity, and weak legal and regulatory frameworks (Nefale, 2016). Additionally, there is often a lack of trust and coordination among members, which can hinder the effective functioning of cooperatives. Despite these challenges, there have been some successful agricultural cooperatives in Tanzania. For example, the Kilimanjaro Native Cooperative Union (KNCU) is a coffee cooperative that was established in the 1920s (Nindi, 1977). The KNCU has been successful in improving the quality and price of its coffee, as well as providing services and support to its members, including access to credit and training (Nindi, 1977).

Lessons from Tanzania's experience with agricultural cooperatives include the importance of a supportive legal and regulatory framework, as well as access to finance and credit. Additionally, effective management and governance structures are critical for the success of cooperatives, as is the need for coordination and trust among members (Sizya, 2001). Finally, cooperatives should be tailored to the needs and circumstances of the local context and should involve active participation and leadership from members (Sizya, 2001). In sum, agricultural cooperatives in Tanzania have a complex history, with both successes and challenges. While there is no one-size-fits-all solution, the experience of Tanzania provides valuable lessons for the development of agricultural cooperatives in other contexts. With the right support and conditions, agricultural cooperatives can play a vital role in promoting sustainable agriculture, supporting smallholder farmers, and enhancing food security.

2.8.3. Agricultural cooperatives in Uganda

The history of agricultural cooperatives in Uganda dates back to the pre-colonial era when farmers formed informal groups to market their produce (Mdluli, 2019). However, it was during the colonial period that cooperatives were formally introduced as a tool for promoting commercial agriculture. After independence, the government of Uganda launched several

initiatives to promote the growth of agricultural cooperatives, including the establishment of the Uganda Cooperative College in 1958 and the formation of the Uganda Cooperative Alliance in 1961 (Hartley, 2012).

However, the period of political instability and conflict in Uganda in the 1970s and 1980s resulted in the collapse of many cooperatives (Nefale, 2016). Additionally, the government's policy of liberalisation in the 1990s resulted in the withdrawal of state support for cooperatives, leading to a decline in their numbers and effectiveness (Nefale, 2016). Despite these challenges, there have been some successful agricultural cooperatives in Uganda, particularly in the coffee and dairy sectors. For example, the Ankole Coffee Producers Cooperative Union (ACPCU) was established in 1995 and has since grown to become one of the largest coffee cooperatives in the country (Mdluli, 2019). The ACPCU has been successful in improving the quality of coffee produced by its members, as well as increasing their incomes through access to markets, credit, and training. Other challenges faced by agricultural cooperatives in Uganda include limited access to finance and credit, poor infrastructure, inadequate technical and managerial capacity, and weak legal and regulatory frameworks (Lecoutere, 2017). Additionally, there is often a lack of trust and coordination among members, which can hinder the effective functioning of cooperatives.

Just like Tanzania, lessons from Uganda's experience with agricultural cooperatives include the importance of effective management and governance structures, as well as access to finance and credit. Additionally, the need for coordination and trust among members is critical for the success of cooperatives, as is the involvement of women and youth (Lecoutere, 2017). Moreover, cooperatives should be tailored to the needs and circumstances of the local context and should involve active participation and leadership from members. This explains why in recent years, the government of Uganda has recognised the potential of agricultural cooperatives in promoting sustainable agriculture and enhancing food security (Mdluli, 2019). The government has launched several initiatives to support the development of cooperatives, including the establishment of the Uganda Cooperative Savings and Credit Union Limited (UCSCU), which provides financial services to cooperatives (Mdluli, 2019).

In sum, agricultural cooperatives in Uganda have faced significant challenges over the years, but there have been some successful examples, particularly in the coffee and dairy sectors. Lessons from Uganda's experience suggest that effective management and governance structures, access to finance and credit, and coordination and trust among members are

critical for the success of cooperatives (Omar, 2014). With the right support and conditions, agricultural cooperatives can play a vital role in promoting sustainable agriculture, supporting smallholder farmers, and enhancing food security in Uganda.

2.9. Overview of agricultural cooperatives in South Africa

Ortman (2007) claims that modern cooperatives started in Europe and spread to other industrialising countries, including South Africa, during the late 19th century as a self-help method to counter extreme conditions of poverty. Rena (2017) posits that cooperatives in South Africa were first formed in the agricultural sector at the beginning of the 19th century; farmers started mobilising themselves into societies in the four main colonies, namely: Natal, the Cape Province, the Transvaal and the Orange Free State. Although the principles of cooperation have been modified over time, the South African cooperatives are influenced by the same principles of “Rochdale Society of Equitable Pioneers, Ltd”.

Mohlala (2020) agrees with the foregoing claim that cooperatives in SA started during the colonial period. However, Dube (2016) stated that the black-owned cooperatives did not enjoy the support provided to white agriculture cooperatives; hence, they remained underdeveloped and weak. In August 2005, the South African government signed a new Cooperatives Act (No.14 of 2005) based on international cooperative principles. This Act re-energised the role of cooperatives in ensuring economic and social development in various communities by creating employment, generating income, facilitating broad-based black economic empowerment and eradicating poverty (RSA, Government Gazette, 2005).

In South Africa, agricultural cooperatives contributed significantly to creating employment and resource mobilisation (Piki, 2021). To add to this, Wessels and Nel (2016) stated that agricultural cooperatives have the potential to improve lives and add to economic growth in SA. Furthermore, Kustepeli et al. (2020) mentioned that agricultural cooperatives could improve human capital through the training and development of members through programmes aimed at improving members' efficiency. Whilst Okem (2016) agreed that agricultural cooperatives can improve communities through infrastructure development and the creation of jobs for cooperatives and supply chain members.

According to Raidimi and Kabiti (2017), agricultural cooperatives are important organisations for sustaining food security and rural development in South Africa. Similarly,

according to Mohlala (2020), the overriding goal of establishing agricultural cooperatives was to address the socioeconomic status of its members and the community at large. However, Iyer et al. (2021) warn that whilst agricultural cooperatives have become the best community initiative tool in mobilising local resources to address their socio-economic conditions, they need to be cautious about their reliance on the government for funding as it compromises their values like self-help. Moreover, in South Africa, smallholder farmers such as cooperatives are subsistence driven and often lack institutional capacity and support (Kruger, 2018).

2.9.1. Lessons for South African agricultural cooperatives from different contexts

There are several implications and lessons for South African agricultural cooperatives from the review of literature from different global contexts reviewed on agricultural cooperatives. Four critical lessons and implications drawn from the literature include shaping the legal and regulatory frameworks, providing access to credit, utilising infrastructure, and technology, and promoting local food production.

First, on legal and regulatory frameworks: The review identified that the Russian and Chinese governments have developed and implemented various legislative mechanisms to support the development of agricultural cooperatives. China has over 200 million farmers participating in about 1.8 million agricultural cooperatives as a result of clear legislative and regulatory frameworks that ensure their sustainable operations (Xinhua, 2017). This includes defining the legal status of cooperatives, regulating their establishment and operation, and providing state support measures such as subsidies and tax incentives. South African cooperatives can benefit from developing similar legislative frameworks to support their development.

Secondly, on access to credit: Yanbykh, Saraikin and Lerman (2019) noted that access to credit determines the success of commercial farmers and agricultural cooperatives. Examples from Russia, Canada, France and China reveal that providing access to financial and credit access to cooperatives plays a crucial role in promoting their effectiveness and sustainability. The inconsistencies of cooperatives in other countries such as Brazil, Ghana and Tanzania were all tied to poor financial support from the government and lack of access to credit and other financial sources. Hence, South African cooperatives can improve their access to credit by collaborating with financial institutions and developing innovative financing models. It is evident that most agricultural cooperatives in developing nations such as South Africa still face challenges in accessing credit. Thus, there is a need to ensure proper mechanisms and

frameworks that can shape government policies and programs aimed at improving access to finance for cooperatives.

Third, on infrastructure and technology: The literature identified that rural-based cooperatives in different countries face challenges with infrastructure and technology, such as poor roads, limited access to water, and insufficient storage facilities. Hence recommendations from the various case studies reflected on the importance of facilitating infrastructure and technology to help agricultural cooperatives to be competitive and sustainable (Nefale, 2016; Qin et al., 2022). Lack of technical capacity and limited access to technology and other resources can limit the ability of cooperatives to operate effectively and compete in the market (Brandao and Breitenbach, 2019). Therefore, South African agricultural cooperatives can benefit from investing in infrastructure and technology to improve their efficiency and competitiveness. Thus, the study sought to shape insight that can facilitate agricultural cooperatives to prioritize the training and education of members and invest in acquiring technological resources.

Fourth, on local food production: The reviewed literature reflected that agricultural cooperatives across the globe have been playing a significant role in promoting local food production and reducing reliance on imports, enhancing food security in the country. South African cooperatives can benefit from focusing on local food production to strengthen the country's agriculture sector and ensure a reliable food supply for its population. For instance, Brazil's success in promoting rural development and reducing poverty by providing training and technical assistance to farmers played a crucial role in reducing poverty significantly (Junior & Wander, 2021). By working together, cooperatives can help improve agricultural productivity and increase incomes, leading to improved living standards and greater economic opportunities for rural communities.

Finally, South African agricultural cooperatives can learn from the reviewed global experiences by developing legal and regulatory frameworks, improving access to credit, investing in infrastructure and technology, and promoting local food production to enhance the country's agriculture sector's efficiency, competitiveness, and food security. By prioritizing inclusivity and diversity within their membership and focusing on promoting rural development and reducing poverty, South African cooperatives, particularly those in KZN, can become more sustainable and significantly contribute to the country's economic growth and development.

2.10. Summary

The chapter provided a broad overview of agricultural cooperatives from a global perspective. It engaged literature and conceptualized cooperatives and agricultural cooperatives. It discussed the different views on agricultural cooperatives using case studies of different countries such as Russia, Brazil, Canada, France, China, Ghana, Tanzania and Uganda. The chapter then reflected on the understanding of agriculture cooperatives in South Africa. It is evident that most black-owned South African cooperatives have been underdeveloped and need critical adjustment of measures to ensure sustainability. The next chapter further reviews existing literature looking into the sustainability of agriculture cooperatives.

3. Sustainability of Agriculture Cooperatives

3.1. Introduction

This chapter presents and discusses a review of the scholarly literature on agricultural cooperatives and sustainability as overarching aspects of the envisaged study. The chapter conceptualises sustainability and sustainable agriculture to provide a detailed understanding of how the sustainability of agricultural cooperatives can be achieved. It utilizes the key study objectives to reflect on relevant literature that helps to determine whether agricultural cooperatives have monitoring mechanisms that ensure sustainability, examine the relationship between resource management and sustainability of agricultural cooperatives, assess the relationship between the environment and sustainability of agricultural cooperatives, assess the good governance, social and economic aspects that impact the sustainability of agricultural cooperatives, and suggest a model enhance the sustainability of agricultural cooperatives. The chapter explores literature that provides an overview of the agricultural sector in South Africa and the role and challenges of agricultural cooperatives. It further discusses factors contributing to agricultural cooperatives' success, variables affecting their sustainability, and empirical studies on the success of agricultural cooperatives.

3.2. Sustainability

The adjective “sustainable” derives from the Latin verb “*sustinere*”, which implies to uphold. The English verb “to sustain” means long-term support, permanence, keep going, keep from falling, and carry on (Ukwandu, 2009). The term ‘sustainability’ was officially utilised by Carlowitz in 1713. The author gave guidelines for averting the abuse of natural resources such as wood to enable the constant supply while still meeting human requirements for building, heating, mining and manufacturing (Ulrich, Trench & Hagemann, 2022). Later, the definition was formally accepted in 1987 by Gro Harlem Brundtland of the World Commission on Environment and Development (WCED) as sustainable development that meets the needs of the present without compromising the ability of future generations to meet their own needs (Kabir, Chakraborty, Hoque & Mathur, 2019).

Currently, many people use the terms ‘sustainability’ and ‘sustainable development’ interchangeably, and this is applied in this study. Resonating well within the context of agricultural production, Ikerd (1993) describes sustainability as farming systems that are capable of maintaining their productivity and usefulness to society indefinitely, and such systems must be resource-conserving, socially supportive, commercially competitive, and

environmentally sound. “Position cooperatives as builders of sustainability” is one of the goals of the International Cooperative Alliance’s Blueprint for a Cooperative Decade. This implies that sustainability is the critical element of cooperatives’ nature, and at all times, cooperatives should make positive on sustainability (Karthikeyan, 2021).

Brundtland Commission (1987) describes sustainability as when societies meet their own needs without compromising the ability of future generations to meet their own needs. On the other hand, the University of Albertine (2010) defined sustainability as the process of living within the limits of available physical, natural and social resources in ways that allow the living systems in which humans are embedded to thrive in perpetuity, social equity and economic development. Agricultural cooperatives use scarce natural resources such as soil, water, and land for farming. For instance, land is the most crucial natural resource upon which all human activity is based for growing crops, building houses, constructing roads and railways for tracks, grazing animals and establishing industries. Moreover, all human activity concerning food, clothes, and shelter is made possible by land. Hence, agricultural cooperatives should use natural resources sparingly without compromising the quality of life for future generations.

According to Seyezhai, Karuppuchamy and Kumar (2021), sustainability is realised when all people on Earth can live well without compromising the quality of life for future generations. Similarly, Clough, Chameau, and Carmichael (2006) describe sustainability as a process that helps create a vibrant economy and a high quality of life while respecting the need to sustain natural resources and protect the environment.

Musindo (2022) argues that all definitions of sustainability should embrace four critical elements. Firstly, that current and future humans are reasonably healthy. Secondly, communities and nations are secure, peaceful and thriving. Thirdly, there is economic opportunity for all, and finally, the integrity of the life-supporting biosphere is restored and sustained at a level necessary to make these goals possible. Further, sustainability is regarded as one of the pillars of the International Cooperative Alliance’s blueprint for a cooperative Decade, which intends to project cooperatives as instrumental in economic, social and environmental sustainability by 2020 (Kapinga et al., 2021).

3.3. Sustainable agriculture

The concept of sustainable agriculture has gained popularity in the recent agricultural policy discourse and has sparked many scholars' interests in monitoring and evaluating agricultural practices (Khwidzhili, 2019; Mutyasira, 2017; Raturi, 2017; Livsey, 2021). Similarly, the concept of sustainable development and the notion of sustainable agriculture has many connotations (Velten, Leventon, Jager and Newig, 2015).

Adding weight to the above assertion is Reganold et al. (2001) in that, for a farm to be sustainable, it must produce adequate amounts of high-quality food, protect its resources and be both environmentally safe and profitable. Similarly, Martin (2021) suggests sustainable agriculture to include management procedures that work with natural processes. With the aim is to conserve all resources, minimise waste and environmental impact. This will promote agroecosystem resilience, self-regulation, evolution and sustained production for the nourishment and fulfilment of all.

According to Bernardo (2016), sustainable agriculture practices promote various processes for sustainable farming methods, such as the use of natural, social, human and physical capital to produce fewer greenhouse emissions. On the other hand, Roobroeck et al. (2015) view sustainable agriculture from the perspective of optimising crop production and maximum interaction between the use of seeds, fertilisers and organic inputs, befitting the local environment.

Maghari and Ardekani (2011) warn farmers against using genetically modified ingredients. In light of the above, it is vividly clear that there is a correlation between sustainable agriculture and the sustainability of agricultural cooperatives. Hence, for the KZN agricultural cooperatives to produce sustainably, they should embrace various sustainable agriculture methods, which include utilizing business enterprise strategies. It is unclear though to what extent extension officers impart knowledge to the agricultural cooperatives on sustainable agricultural practices.

3.4. The global role of agricultural cooperatives

Globally, agricultural cooperatives play a critical role in society in terms of improving the living conditions of members, food security and income generation of small-scale farmers. Additionally, through agricultural cooperatives, affordable prices for seeds, fertilisers, transport and storage are negotiated for small-scale farmers (Ojha, 2019; ICA, 2015).

Agricultural cooperatives are well known for contributing to poverty reduction and employment creation in African countries such as Tanzania. In Egypt, the vibrant marketing and selling of agricultural products enabled more than 4 million cooperatives members to afford many necessities. Whereas in Ethiopia, agricultural cooperatives have improved the livelihood of about 900,000 people (Millennium Development Goal, 2015).

In the same vein, Malomane (2019) underscores the meaningful role played by the agricultural sector in improving the livelihoods of rural communities in developing countries, with many members relying on the income made from agricultural cooperatives. In addition, the role of small-scale farmers is manifested in job creation, poverty reduction, access to markets, economic empowerment, human capital development, and the improvement of the creditworthiness of members. Nuhanovic-Ribic (2015) postulates that agricultural cooperatives arise as a vehicle through which small-scale farmers address their economic and social goals in a manner that leverages minimum production costs and minimise farmers' risks. In amplifying the foregoing assertion, Gutema (2015) cites that ill market behaviour is minimised if individual farmers are part of the agricultural cooperatives.

In the same vein, Adenlea, Wedig and Azadic (2019) state that agricultural cooperatives play an essential role across different parts of the globe; through these establishments, the extent of poverty, food security, and employment opportunities, amongst several advantages, have been recorded over the years. More particularly, the Agricultural Cooperatives in regions such as China and India have driven millions of rural populace out of the poverty cycle (Bakre, 2018). Underscoring the rationale behind the formation of agricultural cooperatives born out as a survival strategy of farmers to stay afloat in the agricultural sector by pooling their resources to leverage economies of scale (Taylor, 2018).

Malomane (2019) also concurs and adds that cooperatives play a crucial role in international food production and distribution systems, with farmers and the cooperative business playing a central role in ensuring farm produce reaches consumers. Cooperatives seem to work in parts of the world even if they struggle to survive in other countries. Kustepeli (2020) looks beyond the contribution of agriculture cooperatives to meeting the economic needs of members; the author also highlights their (agricultural cooperatives) role in improving the needs of local communities.

Similar to the global narrative, agricultural cooperatives in South Africa have also been instrumental in supporting subsistence farmers (Govender, 2017). Malomane (2019)

concludes that in South Africa, agricultural cooperatives play a crucial role in economic growth, job creation and poverty reduction. The role of farmers, including agricultural cooperatives, in resuscitating the agricultural sector amid the Covid-19 effects has been augmented by Ramaphosa in the 2021 State of the Nation Address (SONA). Hence, Didiza (2021) distributes R1.2 billion to financially distressed small scale-farmers to mitigate the adverse impact of Covid-19. However, given the dualistic nature of the South African agricultural sector, it is not clear whether small-scale farmers, such as agricultural cooperatives, contribute meaningfully.

The South African agricultural cooperatives were founded on the notion that growing food would be a strategy toward self-determination and self-reliance (White, 2017). However, despite the support enjoyed by cooperatives since 1994, the Provincial government still struggles to record the success rate of the agricultural cooperatives, especially those that have been assisted over the past years. Hence, Okem (2016) concludes that the survival of most agricultural cooperatives in South Africa relies on continuous government support.

The KwaZulu-Natal Provincial Government acknowledges the role of agricultural cooperatives in the province's economic situation; hence, enabling policies and programmes have been adopted to support agricultural cooperatives (Provincial Growth and Development Programme, 2019). Adding credence to the recognition of the role of agricultural cooperatives in KZN is the study conducted by Malomane (2019). The survey revealed that agricultural cooperatives are instrumental in improving the livelihoods of rural communities in KZN in terms of job creation, poverty alleviation, market access, economic empowerment, human capital development and creditworthiness. However, Dube (2016) exposes a divergent view, which points to the high failure rate of agricultural cooperatives in KwaZulu-Natal Province, owing to conflict among members, poor management and lack of members' interest.

The COVID-19 pandemic of 2020 has collapsed almost all global economies and undermined many economic, social, and entrepreneurial activities with its related lockdowns and restrictions on economic activities. The determination to support social entrepreneurship, including agricultural cooperatives through intensive training, cannot be over-emphasised (Pascoe, Gow and Mostert, 2022). Hence, the envisaged study looks into factors that undermine agricultural cooperatives' successes, intending to turn them into sustainable agricultural cooperatives in KwaZulu-Natal.

3.5. Agricultural Cooperatives in South Africa

Agricultural cooperatives have played an important role in developing South Africa's agricultural sector since the early 20th century. These cooperatives have been instrumental in supporting smallholder farmers and promoting sustainable agriculture practices and have also contributed to the economic development of rural communities (Ortmann & King, 2007). In rural communities, communal land ownership helped the success of agricultural cooperatives. For example, rural communities have communal land that different families can use for grazing (Ducastel & Anseeuw, 2018). The same culture of sharing and cooperation inspired sharing of land and resources for agricultural purposes, resulting in stronger and more productive agricultural cooperatives. However, the history of agricultural cooperatives in South Africa can be traced as early as the 1900s.

According to Ortmann and King (2007), the history of agricultural cooperatives in South Africa dates back to the early 1900s, when the first cooperatives were established by white commercial farmers. These cooperatives were primarily focused on marketing and selling produced products and were dominated by large-scale farmers. However, Ducastel and Anseeuw (2018) note that agricultural cooperatives emerged in the 1930s and 1940s among smallholder and black farmers in their former homelands. These cooperatives were primarily focused on supplying inputs and providing credit to their members. Most of these cooperatives were born out of necessity to help black farmers struggling to compete with white-owned commercial farms (Rukuni et al., 2020). During the apartheid era, agricultural cooperatives were subject to racial segregation, and most cooperatives were limited to white farmers. However, in the 1980s, the government began to support the development of agricultural cooperatives among black farmers to promote rural development and economic empowerment.

Today, agricultural cooperatives in South Africa are an important part of the agricultural sector. Various cooperatives range from small, community-based organisations to large commercial entities (Ortmann & King, 2006). Some cooperatives focus on marketing and selling produce, while others provide inputs such as seeds, fertilisers, and equipment. Still, others provide training and support to their members. The key to the success of these cooperatives is linked to the increase in demand for land use and the realisation among most farmers that agriculture's success is tied to the land and access to resources, and market

penetration (Rukuni et al., 2020). This is where most agricultural cooperatives thrive as they value their members by offering access to the market, resources and training.

Agricultural cooperatives are very important in South Africa. As pointed out by Ortmann and King (2006), one of the key benefits of agricultural cooperatives in South Africa is that they provide smallholder farmers with access to markets and other resources. Many smallholder farmers face significant market access barriers, including a lack of information, limited transportation options, and low bargaining power (Thamaga-Chitja et al., 2011). Agricultural cooperatives help to address these challenges by pooling resources and negotiating on behalf of their members. They also provide access to training and technical support, which can help farmers improve their products' quality and increase their yields (Mdluli, 2019).

In South Africa, sustainable development is at the core of every state-financed business. The standards for sustainable development also apply to agricultural cooperations. Nefale (2016) notes that agricultural cooperatives in South Africa are important because they promote sustainable agriculture practices. Many cooperatives provide training and support to their members on issues such as soil conservation, water management, and integrated pest management. These activities contribute heavily to environmental sustainability and sustainable development. They also promote the use of organic and other sustainable farming practices, which can help to protect the environment and support the long-term viability of smallholder agriculture.

In addition to these practical benefits, agricultural cooperatives in South Africa also have important social and economic benefits. They can help to build social capital and strengthen rural communities by providing a forum for farmers to share knowledge and build networks. They also contribute to local economic development by providing jobs and supporting local businesses. Mdluli (2019) argues that agricultural cooperatives in South Africa are one of the few organisations that value and respect corporate social responsibility. Their goal is to empower community members by applying a bottom-top approach, listening to the wishes and interests of community members to create the best projects for them.

Despite their importance, however, agricultural cooperatives in South Africa face several challenges. These include limited access to financing, lack of infrastructure, and limited technical expertise. Many cooperatives struggle to compete with larger, more established players in the market and face significant barriers to growth and sustainability (Nefale, 2016). These challenges are not unique to South Africa, as most cooperatives face the same

challenges worldwide. Overall, agricultural cooperatives have played an important role in developing South Africa's agricultural sector and will likely continue to do so. As the country faces significant challenges related to climate change, market volatility, and other factors, agricultural cooperatives will be an important tool for supporting smallholder farmers and promoting sustainable agriculture practices (Thamaga-Chitja et al., 2011). Unfortunately, the current efforts to amend section 25 to allow expropriation without compensation can positively or negatively impact agricultural cooperatives. This fear of the unknown requires the South African government to clarify how expropriation without compensation will practically work (Ntsebeza & Hall, 2007).

3.6. Factors that affect the sustainability of agricultural cooperatives

The sustainability of agricultural cooperatives is significantly influenced by a confluence of internal and external factors that affect their operational effectiveness and, in severe cases, may lead to their dissolution. A fundamental challenge is the lack of education among cooperative members, often comprised of older, less-educated individuals, particularly in rural and underdeveloped areas. This deficiency not only impedes their business acumen but also restricts their capacity for innovation and effective governance (Gotyi, 2019; Oluwakemi, Cornelius, & Bolaji, 2012; Mohlala, 2020; Okem, 2016). Furthermore, the absence of education limits members' understanding of financial statements and strategic planning, critical for cooperative success (Lemmi, 2020; Matchaya, 2010; Mkhize, 2016; Serdyukov, 2017).

Moreover, the scarcity of targeted training and knowledge compounds these challenges, thwarting cooperatives' growth and adaptability to evolving agricultural demands. Training, as defined by Gordon (1992) in Nassazi (2013), is crucial for altering behavior through learning events, enhancing knowledge, skills, competencies, and capabilities. However, the current training regimes often fail to equip members with necessary skills such as social efficiency, leaving many cooperatives trapped in low-productivity subsistence farming (Ortmann & King, 2016; Zantsi, 2020; Yobe, Ferrer, & Mudhara, 2022; Nurfadillah, Darma, & Maria, 2022; ILO, 2011; Dube, 2016). This situation is exacerbated by a lack of knowledge on cooperative principles, values, and legislation, with many members unaware of the fundamental aspects of their cooperative's operation and the benefits of sustainable

practices (Gotyi, 2019; Thaba & Mbohwa, 2020; Malomane, 2019; Schoonbee, 2018; Gebaska, Grontkowska, Swiderek, & Golebiewska, 2020; Dorgi, 2017).

In addressing the operational performance of agricultural cooperatives, the importance of effective business management and communication cannot be overstated. Poor business management skills, including inadequate accountability, leadership, and governance, stifle cooperatives' growth and sustainability (Githinji, 2022; Matita et al., 2022; Simamba et al., 2018; Nkurunziza, 2019; Malherbe, 2020; Candemir, Duvaleix et al., 2021; Gores & Kapinga, 2021; Hong, 2017; Giagnocavo et al., 2017). Concurrently, efficient communication serves as the backbone of cooperative success, ensuring coherence and alignment of goals among members and staff (Peng, 2017; Buthelezi, 2020; Butler, 2022; Kalogiannidis, 2020). Furthermore, the development of robust networks facilitates knowledge exchange and access to resources, vital for the cooperative's long-term viability and resilience (Alimohammad, Hosseini, Mirdamadi, & Dehyouri, 2022; Okem, 2013; Mohlala, 2020; Gao, Qu, & Zhang, 2019; Miner, 2023; Mlotshwa & Msimango-Galawe, 2020; Borda-Rodriguez, Johnson, Shaw, & Vicari, 2016; Rena, 2017). Thus, a concerted effort towards enhancing education, training, knowledge dissemination, effective management, and fostering communication and networks within and among cooperatives is imperative for their sustainability and success.

More so, the review of literature reveals that the myriad challenges facing agricultural cooperatives in KZN include structural limitations, such as lack of capital, poor infrastructure, and inadequate agricultural extension services, and operational dynamics, such as member commitment, conflict management, and market access (Hadera, 2020; Mondal, Choudhary, & Mondal 2021; Gaal & Afra, 2017; Ndlela, 2022). Structural limitations are a significant barrier to the sustainability of agricultural cooperatives in KZN. Lack of capital, as highlighted by Shava (2020), and supported by Mastor et al. (2019), directly impacts cooperatives' capacity to support members' well-being and service delivery, echoing the South African government's expectation of these entities as conduits for agricultural support. The intertwined challenge of poor infrastructure, elucidated by Gaal and Afra (2017), and further emphasized by Mokgomo (2020), underscores the systemic hindrance to agricultural development. These challenges are compounded by the lack of adequate agricultural extension services, as Ndlela (2022) and Raidimi and Kabit (2019) elucidate, restricting access to vital information and technologies necessary for advancement in agricultural practices.

Operational dynamics further complicate the landscape for agricultural cooperatives. Member commitment, or the lack thereof, is a critical concern highlighted by Awoke (2021) and Fulton (1999), indicating a deterioration of the cooperative ethos and its detrimental impact on cooperative sustainability. Conflict management emerges as another pivotal challenge, with Piki (2021) noting its negative repercussions on cooperative stability and productivity. This is compounded by difficulties in market access, as articulated by Hadera (2020) and Mondal et al. (2021), which limit cooperatives' abilities to engage effectively with the broader agricultural market.

In consolidating these discussions, it becomes apparent that addressing these challenges requires a multifaceted approach, leveraging governmental support while ensuring cooperatives' autonomy and bolstering their operational capacities. The emphasis on creating enabling environments for cooperatives, as Okem (2016) suggests, alongside the strategic development of infrastructure and capital investment, stands as a foundational requirement for fostering sustainable agricultural cooperatives. Additionally, enhancing member commitment through education and involvement in decision-making, improving conflict management strategies, and facilitating better market access are crucial steps towards ensuring the resilience and productivity of these vital economic entities.

3.7. Factors contributing to the success and sustainability of agricultural cooperatives.

The factors contributing to the success and sustainability of agricultural cooperatives encompass a variety of elements pivotal for their operational efficiency and resilience. Effective governance and management practices, form the cornerstone of successful cooperatives, highlighting the importance of accountability, fairness, transparency, assurance, leadership, and stakeholder management (Gitau, 2021; Samara et al., 2022). Such practices are vital for sustainable growth, ensuring that cooperatives can navigate the complexities of a challenging business environment with adeptness. Additionally, the embracement of sustainable agricultural practices, as noted by Bernardo et al. (2016) and Barnes, Lucas, and Majo (2016), such as water conservation and crop rotation, alongside crop diversification (Kotu, Alene & Manyong, 2017), plays a significant role in enhancing productivity and mitigating the adverse effects of climate change. These practices not only contribute to

environmental sustainability but also bolster the cooperatives' economic viability by improving yields and reducing poverty.

The success of agricultural cooperatives is influenced by organizational factors such as managers' good interpersonal skills, vast experience, a good understanding of a cooperative concept, general business and managerial skills and efficient conflict-solving abilities (Getachew, Haile, and Rischkowsky, 2018). Mhembwe and Dube (2017) believe that agricultural cooperatives should constantly capacitate on leadership and management competencies to manage their businesses better. Additionally, the government should support agricultural cooperatives to grow and diversify. However, DRDLR's Budget Policy Speech (2018) records show more support and resource allocations to sustain agricultural cooperatives but with limited success. Moreover, agricultural cooperatives are significantly enhanced by strategic planning, member participation, and regular training on new farming practices (Khan et al., 2016; Hong, 2017). Innovation, skill development, and establishing networks for horizontal or vertical affiliations and a supportive government environment are crucial (Rutabanzibwa, 2021). Tewodros (2017) adds that motivation, inclusive programs, value-added activities with advanced technologies, risk coverage, market reforms, and healthy regulatory relationships further elevate the cooperatives' success. These elements underscore the importance of a holistic approach that encompasses not only the operational and governance aspects but also the adoption of innovative practices and the development of robust networks and partnerships.

From a KwaZulu-Natal perspective, the challenges of professional and strategic business management among agricultural cooperatives, due to low literacy levels, highlight the need for targeted interventions (Tefera, Bijman & Slingerland, 2017). In 2016, the DARD's Budget Policy Speech underscored the introduction of a Commodity Approach Model to enhance the success rate of agricultural cooperatives. The Model seeks to expand extension and financial support, providing appropriate production equipment and marketing infrastructure to the clustered agricultural cooperatives. Additionally, by clustering agricultural cooperatives, the challenges faced by individual farmers would be better addressed (DARD's Agrarian Transformation Strategy, 2016). However, it is unclear whether the strategy yielded the desirable results since DARD's records show a high turnover of its (DARD) executives, which may affect policy continuity and implementation. Conservation Agriculture Practices (CAP) are instrumental in the prevention of losses while regenerating degraded lands, and it promotes the least mechanical soil disturbance (no/zero tillage),

conservation of a lasting soil cover and modification of plant species (FAO, 2022). While Sankhulani (2021) underscores CAP as improving productivity and adaptive capacity to climate change impact, he also claims that extension services improve the farming skills of agricultural cooperatives. Such interventions aim to provide comprehensive support, including extension services, financial assistance, and access to appropriate production and marketing infrastructure, thereby addressing the multifaceted challenges faced by cooperatives. The synthesis of these factors into a coherent sustainability model suggests a pathway for improving the success and resilience of agricultural cooperatives, ensuring their contribution to economic development and poverty alleviation within their communities.

3.8. Variables affecting the sustainability of agricultural cooperatives

This section analyses the relationship between variables and independent variables underpinning the study. The variables used in the study are monitoring mechanisms, resource management, governance, and social and economic aspects, whereas sustainability is the independent variable.

3.8.1. Agricultural cooperatives monitoring mechanisms to ensure sustainability

Monitoring mechanisms are pivotal for the sustainability of agricultural cooperatives, ensuring that the collective goals of these entities are prioritized over individual interests. Malomane (2019), Khwidzhili and Worth (2017), and Nduta (2018) highlight the indispensability of monitoring and evaluation in managing agricultural cooperatives' activities, advocating for empowerment in self-evaluation to track progress effectively. The emphasis on internal control and financial performance monitoring by Shabri, Saad, and Bakar (2016) underscores the necessity of oversight on the substantial funds often allocated to these cooperatives by governments or private entities. This oversight is crucial in preventing mismanagement and promoting efficient use of resources, as noted in the Public Finance Management Act of 1999. Otonde et al. (2017), Kyazze, Nkote, and Wakaisuka-Isingoma (2017), and Njoroge (2018) further support the premise that meticulous monitoring and evaluation are essential for success and sustainability. The legislative framework, particularly the international monitoring mechanisms governed by Recommendation 193 and the Cooperative Act No. 6 of 2013 in South Africa, establishes a structured approach to cooperative oversight, aiming to enhance economic development and living standards. The establishment of the Cooperative Tribunal and the Cooperative Development Agency (CDA)

illustrates the government's commitment to improving cooperative performance and capacity, although the effectiveness of these mechanisms in the context of KwaZulu-Natal's high failure rate of agricultural cooperatives remains questionable (Dube, 2016; Nduta, 2019; Mohlala, 2020).

3.8.2. The relationship between resource management and sustainability of agricultural cooperative

Effective resource management is critical for the sustainability of agricultural cooperatives, as posited by Tefera, Bijman, and Slingerland (2017), Okoli (2016), and Xaba (2016). The holistic business approach to managing resources, as advocated by Schweiss (2017), is essential for sustainable performance, contrasting with the challenges identified by Simamba (2018) regarding vision, business plans, and internal resource mobilization. The DARD's strategic plans and reports highlight ongoing issues with resource management and the impact on cooperative sustainability, despite initiatives to decentralize assets and provide mechanization programs to enhance production (Kim, Jung, and Choi, 2021; Mathewos, Temesgen, Hamza, and Fesseha, 2021; DARD Strategic Plan, 2017-2018). Financial resources management also plays a crucial role, with Mushonga (2018), FAO (2018), and Yadnya, Budi, Yasa, and Purbadmaia (2021) emphasizing the importance of self-financing and strategic financial planning for superior performance. Challenges related to funding, trust in leadership, and the need for government and banking sector support are prevalent (Okem, 2016; Dube, 2016; Malomane, 2019; Xaba, 2020; Hong, 2017). Skills development and technology adoption are further identified as vital for cooperative sustainability, with regular training on sustainable farming practices and the embrace of new technologies being instrumental in improving productivity and competitiveness in the face of climate change and market dynamics (Hong, 2017; Tefera et al., 2020; Brilon et al., 2021; FAO, 2018).

3.8.3. To examine the relationship between the agricultural environment and sustainability of agricultural cooperatives

The intersection of agricultural cooperatives with the sustainability of natural resources forms a pivotal area of study, given these entities' reliance on soil, water, and land—critical elements at the heart of sustainability discussions. Agricultural cooperatives are essential for promoting sustainable practices within the farming sector, acting as key organizational conduits for environmental stewardship (Mojo, Fischer, & Degefa, 2015). They are recognized for their value-based, principle-driven nature, aligning well with the Sustainable Development Goals (SDGs) that advocate for sustainable business models (SDG, 2015;

Candemir, Duvaleix, & Latruffe, 2021). This is evidenced by the cooperative movement's efforts in environmental protection through practices such as organic manuring, tree planting, crop rotation, and the construction of gabions and stone lines to prevent land degradation (Muloo, Kaunti, & Kimiti, 2019).

However, challenges persist in fully realizing this potential. The existing literature suggests that Small and Medium-sized Enterprises (SMEs), including cooperatives, often grapple with a lack of knowledge and resources necessary for leading environmental change (Ferri, Oelze, Habisch, & Molteni, 2016; Hinrichs & Wettlin, 2019). Furthermore, market pressures significantly influence the choice of agricultural inputs, sometimes at the expense of sustainability (Deng et al., 2021). Despite these obstacles, the imperative of sustainable farming practices remains paramount, as underscored by global and regional analyses of climate change impacts. South Africa's agricultural sector, including its cooperatives, faces the acute effects of global warming—manifested through altered rainfall patterns, increased temperatures, and heightened pestilence—which underscore the urgency of adopting environmentally sustainable methodologies (Kom, 2019; PGDP, 2018).

In addressing these issues, the green economy is a crucial framework for conceptualizing the transition towards more sustainable agricultural practices. The South African government's endorsement of the Green Economy Accord and other strategic policies signals a commitment to fostering environmental, social, and economic outcomes nationwide (UNEP, 2013). This is particularly relevant for agricultural cooperatives positioned to leverage green economy principles in pursuing sustainable agricultural practices (SAPs). These practices, ranging from organic farming to the adoption of climate-smart agriculture (CSA) techniques, offer pathways to mitigating environmental degradation while enhancing food security and quality (Wekesa, 2017; Banjara & Poundel, 2017). The journey towards a fully realized green economy and the broad adoption of SAPs within cooperatives is fraught with challenges. They include internal heterogeneity and management weaknesses that can hinder efforts towards environmental sustainability (Candemir, 2021; Deng, Chen, Zhao, & Wang, 2021).

3.8.4. The good governance, social and economic aspects that affect the sustainability of agricultural cooperatives

3.8.4.1. Governance

The World Bank (1993), cited Lekala (2019), describes governance as the framework utilizing power to manage a country's socioeconomic resources for development. According to UNDP (1997), governance is defined as "the exercise of economic, political, and administrative authority to manage a country's affairs at all levels. This definition is consistent with that of Olowu & Sako (2002: 37), who defines governance as systematized values, institutions, and policies with which a society governs, regulates and mediates its affairs. Good governance is pivotal for the success of agricultural cooperatives. It involves elements such as legitimacy, participation, professionalization, accountability, and transparency with honesty (Lal Puri, 2018; Kumkit, 2020). The literature underscores the need for agricultural cooperatives to adhere to sound business practices, legal frameworks, and governance models similar to those of investor-owned organizations to ensure sustainability (Malherbe, 2020; Ojha, 2019). Scholars such as Dayanandan (2013) and Puri and Walsh (2018) argue that implementing pillars of good governance can significantly enhance the performance and sustainability of agricultural cooperatives. Furthermore, the Cooperatives Act 2005 and its subsequent amendment highlight the importance of transparency and accountability in cooperative societies, setting a foundation for the efficient use of resources and promoting a culture of good governance (Akinsoyinu, 2015; Nandkumar, 2015).

However, challenges such as mismanagement, poor governance, and a lack of accountability and transparency have been identified as major hindrances to the sustainability of agricultural cooperatives (Zantsi, 2021; Zikalala, 2022). The literature calls for vigilance among cooperative members and adherence to principles of good governance to mitigate risks associated with poor management and to foster an environment conducive to sustainable development and transformation in the agricultural sector (Dayanandan, 2013; ILO, 2015).

Addressing professionalism within agricultural cooperatives, it is acknowledged that despite their social dimensions, these entities operate in competitive markets and must manage their operations professionally to thrive (Junior and Wander, 2021; Cooperative Organization of Paraná- OCEPAR, 2016). Challenges in professionalizing the management of cooperatives stem from the inherent complexity of balancing economic, social, and political interests among members (Gimenes & Gimenes, 2007). Furthermore, the critical role of participation

is highlighted, emphasizing that trust, cohesion, and a reduction in transaction costs are fostered through active member involvement in cooperative governance and decision-making processes (Zhang, Luo, & Li, 2021; Chen & Sun, 2019). The literature points out that member participation, commitment, and a conducive organizational culture are fundamental to the economic performance and overall success of agricultural cooperatives (Grey, Kraezle, & States, 1998; Garnevaska, 2011; Donkor & Hejkrlik, 2021).

3.8.4.2. Social Aspect

Agricultural cooperatives inherently embody societal values such as equity, democracy, social justice, and sustainability, addressing local and community issues through their economic agenda (King, Adler & Grieves, 2013). These organizations uphold a social mission aimed at creating a higher social order, striving for cooperative commonwealth and ensuring sustainable development by balancing economic actions with ethical responsibilities toward society and the environment (ICA, 2015; Tang, Sipiläinen & Fu, 2020). The cooperative model, deeply rooted in local communities, plays a pivotal role in fostering social ties, enhancing business performance, and achieving sustainability. This is evidenced by the strong association between social capital elements like trust, communication, and shared goals and the improved benefits and sustainable performance of agricultural cooperatives (Zhou, Liu & Liang, 2016; Yu & Huang, 2020).

In South Africa, agricultural cooperatives are viewed as essential agents for social cohesion and community development, tasked with addressing poverty, unemployment, and social disruption in rural areas (Kwakyewah, 2016; Mohlala, 2020). They are community-owned entities, ensuring that economic benefits are reinvested locally, thus strengthening community unity and social fabric (Mohlala, 2018; ICA, 2017). To enhance their social sustainability, these cooperatives must engage in social responsibility programs and create social funds for community projects, recognizing the importance of environmental stewardship and human capital development (Taylor et al., 2015; Karthikeyan, 2021). However, challenges such as internal conflicts and operational inefficiencies have hindered the full realization of their potential in promoting social development and sustainability (Malomane, 2018; Zantsi, 2021).

The cohesion among cooperative members, underpinned by shared values and commitment, is crucial for the long-term viability of these organizations (Bruce et al., 1998; Simamba, 2018). Agricultural cooperatives must prioritize collective rights and interests, fostering a

strong sense of identity, commitment, and cohesion to overcome internal conflicts and management challenges. Trust within the cooperative is fundamental, enhancing members' satisfaction and reducing conflicts, thereby ensuring the cooperative's effective functioning and contribution to community welfare (Tang et al., 2020; Zhang, Luo & Li, 2021). Therefore, agricultural cooperatives in KwaZulu-Natal and beyond should focus on strengthening internal social dynamics and external community engagements to fulfill their role as sustainable entities within the agricultural sector and broader society.

3.8.4.3. Economic aspect

Agricultural cooperatives serve as vital mechanisms for farmers to address their economic and social needs, allowing for cost economization and risk dispersion associated with individual pursuits (Nuhanovic-Ribic, 2015). They have demonstrated resilience in the face of economic and financial crises, with their formation often seen as a strategic response to rural economic challenges, enhancing food security and members' economic well-being (Franken & Cook, 2019; Benito-Hernandez et al., 2016; Guzman & Santos, 2019). Economies of scale, created by pooling resources and capital, lead to economic benefits for members, thereby contributing to the sustainable development of rural communities and aligning with government objectives for market integration (Brilon et al., 2021; Ojha, 2019; ILO, 2014). However, agricultural cooperatives face significant challenges such as inadequate access to inputs, financial exclusion, and failure to meet market standards, necessitating a reevaluation of their economic models and strategies to improve performance and market access (Karthikeyan, 2021; Kotze & Juan-Pierre, 2020; Adegbite, 2021).

Market access is crucial for the success of agricultural cooperatives, influencing their competitive edge and sustainability. Effective marketing strategies, international market access, and enhanced bargaining power are essential for cooperatives to leverage economic benefits and support the livelihoods of rural communities (Tewodros, 2017; Candemir et al., 2021; Ahmed & Mesfin, 2017). Nonetheless, infrastructural deficits, high transactional costs, and lack of market information present substantial barriers, impacting their ability to engage effectively in the agricultural value chain and access profitable markets. Therefore, strategic interventions, such as improved extension services, financial inclusivity, and market information dissemination, are imperative to bolster the economic viability and market participation of agricultural cooperatives in KwaZulu-Natal and beyond (Matita et al., 2022; Baloyi et al., 2018; Raidimi & Kabiti, 2019).

3.9. Empirical studies on the success of agricultural cooperatives

Studies across various regions and agricultural sectors highlight the successes of cooperatives. They emphasize their role in enhancing economic, social, and environmental sustainability. Chavan and Apte (2021) found that in India dairy cooperatives significantly improved women's leadership skills, community participation, and credit access. They demonstrated the potential for cooperative models to empower women across developing nations. Similarly, Vandeplass, Minten, and Swinnen (2013) observed that dairy farmers within cooperatives achieved higher profit margins, indicating the economic benefits of cooperative structures. Ji, Jia, and Xu (2018) reported how, in China, the sustainability of pig cooperatives managed to thrive despite challenges like food safety concerns and market fluctuations. It showcases the resilience and adaptability of cooperative models.

The economic impact of cooperatives is also evident in Africa and other developing regions, where they contribute to community development, income generation, and market access. Mohlala (2020) in South Africa and Nyoro and Ngugi (2007) in Kenya found that agricultural cooperatives played a crucial role in mobilizing local populations for socio-economic betterment and exhibited characteristics of successful management, such as transparency and accountability. Sentama (2009) provides an account of Kenya, reflecting the peacebuilding role of cooperatives post-genocide, shaping relationships among conflicting parties and contributing to social cohesion.

Research in the agricultural sector reveals that cooperatives have enabled members to access markets, improve productivity, and achieve financial stability. For example, Xaba (2020) and Okem (2016) noted that agricultural cooperatives in the United States and the United Kingdom enhanced their competitive edge through reduced transaction costs and member contributions, without relying heavily on government subsidies. In South Africa, Piesse et al. (2005) documented the efficiency of grain cooperatives in competitive markets, indicating the potential for cooperatives to thrive under market pressures.

Cooperatives not only improve the economic standing of their members but also contribute to broader societal and environmental goals. Studies like that of Deng et al. (2021) in China demonstrated that cooperatives could enhance agricultural sustainability by promoting eco-friendly practices and technologies. In India, Gaillard and Derville (2022) found that dairy cooperatives significantly contributed to poverty alleviation and economic growth in rural

areas, underscoring the potential of cooperatives to drive agricultural development and improve livelihoods across developing countries.

3.10. Theoretical Framework: Sustainability Models

Several theories and models have been propounded; however, the sustainability models, which include pictorial visualization, quantitative, physical, conceptual, and standardising models, underpin the current study. The above models are used as they contain crucial elements of sustainability that can be applied within the context of agricultural cooperatives.

3.10.1. Pictorial Visualisation Model



Figure 3.1: Pictorial Visualization Model

Source: Adapted from Feenstra (2019)

The Pictorial Visualization Model, as articulated by various scholars, integrates the three critical pillars of sustainability—economic, social, and environmental—into a cohesive framework that underscores the synergy among these domains, thereby highlighting the indispensability of an interdisciplinary and transdisciplinary approach to sustainable development. Bob (2017)'s analogy of a three-legged stool with interdependent pillars further enriches this concept by emphasizing the mutual reinforcement among the pillars necessary for a sustainable society. The model delineates specific economic factors such as farmers' revenue, job creation, and the bolstering of local economies; social dynamics involving enhanced social relations, collective initiatives, and innovations that cater to economically disadvantaged groups; alongside environmental considerations like greenhouse gas emission reduction, promotion of agrobiodiversity, and the adoption of eco-friendly practices (Moir &

Carter, 2012; Umaran, Perdana, Kurniadie, & Parikesit, 2021). Despite its comprehensive framework, the model has faced criticism for its lack of explanatory depth compared to the more detailed criteria proposed by Boulanger and Bréchet (2005) and a noted absence of consensus on the precise content of each pillar (Kates et al., 2005). Nonetheless, the United Nations World Summit (2005) acknowledges its foundational tri-pillar approach as essential for harmonizing economic growth, societal advancement, and environmental protection, marking a significant endorsement of its overarching principles for achieving sustainable development.

Boulanger and Bréchet (2005) concur with Pictorial Visualisation Model and suggest five crucial conditions to be considered when developing a model for sustainability (interdisciplinary approach; managing uncertainty; a long-range pillars model (also called the three circles model or the Triple Bottom Line). On the contrary, Mushonga (2018) argues that agricultural cooperatives should attain their economic agenda first before considering their social and environmental mission. The same logical thinking is echoed by Hannam and Ashta (2017), who claim that the implementation of social impacts should be preceded by long-term financial sustainability. In this context, it means agricultural cooperatives, after generating sufficient income, should then consider ploughing their excesses back to the community. This line of thinking may create a situation whereby capitalists regard the economic pillars as superior and exploit the well-being of the other two pillars. This Model lacks a monitoring mechanism to avert the competition among the three pillars. On the contrary, Bernardo et al. (2016) shows the environment as a strategic pillar in the sustainability discourse, highly rated by most countries in the globe to promote sustainable development (Drexhage & Murphy, 2010).

In committing to the 2030 Agenda for Sustainable Development, all world leaders adopted the 17 Sustainable Development Goals in September 2015 at the United Nations Summit. Amongst other resolutions were to eradicate poverty, improve food security and good nutrition, create jobs and manage natural resource assets sustainably. Cooperatives were central to the achievement of the above goal due to their capacity for poverty eradication and job creation of about 100 million people worldwide (SDG, 2015).

It is interesting to know whether the world's Agenda for Sustainable Development some form of monitoring system has to monitor if countries and role players comply with its resolutions. For instance, KZN agricultural cooperatives focus on local matters as opposed to regional or

global issues. This points to the next question of whether cooperatives were part of or represented at the summit. If not, to what extent does the KZN government create awareness among the agricultural cooperatives about the 2030 Agenda for Sustainable Development?

There is a sound correlation between the Pictorial Visualisation Model and the goal behind the formation of cooperatives. For instance, the foregoing model advocates a narrative that society will be sustainable when there is economic, social and environmental stability. Similarly, cooperatives, by definition, are formed to meet the members' economic, social, and cultural necessities (Mohlala, 2020). Echoing the same sentiment are Benito-Hernández, Platero-Jaime, & Esteban-Sánchez (2016), who say that the formation of agricultural cooperatives is one of the strategies for rural families to address the socio-economic challenges of their members and community.

In the same vein, the UN, ILO, and ICA recognise agricultural cooperatives as the most suited to address social and economic needs while conserving the environment (SDG, 2015). The distinctive element of having both business and social purpose is one of the factors distinguishing co-operatives and other conventional firms (Shirima, 2021). The FAO (2015) also amplify the above assertion that around 70% of emerging farmers in the Sub-Saharan rely on natural resources for farming; hence, farmers should use environmental-friendly farming equipment when in their quest for social and economic well-being. Cooperatives are founded on the values of self-help, self-responsibility, democracy, equality, solidarity, as well as social responsibility; hence, agricultural cooperatives are determined to enable farmers to attain their economic and social needs without compromising the environment (ICA, 2015). However, Thaba and Mbohwa (2015) differ, expose the weaknesses of the agricultural cooperatives in KZN, and doubt if they will be able to address the social, economic and environmental needs of the society.

3.10.2. Conceptual Model

This Model is linked to humankind's effect on natural settings and the adverse effects posed by the populace on ozone depletion. According to Meadows (1971), the Conceptual Model is linked to the work of the Club of Rome and continued global ozone warming and various futurist scenarios, which were developed by the World Business Council for Sustainable Development (Litfin, 1994; Speth, 2004).

The above is consistent with the assertion by Shabangu et al. (2017), who asserts that human activities are attributable to climate change in an abnormal way, thus causing climate

calamities. South Africa is going through substantial effects of climate change, mainly as a result of increased temperatures and rainfall variability. (National Climate Change Adaptation Strategy Republic of South Africa, 2019). The agricultural cooperatives are the hardest hit by global warming, given their socio-economic condition and the rural nature of the KZN Province.

For KZN agricultural cooperatives to farm sustainably amid climate change, they should employ Climate Smart Techniques, as this will increase crop resilience and productivity in a manner that reduces greenhouse gas emissions (Molieleng, Fourie and Nwafor, 2021). Some scholars criticise the model as it is unable to manage uncertainty, and it has triggered a wide range of differences in ideas. Javanmardi, Liu, and Xie (2023) also lament the uncertainty of the future because people observe environmental processes like climate change, demographic change, increasing socio-economic inequalities worldwide and cultural “clashes”, which pose serious challenges for people today and for future generations. Although this Model exposes human actions as the cause of ozone depletion, it lacks an explanation of strategies to mitigate the adverse effects of human activities.

This Model applies to agricultural cooperatives in many ways. Agricultural cooperatives should always employ practices that safeguard the environment and community in their quest to become sustainable farmers. Amplifying the above notion are Kom, Nethengwe, Mpandeli and Chikoore (2020), who state that agricultural cooperatives should employ both environmentally friendly and scientific adaptation methods to mitigate the negative impact of climate change. These methods include; drought-tolerant seeds, shorter cycle crops, diversification of crops, changing planting dates and small-scale irrigation.

3.10.3. Prism model

The prism model is also known as the four pillars model or the prism of sustainable development. With the Prism model, sustainable development is defined using four components, which are economy, environment, society and institution. This model adds one pillar to the basic three-pillar model. In Spangenberg and Bonniot’s prism model (1998), the interlinkages such as care, access, democracy, and eco-efficiency have to be looked at closely since they show the relationship between the dimensions which could translate and influence policy.

In each dimension of the prism of sustainable development, there are imperatives (as norms for action). Indicators are used to measure how far one has come in comparison to the overall

vision of sustainable development (Keiner, 2005). The prism of sustainability is criticized in that the economic dimension tends to include assets emanating from all four dimensions, thus, adding confusion to the description and analysis. The prism model of sustainability also faces the same criticism as the three-pillar model since both models have the assumption that different components that make up the models are independent, and they do not consider the time factor within the models.

Karthikeyan (2021) argues that for agricultural cooperatives to attain environmental sustainability, they should improve on (a) organic farming, (b) conservation and protection of the environment, (c) agricultural waste management, (d) complying with the environment policy of the government, e) and inculcating farmers' knowledge on agricultural and ecosystems for eco-friendly products and services to the community. The four-pillar model is closely linked to the current study more than the basic three-pillar model. Although the institution as an added pillar entails critical components of the business, it still lacks certain aspects which are crucial for the sustainability of agricultural cooperatives. These aspects are resource management and governance.

3.10.4. The Egg of sustainability

This model is also called the three Nested Dependencies Model. The egg of sustainability model was designed in 1994. It illustrates the relationship between people and the ecosystem as one circle inside the other. The model implies that people are within an ecosystem and they depend on each other. In addition, social and economic development can take place if the environment offers the required resources. Thus, sustainable development is equal to human well-being and economic well-being. The other dimensions of the model can only function well if they adapt well to the confines of the environment's carrying capacity.

The foregoing model applies to the study because agricultural cooperatives depend so much on the ecosystem to make business possible. It should be in the interest of any farmer, including agricultural cooperatives, to conserve the ecosystem. The well-maintained ecosystem may lead farmers to produce sustainably. Providing credibility to the foregoing notion is Lalani et al. (2016) in that the use of advanced technologies and agricultural practices that are pro-agro-biodiversity are the game changers in the farming discourse and may lead to improved agricultural sustainability. Ellis (2021) concedes and expatriates that agricultural green infrastructure and techniques are central to the support of ecosystems and human health. However, (FAO, 2011) exposes that the land management systems used in

many countries around the world are detrimental to the soil and restrain their capacity to generate rising yields on a sustainable basis. Given the alarming impact of climate change on agriculture and farming schemes, Giagnocavo (2018) raises the need to support agricultural cooperatives. Through their close associations with farmers, agricultural cooperatives are instrumental in assisting farmers to improve their agricultural practices and adopt more sustainable practices for the conservation of the environment (Candemir, Duvaleix and Latruffe, 2021).

3.10.5. Quantitative Model

The focus of this Model is on macro-econometric, which emphasises the analysis of the entire economy (Boulanger and Bréchet, 2005). Although this Model is linked to the cooperatives with economic aspect, the other missing elements of sustainability are equally important for agricultural cooperatives to achieve sustainability. The nature of the cooperatives' businesses warrants that social and environmental aspects also be prioritised. Giving credibility to the foregoing assertion are Thornton, Dinesh, Cramer, Loboguerrero and Campbell (2018) in that agricultural cooperatives are at the heart of economic and social development and have a responsibility of feeding the nation without exploiting the environment.

Although Boulanger and Bréchet (2005) commend quantitative models that they can withstand the event of uncertainty and advocate for different levels of prosperity, they are accused of failing to cater for the holistic perspective and need for stakeholders' participation. Rukuni, Huni, Tshetu, Leontes and Takura (2020) postulate that a slow-growing economy culminates in a reduction in income and it undermines the operational effectiveness and efficiency of agricultural cooperatives. Hence, the slow economic growth is intimidating the survival of agricultural cooperatives that should be addressing unemployment and poverty. In the same vein, Mhembwe (2017) argue that agricultural cooperative's accomplishment is seen through economic success indicators; for instance, the attainment of profits and the reduction of cost is primarily.

Although Rukuni et al. (2020) and Mhembwe et al. (2017) prioritise the economic well-being of cooperatives, the economic element cannot flourish in isolation from social and environmental elements. This Model accentuates that the success of agricultural cooperatives is dependent on the broader understanding of economic factors such as market analysis, gross domestic product, foreign trade and balance of payments, and value of the domestic currency. However, Mohlala (2020) looks beyond the economic factor as the scholar claims that factors

such as social and cultural are also the basis behind the formation of cooperatives. The Quantitative Model is also in conflict with Pictorial Visualisation Model in that; Pictorial Visualisation Model regards all three pillars of sustainability as equally important to the success of cooperatives.

3.10.6. Physical Model

This model for sustainability is limited and specific to the environmental component. The use of physical models for sustainability has been restricted mainly to its environmental component. They have been used for water, energy, buildings, urban design, the recreation of habitats, pollution handling and toxicity (Hellstrom, 2000; Livingstone, 2011; Karlsson, Hoveskog, Halila & Mattsson, 2018). Although it accommodates a participatory approach and interdisciplinary perspectives, the physical model has a limited duration, and it does not cater for the global system since it is local. Hence, it does not address the objective of modelling for sustainability.

Agricultural cooperatives depend on the environment very much as they use the land for sustainable development. The physical model kicks in by figuring out ways in which cooperatives can achieve sustainable development without exploiting the environment. Agricultural cooperatives must always be aware of their impact on the environment so that their actions can always be environmentally friendly.

Climate change has wide-ranging effects on the environment and on socio-economic and related sectors, including water resources, agriculture and food security, human health, terrestrial ecosystems and biodiversity and coastal zones. Changes in rainfall patterns because of climate change lead to severe water shortages and/or flooding, droughts, weeds, pests and diseases, yield reduction and the degradation of soil Muluneh, (2021).

3.10.7. Standardising Models

The Standardizing Model entails the development and application of sustainability indicators. This Model is linked to the study; for instance, if the activities of agricultural cooperatives are properly monitored, the sustainability indicators will have to be developed as the yardstick for sustainability (Gaviglio, Bertocchi and Demartini, 2022). These models, according to Gaviglio et al. (2022), enable one to assess the performance of the system; they can cover global-local perspectives, and the process of their development can be participatory. Some scholars criticize standardizing model in that it lacks focus on the process itself as it concentrates on the components, states, and outcomes. Hence, Marcis et

al. (2019) cite the significance of agricultural cooperatives in developing sustainability indicators for performance monitoring purposes.

The implementation of the sustainability indicators will also assist agricultural cooperatives to dictate problems at the earliest stages and work towards fixing them. Malomane (2019) concurs that KwaZulu-Natal agricultural cooperatives need to have some form of monitoring mechanism to improve their sustainability. According to Mushonga (2018), the sustainability of agricultural cooperatives is a concern as the majority of them appear in the paper without any significant economic activity impact on the ground. The implementation of sustainability indicators may help DARD and other funders to distinguish between successful and unsuccessful agricultural cooperatives. In addition, the sustainability standards will empower government and private funders to take a well-informed decision to avoid refunding staggering agricultural cooperatives.

Although this model accentuates the importance of sustainability indicators, the fact of the matter is that these indicators kick in when other aspects of the business have already done their part. For example, in the context of agricultural cooperatives, a conducive environment, social cohesion and good economic opportunities contribute to the existence of the business. The sustainability indicators will be applied to monitor the existing business. Hence, other pillars of sustainability are equally important.

3.10.8. Understanding Sustainability Models in Agriculture Cooperatives

Table 3.1: Analysis of Sustainability Models for Agricultural Cooperatives

Model	Fit for Purpose	Similarities	Differences	Link to Study
Pictorial Visualization	Yes, it integrates all sustainability pillars	All models address sustainability	Focuses on the interdependence of economic, social, and environmental factors	Reflects the holistic approach needed for cooperative sustainability
Conceptual	Yes, it emphasizes human impact and environmental focus	Address environmental sustainability	Specific to human-environment interaction	Highlights the impact of agricultural practices on the environment and necessity for eco-friendly methods
Prism	Yes, it includes an additional institutional pillar	Emphasize multi-dimensional approach to	Adds institutional aspects to the three pillars	Indicates the importance of governance and policy in cooperative

		sustainability		sustainability
Egg of Sustainability	Yes, it emphasizes dependency of economic and social development on the environment	Focus on environmental sustainability	Unique in illustrating nested dependencies	Stresses the environmental limits within which cooperatives must operate
Quantitative	Partially, mainly economic-focused	Address sustainability in broader terms	Limited by economic focus and less on social/environmental aspects	Useful for economic analysis of cooperatives but needs integration with other sustainability aspects
Physical	Partially, it focuses on environmental sustainability	Environmental consideration	Limited scope, mainly physical/environmental	Can inform sustainable land and resource use practices for cooperatives
Standardizing	Yes, it provides measurable indicators	Used for performance assessment	Focuses on outcome measurement and less on processes	Facilitates monitoring and evaluation of sustainability in cooperatives

Source: Own Research

Sustainability models like pictorial visualization, conceptual, prism, egg of sustainability, quantitative, physical, and standardizing models provide frameworks to understand and implement sustainable practices within agricultural cooperatives. These models incorporate crucial elements like economic, social, environmental, and institutional factors. This is essential for the holistic sustainability of cooperatives. While pictorial visualization emphasizes the interdependence of economic, social, and environmental pillars, conceptual models focus on human impact on the environment and climate change. The prism model adds an institutional dimension, highlighting the need for governance and policy integration in sustainability efforts.

Comparatively, the pictorial visualization model, with its tri-pillar approach, aligns well with the core objectives of cooperatives, advocating for a balanced focus on economic viability, social equity, and environmental stewardship. However, it faces critique for its generalized

framework and lack of a monitoring mechanism. The conceptual model, rooted in the global environmental perspective, stresses the impact of human activities on climate change, which is relevant for cooperatives in regions like KZN, where agriculture is climate-sensitive. With its additional institutional dimension, the prism model offers a more comprehensive view, yet it may complicate the understanding of sustainability by merging various aspects into the economic domain.

The egg of sustainability model underscores the dependency of human activities on ecological limits, resonating with the agricultural sector's reliance on natural resources. However, it might overlook the socio-economic complexities of cooperatives. The quantitative model focuses on economic analysis, which is essential for understanding cooperatives' market dynamics, but may neglect social and environmental considerations. Physical models are specific to environmental sustainability, providing detailed insights into resource management but lacking in addressing the broader socio-economic context. Standardizing models, emphasising sustainability indicators, offer a practical approach to monitoring and evaluating cooperative performance but may fail to capture the dynamic interactions between different sustainability dimensions.

For agricultural cooperatives, especially in developing regions like KZN, a hybrid approach that combines elements of these models would be most effective. A model that integrates the economic resilience and market focus of the quantitative model, the social inclusivity of the pictorial visualization model, and the environmental consciousness of the egg of sustainability model, complemented by the governance and policy focus of the prism model, would provide a comprehensive framework. The standardizing model's approach to developing and applying sustainability indicators could serve as an essential tool for monitoring and evaluating the cooperatives' performance and sustainability over time.

Although the above models of sustainability are applicable and helpful for the sustainability of agricultural cooperatives, their pillars could be stronger if they are applied concurrently in each model and work in unison. Lastly, the majority of the above models lack a monitoring mechanism, which is the most critical aspect of enhancing performance and sustainability.

3.11. Summary

This chapter looked at the definitions of terms underpinning the study. The global overview of the cooperatives, which includes the rationale behind the formation of cooperatives and their contribution to improving the socio-economic status of people around the globe, was reviewed. The overview of the agricultural sector in South Africa and the role and challenges of agricultural cooperatives were discussed. It further underscored factors contributing to the success of agricultural cooperatives, variables affecting the sustainability of agricultural cooperatives, such as resource management, good governance, and social and economic aspects were also highlighted as the panacea for sustainable agricultural cooperatives. Lastly, the empirical studies on the success of agricultural cooperatives around the globe were discussed.

4. Research Methodology

4.1. Introduction

This chapter set out the research methods that were employed in the study. It also sheds light on the participants, that is, the criteria for inclusion in the study, who the participants were and how they were sampled. The research design is described that was selected for the purpose of this study and the rationale behind this choice. The instrument that was utilised for data collection is also described, and the processes that were followed to conduct this study are incorporated. The researcher also discusses the methods used to analyse the data. Lastly, the ethical matters that were followed in the process are also included.

4.2. Research Methodology

Bogdan & Biklen (2007) define methodology as a common reasoning and hypothetical viewpoint of the study, while methods denote an explicit plan, measures and methods of analyzing and interpreting data. Crotty (1998) concurs with the above definition in that methods entail particular systems and methodologies that are employed to gather and examine data. Wamicha (2019) further underscores the importance of research methodology in that it represents the theoretical assumptions and also guides the selection of research methods.

According to Gaya, Fara, and Queiros (2017), scientific research embraces qualitative and quantitative approaches in the investigation of various circumstances. Similarly, John Dudovskiy (2013) elaborates further by defining the quantitative method as the research approach that deduces and resolves problems using numbers, whereas the qualitative method is grounded on words, feelings, emotions, sounds and other non-numerical and unquantifiable elements. In addition to the two opposing paradigms, Cresswell (2009) argues that the emergence of mixed-method research as a new research model goes a long way in addressing shortcomings of both qualitative and quantitative research and illuminating multifaceted social situations.

In light of the overall research purpose, research questions and description of various research methods, the researcher used a quantitative method for the current study. Given the current study's large sample size involved 367 people from 99 of 176 supported agricultural

cooperatives in the Province of KwaZulu-Natal, in line with quantitative research, the sample size was generalized to represent a total population of 1278, as shown in Table 1.

This is not possible with qualitative research as it advocates for few sample size, which is difficult to generalise from a small number of case studies (Rahman, 2016). In the same vein, Harry and Lipsky (2014) argue that a research method which involves a smaller sample size raises the concern of generalizability to the whole population of the research. Adding weight to the above assertion is Atieno (2009); in terms of quality method, the results cannot be used on broader populations with the same amount of confidence that quantitative analyses.

According to (Dudovskiy, 2013), qualitative research is based on words, feelings, emotions and other non-numerical and unquantifiable elements. Hence, policymakers may not ask for qualitative research due to its subjectivity, ambiguity, and erroneous. This, therefore, may compromise the objectivity of the study and its contribution expected to be made in terms of the development of a sustainability model for the agricultural cooperatives in the Province of KwaZulu-Natal. It is pertinent to mention that this study will lean towards the quantitative method as it embraces structured processes and formal tools for data collection; hence the data is gathered accurately and scientifically (Martin, 2021). Silverman (2010) asserts that qualitative research approaches sometimes omit contextual understandings and concentrate more on denotations and experiences.

Although Jogulu and Pansiri (2011) underscore the significance of the mixed methods in terms of underpinning findings from both quantitative and qualitative methods. Wisdom and Cresswell (2013) argue that mixed methods also have their own share of shortcomings as they require more resources, labour, time and skills for the researcher to plan and evaluate complex data of both qualitative and quantitative methods. Richards and Richards (1994) are in agreement with the above assertion in that data interpretation and analysis may be more tedious in respect of mixed methods.

Since the current study adopts a quantitative method, it will be easier to generalise the larger sample results to the larger population as opposed to other research methods (Flick, 2011). Cohen, Manion and Morrison (2011) claim that qualitative methods, such as participant observation, unstructured interviews, and direct observation, are most usually utilized for the gathering of data. Additionally, there is a lot of interaction between the researcher and participants during the face-to-face interview process, in view of the current global upsurge of Covid 19 infection which is transmitted through the interaction of people (SA Department

of Health, 2020). This type of research method may put the lives of the targeted agricultural cooperatives in jeopardy as opposed to a quantitative method which uses questionnaires for data collection.

The figure 4.1 below sums up the road map of this research paradigm. As pointed by Saunders et al (2015), research paradigm is important in highlighting how the research was conducted, the type of research, the approaches used by the researcher and the philosophical assumptions guiding the researcher. This research is quantitative research which is based on the positivist paradigm as a point of departure. The research uses deductive reasoning as it starts with a hypothesis that requires data collection and analyses to answer the research questions. Survey was therefore used to collect data since the research is quantitative. The collected data was analysed through inferential statistics where a survey of a small sample was conducted with the aim of generalising the results to the larger population.

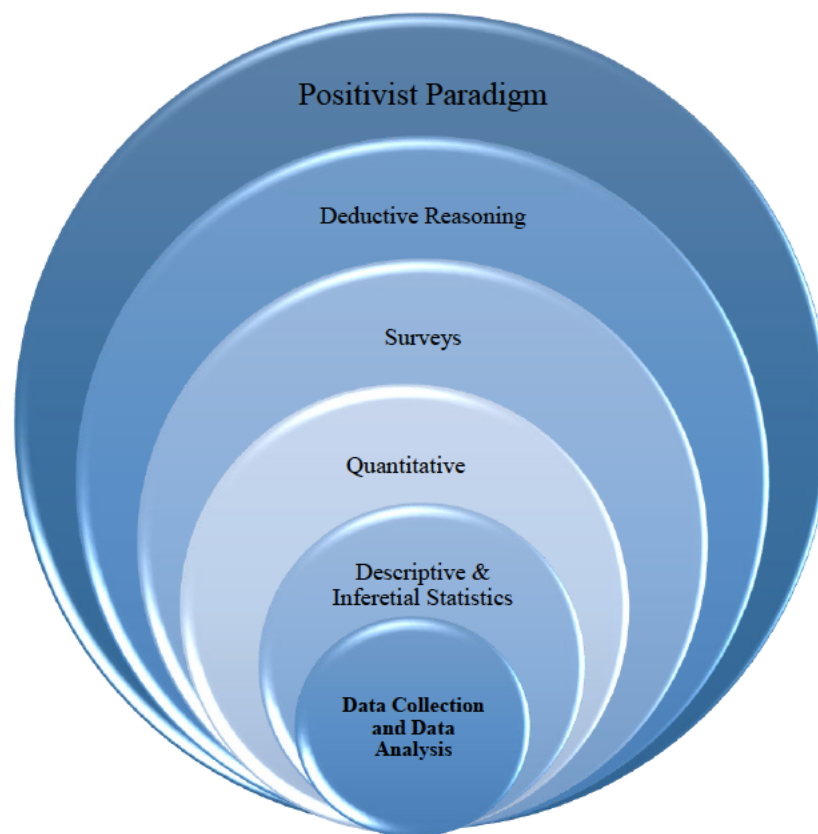


Figure 4.1: Saunders' Research Onion

Source: Saunders et al (2015: 108)

4.3. Research approach and design.

This study was conducted using a quantitative research design. Quantitative research is the research strategy that emphasises quantification in the collection and analysis of data (Bryman, 2008). It is a methodology that deals with numbers, has a strictly formal approach, and focuses on theory verification and testing (Saunders et al., 2009). It further incorporates practice and the norms of positivism and accepts the view that social reality is an external objective reality (Bryman, 2008). The techniques applied to produce numerical or quantifiable data (Mugenda & Mugenda, 2003). This study will use quantitative research as it is in line with the overall purpose of the study. Questionnaires will be administered to all 176 supported agricultural cooperatives through the help of extension officers of the Department as they work closely with all registered agricultural cooperatives in the Province.

The Covid-19 pandemic is affecting countries worldwide, including South Africa. In adhering to the South African lockdown level 3 protocols which prohibit the gathering of more than 50 people indoors and 100 people outdoors, the targeted agricultural cooperatives were met individually, and each cooperative has a membership of less than 50. The hygiene protocols and lockdown rules, such as wearing masks, consistent sanitization and social distancing of two meters, will be maintained during the researcher's meetings with cooperatives.

4.4. Research Paradigm

Research paradigms represent fundamental belief systems or worldviews that guide researchers in their work. They are crucial in defining how they interpret and engage with the world (Ohlomag, 2019). This study adopted positivism as a paradigm that perceives the social world as consisting of stable and observable realities that can be objectively measured and quantified (Zukauskas, 2017). Positivist researchers prioritize quantitative methods to validate knowledge based on the conviction that there is an objective reality subject to natural laws (Rehman & Alharthi, 2016; Zukauskas, 2017). A commitment to empirical evidence and methodological rigour characterises this approach. It aims to produce reliable and generalizable findings contributing to the existing knowledge body.

Positivism emphasizes structured methodologies and quantitative analysis. It was conducive to assessing the sustainability of agricultural cooperatives in a concrete and measurable manner. Unlike interpretivism, realism, or pragmatism, which incorporate subjective

interpretations and mixed-method approaches, positivism offers a clear-cut pathway for examining the phenomena through objective lenses. It allowed for the collection of quantifiable data that can be universally accepted and replicated. This choice was rooted in the aim to derive generalizable and empirically valid conclusions that can inform evidence-based strategies for enhancing the sustainability of agricultural cooperatives. The selection of positivism aligns with the research's objective to establish definitive correlations and patterns within the studied phenomena. It provided a solid foundation for subsequent decision-making and policy formulation.

In the current study, the positivist quantitative research model was used for the following reasons: firstly, the findings of the research can be generalised and used by other researchers in the near future; and secondly, questionnaires will be used to collect data. Thirdly, positivism postulates that social scientific knowledge should always be guided by proof through empirical experimentation. Hence, the current study is based upon pragmatic scientific experimentation, which is aimed at giving solutions to the scientific and social phenomenon with regard to the sustainability of agricultural cooperatives. The aforementioned reasons led to a quantitative research approach (Ohlomoh, 2019, Bryman, 2008; Berryman, 2019; Slevitch, Mugenda & Mugenda, 2003).

4.4.1. Research Philosophy

Research philosophy generally refers to assumptions about the nature and methods of knowledge (Cruickshank, 2017). Everest (2014) cites three theoretical underpinnings that often guide researchers, namely, ontology, epistemology, and axiology. In this study, the guiding research philosophy is grounded in epistemology, particularly within the positivist tradition. Epistemology, as defined by Cruickshank (2017), focuses on the nature of knowledge and how it is acquired, underpinning the belief that knowledge is best gained through objective observation and empirical measurement. This philosophical stance aligns with the chosen positivist paradigm, emphasizing the acquisition of knowledge through observable, quantifiable data, as opposed to the interpretivist view which perceives knowledge as subjective and constructed through social interactions. The selection of a positivist epistemological approach is driven by the study's aim to produce verifiable and objective data on the operations and impact of agricultural cooperatives.

The study prioritized positivism and its associated epistemology. Thus, it did not focus on the subjective interpretations and flexible realities inherent in ontological perspectives like idealism or materialism. Instead, it embraces a more structured approach to understanding the

phenomena under investigation. This helped to ensure that the findings are grounded in observable, measurable evidence. This choice reflects the study's commitment to generating reliable, valid, and generalizable data. This was driven to of contributing towards a broader academic and practical understanding of agricultural cooperatives, their functioning, and their role in sustainable development.

4.5. Population

According to Mugenda & Mugenda (2003), a population is a whole group of actions or items with mutual qualities. Keyton (2011:121) concurs and adds that the population comprises all components, persons, or matters having the qualities which concern the researcher. Wiid and Diggines (2013) also agree with Keyton in defining the population as the entire collection of individuals or things where the data in relation to the study is needed.

The target population for this study included 99 of the 176 supported agricultural cooperatives in KwaZulu-Natal, with a sample of 367 respondents participating in the study from a population of 1278, as shown in Table 4.1. The ratio of a district shown in Table 4.1. is the total number of people in that particular district divided by the total population.

Table 4.1: Number of cooperatives and research population

District	Number of Cooperatives	Number of people/districts	Ratio
Umkhanyakude	11	72	0.06
Zululand	18	113	0.09
Ugu	13	95	0.07
Ethekwini Metro	22	146	0.12
Ilembe	12	82	0.06
Umzinyathi	14	100	0.08
King Cetshwayo	16	119	0.09
Umgungundlovu	15	120	0.09
Amajuba	17	134	0.11
Uthukela	18	138	0.11
Harry Gwala	20	149	0.12
TOTALS	176	1278	1

Source: Own Research

4.6. Sampling

Sampling can be defined as a method whereby respondents are chosen from a huge population group to become the foundation for assessing the occurrence of the information, which is of concern in the study (Kumar, 2011). Two types of sampling methods exist, and these are the probability and non-probability methods. Etikan and Bala (2017) cite different methods used in sampling population, including probability and non-probability sampling. Probability sampling is common when a study uses a quantitative approach, and non-probability is common when the research uses qualitative research. The probability method means that every component within the population possesses an equal chance of being selected for the sample (Taherdoost, 2016). Non-probability is applicable in situations where there is difficulty in picking the appropriate people for the sample or where accessibility to the whole population is difficult (Du Plooy-Cilliers, Davis and Bezuidenhout, 2014). The study used probability sampling, as the research study is quantitative.

Table 4.2 illustrates different probability sampling methods, and the study will use clustered sampling to ensure each district is represented. According to Gaille (2018), the benefits of using clustered sampling include the fact that data may be obtained from one or more regions, and it integrates benefits from both stratified and random sampling. The author further states that clustered sampling is cost-effective and more rapid because it allows a researcher to detect clusters of units in a population rather than randomly selected units spread over.

Systematic sampling was not used as it might select participants with only similar characteristics depending on the system set-up, and this was also eliminated by not using cluster sampling. More than simple random sampling was needed, as Moore (2007) cited the difficulty in obtaining the sampling frame, which may cause the researcher to make a compromise. Such compromise may lead to a subjective sample. On the other hand, stratified sampling could be time-consuming and tedious (Drury 2021). Dudovskiy (2015) concurs and expatiates that the research process may be prolonged due to the complexity and become costly.

Cluster sampling was used in this study. Cluster sampling involves grouping participants into predefined clusters based on certain characteristics or geographical areas (Yilmaz, 2013; Cohen et al., 2017; Campbell et al., 2022). The researcher randomly selected clusters of agricultural cooperatives in different districts across KZN province to achieve a representative sample of the larger population. This method streamlined data collection and

enhanced the efficiency of the research process, especially when dealing with large populations spread over wide areas as in the case of agricultural cooperatives in KZN. ensuring diverse participant inclusion and comprehensive data representation.

Table 4.2: Probability and non-probability sampling

Probability sampling	Non-probability sampling
1. Simple random sampling	1. Convenience sampling
2. Stratified random sampling	2. Quota sampling
3. Cluster sampling	3. Purposive sampling
4. Systematic sampling	

Source: Adapted from Leedy & Ormrod (2012)

4.7. Sample Size

According to Taherdoost (2018), the sample size is the number of people from whom the researcher obtains the required information. This research used Krejcie and Morgan model in calculating the sample size at a 95% confidence interval. The Krejcie and Morgan model is shown:

$$s = \frac{X^2 NP(1 - P)}{d^2 (N - 1) + X^2 P(1 - P)}$$

s = required sample size

X^2 = chi-square value for $d_f = 1$ @ 5% confidence interval

N = the population size

P = population proportion (assumption = 0.5)

d = degree of accuracy (0.05)

This model gives a sample size of:

$$\begin{aligned} s &= \frac{X^2 NP(1 - P)}{d^2 (N - 1) + X^2 P(1 - P)} \\ &= \frac{1.96^2(1278)(0.5)(1-0.5)}{(0.05)^2(1268-1) + 1.96^2(0.5)(1-0.5)} \\ &= 296 \text{ people} \end{aligned}$$

While the calculated sample size for the study was (n=296), the actual sample that participated in the study was (n=367) respondents. The sample size in this study comprises

supported agricultural cooperatives from each district in KwaZulu-Natal. Roscoe (1975) proposes that sample sizes of more than 30 but under 500 are suitable for the majority of the studies. This study involved 367 respondents from 99 cooperatives in KZN selected from each district based on the ratios of the population in each agricultural cooperative supported over the last three years.

4.8. Data Collection and Analysis

Data analysis refers to the practice of lessening the amount of raw information, shifting the meaning from non-essentials, pinpointing substantial configurations as well as creating a structure for connecting the ethos revealed by the data (De Vos et al., 2011). Data collection is critical in the sense that if data collection is erroneously done, the outcomes, which are also known as the results and the findings, will be invalid (Franzel du Plooy-Cilliers and Johannes Cronje, 2014). The analysed data can be categorised into primary and secondary data. It is, therefore, important to highlight how primary and secondary data is collected.

Data can be collected in many forms: field reports of the common event, journal reviews, interview records, people's assertions, story narrations, written letters, written autobiographies, documents like class plans as well as newspapers and writings comprising of regulations, standards, portraits, metaphors, as well as individual ideologies (Kobus Maree, 2016). The above different forms can be grouped into primary or secondary data. Primary data refers to the data that is collected directly by the researcher from participants while secondary data refers to the literature that the researcher can use while acknowledging the scholars or authors.

There are different forms of collecting primary data such as observation, interviews and surveys (Rashid et al., 2019). On the other hand, secondary data collection can be done through document analysis, which refers to the act of systematically analysing written material to support the arguments of the research. In most cases, most research start with secondary data collection to identify gaps and review secondary literature. This study utilised secondary data collection to review secondary literature and to support the primary data that was directly obtained from the participants through surveys. According to Salkind (2010), primary data is much more effective than secondary data for data reliability. However, primary data collection is much costly and time consuming compared to secondary data collection.

After the collection of data, the researcher needs to analyse the data to answer the research questions. The type of a research determines the best data analysis method. For example, qualitative studies often rely on interpretative and descriptive analysis techniques such as thematic analysis while quantitative research often relies on positivist analysis techniques such as SPSS and inferential statistics. According to Marshall and Jonker (2011), inferential statistics is a data analysis technique that relies on samples to draw conclusions which can be generalised to the larger population. This method is suitable for quantitative research which often relies on the interpretation of quantitative data.

This study collected primary data through surveys and secondary data through journal reviews. The research instrument utilised in this study were questionnaires. The questionnaires were used in soliciting information from the cooperative's farmers and were drafted by the researcher and comprised of open-ended and closed-ended questions. The data was analysed through the SPSS (Version 24.0) and inferential statistics. The reason why inferential statistics was chosen is because of its ability to allow the researcher to study a small sample and use the results to generalise to a large population. In short, the sample from the research survey is a representation of the population. However, Davies and Fisher (2018) explain that in order for the study sample to be generalised as a representation of the whole population, the sample must be selected in a way that represent the population in question. The advantage of using inferential statistics is that it allows the researcher to save time and financial costs. Put differently, Marshall and Jonker (2011) argues that inferential statistics assumes that it is impossible practically impossible to study the entire population hence the need to focus a representative sample to draw conclusions that applies to the entire population.

4.9. Reliability and validity of the study

The principles of reliability and validity of the study findings were achieved using various methodological strategies (Cohen et al., 2017). These fundamental principles guide the integrity and robustness of every research study. In this quantitative research, reliability was achieved using systematic data collection methods, rigorous statistical analysis, and reliable instruments to measure the variables under investigation (Cohen et al., 2017; Yilmaz, 2013). The meticulous application of these techniques facilitates a foundation of trust and

confidence in the empirical data gathered, thereby bolstering the credibility of the research outcomes (Yilmaz, 2013).

Transferability for the study was achieved to ensure external validity through a comprehensive and transparent presentation of the research methodology. This involved presenting the study design, sampling strategy, data collection, and analysis procedures in detail and in simple steps (Yilmaz, 2013). The research provides a blueprint enabling other scholars to understand and replicate the study in different contexts. This detailed methodological exposition enhances the generalizability of the study results to similar settings, thereby ensuring their transferability.

Paralleling the concept of objectivity in this quantitative research, confirmability was rigorously maintained through a clear and methodical documentation process. An audit trail was meticulously kept, chronicling every phase of the research process, from data collection through analysis and use of peer-reviewed sources in reporting the study results (Cohen et al., 2017). This systematic documentation ensured that the research process was transparent and could be independently verified. Hence, this safeguarded the research process against potential biases and confirmed the integrity of the study's findings.

4.10. Ethical consideration

Studies by Clements, Darroch and Green (2017) argue the appropriateness of a study to observe certain ethical standards. The study strictly followed the ethical principles upheld by the University of KwaZulu-Natal.

Voluntary participation was key in the data gathering process. Respondents were given an information letter that outlined the study details, potential risks, and benefits. This was attached with a consent letter to sign before they responded to the questionnaire. The letters were fully detailed, which confirmed the participants' right to withdraw from the study at any stage without any consequences. This allowed them to make an informed decision about their involvement (Khan, 2015; Campbell, Taylor-Clark, & Loan, 2022).

The 'do no harm' was integral to this study. Ethical standards such as the Letter seeking permission from the Department were sought before the collection of data, and the Letter of Consent will be furnished to the participants. The principle is meant to ensure that the participants are protected from any physical, psychological, social, or legal risks. Thus, the questionnaires that were distributed did not have any potentially harmful questions. The

participants were given the questionnaire to go and respond at their own convenient and comfortable place. This ensured that they shared their responses in a safe environment and freely responded without any coercion. (Cohen, Manion, & Morrison, 2017).

Confidentiality and anonymity in research contribute to the integrity and credibility of the results (Khan, 2015; Campbell, Taylor-Clark, & Loan, 2022). Considering this was a quantitative study, the confidentiality and anonymity of respondents were achieved using numerical codes. There were no identifying markers that were used in the presentation of results.

4.11. Conclusion

This chapter focused on the methodology that was employed in this study. A clarification of quantitative research as a technique for data collection and analysis was provided. Measures followed during the data collection were discussed in this chapter, and information about the sample was provided.

5. Presentation of Results

5.1. Introduction

The previous chapter focused on the research methodology. This chapter focuses on the presentation of results. Data was collected using a questionnaire which was set based on the Likert scale. The questionnaires were administered to 367 respondents (farmers) who are part of the 99 surveyed agricultural cooperatives. These results are crucial in addressing the key objectives to (i) determine whether agricultural cooperatives have monitoring mechanisms to ensure sustainability in KwaZulu-Natal; (ii) examine the relationship between resource management and sustainability of agricultural cooperatives in KwaZulu-Natal; (iii) assess the relationship between environment and sustainability of agricultural cooperatives in KwaZulu-Natal; and (iv) assess the good governance, a social and economic aspect that impact on the sustainability of agricultural cooperatives in KwaZulu-Natal. The overall results of the study were crucial in achieving the fifth objective of the study to suggest a model to enhance the sustainability of agricultural cooperatives, as discussed in the next chapter (Chapter 6). The study results were analysed using SPSS (Version 24.0). The results following statistics were used to analyse data for this study descriptive analysis, factor analysis, one sample t-test, regression analysis and Pearson's correlation analysis.

5.2. Section A: Demographic Results

This section presents those demographic results of the agricultural cooperatives in KZN. Descriptive statistics are utilised to organise data summaries by describing the connection between variables within a sample or population (Kaur, Stoltzfus and Yellapu, 2018). This section presents the demographic details gathered from a total of 367 farmers from 99 co-operatives across 11 districts in KZN. Because the study and its objectives are aimed at what is happening at co-operatives, responses from the farmers in each co-operative were averaged to reflect the average opinions across each agricultural co-operative. The results involve the distribution of respondents from cooperatives per each KZN district. The types of funding support the agricultural cooperatives are receiving, the types of agricultural commodity being

farmed, the land size, number of years the cooperative has been operational, and the total number of members in each cooperative.

5.2.1. District

The results as shown in Figure 5.1 below show the distribution of respondents per district. It shows that 13.1% of the respondents were from Uthukela district, 12.1% from Harry Gwala, 12.1% from Umgungundlovu, 9.1% from Zululand, 9.1 from Amajuba, 9.1% from Ugu, 9.1% from Ilembe, 8.1% from Ethekewini metro, 7.1% from Umkhanyakude, 6.1% from Umzinyathi and 5.1% from King Cetshwayo.

5.2.2. Cooperative support

The results also reflected the types of support the agricultural cooperatives are receiving. The results revealed that the majority of the agricultural cooperatives are receiving more government support than private. Figure 5.1 below shows that majority (89.9%) of the agricultural cooperatives are supported by government and 10.1% are supported by private sector.

5.2.3. Types of commodities being farmed in KZN agricultural cooperatives.

The results of the study helped to establish the types of commodities being farmed by different agricultural cooperatives across KZN. Table 5.3 below provides the statistical details of the commodity distribution. Figure 5.1 below shows that 89.9% of the agricultural cooperatives were engaged in crop farming, 7.1% in mixed farming, and 3% in livestock farming. This shows that the majority were engaged in crop farming.

5.2.4. Land Size

The results of the study established the land size for the agricultural cooperatives in KZN. Table 5.4 below provides a detailed statistical distribution of the land size in hectares (ha).

Table 5.1: Land size

Land size (Hectares)	Frequency	Percent
Valid 1ha	24	24.2
2ha	37	37.4
3ha	18	18.2
4ha	7	7.1
>4ha	13	13.1
Total	99	100.0

Source: Own Research

The results in Table 5.4 above showed that 37.4% of the agricultural cooperatives had 2ha. 24.2% had 1ha, 18% had 3ha, 13% had more than 4ha and 7% had 4ha. This shows that the majority had land size close to 2ha. This data indicates that most agricultural cooperatives in KZN operate on relatively small land sizes, with the most common being around 2 hectares. This suggests that these cooperatives are likely small-scale operations which may face limitations in expanding their agricultural activities and achieving economies of scale.

5.2.5. Number of years the agricultural cooperative has been in operation

The study sought to establish the number of years each agricultural cooperative has been operational. The results of the study revealed that most of the agricultural cooperatives have been operational for over 5 years. Table 5.5 below provides detailed information.

Table 5.2: Years the agricultural cooperative has been in operation.

		Frequency	Percent
Valid	5.0	35	35.4
	5.6	1	1.0
	6.0	29	29.3
	6.9	1	1.0
	7.0	23	23.2
	8.0	9	9.1
	9.0	1	1.0
	Total	99	100.0

Source: Own Research

The results show that (35.4%) of the cooperatives have been in operation for five (5) years, followed by 29.3% who had been operating for six (6) years, whilst 23.2% were operational for seven (7) years. The results also showed that 9.1% were operating for eight (8) years, 1% were operating for five (5) years 6 months, 1% for six (6) years 9 months, and another 1% were operating for nine (9) years. The data indicates that most agricultural cooperatives in the study have been operational for five to seven years, suggesting relative stability and experience in the sector. This longevity implies that these cooperatives have surpassed the initial startup challenges and are potentially in a phase of growth and consolidation, indicating a mature segment within the sector.

5.2.6. Number of members in a cooperative

The study results revealed that agricultural cooperatives in KZN have different number of members. Table 5.3 below provide detailed insight of the results.

Table 5.3: Number of members in agriculture cooperatives in KZN

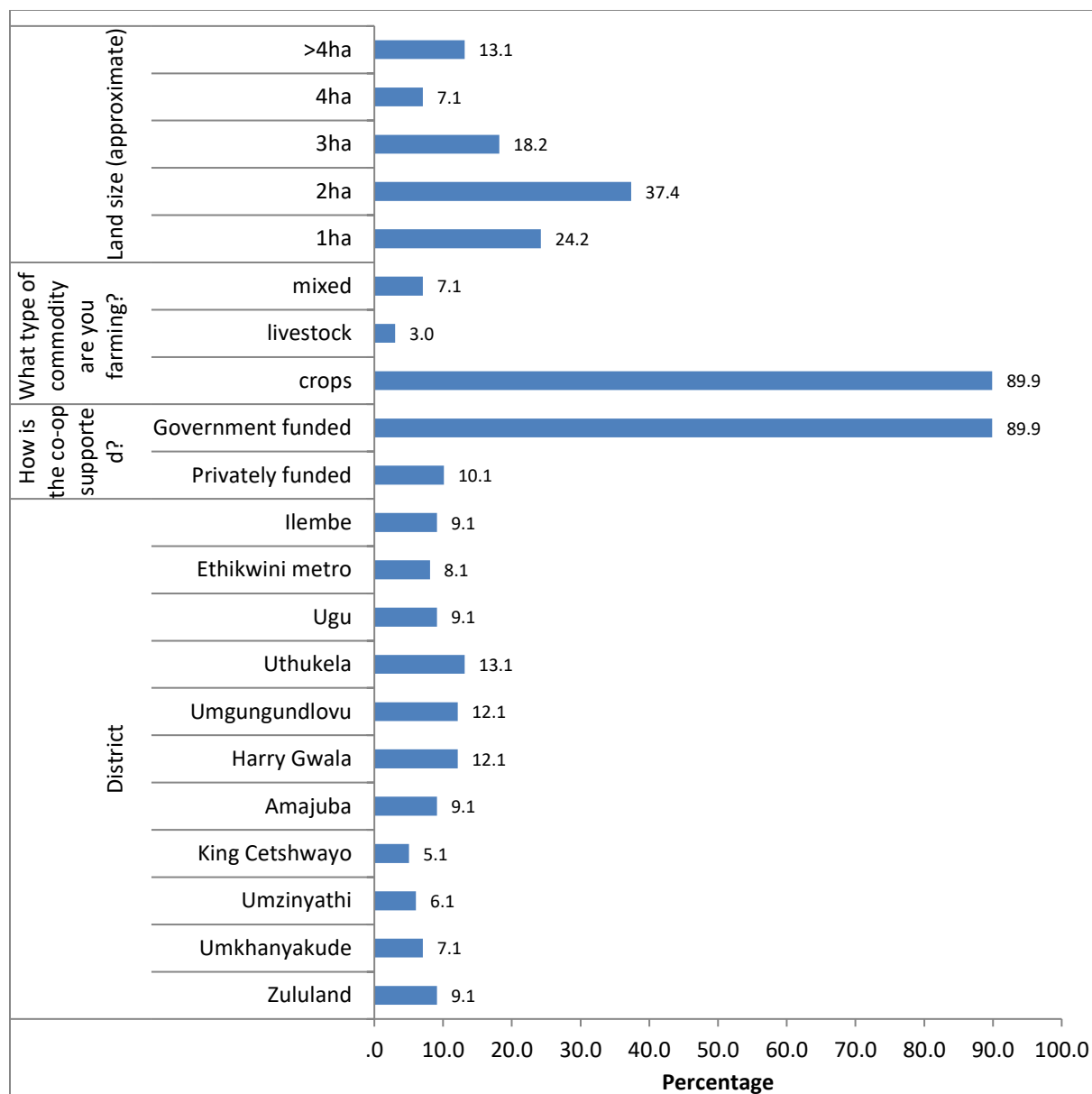
		Frequency	Percent
Valid	3.0	7	7.1
	4.0	20	20.2
	5.0	19	19.2
	6.0	13	13.1
	6.6	1	1.0
	7.0	33	33.3
	8.0	5	5.1
	9.0	1	1.0
	Total	99	100.0

Source: Own Research

The results show that 33.3% of the agricultural cooperatives had seven (7) members, 20.2% had (4) members and 19.2% had five (5) members. In addition, the results showed that 13.1% had six (6) members, 7.1% had three (3) members, 5.1% had eight (8) members, 1% had six (6) members, and 1% had nine (9) members. This shows that the cooperatives had a different number of members. The diversity in membership numbers among KZN agricultural cooperatives indicates varied organizational sizes and potentially different operational capacities. A larger proportion having around 4-7 members suggests a trend towards smaller, more manageable cooperative sizes, which could affect their resource allocation, decision-making processes, and overall operational dynamics.

5.2.7. Summary of the Demographic Information

Figure 5.1 below presents a detailed summary of the demographic results that were gathered from the agricultural co-operatives. It shows the distribution of gathered data across all the 11 districts in a bar-graph to provide a detailed pictorial analysis of the land size being farmed; the types of commodities and the type of support being received. The results show that All districts were sampled and represented the study.



Source: Own Research. **Figure 5.1:** Summary of General Information on Agricultural Cooperatives in KZN

The results showed that the different co-operatives had different land sizes ranging between 1ha to 4ha, and the majority have either 1ha or 2ha, and the least (7.1%) are on 4ha. The results in Figure 5.1 also show the different types of commodities the farmers are farming. They reveal that the majority of commodities being produced are crops (89.9%). The study sought to establish if the co-operatives receive any form of support from the government and private

sector. The results showed that the majority (89.9%) of the cooperatives are supported by the government, and 10.1% are supported by the private sector. The data suggests that agricultural cooperatives in KZN predominantly operate on smaller land parcels, primarily engage in crop production, and largely depend on government support. This implies a need for diversified agricultural activities and increased private sector involvement to enhance sustainability and growth potential within the cooperative sector.

5.3. Section B: Business Management

This section was based on the objective: of assessing the good governance and social and economic aspects that impact the sustainability of agricultural cooperatives in KwaZulu-Natal. A t-test and factor analysis were done to determine if there was sig agreement or disagreement with each item.

5.3.1. Monitoring mechanisms

Respondents were asked to rate their level of agreement (using a scale of 1= strongly disagree to 6=strongly agree) with nine (9) items about monitoring mechanisms. A one-sample t-test was applied to determine if there was significant agreement or disagreement with each item.

The results shown in Table 5.4 below show that there was significant agreement that assets are regularly monitored for loss or breakage, and minutes are taken at meetings in order for follow-up actions to be taken when necessary. However, the results also show that there is significant disagreement that regular checks against market standards regarding the quality of the products produced by the cooperative are undertaken; financial records of the cooperative are audited annually by a reputable auditor; business risks are identified and recorded annually in a Risk register; financial reports are submitted to both cooperative members and funders at least annually; operating performance is reviewed regularly against the operational plan; and harvest reports are compiled at the end of the harvest.

Table 5.4: Monitoring mechanisms

Monitoring mechanisms	N	Mean (SD)	t	df	p-value
1.1 Regular checks against market standards regarding the quality of the products produced by the cooperative are undertaken	99	3.01 (1.059)	-4.567	98	<.001*
1.2 The financial records of the cooperative are audited annually by a reputable auditor	99	3.05 (1.105)	-4.033	98	<.001*
1.3 All assets are regularly monitored for loss or breakage	99	3.71 (0.986)	2.139	98	.035*
1.4 The business risks are identified and recorded annually in a Risk register	99	2.78 (0.783)	-9.100	98	<.001*
1.5 Financial reports are submitted to both cooperative members and funders at least annually	99	3.08 (0.854)	-4.892	98	<.001*
1.6 Minutes are taken at meetings in order that follow-up actions can be taken when necessary	99	3.89 (0.965)	4.030	98	<.001*
1.7 Operating performance is reviewed regularly against the operational plan	99	2.91 (0.984)	-5.995	98	<.001*
1.8 Harvest reports are compiled at the end of the harvest	99	2.81 (1.017)	-6.758	98	<.001*
1.9 Wastage of farming input is monitored	99	3.65 (1.278)	1.125	98	.263

Source: Own Research. * indicates significance at the 95% level.

Factor analysis with Promax rotation was applied to determine the structure of these nine (9) items. One factor that accounts for 66.07% of the variance in the data was extracted. A Kaiser-Meyer-Olkin Measure of Sampling Adequacy (KMO) of .928 and a significant Bartlett's test indicates that the data was adequate for successful and reliable extraction. The factor loadings are summarised in Table 5.5.

Table 5.5: Factor loadings – Monitoring mechanisms

	Factor
	1
1.5 Financial reports are submitted to both cooperative members and funders at least annually	.884
1.2 The financial records of the cooperative are audited annually by a reputable auditor	.871
1.8 Harvest reports are compiled at the end of the harvest	.859
1.7 Operating performance is reviewed regularly against the operational plan	.851
1.1 Regular checks against market standards regarding the quality of the products produced by the cooperative are undertaken	.838
1.9 Wastage of farming input is monitored	.819
1.3 All assets are regularly monitored for loss or breakage	.777
1.4 The business risks are identified and recorded annually in a Risk register	.739
1.6 Minutes are taken at meetings in order that follow-up actions can be taken when necessary	.651

Source: Own Research

The analysis of monitoring mechanisms within cooperatives reveals a moderate implementation level, with a mean score of 3.21 indicating neither robust agreement nor strong disagreement. This subtlety, underscored by a significant t-value of -3.439 ($p = .001$), suggests that while monitoring practices are established, they may not be as comprehensive or consistently applied as desired. The high reliability coefficient (Cronbach's alpha of .942) confirms the consistency of the measurement, yet the moderate mean score points towards potential areas for enhancement in monitoring effectiveness within the cooperatives. The results suggest that while agricultural cooperatives in KZN have established monitoring mechanisms, there are significant gaps in their implementation. These gaps particularly are in regard to quality control, financial auditing, risk management, and performance review. This suggests a need for stronger and more consistent monitoring practices to enhance operational effectiveness and ensure sustainability.

5.3.2. Human resource management

Respondents were asked to rate their level of agreement (using a scale of 1= strongly disagree to 6= strongly agree) with ten (10) items about human resources management. A one-sample t-test was applied to determine if there was significant agreement or disagreement with each item.

Table 5.6: Human resource management

Human resource management	N	Mean (SD)	T	df	p-value
2.1.1 The cooperative leaders promote job satisfaction of their members	58	4.678 (1.2546)	7.087	56	<.000*
2.1.2 The leaders encourage members to achieve the goals of the cooperatives	58	4.564 (1.2367)	6.495	56	<.000*
2.1.3 The cooperative members receive technical training at least in every farming season	99	2.900 (0.8731)	-6.834	98	<.000*
2.1.4 Disputes involving employees/cooperative members are handled fairly	99	3.510 (1.0681)	.093	98	.926
2.1.5 The cooperative's members receive training in business management	99	2.948 (0.8823)	-6.223	98	<.000*
2.1.6 The profit is distributed equally to cooperative members	99	3.730 (0.9754)	2.349	98	.021*
2.1.7 Members are given the opportunity for development through attending workshops and short courses	99	3.106 (0.8605)	-4.554	98	<.000*
2.1.8 A performance management system is in place to monitor and review the performance of employees and members	99	2.704 (0.6777)	-11.688	98	<.000*
2.1.9 The recruitment process at this cooperative is fair and transparent	99	3.700 (1.0273)	1.933	98	.056
2.1.10 There is a well-defined structure in this cooperative in which reporting lines, functions, and accountability are clear	99	2.863 (0.7945)	-7.983	98	<.000*

Source: Own Research. * indicates significance at the 95% level

Table 5.6 shows that there is significant agreement that cooperative leaders promote the job satisfaction of their members, the leaders encourage members to achieve, and the profit is distributed equally to cooperative members. The results also showed that there is significant disagreement that: the cooperative members receive technical training at least in every farming season; the goals of the cooperatives; members are given the opportunity for development through attending workshops and short courses; a performance management system is in place to monitor and review the performance of employees and members; there is a well-defined structure in this cooperative in which reporting lines, functions and accountability are clear.

Factor analysis with Promax rotation was applied to determine the structure of these ten (10) items. Two factors that account for 81.78% of the variance in the data were extracted. A Kaiser-Meyer-Olkin Measure of Sampling Adequacy (KMO) of .879 and a significant Bartlett’s test indicates that the data was adequate for successful and reliable extraction. Rotation converged in 3 iterations.

The factor loadings are summarised in Table 5.7.

Table 5.7: Factor loadings – Human resources management

	Factor	
	1	2
2.1.7 Members are given the opportunity for development through attending workshops and short courses	.956	
2.1.3 The cooperative members receive technical training at least in every farming season	.927	
2.1.6 The profit is distributed equally to cooperative members	.906	
2.1.5 The cooperative’s members receive training in business management	.903	
2.1.4 Disputes involving employees/cooperative members are handled fairly	.902	
2.1.10 There is a well-defined structure in this cooperative in which reporting lines, functions, and accountability are clear	.842	
2.1.9 The recruitment process at this cooperative is fair and transparent	.813	
2.1.8 A performance management system is in place to monitor and review the performance of employees and members	.798	
2.1.2 The leaders encourage members to achieve the goals of the cooperatives		.987
2.1.1 The cooperative leaders promote job satisfaction of their members		.970

Source: Own Research

Overall, these results point out that agricultural cooperatives in KZN show strengths in promoting job satisfaction and encouraging members to achieve goals, with a fair profit distribution. However, there are significant gaps in providing regular technical and business management training, developing a well-defined organizational structure, and implementing a robust performance management system. Enhancing these areas could improve operational efficiency and member engagement.

5.3.3. Financial resources

Respondents were asked to rate their level of agreement (using a scale of 1= strongly disagree to 6= strongly agree) with eight (8) items about financial resources. A one-sample t-test was applied to determine if there was significant agreement or disagreement with each item.

Table 5.8: Financial resources**One-Sample Test**

Financial resources	N	Mean	t	df	p-value
1. A budget plan is compiled every year	99	3.805 (0.9364)	3.238	98	.002*
2.2.2 All operating expenditure incurred on a day-to-day basis is accounted for through the presentation of invoices	99	3.274 (2.1983)	-1.021	98	.310
2.2.3 Monthly cash flow meetings are held in order for members to keep abreast of cooperative finances	99	2.835 (0.7635)	-8.664	98	<.000*
2.2.4 Cooperative members receive training in finance management	99	2.916 (0.8054)	-7.211	98	<.000*
2.2.5 Members of the cooperative are encouraged to report suspicious fraud elements	99	2.762 (0.8118)	-9.044	98	<.000*
2.2.6 Financial statements are compiled annually	99	2.931 (1.0252)	-5.520	98	<.000*
2.2.7 After the distribution of income, the cooperative still maintain enough funds to be used for working capital and as a safety net in times of adverse economic conditions	99	2.774 (0.9459)	-7.637	98	<.000*
2.2.8 Income tax returns are filed annually	99	3.086 (1.1191)	-3.680	98	<.000*

Source: Own Research. * indicates significance at the 95% level

Table 5.8 above shows that there is significant agreement on a budget plan that is compiled every year. Then significant disagreement that all operating expenditure incurred on a day-to-day basis is accounted for through the presentation of invoices; monthly cash flow meetings are held in order for members to keep abreast of cooperative finance; cooperative members receive training on finance management; members of the cooperative are encouraged to report suspicious fraud elements; financial statements are compiled annually; after the distribution of income, the cooperative still maintains enough funds to be used for working capital and as a safety net in times of adverse economic conditions; income tax returns are filed annually.

Factor analysis with Promax rotation was applied to determine the structure of these eight (8) items. A Kaiser-Meyer-Olkin Measure of Sampling Adequacy (KMO) of .948 and a significant Bartlett's test indicates that the data was adequate for successful and reliable extraction.

The factor loadings are summarized in Table 5.9 below.

Table 5.9: Factor loadings – Financial resources

	Factor
	1
2.2.6 Financial statements are compiled annually	.956
2.2.8 Income tax returns are filed annually	.899
2.2.3 Monthly cash flow meetings are held in order for members to keep abreast of cooperative finances	.896
2.2.4 Cooperative members receive training in finance management	.882
2.2.7 After the distribution of income, the cooperative still maintain enough funds to be used for working capital and as a safety net in times of adverse economic conditions	.856
2.2.5 Members of the cooperative are encouraged to report suspicious fraud elements	.786
2.2.1 A budget plan is compiled every year	.724
2.2.2 All operating expenditure incurred on a day-to-day basis is accounted for through the presentation of invoices	.331

Source: Own Research

5.3.4. Assets management

Respondents were asked to rate their level of agreement (using a scale of 1= strongly disagree to 6= strongly agree) with seven (7) items about asset management. A one-sample t-test was applied to determine if there was significant agreement or disagreement with each item.

Table 5.10: Assets management

One Sample Test					
Asset management	N	Mean (SD)	t	Df	p-value
2.3.1 The farming equipment is serviced regularly	99	3.29 (1.0878)	-1.922	98	.058
2.3.2 The old model equipment is upgraded after a reasonable time	99	3.01 (0.8518)	-5.685	98	<.000*
2.3.3 The farming equipment is always ensured	99	2.58 (0.8162)	-11.182	98	<.000*
2.3.4 All assets are inspected and registered annually in an asset register	99	2.79 (0.7510)	-9.344	98	<.000*
2.3.5 The abuse of assets (e.g. farming equipment) is avoided	99	3.93 (0.8772)	4.941	98	<.000*
2.3.6 Farming inputs (e.g. fertilizer, animal feed) are securely stored in a facility onsite.	99	4.35 (0.9995)	7.314	72	<.000*
2.3.7 Wastage of farming input is minimised	99	4.48 (0.8923)	9.453	72	<.000*

Source: Own Research. * indicates significance at the 95% level

Table 5.10 above shows that there is significant agreement that wastage of farming input is minimised, the abuse of assets is avoided, and farming inputs (e.g. fertilizer, animal feed) are securely stored in a facility onsite. The results further showed that there is significant disagreement that: The farming equipment is serviced regularly; the old model equipment is upgraded after a reasonable time; the farming equipment is always ensured, and all assets are inspected and registered annually in an asset register.

Factor analysis with Promax rotation was applied to determine the structure of these seven (7) items. Two factors that account for 82.20% of the variance in the data were extracted. During the process, item 2.3.5 was dropped because it cross-loaded on both factors. A Kaiser-Meyer-Olkin Measure of Sampling Adequacy (KMO) of .747 and a significant Bartlett's test indicates that the data was adequate for successful and reliable extraction.

The factor loadings are summarised in Table 5.11 below.

Table 5.11: Factor loadings – Asset Management

	Factors	
	1	2
2.3.3 The farming equipment is always ensured	.921	
2.3.4 All assets are inspected and registered annually in an asset register	.907	
2.3.2 The old model equipment is upgraded after a reasonable time	.795	
2.3.1 The farming equipment is serviced regularly	.693	
2.3.7 Wastage of farming input is minimised		.996
2.3.6 Farming inputs (e.g., fertilizer, animal feed) are securely stored in a facility onsite.		.985

Source: Own Research

5.3.5. Governance

Respondents were asked to rate their level of agreement (using a scale of 1= strongly disagree to 6= strongly agree) with nine (9) items about governance. A one-sample t-test was applied to determine if there was significant agreement or disagreement with each item.

Table 5.12: Governance

One-Sample Test					
Governance	n	Mean (SD)	t	Df	p-value
3.1 Membership in our cooperative is voluntary and open to anyone	99	3.99 (0.9692)	5.070	98	<.000*
3.2 All members of the cooperative can participate in and contribute to decision making	99	3.96 (1.0315)	4.503	98	<.000*
3.3 There is a 'director' who manages the business	99	1.92 (1.1631)	-13.478	98	<.000*
3.4 All members contribute their own capital as a joining fee	99	3.74 (1.1875)	2.059	98	.042*
3.5 Our cooperative is independent and governs itself	99	3.95 (0.9758)	4.592	98	<.000*
3.6 Education/training is available to members of the coop to empower them to actively participate in decision making	99	3.00 (0.8392)	-5.901	98	<.000*
3.7 Our cooperative collaborates with other cooperatives in that we share knowledge on new	99	2.85 (1.0448)	-6.114	98	<.000*

farming practices					
3.8 The cooperative has a board of governors	99	1.62 (0.3520)	-53.037	98	<.000*
3.9 The cooperative has a strategic plan to align its programmes with the businesses' vision and mission	99	2.73 (0.7743)	-9.862	98	<.000*

Source: Own Research. * indicates significance at the 95% level

Table 5.15 above shows that there is a significant agreement that: membership of the cooperative is voluntary and open to anyone; all members of the cooperative can participate in and contribute to decision-making; all members contribute their own capital as a joining fee, and the cooperative is independent and governs itself. There is a significant disagreement that there is a 'director' who manages the business; education/training is available to members of the coop to empower them to actively participate in decision making; the cooperative collaborates with other cooperatives in that we share knowledge on new farming practices; the cooperative has a board of governors; the cooperative has a strategic plan to align its programmes with the businesses' vision and mission; and the cooperative has a strategic plan to align its programmes with the businesses' vision and mission.

Factor analysis with Promax rotation was applied to determine the structure of these nine (9) items. Two factors that account for 82.20% of the variance in the data were extracted. During the process, items 3.3 and 3.8 were dropped from the analysis because they did not load strongly onto any factor. A Kaiser-Meyer-Olkin Measure of Sampling Adequacy (KMO) of .845 and a significant Bartlett's test indicates that the data was adequate for successful and reliable extraction.

The factor loadings are summarised in Table 5.13 below.

Table 5.13: Factor loadings -Governance

	Factor
	1
3.5 Our cooperative is independent and governs itself	.901
3.2 All members of the cooperative can participate in and contribute to decision making	.842
3.6 Education/training is available to members of the coop to empower them to actively participate in decision making	.837
3.7 Our cooperative collaborates with other cooperatives in that we share knowledge on new farming practices	.815
3.4 All members contribute their own capital as a joining fee	.792
3.9 The cooperative has a strategic plan to align its programmes with the businesses' vision and mission	.704
3.1 Membership in our cooperative is voluntary and open to anyone	.625

Source: Own Research

5.3.6. Social aspects

Respondents were asked to rate their level of agreement (using a scale of 1= strongly disagree to 6= strongly agree) with eight (8) items about social aspects. A one-sample t-test was applied to determine if there was significant agreement or disagreement with each item.

Table 5.14: Social aspects

One-Sample Test					
Social aspect	n	Mean (SD)	t	Df	p-value
4.1 Our cooperative has a programme in place to improve social development within the community	99	3.01 (0.9863)	-4.914	98	<.000*
4.2 An aim of our cooperative is to improve the living standards of its members so that we can all better ourselves	99	4.61 (0.5855)	18.974	98	<.000*
4.3 Being a member of this cooperative provides us with freedom and control over the course of our own lifestyle	99	3.80 (0.8542)	3.572	98	<.001*
4.4 Our cooperative ensures basic needs for our families	99	3.65 (0.8553)	1.766	98	.080

4.5 There is cooperation and teamwork among members of the cooperative	99	3.37 (1.1023)	-1.110	98	.270
4.6 Our cooperative provides employment to us and others	99	3.45 (0.9118)	-483	98	.630
4.7 Our cooperative improves our empowerment and social recognition in society	99	3.63 (0.9778)	1.331	98	.186
4.8 There are no conflicts among members of the cooperative	99	3.44 (1.0660)	-554	98	.581

Source: Own Research. * indicates significance at the 95% level

Table 5.14 above shows that there is significant agreement that an aim of the cooperative is to improve the living standards of its members so that they can all better themselves; being a member of this cooperative provides us with freedom and control over the course of our own lifestyle; the cooperative ensures basic needs for our families and the cooperative improves our empowerment and social recognition in society; there are no conflicts among members of the cooperative. The results also showed that there is significant disagreement that: The cooperative has a programme in place to improve social development within the community; an aim of our cooperative is to improve the living standards of its members so that we can all better ourselves; there is cooperation and teamwork amongst members of the cooperative and the cooperative provides employment to us and others.

Factor analysis with Promax rotation was applied to determine the structure of these eight (8) items. Two factors that account for 82.20% of the variance in the data were extracted. During this process, item 4.2 was dropped because it did not load strongly onto a factor. A Kaiser-Meyer-Olkin Measure of Sampling Adequacy (KMO) of .927 and a significant Bartlett's test indicates that the data was adequate for successful and reliable extraction.

Table 5.15: Factor loadings – Social aspect

	Factor
	1
4.6 Our cooperative provides employment to us and others	.949
4.5 There is cooperation and teamwork among members of the cooperative	.944
4.7 Our cooperative improves our empowerment and social recognition in society	.941
4.8 There are no conflicts among members of the cooperative	.940
4.4 Our cooperative ensures basic needs for our families	.938
4.3 Being a member of this cooperative provides us with freedom and control over the course of our own lifestyle	.910
4.1 Our cooperative has a programme in place to improve social development within the community	.813

Source: Own Research

5.3.7. Environmental aspects

Respondents were asked to rate their level of agreement (using a scale of 1= strongly disagree to 6= strongly agree) with 12 items about environmental aspects. A one-sample t-test was applied to determine if there was significant agreement or disagreement with each item.

Table 5.16 below shows that there is significant agreement that the cooperative practices rotational grazing for the livestock, and soil testing is done prior to planting.

Table 5.16: Environmental aspects

One-Sample Test

Environmental aspect	n	Mean (SD)	T	Df	p-value
5.1 We strive to farm responsibly in order to protect the environment	99	3.52 (0.9063)	0.295	98	.769
5.2 Our cooperative uses utilities (e.g. energy and water) in an environmentally friendly	99	3.35 (0.8583)	-1.733	98	0.86
5.3 We use climate-smart technologies in our operations to reduce greenhouse gases	99	3.07 (0.7791)	-5.423	98	<.000*
5.4 Soil testing is done prior to planting	99	4.00 (1.1655)	4.256	95	<.000*
5.5 Water is harvested for farming (e.g. dams and boreholes)	99	2.36 (1.3336)	-8.482	98	<.000*
5.6 The cooperative practices dry farming	99	1.63 (0.6580)	-27.782	95	<.000*

5.7 The cooperative uses recycled water	99	1.42 (0.3077)	-66.984	98	<.000*
5.8 The cooperative uses solar panels and wind turbines	99	1.43 (0.3275)	-62.615	98	<.000*
5.9 The cooperative practices no-till cultivation	96	1.62 (0.5917)	-31.013	95	<.000*
5.10 The cooperative practices rotational grazing for the livestock	12	4.93 (0.5829)	8.543	11	<.000*
5.11 The produce is sold directly at the cooperative market or locally to conserve resources that may cause greenhouse gas (GHG) emissions.	99	2.68 (1.0586)	-7.681	98	<.000*
5.12 Our cooperative is concerned about the waste management	99	2.76 (0.8941)	-8.148	98	<.000*

Source: Own Research. * indicates significance at the 95% level

The results also showed that there is significant agreement that: Our cooperative strives to farm responsibly in order to protect the environment; soil testing is done prior to planting, and the cooperative practices rotational grazing for the livestock. There was a sig disagreement that; our cooperative uses utilities (e.g. energy and water) in an environmentally friendly; we use climate-smart technologies in our operations to reduce greenhouse gases; Water is harvested for farming (e.g. dams and boreholes); the cooperative practices dry farming; the cooperative uses recycled water; the cooperative uses solar panels and wind turbines; the cooperative practices no-till cultivation; the produce is sold directly at the cooperative market or locally to conserve resources that may cause greenhouse gas (GHG) emission; Our cooperative is concerned about waste management.

Factor analysis with Promax rotation was applied to determine the structure of these eight (8) items. Two factors that account for 82.20% of the variance in the data were extracted. During this process, item 5.10 was dropped because it correlated too highly with other items and caused numerical problems with the analysis. In addition, items 5.5 and 5.12 were cross-loaded and dropped. A Kaiser-Meyer-Olkin Measure of Sampling Adequacy (KMO) of .774 and a significant Bartlett's test indicates that the data was adequate for successful and reliable extraction.

Table 5.17: Factor loadings – Environmental aspect

	Factor	
	1	2
5.2 Our cooperative uses utilities (e.g. energy and water) in an environmentally friendly	.896	
5.1 We strive to farm responsibly in order to protect the environment	.873	
5.3 We use climate-smart technologies in our operations to reduce greenhouse gases	.855	
5.4 Soil testing is done prior to planting	.644	
5.9 The cooperative practices no-till cultivation		.726
5.6 The cooperative practices dry farming		.656
5.7 The cooperative uses recycled water		.584
5.8 The cooperative uses solar panels and wind turbines		.577
5.11 The produce is sold directly at the cooperative market or locally to conserve resources that may cause greenhouse gas (GHG) emissions.		.427

Source: Own Research

While agricultural cooperatives in KZN are making efforts to adopt environmentally sustainable practices like rotational grazing and soil testing, the results highlight that significant gaps exist in water conservation, renewable energy use, and waste management. This highlights the need for enhanced environmental strategies to ensure sustainable farming practices and reduce greenhouse gas emissions.

5.3.8. Economic aspects

Respondents were asked to rate their level of agreement (using a scale of 1= strongly disagree to 6= strongly agree) with nine (9) items about economic aspects. A one-sample t-test was applied to determine if there was significant agreement or disagreement with each item.

Table 5.18: Economic aspects

Economic aspect	N	Mean (SD)	t	df	p-value
6.1 There is a reliable market where we can sell our produce	99	3.50 (1.1231)	0.050	98	.960
6.2 The cooperative has its own transport to deliver the produce to the market	99	2.92 (1.2228)	-4.672	98	<.000*
6.3 The cooperative negotiates prices for farming inputs on behalf of its members	99	3.35 (1.0778)	-1.352	98	.179
6.4 The cooperative negotiates better rates when selling our produce	99	3.36 (1.0959)	-1.190	98	.237
6.5 Since the start of the cooperative, our market share has increased	99	3.25 (1.0097)	-2.450	98	.016*
6.6 Since the inception of the cooperative, turnover has increased	99	3.26 (0.9502)	-2.488	98	0.15*
6.7 Since the inception of the cooperative, the business has grown in size (number of employees /members)	99	3.12 (0.9090)	-4.152	98	<.000*
6.8 There continues to be growth in all aspects of the business	99	3.16 (0.8946)	-3.736	98	<.000*
6.9 The cooperative receives training on the marketing of its business	99	2.80 (0.9139)	-7.607	98	<.000*

Source: Own Research. * indicates significance at the 95% level

The results in Table 5.18 above shows that there is a significant agreement that: There is a reliable market where we can sell our produce. There is a sig disagreement that: the cooperative has its own transport to deliver the produce to the market; the cooperative negotiates prices for farming inputs on behalf of its members; since the start of the cooperative, our market share has increased; since the inception of the cooperative, turnover has increased; since the inception of the cooperative, turnover has increased; since the inception of the cooperative, the business has grown in size (number of employees /members); there continues to be growth in all aspects of the business; the cooperative receives training on the marketing of its business.

Factor analysis with Promax rotation was applied to determine the structure of these nine (9) items. A Kaiser-Meyer-Olkin Measure of Sampling Adequacy (KMO) of .911 and a significant Bartlett’s test indicates that the data was adequate for successful and reliable extraction.

Table 5.19: Factor loadings – Economic aspect

	Factor
	1
6.5 Since the start of the cooperative, our market share has increased	.956
6.6 Since the inception of the cooperative, turnover has increased	.952
6.8 There continues to be growth in all aspects of the business	.952
6.7 Since the inception of the cooperative, the business has grown in size (number of employees /members)	.944
6.4 The cooperate negotiates better rates when selling our produce	.939
6.3 The cooperative negotiates prices for farming inputs on behalf of its members	.931
6.2 The cooperative has its own transport to deliver the produce to the market	.904
6.9 The cooperative receives training on the marketing of its business	.889
6.1 There is a reliable market where we can sell our produce	.877

Source: Own Research

5.3.9. Sustainability

Respondents were asked to rate their level of agreement (using a scale of 1= strongly disagree to 6= strongly agree) with ten (10) items about sustainability. A one-sample t-test was applied to determine if there was significant agreement or disagreement with each item.

Table 5.20: Sustainability

Sustainability	n	Mean (SD)	T	Df	p-value
7.1 We are able to make a profit with the business without destroying the environment	99	2.91 (0.9011)	-6.454	98	<.000*
7.2 We have money in savings in case we need it in times of difficulty	99	2.78 (1.1941)	-5.976	98	<.000*
7.3 If our support systems pull out, the business will be able to continue its operations	99	2.69 (1.1924)	-6.744	98	<.000*
7.4 Through our farming practices, the soil/ grass	99	2.50	-13.768	98	<.000*

on the farm in our cooperative will be of a good enough quality to sustain farming in the future		(0.7224)			
7.5 Through our careful practices governing the use of natural water, there will be enough available water to sustain farming and living in the future	99	2.38 (0.6613)	-16.759	98	<.000*
7.6 Enough land is available for both farming and habitation in the future	99	2.08 (0.5885)	-23.902	98	<.000*
7.7 Our cooperative has a positive impact on the communities in which we are situated	99	2.95 (1.1957)	-4.526	98	<.000*
7.8 Our cooperative is performing well in all areas (profit, market share, growth) compared to our competitors	99	2.86 (1.0334)	-6.151	98	<.000*
7.9 Our cooperative uses sustainable agricultural practices such as water conservation, conservation tillage, legume, improved seed varieties, use of animal manure, crop rotation, and livestock grazing rotation.	99	2.83 (0.9873)	-6.749	98	<.000*
7.10 Our cooperative uses farming methods that do not have a negative impact on the environment	99	2.76 (0.8522)	-8.591	98	<.000*

Source: Own Research. * Indicates significance at the 95% level

Table 5.20 above shows that there is significant disagreement that: We are able to make a profit with the business, without destroying the environment; we have money in savings in case we need it in times of difficulty; If our support systems pull out, the business will be able to continue in its operations; through our farming practices, the soil/ grass on the farm in our cooperative will be of a good enough quality to sustain farming in the future; through our careful practices governing the use of natural water, there will be enough available water to sustain farming and living in the future; enough land is available for both farming and habitation into the future; our cooperative has a positive impact on the communities in which we are situated; our cooperative is performing well in all areas (profit, market share, growth) compared to our competitors; our cooperative uses sustainable agricultural practices such as water conservation, conservation tillage, legume, improved seeds varieties, use of animal manure, crop rotation, and livestock grazing rotation; our cooperative uses farming methods that do not have a negative impact on the environment.

Factor analysis with Promax rotation was applied to determine the structure of these 12 items. A Kaiser-Meyer-Olkin Measure of Sampling Adequacy (KMO) of .944 and a significant Bartlett's test indicates that the data was adequate for successful and reliable extraction.

Table 5.21: Factor loadings – Sustainability

	Factor
	1
7.9 Our cooperative uses sustainable agricultural practices such as water conservation, conservation tillage, legume, improved seed varieties, use of animal manure, crop rotation, and livestock grazing rotation.	.955
7.8 Our cooperative is performing well in all areas (profit, market share, growth) compared to our competitors	.954
7.7 Our cooperative has a positive impact on the communities in which we are situated	.939
7.10 Our cooperative uses farming methods that do not have a negative impact on the environment	.928
7.3 If our support systems pull out, the business will be able to continue its operations	.920
7.2 We have money in savings in case we need it in times of difficulty	.908
7.1 We are able to make a profit with the business without destroying the environment	.862
7.5 Through our careful practices governing the use of natural water, there will be enough available water to sustain farming and living in the future	.826
7.4 Through our farming practices, the soil/ grass on the farm in our cooperative will be of a good enough quality to sustain farming in the future	.824
7.6 Enough land is available for both farming and habitation in the future	.675

Source: Own Research

The results indicate a significant concern among cooperatives about their sustainability, with disagreements on their ability to profit without environmental harm, ensure financial stability, and continue operations without external support. This underscores a need for strategic planning and the adoption of sustainable practices to enhance resilience and sustainability in agricultural cooperatives.

5.4. Regression analysis

Linear Regression estimates the coefficients of the linear equation involving one or more independent variables that best predict the value of the dependent variable. A regression analysis was done using constructs as independent variables (IVs) and Sustainability (SUS) as the dependent variable. This was done to determine if any of these IVs have a significant effect on SUS when all are taken together (i.e., they all influence SUS at the same time)

5.4.1. Effect of resource management on sustainability

Table 5.22: Effect of resource management on sustainability

IV	R ²	F	df1; df2	p-value	B (regression coefficient)	t	p-value
HR1	.833	42.755	5; 43	<.001	.529	3.050	.004*
HR2					.044	.830	.411
FR					.372	2.088	.043*
AEM					.098	.828	.412
AIM					-.001	-.011	.991

Source: Own Research

As shown in Table 5.22 above, the five constructs measuring resource management account for 83.3% of the variance in SUS (sustainability). HR1 (HR Training & Management) and FR (financial management) are both significant predictors of sustainability. The results also showed that AIM has the smallest coefficient /largest p-value and has the least effect on SUS.

5.4.2. Effects of environment on sustainability

Table 5.23: Effect of environment on sustainability

IV	R ²	F	df1; df2	p-value	B (regression coefficient)	t	p-value
EA1	.699	111.673	2; 96	<.001	.743	12.001	<.000*
EA2					.738	5.365	<.000*

Source: Own Research

Table 5.23 above shows two constructs measuring environmental aspects for 69.9% of the variance in SUS (sustainability). EA1 (Environmental Aspect on Resource Usage) and EA2 (Environmental Aspect on Practices) are both significant predictors of sustainability.

5.4.3. Effects of good governance, social and economic aspects on sustainability

Table 5.24: Effects of good governance, social and economic aspects on sustainability

IV	R ²	F	df1; df2	p-value	B (regression coefficient)	t	p-value
G	.891	257.559	3; 95	<.001	.046	513	.609
SA					.120	1.074	.286
ECONA					.691	7.197	<.000*

Source: Own Research

Table 5.24 above shows that the three constructs, good governance and social and economic aspects, account for 89.1% of the variance in SUS (sustainability). The economic aspect is a significant predictor of sustainability. The results also showed that good governance has the smallest coefficient /largest p-value and has the least effect on SUS.

5.4.4. Effects of monitoring mechanism on sustainability

Table 5.25: Effects of monitoring mechanism on sustainability

IV	R ²	F	df1; df2	p-value	B (regression coefficient)	t	p-value
MM	.603	147.093	1; 97	<.000	.782	12.128	<.000*

Source: Own Research

Table 5.25 above shows monitoring mechanisms which account for 60.3% of the variance in SUS (sustainability). The monitoring mechanism is a significant predictor of sustainability and is important to SUS.

5.5. The relationship between resource management and sustainability of agricultural cooperatives in KwaZulu-Natal

This section was based on the objectives of determining the relationships between variables and the sustainability of agriculture cooperatives in KwaZulu Natal. Pearson's correlation coefficient was used to measure linear association. This was done to measure the strength of a linear

association between two variables in the study. It was done because it gives information about the magnitude of the correlation, as well as the direction of the relationship.

5.5.1. Relationship between resource management and sustainability

Table 5.26: Correlations between sustainability and resource management

		HR1	HR2	FR	AEM	AIM
SUS	Pearson Correlation (r)	.880	.342	.899	.822	.613
	p-value	<.000*	.009*	<.000*	<.000*	<.000*
	N	99	57	99	99	73

Source: Own Research

Table 5.26 shows that there is a moderate positive correlation between HR2 (HR Support) and sustainability, $r=.342$, $p=.009$. The results also showed that there are strong positive correlations between the remaining resource management constructs and sustainability. The results imply that all mean that agreement shown to the individual construct variable (e.g., good management of HR) is associated with the agreement that there is sustainability. Report these as you wish.

5.5.2. Relationship between environment and sustainability

Table 5.27: Correlation between environment and sustainability

		EA1	EA2
SUS	Pearson Correlation	.781	.498
	p-value	<.000*	<.000*
	N	99	99

Source: Own Research

As shown in Table 5.27 above, there is a strong positive correlation between EA1 and sustainability, $r=.781$, $p=.000$. The results also showed that there are moderate positive correlations between EA2 and sustainability. The results imply that all mean that agreement shown to the individual construct variable is associated with the agreement that there is sustainability.

5.5.3. Relationship between good governance, social and economic aspects and sustainability

Table 5.28: Correlation between good governance, social and economic aspects and sustainability

		G	SA	ECONA
SUS	Pearson Correlation	.859	.908	.942
	p-value	<.000*	<.000*	<.000*
	N	99	99	99

Source: Own Research

As shown in Table 5.28 above, there are strong positive correlations between good governance ($r=.859$; $p=.000$), social aspects ($r=.908$; $p=.000$), economic aspects ($r=.942$; $p=.000$) and sustainability. The results imply that all mean that agreement shown to the individual construct variable is associated with the agreement that there is sustainability.

5.5.4. Relationship between monitoring mechanism and sustainability

Table 5.29: Correlation between monitoring mechanism and sustainability

		Monitoring mechanisms
SUS	Pearson Correlation	.776
	p-value	<.000*
	N	99

Source: Own Research

Table 5.29 shows that there is a strong positive correlation between the monitoring mechanism and sustainability ($r=.776$; $p=.000$). The results imply that all mean that agreement shown to the individual construct variable is associated with the agreement that there is sustainability.

5.6. Conclusion

In conclusion, descriptive and inferential statistics conducted showed that the majority of the cooperatives are supported by the government. In addition, the results showed that the majority of the cooperatives were into crop farming. The results also showed that the cooperatives

operated between 5 to 9 years. The results also showed that the cooperatives had members ranging from 3 to 9 members. The results of the factor analysis showed that some items were removed because they had low values, which showed that they were not related to the other items. Furthermore, a t-test analysis was done to determine if there was significant agreement or disagreement with each item using the one-sample t-test. The results showed that there were both significant agreements and disagreements. Regression and Pearson correlation analysis were also done, and the results showed the effects and relationships of the variables to sustainability.

6. Discussion of Results

6.1. Introduction

In the previous chapter, the results obtained through the quantitative analysis of the data collected from respondents through descriptive and inferential statistics were presented. The research objective was to answer the questions on which the study was premised pertaining to agricultural cooperatives and their sustainability. The study's main aim was to suggest a model that enhances the sustainability of agricultural cooperatives in KwaZulu-Natal. The study was guided by five main questions to accomplish its aim: (i) Are there monitoring mechanisms available for agricultural cooperatives in KwaZulu-Natal to ensure their sustainability? (ii) What is the relationship between resource management and the sustainability of agricultural cooperatives in KwaZulu-Natal? (iii) What is the relationship between the environment and the sustainability of agricultural cooperatives in KwaZulu-Natal? (iv) What good governance and social and economic aspects impact the sustainability of agricultural cooperatives in KwaZulu-Natal? (v) What model can be suggested to enhance the sustainability of agricultural cooperatives? The purpose of this chapter is to provide interpretations and explanations for the obtained results concerning these questions. Moreover, the results are also critically evaluated against reviewed literature to establish links and gaps. Therefore, the chapter is arranged into five main sections, each concentrating on a single research question.

6.2. Monitoring mechanisms for Agricultural Cooperatives

The critical role of monitoring mechanisms in the sustainability of agricultural cooperatives should be emphasised. While analysing the data that was obtained, inferential statistics were conducted to assess the relationship between monitoring mechanisms and sustainability using both Linear Regression and Pearson (r). The regression analysis results revealed that monitoring mechanisms are a powerful predictor of sustainability in agricultural cooperatives. The correlation results also confirmed this, which indicated a strong

positive relationship between the two. What Pearson (r) does is that it shows both the strength and the direction of the relationship. In this instance, the relationship was not only strong, but it was also positive. This means that as one variable increases, so does the other. Translated, improving the monitoring mechanisms or implementation would positively impact and ensure the sustainability of the agricultural cooperatives.

Data collected indicated that the agricultural cooperatives represented by the respondents have monitoring mechanisms. Their ability to monitor operations is a key factor in ensuring sustainability; hence they are already a step in the right direction. Malomane's (2019) views on the importance of monitoring within agricultural cooperatives are shared and practised on this factor. However, there was a concerning issue highlighted by the data, which is a prioritization of some monitoring mechanisms over others. An assessment of the level of agreement or disagreement among participants highlighted areas of strengths and areas of weakness, which are detailed in Table 6.1 below.

Table 6.1: Monitoring Mechanisms for Agricultural Cooperatives in KZN

Monitoring Mechanisms for Agricultural Cooperatives		
Strengths and Weaknesses	Statement	Summary
Monitoring Strengths	All assets are regularly monitored for loss or breakage.	This is a strength in cooperatives, reflecting diligence in asset management, crucial for economic contribution at multiple levels (Nuhanovic-Ribic, 2015; Dube, 2016). The monitoring encompasses various essential aspects of the cooperatives' operations, from equipment to land and livestock, facilitating swift response to issues and maintaining value for sustainability. Government support is recommended, especially for rural-based cooperatives (Dube, 2016).
	Minutes are taken at meetings in order that follow-up actions can be taken when necessary.	Effective minute-taking enhances business processes, members' efficiency, and accountability, which are critical for sustainability (Manikas, 2015). It is an essential part of cooperatives' record-keeping, aiding in the reminder of responsibilities and business productivity (Makgahlela, 2021).

Monitoring Weakness	Cooperatives do not regularly check product quality against market standards.	Immediate attention needed to enhance market access and competitiveness (Van der Ploeg, 2019; Kyazze et al., 2017; Tashiana, 2017).
	Regular audits of financial records are not conducted.	Urgent need for auditing to ensure accountability and compliance (Yildiz et al., 2017; PFMA, 1999).
	Risks are not systematically identified or recorded annually.	Instituting risk management practices is essential for coping with volatility (Giannakis & Papadopoulos, 2016; Keuangan, 2016; Mangla et al., 2015; Msomi, 2018; Marwa, 2015).
	Annual financial reports are not provided to stakeholders.	Enhancing financial reporting practices is critical for transparency and attracting investment (Palepu et al., 2020; Fouche, 2014; Turan & Aunce, 2019).
	There is a lack of regular review against the operational plan.	Reviews against operational plans are essential for strategic management and continuous improvement (Huang et al., 2015; Gxabuza & Nzewu, 2021).
	Harvest reports to track yields are not utilized.	Compiling harvest reports is crucial for addressing Post-Harvest Loss and optimizing land and livestock management (Oboobi, 2020).
	The wastage of farming inputs is not adequately monitored.	Effective management and monitoring of inputs are required for production efficiency and quality maintenance (Kubayo, 2009; Baloyi, 2010).

Source: Own Research

6.3. Resources management and sustainability

Resources management is at the pith of business management and sustainable development. Regardless of the sector of the operation, all businesses depend on different kinds of resources, including human capital, which requires efficient and effective management to accomplish business goals. Chams & García-Blandón (2019) allude to what is regarded as Strategic Resources Management. This entails monitoring the business' capital in relation to financial and economic outcomes.

The first area of resource management that was assessed during the study is human resources management. Chams & García-Blandón (2019) mention, among other theories, systems theory as one of the principal theories upon which resources management is premised

(Chams & García-Blandón, 2019). This is the kind of thinking that would lead to the sustainability of a business; thus, there needs to be an understanding that people are a significant component of the entire business system, while mismanagement in this regard can potentially jeopardise the whole system.

Literature supports a strong relationship between human resources management and business sustainability. The results of the study were able to confirm this. In the correlation (Pearson r) analysis that was conducted. Human resources support correlated positively with sustainability, with the implication being that when employees receive support, there is an improvement in the sustainability of the business. However, while the relationship was positive, it was moderate, meaning that human resources support is not one of the best predictors of sustainability. Human resources training and support, however, the results indicated a strong positive relationship with sustainability. These results were confirmed by the linear regression analysis meant to determine the best predictors of sustainability. The analysis confirmed that of all the independent variables, both human resources training and support and financial management were good predictors of sustainability. This shows that agricultural cooperatives need to focus on training and support to ensure sustainability. The ability to compile a budget plan every year was the only financial management practice that was reported to be in place within the agricultural cooperatives. It should be noted that this is one of the initial steps of financial management. All businesses work based on an agreed-upon budget, as stated by Akelmu and Mihaylova (2021) and Zweli (2017), which allows the cooperatives to have a projection of growth. The budget acts as a blueprint for expenditure, and if cooperatives work within its limits, they can affect good practices in resource management.

However, this does not mean neglecting all HR functions because systems thinking alludes to the fact that the system is the product of the sum of its parts. Even though correlation and regression results revealed a strong relationship between human resources training and management on sustainability, the one-sample t-test results showed this as a weakness within the agricultural cooperatives. 11 components were used to assess the human resource functions of the agricultural cooperatives. Of these, the identified areas of weakness are mostly related to the aspect of training.

Table 6.2: Resource Management and Sustainability in KZN Agricultural Cooperatives

Resources management and sustainability		
Human Resource Management	Statement	Summary
Human Resource Management Weaknesses	Cooperative members do not receive technical training each season.	Agriculture is a business that is constantly evolving. There is a need to adapt to changing climate conditions, farming technologies and market requirements, among other things. This required constant improvement in the skills and capabilities of employees through training. Despite this need, the agricultural cooperative members do not receive technical training at least in every farming season, and the results revealed this. This is contrary to Anania and Rwekaza (2018), who underscore the importance of improving agricultural cooperatives' operational performance and technical capacity through workshops, seminars, tailor-made programmes and networking. Mkonda (2018) also accedes and avers that it would be hard for them to succeed unless agricultural cooperatives are equipped with technical information on sustainable farming. Agricultural cooperatives in KwaZulu-Natal thus need to develop a clear strategy for training employees at least every farming season, to enhance their knowledge and thus the capacity to succeed.
	Members lack training in business management.	Training is required on the part of cooperative members for understanding and managing successful business. The cooperatives need to take on the identity of a genuine economic enterprise with a clear understanding of the business world. The data revealed that agricultural cooperative members are not being trained in business management, which is a concern. They, therefore, lack critical knowledge on the management of a successful business and how to ensure sustainability Simamba(2018) argues that a cooperative is a business; hence its members must be capacitated on effective business management. Gxabuza and Nzewi (2021) also underscore the need for capacity building of agricultural cooperatives to comprehend their business's management aspects fully.
	Members lack opportunities for development through workshops and courses.	The analysed data shows that members are not given the opportunity for development through attending workshops and short courses. This further highlights the lack of training and development within the agricultural cooperatives. Mabunda (2017) argues that training is a prerequisite if agricultural cooperatives are to be autonomous, responsible, and accountable; hence it is lacking. Furthermore, there is a need to enhance their expertise to meet growing

		business environment demands; thus, literature cementing that training is one of the important measures. Inferential results also confirmed this, and the cooperatives must address this matter urgently.
	There is no system to monitor and review employee performance.	Kyazze et al.(2017) highlight the importance of setting a monitoring framework to assess the performance of cooperative members in maintaining high business performance. Mushonga (2018) also maintains that each member's performance monitoring and improvement is critical as it will influence the overall performance of the agricultural cooperatives.
Human Resource Management Resources Strengths	Cooperative leaders work to promote job satisfaction.	Promoting job satisfaction is a major advantage for cooperatives as employees who are satisfied with their jobs tend to have affective, normative and continuance commitment to the organisation. They work towards the organisation's goals and adopt its vision as their own. Job satisfaction is also a key determinant in creating a productive corporate culture. To that effect, Anusha Karkera and Maiya (2019) argue that human resources are the crucial pillar for all organizations, and agricultural cooperatives are not an exception; hence, job satisfaction should always be promoted. Similarly, De Reuver, Kroon, Olabarria, and Inurritegui (2021) assert that agricultural cooperatives should ensure the well-being of their members and employees.
	Management motivates members to achieve business goals.	Raewf <i>et al.</i> (2021) argue that if agricultural cooperatives are to be successful, their management should influence members to attain business goals. In the same line of argument, Still, Karunakaran and Huka (2018) amplify. Hence they assert that the success of agricultural cooperatives lies in the motivated members to realise business goals. Within their study, they raise a critical factor enabling employees to work towards achieving organisational goals: motivation. This relates to job satisfaction, which is why the results were congruent. The two variables have a positive relationship, and they complement each other.
	Disputes among members are handled fairly.	Dispute resolution is a part of the human resources function of every organisation. According to Hoffmann (2005), conflicts among members of agricultural cooperatives are inevitable; hence the skill of conflict management is crucial, and it must be embedded in the organogram of agricultural cooperatives. The important thing is the practice of fair practice in how disputes are handled; otherwise, there will be contention among employees. The data obtained from the study reflects that disputes involving employees/cooperative members are handled fairly. The practice will need to be sustained to maintain sustainable relations among employees.

	Profits are distributed equally to cooperative members.	The continued survival of a cooperative is contingent on the sharing of profits to all participating members in relation to the amount of business (the shares) they do within the cooperative. There is valuable literature to this effect. According to the cooperatives' values, the profit must be distributed equally to every member of the agricultural cooperatives (ICA, 2015). Mabunda (2017) also asserts that agricultural cooperatives' members should decide on how to share the profit equitably and fairly. Fairness is thus essential towards sustainability; otherwise, members opt to leave. In the cooperatives in question, it emerged that the profits are distributed equally to cooperative members.
	Recruitment processes are fair and transparent.	Recruitment practices are one of the core functions of human resources management. This must be done to promote sustainability through fairness and transparency within the recruitment process. Wech (2018) argues that effective recruitment alleviates numerous organisational challenges and contributes to the success of the cooperative business. These challenges may include but are not limited to the development of a poor reputation on the job market, leading to failure in securing good employees, the employment of unqualified employees and wide-ranging business decline. It was thus a relief to note general agreement concerning the fact that the recruitment processes at the cooperatives are fair and transparent.
	The board is accountable to cooperative members.	Rwekaza, Kayunze and Kimaryo (2018) suggest that the board should be accountable to the members of agricultural cooperatives, and members must be trained to make the board accountable. One of the cooperative principles promotes cooperative, democratic member control, which amplifies members' right to own and manage their cooperative hence, the appointed board and managers should account to the owners of the cooperative (ICA, 2015).
Financial Management Weaknesses	Operating expenses are not accounted for with invoices.	The results revealed that the agricultural cooperatives were being met with the challenge of not being able to account for daily expenditures. This points towards the lack of accountability among members and possible mismanagement of funds. This challenge plagues many small businesses due to a lack of good management practices, as evidenced in this case (Mungal, 2014). Effective turnaround is required in this area; otherwise, the cooperatives will incur unprecedented losses. Operational expenditures need to be accounted for through the presentation of invoices. This practice should be made mandatory within the cooperatives.
	Cash flow meetings are not held monthly.	Apart from being able to account for expenditures, the cooperatives do not hold monthly cash flow meetings. This exacerbates the situation as members lose sight of the cooperative's finances. Moreover, they then lose platforms through which they can question each other

		regarding transparency in expenditure. These agricultural cooperatives already have to survive on limited resources, which need to be monitored closely (Myeni, 2018).
Members lack finance management training.		The data reflects that the agricultural cooperative members do not receive training on finance management. Hence, the lack of effective financial management practices, as discussed above and throughout this section. According to Karunakaran and Huka (2018), most agricultural cooperatives lack financial management skills; hence they collapse. Collapse becomes inevitable in this case because of mismanagement.
Members are not encouraged to report fraud.		Cooperative members are not encouraged to report suspicious fraud elements. This paints a vivid picture of the lack of a culture that encourages accountability. Giannakas and Fulton (2020) claim that proper business principles need to be applied within these cooperatives because corruption is rife within this sector of work. Therefore, members and employees should be encouraged to report fraud. Malomane (2019) concurs that agricultural cooperatives are riddled with mismanagement practices, which is why PFMA (1999) encourages reporting fraud for growth in the business. This is a critical aspect of business that cannot be neglected; otherwise, culprits continue to benefit from embezzling money and committing fraud while others fail to benefit substantially.
Financial statements are not compiled annually.		This leaves them without a clear understanding of the performance of the business. Radikoko and Wally-Dima (2016) postulate that this is a key function within financial management. Thus, Fouche (2014) states that a framework for this is required within agricultural cooperatives. Regarding the major benefits of compiling financial statements, Mashange and Briggeman (2022) assert that gauging liquidity risks, profitability, and creditworthiness is only possible when financial statements are compiled and closely monitored.
Cooperatives lack a reserve for working capital.		After the income distribution, the agricultural cooperatives do not maintain enough funds for working capital and as a safety net in times of adverse economic conditions. Doing this is imperative because it ensures that the cooperatives always have running capital. Such funds should be set aside and built because they allow the business to always be on a growth trajectory (ICA, 2015). Hence, Sebhatu (2011) asserts that a lack of savings is a significant inhibitor of growth and sustainment.
Cooperatives do not file tax returns		Agricultural cooperatives do not file income tax returns annually. This is a critical function for

	annually.	businesses; otherwise, they breach income tax laws (Deller et al., 2009). The agricultural cooperatives must file their annual financial statement in line with CO-OP 15.2 financial reporting framework (IXBRL guide for Cooperatives in South Africa, 2022). The risk of not doing is very high because they may find themselves owing the South African Revenue Service (SARS), leading to the collapse of the business.
Asset Management Weaknesses	Equipment is not serviced regularly.	Lack of optimal equipment functioning is a threat to efficiency and may compromise the ability to meet deadlines. Servicing equipment prolongs its lifecycle, positively impacting productivity (Chen & Sun, 2019). This is why it should be an essential aspect of asset management. Essentially, this should be included in the strategic management of the business to mitigate against such things as breakdowns (Maleti et al., 2018).
	Outdated equipment is not replaced in time.	Aside from not servicing equipment, the agricultural cooperatives do not upgrade old model equipment following reasonable time limits. They must realise that all equipment has a lifespan that ends with disposal (Gabone, 2006). In other instances, over time, the cost of maintenance becomes more than the cost of disposal and investment in newer equipment. To that effect, Aditya (2016) advocates for the necessity of continued equipment upgrades in the agricultural business.
	Farming equipment is not insured.	Ensuring equipment is essential to minimize unplanned loss or damage. However, the agricultural cooperatives neglect to insure their equipment. Chen et al. (2022) claim that this is irresponsible asset management which increases operation costs. The scholars call on agricultural cooperatives to allocate equipment insurance and maintenance funds to avert any eventualities resulting from poor asset management.
	Assets are not inspected and registered annually.	The agricultural cooperatives are also in the practice of not registering to inspect and keeping a register of their assets. This means they have no way to account for lost or stolen assets which is a problem. Good asset management requires the constant inspection of assets and the keeping of precise records of the cooperative's assets. This is an integral aspect of risk management (Smadi, 2021), which is being neglected.
	Measures to prevent asset abuse are not in place.	The cooperatives do not have measures to mitigate the abuse of business assets like farming equipment. Again, this increases the cooperatives' costs because they have to repair or replace assets when such things could have been avoided. The abuse of assets in cooperatives is thus reported by Nkurunziza (2019), who claims that this is one of the reasons that hinder their performance. This further cements the discussion on the lack of accountability practices, yet

		this is instrumental in achieving the business-set objectives.
	Inputs like fertilizers are not securely stored.	The results revealed that farming inputs such as fertilisers and animal feeds are not stored in a secure facility in these agricultural cooperatives. The results prove that there is a lack of culture which places importance on the sustainability of the business. Agriculturally based businesses like cooperatives handle wide-ranging inputs, which are all critical towards production. These require care and monitoring as they are costly to acquire (Seko, 2009). Storage facilities for these inputs should be prioritised because they are a critical factor in the success of businesses.
	There is significant wastage of farming inputs.	Without proper storage facilities for farming inputs, it is not surprising that the cooperatives also lack measures meant to minimise the wastage of such inputs. According to Wonde et al. (2022), the wastage of farming inputs is a widely recognised challenge in small-scale farming businesses, which was corroborated by the results obtained in this study.

Source: Own Research

6.4. Environmental management in agricultural cooperatives in KZN

As was done in the previous section, regression analysis and Pearson (r) were applied to measure the relationship between the environment and the sustainability of agricultural cooperatives in KwaZulu-Natal. The regression analysis revealed that Environmental Aspect on Resource Usage and Environmental Aspect on Practice were significant predictors of sustainability. The correlation analysis gave a more precise breakdown of this relationship's strength and direction. Even though both variables predict sustainability, Environmental Aspect on Resource Usage had a strong positive relationship with sustainability, while the relationship with Environmental Aspect on Practice was moderate. The construct validity of these two groups of constructs within the environmental variable was established through the factor analysis presented in the previous chapter. An integral aspect of the analysis was conducted through the one-sample t-test, which enabled one to glean the performance of the agricultural cooperatives on constructs relating to resource usage and practice. Challenges are thus being encountered on many of the constructs within the two areas of environmental management. These are detailed in Table 6.3 below.

Table 6.3: Environmental Management in KZN Agricultural Cooperatives

Environmental Management in Agriculture Cooperatives		
Influence	Statement	Summary
Influence of the Environment on Resource Usage	Cooperatives strive to farm responsibly to protect the environment.	The commitment to responsible farming is evident among the cooperatives, reflecting an understanding of agriculture's dependence on a healthy environment. This aligns with sustainable resource management practices and is key to long-term viability. Embracing environmentally friendly methods, as advocated by Gonzalez (2018), and adopting conservation agriculture to maximize production and environmental protection are practices already being integrated, resonating with the agreements among participants (Mugandani, 2018).
	Utilities are not used in an environmentally friendly manner.	Despite a commitment to responsible farming, there is a noticeable gap in the environmentally conscious use of utilities such as energy and water. Given the current energy crisis and water scarcity issues in South Africa, the importance of sustainable utility management becomes even more pronounced. The need for training and adaptation of sustainable farming practices is crucial to address broader social and economic challenges (Gebremedhin, 2019; Piemontese, 2020).
	Climate-smart technologies are not widely used to reduce greenhouse gases.	The cooperatives show a gap in employing climate-smart agricultural technologies (CSATs), which are essential for reducing the environmental footprint and enhancing adaptation to climate change. The significant potential benefits of CSATs include maximizing production and improving farmers' resilience, emphasizing the urgency for government-supported initiatives to facilitate access to these technologies (Mazibuko, 2018; Lipper & Zilberman, 2018; Chapel Hill, 2021).
	Soil testing is not regularly conducted prior to planting.	There is a lack of consistent soil testing before planting within the cooperatives, a practice critical for assessing soil nutrient needs and preventing long-term soil degradation. The necessity of soil testing for sustainable fertilizer application cannot be overstated, as it underpins the health and productivity of the land (Patel, 2017; Neufeld & Davison, 2000).
Influence of the Environment on	Water is not adequately	The cooperatives are not engaging in sufficient water harvesting, a significant oversight given the reliance on crop farming and animal husbandry, which require robust water

Practice	harvested for farming.	management. The implementation of water harvesting strategies, including the construction of small dams for reliable irrigation, is a crucial adaptation to address rainfall variability and ensure sustainability (Mhagama, 2019; Khuzwayo, 2017).
	Dry farming practices are not adopted.	The lack of dry farming practices indicates a missed opportunity for the cooperatives, especially considering the challenges in water management. Dry farming can serve as an important climate change adaptation technique, conserving moisture and enabling cultivation with minimal rainfall (Barua & Mitra, 2022; Rusell, 2007).
	Recycled water is not used in farming.	The absence of recycled water use in agricultural processes represents a shortfall in maximizing resource efficiency. The advantages of using recycled water, which include increased nutrient content and potential for higher agricultural yields, are thus not leveraged, despite its importance being underscored by global and national agricultural directives (United Nations, 2017; Sears, 2021).
	Solar panels and wind turbines are not utilized.	The cooperatives have yet to embrace renewable energy sources such as solar panels and wind turbines. These technologies are increasingly critical for sustainable energy use and are integral to addressing climate change and promoting public health. The adoption of renewable energy could provide a dual benefit of reducing operational costs and contributing to environmental sustainability (Zhan, 2020; James, 2022).
	No-till cultivation is not practiced.	The non-adoption of no-till cultivation practices suggests a gap in employing cost-saving and soil-conserving agricultural methods. No-till farming has been associated with numerous benefits, including improved soil water availability, increased yields, and reduced expenses related to fuel and labor (Cusser et al., 2020; Deen & Kataki, 2003).
	Rotational grazing is practiced for livestock.	The practice of rotational grazing is a notable strength within the cooperatives, highlighting an environmentally conscious approach to livestock management. This practice contributes to soil health, enhances the organic matter content, and is a resilient strategy against the impacts of climate change (Hemphill, 2020; Austin, 2015).
	Produce is not predominantly sold locally.	The tendency to transport goods to markets beyond the local area contributes to increased greenhouse gas emissions, overlooking the environmental and economic benefits of local produce sales. Reducing transportation is key to minimizing the carbon footprint of agricultural operations and should be considered within sustainable business practices

		(Gedik et al., 2022; Wu et al., 2022).
	Waste management is not a primary concern.	The lack of focus on waste management within the cooperatives signals a disregard for the potential environmental impact of agricultural waste. Effective waste management is a critical component of environmental stewardship and sustainability, and its neglect can lead to significant ecological harm and contribute to global warming (Fernando, 2021; Schulte, 2012).

Source: Own Research

6.5. Good governance, social and economic impacts on sustainability

The results of the correlation analysis revealed all three variables (good governance, social and economic aspects) have a strong positive relationship with sustainability. The direction of the relationship, which was positive, shows that all three variables are determinants of sustainability. There is a desired improvement in sustainability when there is good governance or good social and economic processes.

The three variables do not hold equal weight/importance in their influence on sustainability, which was revealed through linear regression. The analysis allowed the researcher to make a distinction. Firstly, it revealed that economic aspects have the best predictors of sustainability. Regardless, the agricultural cooperatives perform poorly in almost all economic areas assessed in the study. Table 6.4 below provides a detailed summary discussion of the results.

Table 6.4: Good Governance, Social and Economic Aspects for Sustainability in KZN Agricultural Cooperatives

Good Governance, Social, and Economic Impacts on Sustainability			
Economic Aspects			
Strengths and Weaknesses	Market	Statement	Summary
Economic Strengths	Reliable market presence	There is a reliable market for selling produce.	The presence of a reliable market for agricultural produce stands out as a significant economic strength for the cooperatives. The ability to sell produce reliably is fundamental to profitability and long-term viability (Mdluli, 2019). Mabunda (2017) further emphasizes the importance of accessing stable markets for the economic success of cooperatives.
Economic Weaknesses	Lack of transportation	The cooperative lacks its own transport for delivering produce.	The absence of owned transportation means for the cooperatives heightens economic vulnerability, given the rising fuel costs and the resultant impact on transport hiring prices, compounding their economic challenges (SLAF, 2022; FAO, 2015).
	Ineffective negotiation for inputs	Prices for farming inputs are not negotiated on behalf of members.	The cooperatives' inability to negotiate input prices undermines their potential to reduce costs and improve margins, failing to capitalize on the collective bargaining power that is one of the cooperative model's hallmarks (Mabunda, 2017; Miller, 2021).
	Ineffective negotiation for produce sales	Better rates for selling produce are not negotiated.	The failure to negotiate favorable selling prices for their produce limits the cooperatives' ability to enhance profit margins, affecting financial sustainability (Bijman & Wijers, 2019; Xaba, 2020).
	Stagnant market share	No significant growth in market share since inception.	The cooperatives' market share has not expanded, indicating a lack of competitive strategy and innovation necessary for growth and sustainability in the market (Holgado-Silva & Binotto, 2022; LaTour, 2021).

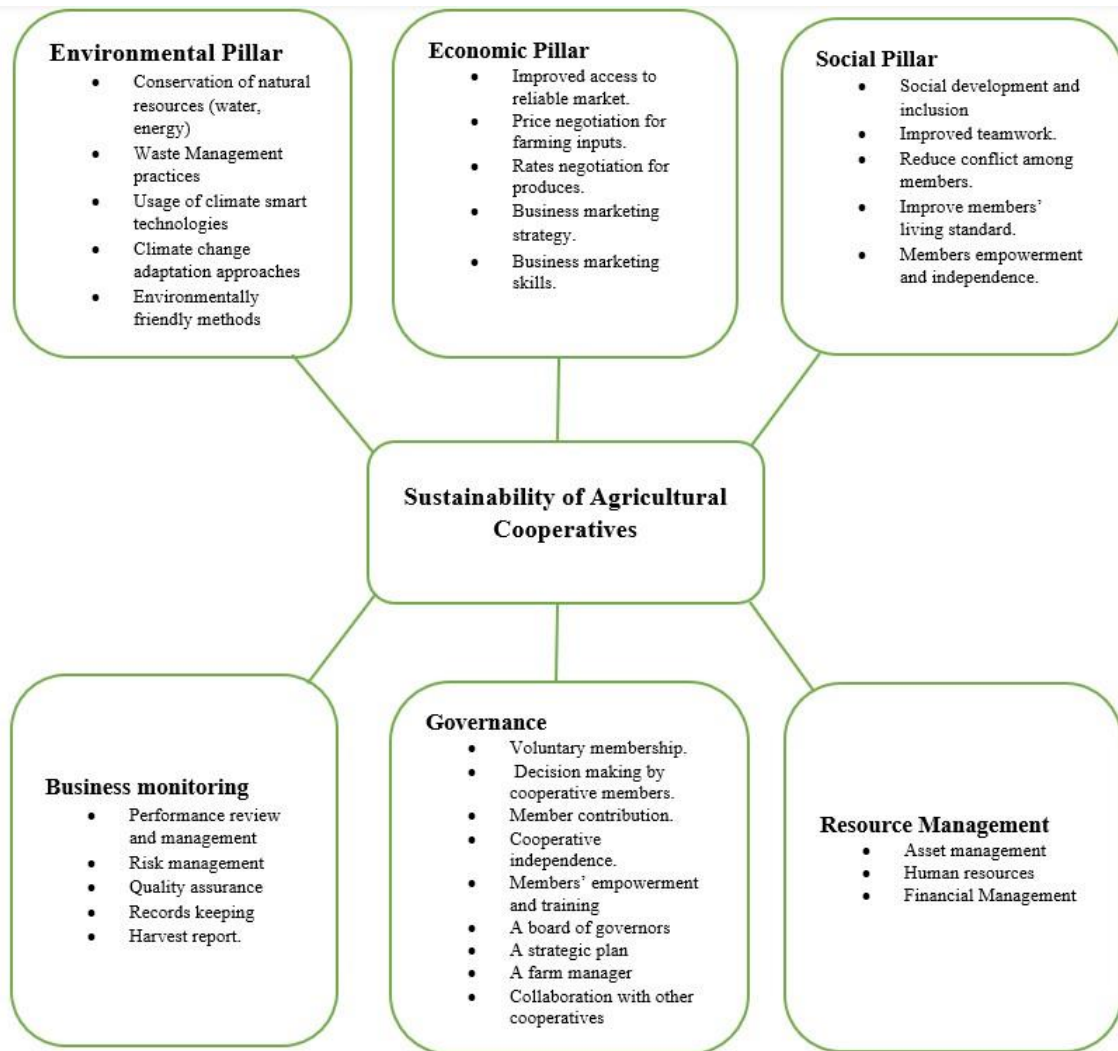
	Stagnant turnover	Turnover has not increased since the cooperative's inception.	Stagnation in turnover reflects economic challenges and a failure to capitalize on potential growth opportunities, highlighting a critical area for development (Grashuis & Su, 2019).
	Lack of business growth	No growth in size (employees/members) since inception.	The static size of the cooperatives, in terms of members and employees, suggests a failure to attract investment and expand operations, undermining their sustainability and potential for impact (Mohlala, 2020; The New Vision, 2022).
Social Aspects			
Strengths and Weaknesses	Social State	Statement	Summary
Social Strengths	Empowerment and social recognition	Cooperative improves empowerment and social recognition.	Despite the economic and governance challenges, cooperatives positively impact members' social recognition and empowerment, contributing to community status and cohesion (ICA, 2015; Mhembwe et al., 2007).
Social Weaknesses	Lack of community development programs	No programs to improve community social development.	The absence of initiatives for community social development signifies a missed opportunity for cooperatives to play a broader societal role and contribute to the Sustainable Development Goals (SDG, 2015; Ketola, 2006; Yu & Huang, 2020).
	Insufficient improvement in living standards	Aim to improve living standards not fully realized.	Although improving members' living standards is a goal, the cooperatives' economic struggles hinder this objective, challenging their ability to effectively enhance members' quality of life (Turan & Once, 2021; Yasin, 2021).
	Lack of cooperation and teamwork	Cooperation and teamwork among members are lacking.	The absence of teamwork and cooperation within the cooperatives impacts their economic and social performance, necessitating a focus on collaborative practices for success (Raewf et al., 2021; Iliopoulos & Valentinov, 2018).
	Inadequate employment provision	Cooperative does not provide sufficient employment.	The cooperatives' failure to offer adequate employment opportunities contradicts their potential role as job creators in rural economies, reflecting a significant misalignment with cooperative principles (Malomane, 2019).
Governance Aspects			
Strengths	Governance state	Statement	Summary

and Weaknesses			
Governance Strengths	Voluntary and open membership	Membership is voluntary and open to all.	The voluntary and open membership practice aligns with the principles of cooperative governance, enhancing inclusivity and potential for growth (ICA, 2015; Richter & Hanf, 2021).
	Democratic decision-making	All members participate in decision-making.	The democratic participation in governance ensures that all members contribute to the cooperative's strategic direction, which is vital for engagement and sustainability (Huang et al., 2015; Birchall & Simmons, 2004).
Governance Weaknesses	Lack of professional management	No farm manager to manage operations.	The absence of professional management, particularly farm managers, undermines operational efficiency and governance structure, highlighting a critical gap in leadership and strategic direction (Kyazze et al., 2017; Malomane, 2019).
	Insufficient strategic planning	No strategic plan aligning with vision and mission.	The lack of strategic planning indicates a governance deficiency, hindering the cooperatives' ability to set and achieve long-term goals, essential for sustained success and growth (Hofmann et al., 2016; Simamba, 2018).
	Inadequate collaboration with other cooperatives	Limited collaboration and knowledge sharing.	The failure to collaborate with other cooperatives limits knowledge exchange and best practice sharing, essential for innovation and competitiveness in the agricultural sector (Mindlin et al., 2022).

Source: Own Research

6.6. Sustainability model for Agricultural Cooperatives

The results that were obtained during the analysis revealed that there are many major weaknesses in the operations of the agricultural cooperatives in KwaZulu Natal. The data allowed the researcher to glean the extent to which the cooperatives need to improve in six major areas: business monitoring, resource management, environmental management, and economic, social and governance aspects. The results confirmed the findings of the literature review, as well as the recommendations made through the theoretical engagement with the analysis of theoretical models of sustainability, including the Pictorial Visualisation Model, the Conceptual Model, the Prism Model, the Egg of sustainability, the Quantitative Model, the Physical Model, as well as the Standardising Models that these are the areas of management that determine the sustainability of agricultural cooperatives. Therefore, the model below is a depiction of the suggested measures to enhance the sustainability of the cooperatives.



Source: Own Research. **Figure 6.1:** A sustainability model for agriculture cooperatives.

An analysis of the literature and the study findings indicates the functioning of agricultural cooperatives and how they can enhance sustainability. The challenge with the literature and the models reviewed in the theoretical and conceptual framework is that, in most instances, they do not capture contextual issues. This suggested sustainability model covers this gap because it is not from a single viewpoint. It combines the literature findings, the different theoretical underpinnings, as well as the results of the study into a single model that applies to the context of agricultural cooperatives in KwaZulu-Natal. The study results confirmed that agricultural cooperatives in KwaZulu-Natal are inundated with challenges in all six major pillars of sustainability. They, therefore, need to ensure that they meet every aspect's demands to improve their businesses' performance

6.6.1. Environmental pillar

The study conducted regression and correlation analysis to evaluate the impact of environmental management on the sustainability of agricultural cooperatives in KwaZulu-Natal. The research identified that the Environmental Aspect of Resource Usage and the Environmental Aspect on Practice significantly predict the sustainability of farming cooperatives. The study noted that agricultural cooperatives must adopt environmentally friendly methods, such as conservation agriculture, to maximise food production while protecting the environment. However, the results revealed that cooperatives did not use utilities like energy and water in an environmentally friendly manner. Agricultural cooperatives should adopt an agroecological approach to increase productivity, conserve water, and recycle organic matter within the farm. The study highlighted that the cooperatives faced challenges in fulfilling the environmental sustainability requirements, such as soil testing, responsible water management, and water harvesting. The study suggested that agricultural cooperatives should embrace indigenous knowledge and adaptation approaches, such as dry farming, to cope with climate change's adverse effects.

The environmental pillar is crucial in promoting the sustainability of agricultural cooperatives in KwaZulu-Natal. It is evident from the study findings that challenges faced by agricultural cooperatives in KZN regarding environmental sustainability are complex and multifaceted. In addition to the issues mentioned above, there are challenges related to waste management, biodiversity conservation, and soil erosion control. Waste management is an area that requires attention, as many agricultural activities generate waste that can have negative environmental impacts if not appropriately managed. For instance, the use of pesticides and fertilisers in farming can result in the contamination of soil and water resources. To mitigate this, agricultural cooperatives must adopt appropriate waste management practices, such as composting and recycling, to reduce the environmental impact of their waste. Biodiversity conservation is another important aspect of environmental sustainability in agriculture. Agricultural activities often have negative impacts on biodiversity through habitat destruction, overgrazing, and the use of harmful chemicals. Therefore, agricultural cooperatives should prioritise biodiversity conservation in their farming practices to address this challenge. This can be achieved by adopting sustainable land-use practices that minimise habitat destruction and promote the conservation of native species. Soil erosion control is also a critical area that requires attention. Soil erosion can result from various agricultural practices, such as overgrazing, deforestation,

and improper land management. This can lead to reduced soil fertility, decreased crop yields, and increased environmental degradation. To address this challenge, agricultural cooperatives should adopt sustainable land management practices that reduce soil erosion, such as contour farming, conservation tillage, and cover crops.

Promoting environmental sustainability is crucial for the long-term success of agricultural cooperatives (Barua and Mitra, 2022; James, 2022; Patel, 2017; Sears, 2021). This requires a concerted effort to address the multifaceted challenges faced by these cooperatives, including responsible resource management, adoption of climate-smart technologies, waste management, biodiversity conservation, and soil erosion control. Agricultural cooperatives can achieve greater environmental sustainability and long-term success by prioritising these areas and implementing appropriate strategies. The insights on the environmental pillar can contribute to a sustainable model for agricultural cooperatives in KZN by highlighting the importance of environmental stewardship and sustainability in the operations of these cooperatives (Austin, 2015; Gedik et al., 2022; James, 2022; Wu et al., 2022). By prioritising sustainable practices such as responsible use of natural resources, reduced greenhouse gas emissions, and biodiversity conservation, agricultural cooperatives in KZN can help protect the natural resources they rely on, ensure the long-term viability of their businesses, and contribute to the sustainability of the broader agricultural sector in the region.

Some specific actions that agricultural cooperatives in KZN could take to improve their environmental performance and sustainability include: (i) Adopting sustainable farming practices: This could include practices such as reduced tillage, crop rotation, integrated pest management, and agroforestry, which can help improve soil health, reduce erosion, and increase biodiversity. (ii) Implementing renewable energy solutions could involve installing solar panels or wind turbines to generate clean energy and reduce greenhouse gas emissions. (iii) Using water efficiently: This could include practices such as drip irrigation and rainwater harvesting, which can help conserve water and reduce the need for irrigation. (iv) Investing in biodiversity conservation: This could involve setting aside land for conservation or implementing practices such as hedgerows or cover crops to provide habitat for beneficial wildlife. By taking these actions, agricultural cooperatives in KZN can contribute to a more sustainable model for agriculture that benefits both the environment and the long-term viability of their businesses.

6.6.2. Economic pillar

The economic performance of agricultural cooperatives in KZN is crucial for their sustainability. The economic pillar entails self-reliance, funds and market access, resilience and sustainability, return on investment and economic growth, and sustainable development. Despite having a market advantage, cooperatives' profitability is hampered by their ineffectiveness in negotiating costs for farming inputs and selling their produce. This situation is compounded by stagnant turnover and market share, signaling a pressing need for robust marketing strategies and economic dynamism to boost membership and sustainability (Mushonga, 2018; Mdluli, 2019). The economic interdependencies within a cooperative suggest that enhancing one aspect, like market negotiations or resource management, can lead to comprehensive organizational improvements, fostering overall economic growth and self-reliance (Hale and Mauzerall, 2004; Ebinga, 2014).

Market access and funding are pivotal for the cooperatives' survival and growth, allowing them to invest in innovations and expand operations, thereby improving competitiveness. However, challenges such as inadequate market and transportation access, failure in strategic price negotiations, and a lack of initiatives to widen market share and turnover underscore the cooperatives' struggles, highlighting the necessity for training in marketing to augment economic outcomes (ICA, 2015; Qu et al., 2020). The findings accentuate the cooperatives' dependency on external support, risking operational discontinuity if such support wanes. Sustainable development within these cooperatives hinges on cultivating economic resilience, enhancing market presence, and bolstering internal financial management to withstand economic adversities (Mdluli, 2019).

The interconnectedness of economic factors within cooperatives necessitates a holistic approach to management and strategic planning, emphasizing innovation, diversification, and employee development to ensure self-reliance and reduce external dependency. These strategies can lead to sustainable economic growth, attracting investments, and instilling consumer confidence, vital for the agricultural sector's sustainability. However, it's imperative to balance economic growth with environmental stewardship and social responsibility to mitigate potential adverse outcomes, such as environmental degradation or the marginalization of small-scale farmers (Ebinga, 2014; Thakhathi, 2019).

In summary, the economic health of agricultural cooperatives in KZN is critical for their sustainable operation and contribution to rural development. Strategic interventions, including access to credit improvement, governance strengthening, and leadership enhancement, are essential for addressing the economic challenges faced by these cooperatives. These cooperatives can achieve sustainability, underpinning their role in the broader agricultural landscape of KZN and beyond, by fortifying their economic foundation (Mushonga, 2018; Hale and Mauzerall, 2004).

6.6.3. Social pillar

The social development and inclusion within agricultural cooperatives in KZN are pivotal for their sustainability, advocating for improved living standards, empowerment, independence, and enhanced teamwork among members. Agricultural businesses must foster social development and cohesion, as negative community relations can threaten their stability and growth. Social Impact Assessment (SIA) emerges as a key mechanism for advancing social inclusion, guiding cooperatives to fulfil their societal responsibilities effectively and ethically (Tang et al., 2020; Martin, 2021). Cooperatives should serve as catalysts for social change, promoting economic, social, and cultural development within their communities. This collective action model encourages members to prioritize communal benefits over individual gains, aligning with sustainable development goals and fostering social accountability (Shava & Hofisi, 2019; Mhembwe & Dube, 2017).

Economic challenges faced by cooperatives, including poor negotiation for input prices and produce sales, directly impact their ability to engage in social responsibility programs. The economic shortfall restricts their capacity to contribute meaningfully to community development, hindering their ability to enact environmentally friendly farming methods or sustainable practices. Consequently, the economic viability of cooperatives is essential for realising broader social objectives. Hence, engaging in strategic planning and incorporating social responsibility should be the core of business operations (King et al., 2013; Omri & Mabrouk, 2020).

The importance of the relationship between corporates and community members was also emphasised by the need for corporate social responsibility (CSR). CSR can play a crucial role in promoting sustainable development by positively impacting society and the environment while contributing to the long-term success of businesses (Strand, Freeman and Hockerts, 2015). Cooperatives can enhance their reputation, improve employee satisfaction, and drive innovation,

contributing to a competitive and sustainable business model through CSR. The integration of community needs and perspectives through proactive CSR and SIA practices ensures that agricultural cooperatives not only support but also thrive in harmony with their surrounding communities. This paves the way for innovative and sustainable solutions (Strand et al., 2015; Murray et al., 2016; SDG, 2015).

Agricultural cooperatives must actively engage in community development. They can help create employment opportunities and support education and training to ensure sustainability and facilitate social cohesion. Embedding social accountability and promoting inclusive practices, cooperatives can build trust and mutual respect with community members. This ensures a supportive environment conducive to sustainable development. This holistic approach to economic and social integration underlines the importance of cooperatives as sustainable entities capable of driving positive change in their communities. Thus aligning their operations with the broader objectives of sustainable development and social equity (Turan and Once, 2021; SDG, 2015).

6.6.4. Governance pillar

Governance in the context of agricultural cooperatives in KZN is fundamental to their functionality and sustainability. It embodies the systems and principles that dictate corporate activities and resource management. This governance encompasses establishing clear policies, rules, and procedures to guide operations, ensuring strategic goals are met while adhering to legal standards and ethical practices. The essence of governance lies in instilling values and integrity within corporations (Roy and Tisdell, 1998), which is crucial for the sustainable trajectory of cooperatives. Adherence to cooperative governance principles, as outlined by the ICA (1995), including voluntary membership, democratic control, and economic participation, sets a professional standard in business conduct, vital for achieving sustainability (Mushonga, 2018).

Open and voluntary membership is a cornerstone of cooperative governance, offering an inclusive platform for anyone willing to partake in and shoulder the responsibilities of membership, thus fostering diversity and potential growth within the cooperative (Rena, 2017; ICA, 2015). Democratic decision-making further empowers members, enabling active participation in shaping the cooperative's trajectory, thereby ensuring decisions reflect the collective interest and enhance commitment to shared objectives (Dube, 2016; Martin, 2021).

Economic contribution by members through capital investment, as suggested by the ICA (1995), underpins the cooperative's financial foundation, enabling the distribution of economic benefits among members and potentially facilitating community development initiatives (Qu et al., 2020; Okem, 2016). However, challenges such as insufficient member capital contributions and the absence of farm managers reveal gaps in operational and financial governance that need addressing to strengthen the cooperative's economic and administrative structures (Mangla, Kumar, and Barua, 2015).

The role of a functioning board in steering the cooperative towards sustainable development cannot be overstated. According to Omri and Mabrouk (2020) and Kardos (2012), this governance body is crucial for setting strategic goals, ensuring ethical operations, and advancing corporate responsibility. It contributes to the cooperative's sustainability and ethical stature in the business landscape. Therefore, an effective board promotes transparency, guides decision-making, and promotes stakeholder trust. It serves as the foundation for good governance practices that shape the long-term success and sustainability of the cooperative.

Good governance is key in the sustainable development of agricultural cooperatives in KZN. It reveals the need for transparent, accountable, and ethically sound practices. It is the linchpin for ensuring cooperatives meet their strategic objectives, uphold legal and regulatory compliances, and maintain ethical operations. With the establishment of solid governance frameworks, including effective board management and member participation, agricultural cooperatives can navigate the complexities of sustainable development. Allowing them to facilitate long-term success and contributing positively to the broader community and environment.

6.6.5. Resource management pillar

Resource management is critical in business management and sustainable development, including agricultural cooperatives in KZN. Human resources management is a key area of resource management that requires effective management to achieve business objectives. The systems theory is one of the principal theories that underpin resource management. It suggests that people are an essential component of the entire business system, and mismanagement in this area can jeopardise the whole system. Studies confirm the strong link between effective human resources management and business sustainability, with training, support, and financial management identified as key predictors of success. However, the research highlighted a significant gap in technical training among cooperative members, underscoring the urgent need

for comprehensive training programs to build their competence and enhance their contribution to the cooperative's success (Kyazze, Inkote, and Wakaisuka-Isingoma, 2017; Mushonga, 2018).

The lack of business management acumen among cooperative members is concerning, as it impacts their ability to navigate the complexities of the business world effectively. To address this, cooperatives must prioritize the development and implementation of targeted training and educational initiatives, including workshops and short courses that can bolster their business management skills. Such educational efforts are crucial for fostering a culture of autonomy, responsibility, and accountability within cooperatives, ensuring they are well-equipped to adapt to the evolving demands of the business environment and sustain their operations over the long term (Martin, 2021; Shava and Hofisi, 2019).

The absence of a robust performance management system in the cooperatives suggests a need for a more structured approach to monitoring and evaluating employee and organizational performance. Establishing clear reporting lines, functions, and accountability mechanisms is essential for efficient decision-making and organizational agility. Moreover, promoting job satisfaction and ensuring the well-being of members and employees are pivotal in cultivating a committed and productive workforce, dedicated to achieving the cooperative's goals and contributing to its sustainability (Anusha Karkera and Maiya, 2019; De Reuver et al., 2021).

Financial management remains a critical area where agricultural cooperatives in KZN need to bolster their capabilities. Although they are proficient in budget planning, there is a notable deficiency in broader financial management aspects, impacting their growth and economic resilience. For cooperatives to thrive and achieve sustainable development, they must embrace comprehensive financial strategies that encompass effective budgeting, expenditure management, and investment planning, facilitating a stable and growth-oriented economic environment (Akemu and Mihaylova, 2021; Zweli, 2017).

In summary, for agricultural cooperatives in KZN to realize long-term sustainability, a holistic approach to resource management encompassing human, financial, and operational aspects is imperative. By enhancing training and development, establishing strong performance and financial management systems, and fostering a supportive and inclusive organizational culture, cooperatives can build a robust foundation for sustained success. This strategic focus will improve their immediate operational effectiveness and ensure their enduring contribution to the

region's agricultural sector and broader socio-economic landscape (Okem et al., 2016; Mdluli, 2019).

6.6.6. Business monitoring pillar

In order to ensure the sustainability of agricultural cooperatives, it is critical to emphasise the role of monitoring mechanisms. Inferential statistics were conducted on data obtained from agricultural cooperatives in KZN using both linear regression and Pearson (r) to assess the relationship between monitoring mechanisms and sustainability. The regression analysis results revealed that monitoring mechanisms are a powerful predictor of sustainability in agricultural cooperatives. Furthermore, the correlation results also confirmed a strong positive relationship between the two. This implies that improving monitoring mechanisms or their implementation would positively impact and ensure the sustainability of the agricultural cooperatives. The data collected indicated that the agricultural cooperatives represented by the respondents had monitoring mechanisms in place. The ability to monitor operations is a key factor in ensuring sustainability, and these cooperatives are already on the right track. The importance of monitoring within agricultural cooperatives is highlighted by Malomane (2019), and this notion is shared and practiced by the cooperatives from which data was collected. However, there was a concerning issue highlighted by the data, which is the prioritisation of some monitoring mechanisms over others. An assessment of the level of agreement or disagreement among participants highlighted areas of strengths and areas of weaknesses.

Two areas of strength were identified in the monitoring processes of the agricultural cooperatives. The first is the regular monitoring of all assets for loss or breakage. Agricultural cooperatives operate like any other business, and their assets must be regularly monitored for loss and breakage to maintain their value and ensure sustainability. This is also critical for responding to any issues and countering potential future losses. Monitoring and evaluating cooperative assets cannot be stressed enough, and this was an area of strength for the cooperatives in the study. However, it is essential to emphasise the need for government support for rural-based agricultural cooperatives, which may not have the resources to monitor their assets effectively.

The second area of strength in monitoring mechanisms is minute-taking during meetings. This is a critical aspect of all business-related meetings, where decisions are made, actions are assigned, and progress is evaluated. The cooperatives participating in the study took minutes during

meetings to follow up on action points, enhancing the business process, members' efficiency, and accountability. Minute-taking is a seemingly low-level task, but it yields high returns when utilised effectively to keep track of issues discussed and decisions made during meetings.

More so, it was evident that respondents disagreed with many of the business monitoring mechanisms, indicating concerning outcomes of possible lack of consistency or lack thereof of these monitoring mechanisms within these cooperatives. The lack of agreement among participants within the sample showed that these areas of weakness require improvement to ascertain sustainability. The weaknesses identified were the lack of regular checks against the market standards regarding product quality, lack of annual auditing of financial records, lack of risk analysis and risk register, and the absence of regular financial reports to evaluate the cooperatives' financial performance.

In the agricultural business, constant market surveillance is necessary to keep track of the demands of consumers regarding the preferred quality of produce. However, the research findings showed that the cooperatives in the study did not regularly check the quality of products they produce against market standards. This lack of market monitoring places them at potential risk and failure. As a result, agricultural cooperatives may find it easier to access the market but find it challenging to maintain. Consistent monitoring of the market and product quality is critical to improving sustainability.

Auditing financial records are vital for every business owner wishing to succeed. Unfortunately, the lack of auditing as an annual priority by these cooperatives means that they lack the benefits of an accurate depiction of expenses, truthfulness, accountability among business stakeholders, and a clear picture of how their cooperatives are growing. In addition, agricultural cooperatives necessitate more independent auditing than other organisations due to their multi-partner structures, and the lack of financial auditing records leaves them wondering how to track development and mitigate losses and potential theft.

Effective risk management would allow agricultural cooperatives to cope with the volatility of the agricultural business, such as climate change-related issues, meet market demands, and increase competitiveness through adaptation to new technologies. However, the agricultural cooperatives in the study did not have a risk register to identify and record risks annually, leaving them with a higher probability of failing to remain sustainable over time.

It is crucial to note that monitoring mechanisms play a critical role in ensuring the sustainability of agricultural cooperatives. The study highlights the need to prioritise all monitoring mechanisms equally, particularly in the context of rural-based agricultural cooperatives. The strengths identified in the monitoring processes of the cooperatives in the study serve as positive examples for others, particularly in regularly monitoring all assets and taking minutes during meetings. Therefore, it is essential to continue emphasising the importance of monitoring mechanisms for agricultural cooperatives and their impact on sustainability. From the findings, it is crucial to note that the business monitoring pillars help to emphasise that financial reports should be compiled at least annually to gain insight into the financial value of an organisation, such as an agricultural cooperative. Valuing an organisation is essential, and regular financial reports provide transparency, allowing all business stakeholders to understand the business's financial performance. Overall, this study emphasises the importance of monitoring mechanisms, such as regular market checks, auditing of financial records, risk analysis, and regular financial reports, in ensuring the sustainability of agricultural cooperatives.

6.7. Summary

The chapter presented a progressive discussion on the results presented in the previous chapter and their implications on the sustainability of agricultural cooperatives in KwaZulu Natal. The point of culmination in the chapter is where it reveals the sustainability risks in all areas of function and how they would need to be addressed. The model presented in the chapter makes a unique contribution to the entire chapter and the study as a whole because it summarises the literature, the theoretical framework and the results, with clear indications of the areas in which the sustainability of agricultural cooperatives and businesses at large are premised.

7. Summary, Conclusion, and Recommendations

7.1. Introduction

This thesis aimed to explore the potential for agricultural cooperatives in KZN, South Africa, to become more sustainable. This chapter concludes the research by providing a summary of the chapters, reflecting on the research goal and objectives, and a general conclusion. Finally, it outlines the key recommendations of the study.

7.2. Summary of Chapters

The present thesis is composed of seven chapters, each of which serves a specific purpose. Chapter 1 sets out to introduce the research study by identifying the problem formulation, research goal, objectives, and hypothesis. It provides a comprehensive orientation to the study, unpacking the impact and role of sustainability models in improving cooperative functions and performances. The chapter outlines how cooperatives function in an economy, particularly in addressing socioeconomic issues. It then discusses the role of cooperative models in the agricultural sector and the existing gap towards sustainability, particularly in the South African context. The chapter presents the rationale behind the study and outlines the applicability of theories to the gap in the literature and their relevance to the aims and objectives of the study. This chapter identifies a gap in the literature for a sustainability model, which looks at the combined behaviour of resource management, good governance, sustainability monitoring, market access, and social and economic aspects in agricultural cooperatives. Based on the existing models, the sustainability model for agricultural cooperatives is suggested to address the gap and shortcomings. The chapter concludes by presenting the ethical aspects and definitions of some of the main concepts, as well as the limitations of the study.

Chapter 2 provides an overview of the literature on agricultural cooperatives, with a focus on defining the terms underpinning the study. It reviews the global perspective of cooperatives, including the rationale behind their formation and their contribution to improving the socioeconomic status of people around the world. The chapter reviews the agricultural sector in South Africa and discusses the role and challenges of agricultural cooperatives.

Chapter 3 further reviews the literature on cooperatives in the agricultural sector and how sustainability can be achieved. It establishes that there are still uncertainties within the South African context pertaining to the farmers' scope of practice when dealing with sustainability systems. The review notes that farmers receive very little and often no training in farming-related activities, diagnoses and theories, which is a shortfall since this profession often forms part of a production team. Thus, with the insight for the literature review, it was identified that basic knowledge and application of the model system could be a tool in creating a diagnostic impression in Agriculture that will enable the farmer to participate in the consultation process with other professional farming institutes. The chapter further underscores factors contributing to the success of agricultural cooperatives, such as resource management, good governance, and social and economic aspects. Variables affecting the sustainability of agricultural cooperatives are also highlighted as the panacea for sustainable agricultural cooperatives. The chapter reviews a number of models which are relevant to the study, including the Quantitative Model, Physical Model, and Standardizing Model. It further discusses the rationale behind choosing the models. The applicability of theories to the gap in the literature and their relevance to the aims and objectives of the study are presented in this chapter.

Chapter 4 describes the research methodologies used in the study. It provides information on the participants, specifically the inclusion criteria for the study, who the participants were, and how they were sampled. The research design used for the aim of this study is outlined, as well as the reasoning behind it. The instrument used for data collection is also detailed, as are the procedures that were followed to carry out this investigation. The researcher also describes the data analysis methodologies employed. Finally, the ethical issues that were addressed during the process are highlighted.

Chapter 5 presents the results from the 367 respondents (farmers) who are part of the 99 agricultural cooperatives that were surveyed in this study. The study's goals are focused on developments inside the cooperative, and data from individual cooperative farmer respondents were weighted to reflect the general sentiment of their members.

Chapter 6 presents the discussion chapter and provides light on the areas where the data was collected, the sources of funding for the cooperative, the commodities being farmed, the size of the farmland, and the length of the study and its key findings, including the sustainability model

for agricultural cooperatives proposed in Chapter 3. Finally, the chapter summarizes the main results and conclusions of the research study, highlighting the key findings of each chapter. It also includes recommendations for further research and practical implications for agricultural cooperatives in South Africa.

Chapter 7 provides an overall conclusion. The thesis provides a comprehensive overview of agricultural cooperatives in KZN, South Africa and their potential for sustainability. It identifies agricultural cooperatives' challenges and proposes a sustainability model that considers resource management, good governance, sustainability monitoring, market access, and social and economic aspects. The study also provides insights into the factors contributing to the success of agricultural cooperatives and highlights the need for basic knowledge and application of sustainability systems among farmers.

7.3. Reflecting on Study Goal and Research Objectives

7.3.1. The role of the model

This study aimed to suggest a model that enhances the sustainability of agricultural cooperatives in KwaZulu-Natal. Hence, the study explored existing literature in detail to provide an in-depth background that could be utilised in addressing the survival challenges in the context of KwaZulu-Natal agricultural cooperatives. Like many other nations, South Africa's agricultural cooperatives have increasing difficulties surviving and staying in business. Hence, their 2.5% GDP contribution has been falling since 2015, attracting the need for a sustainable model that can help the agricultural cooperatives in the country to stay afloat. Agricultural cooperatives in South Africa continue to receive a disproportionate share of government funding despite their financial difficulties, with many showing slow development, some shutting down, and very few being commercially viable.

Agricultural cooperatives are crucial in sustainable economic development, particularly in Southern Africa. Cooperatives provide smallholder farmers access to improved production and marketing services, enhanced bargaining power and improved access to credit, technology, and other inputs. In this way, they can improve the livelihoods of their members while promoting equitable development. The literature explored in this study revealed that agricultural cooperatives across the globe have been successful in enhancing agricultural productivity,

providing market access for small-scale farmers, reducing rural poverty, promoting economic self-sufficiency, and fostering community empowerment. The success of these cooperatives has been largely attributed to their ability to efficiently aggregate resources on behalf of individual producers who are often hampered by limited means individually but able to generate greater returns when working together collectively. In addition, forming agricultural cooperatives also has greater implications beyond an increase in farm incomes or improved agricultural yields. They play an important role in facilitating social capital mobilization among small-scale farmers, which can then be used as a tool for long-term collective action aimed at equality. Agricultural Cooperatives are thus often seen as intrinsic mediators between “bottom-up” initiatives led by the marginalised and “top-down” approaches pursued by policymakers to increase equity.

Therefore, the study was conducted to assist agricultural cooperatives to plug their business plans into the sustainability model that will be formulated to enhance the success rate. Cooperatives are already present in all the areas that the proposed Sustainable Development Goals envisage the world's direction to make sustainable development a reality. Although cooperatives are central to the realization of sustainable development around the world, With their focus on members and local needs, they have not always been proactive in national and international debates. With little visibility at national and international levels, the potential and importance of the contribution that cooperatives can make to the design and realization of SDGs seem to have been missed by policy makers at respective levels. This explains the relatively limited visibility and attention that cooperatives have received in the debate on the post-2015 development agenda. Therefore, the study was able to engage and contribute towards bridging the gap in the debate by providing a critical sustainability framework that can be utilised as a model in shaping agricultural cooperative business experiences in KZN. The following summaries and conclusions on how the study's objectives were addressed will provide detailed clarity on the interests of this thesis.

7.3.2. Research Objective 1

To determine whether agricultural cooperatives have monitoring mechanisms to ensure sustainability in KwaZulu-Natal.

Findings

The study sought to establish the availability of monitoring mechanisms for agricultural cooperatives in KZN. The review of the literature and the gathering of survey data helped establish that agricultural cooperatives have been widely used in KwaZulu-Natal (KZN) as an effective means of addressing issues of inequity and sustainability. By definition, such cooperatives involve members' collective ownership and management of rural resources. They often form the basis for localised resource management and policy formation decision-making. As such, it is necessary to understand the parameters which govern these systems and how monitoring mechanisms can be implemented to ensure their longevity.

The agricultural cooperatives that are found throughout KwaZulu-Natal are diverse in nature, ranging from crop/livestock production to agroforestry activities. In a socio-ecological context, agroforestry is often considered one of the most sustainable land use systems due to its ability to provide multiple products from diverse components within a given area. It has been stated that South Africa faces several challenges concerning sustainability, including the degradation of soil resources, lack of employment opportunities and poverty in rural communities. The formation of agricultural cooperatives is seen as one way these human security issues can be addressed through collective auctioneering between members for developing strategies for long-term sustainability. For instance, reviewed evidence suggests that cooperatives are more resilient and perform better during financial and economic crises. Furthermore, whereas environmental cooperatives are spearheading the sustainable management of natural resources for posterity, the cooperative governance model can provide the framework for equitable, participatory processes that guarantee transparency and accountability in cooperation with communities, governments, businesses and other stakeholders to realize sustainable development.

The findings showed that the respondents' agricultural cooperatives have monitoring systems. They have already taken a positive start in the right direction because their capacity to oversee operations is crucial to ensuring sustainability. This is significant because monitoring within agricultural cooperatives is a crucial aspect that needs to be communicated and put into reality to ensure sustainability. Nevertheless, the statistics drew attention to a worrying problem: the priority of some monitoring techniques over others. This was discovered through an evaluation of participant agreement or disagreement, which revealed strengths and weaknesses in monitoring. Strengths were identified in (i) regular assets monitoring for loss or breakage and

(ii) consistent minute-taking at meetings to follow up on actions to be taken. At the same time, monitoring weaknesses included (i) poor undertaking of regular checks against market standards regarding the quality of the products produced by the cooperative, (ii) lack of financial records auditing, (iii) lack of risk management, (iv) no submission of financial reports to cooperative members and funders, (v) lack of operational performance reviews, (vi) lack of compilation of harvest reports, and (vii) wastage of farming inputs.

Conclusions and implications

The study indicates several possibilities to improve the current cooperative agriculture system. First, it establishes that evaluating the system by integrating the monitoring protocol of agriculture cooperative projects in KZN will help to leave a lasting legacy after implementation. However, it is also essential to recognise how cultural dynamics influence group behaviour and how structure and order are maintained over the long term. Therefore, there is a need to advance, devoted research to determine the suitability of proposed evaluative methodologies used in various contexts to address these dynamics and patterns. Therefore, monitoring helps assess the decisive contribution to improve agricultural performance, output and business, which would improve the living conditions of the local population and the region's general development in the direction of protecting and conserving natural resources with the utmost care.

Monitoring processes are identified to help to maintain strong, unified behavioural standards following fair and equitable distributional principles that require active engagement. For instance, when compliance is achieved subsequently in monitoring mechanisms, it indicates a successful outcome that can dawn a new sustainable era for agricultural cooperatives. It is important to note that sustaining South Africa's marginalised communities in agricultural cooperatives requires knowledge and skills enhancement towards monitoring processes to ensure a responsible, collaborative environment, greater equity development, and form an advanced progressive global vision guided by economic and social justice for all.

Monitoring efforts within agricultural cooperatives entail careful measurement and evaluation over time, which assesses both internal governance processes alongside external levels of impact relating specifically to resource management outcomes. Whilst this may appear difficult or expensive at first, we note that “good governance” should remain integral throughout all levels, ensuring accountability from individual participants and collective interactions amongst

members when decisions regarding day-to-day operational practices are made. Furthermore, it has been argued that such “observable indicators” should consider environmental quality measures such as soil fertility indices in tandem with technical models pertaining to access rights/tenure arrangements, which other literature on sustainable natural resource management also refers to.

7.3.3. Research Objective 2

To examine the relationship between resource management and sustainability of agricultural cooperatives in KwaZulu-Natal.

Findings

The study established that in KwaZulu-Natal, resource management plays a critical role in sustaining the growth and stability of agricultural cooperatives. It is crucial to note that an agricultural cooperative's success or failure largely depends on its ability to effectively manage resources such as land, water, capital, and labour. Without adequate access to these resources, cooperatives cannot survive and grow. One way that this can be achieved is through long-term planning that takes into account changes in the socio-economic environment. Moreover, there must be a social consensus among members regarding how resources should be allocated within the cooperative. This requires a clear understanding of what each member needs from participating in the cooperative. For example, one member may benefit more from access to training while another may focus more on gaining access to financing. Three broad resource management areas, including human resource management, financial management, and asset management, were investigated, and the findings established a positive relationship between resource management and the sustainability of agricultural cooperatives in KZN.

Resource Management

a) Human Resources

Eleven resource management components were used to evaluate the HR departments of agricultural cooperatives. Six of the components have positive implications towards the sustainability of agricultural cooperatives. The study established that (i) there is the promotion of job satisfaction of members by the leaders of the cooperative, (ii) the cooperative leaders encourage their members to achieve business goals, (iii) there is a fair and clear handling of

disputes, (iv) there is equal distribution of profits among cooperative members, (v) there is a fair and transparent recruiting process at cooperatives, and (vi) the board is accountable to the cooperative members.

Even though the correlation and regression findings showed a strong association between human resources training and management on sustainability, the one-sample t-test showed that this was a weakness within the agricultural cooperatives. Training components of resource management were shown to be the weakest link affecting the realisation of sustainability of agricultural cooperatives in KZN. Five key areas of weakness were identified. Firstly, the cooperatives have no clear strategy for employee technical training, at least in every farming season. Secondly, no business management training is being done for cooperative members. Thirdly, no opportunities are being given to cooperative members for development through attending workshops and short courses. Fourth, no performance management system is in place to monitor and review the performance of employees and members. Lastly, there is still a lack of a well-defined structure to lay out reporting lines, functions, and accountability. These weaknesses remain a key limiting factor to the full realisation of sustainability. Though positive implications proved to be dominantly visible, these identified weaknesses need attention.

b) Financial Management

The findings established that the financial management of cooperatives needs attention and improvement to ensure sustainability since there is a lack of proper financial management. Only the budget plan is consistently compiled every year of the eight financial management components surveyed. The other components include (i) accountability of daily expenditures, (ii) monthly cashflow meetings, (iii) training on financial management, (iv) encouragement on reporting of suspicious fraud elements, (v) compilation of annual financial statements, (vi) maintenance of funds for working capital and as a safety net in times of adverse economic condition and (vii) filing of annual income tax are lacking. This has a clear negative impact towards the sustainability of agricultural cooperatives in KZN if not attended to.

c) Asset Management

The study also looked at asset management to evaluate the sustainability of agricultural cooperatives' resource management practices. The findings revealed that agricultural cooperative asset management is very worrying due to the absence of regular care for farming equipment, the

lack of upgrades on old equipment, and the lack of insurance for farming equipment. The findings also revealed that the agricultural cooperatives do not regularly inspect their assets, keep a record of them, or take any precautions to prevent the abuse of these resources. Finally, it was found that KZN agricultural cooperatives do not take the necessary steps to ensure secure storage of farming inputs like fertilisers and animal feed, and they also do not take adequate steps to reduce the waste of such inputs.

Conclusion and implications

In conclusion, after examining the many facets of agricultural cooperatives' resource management which entails human resource, financial, and asset management, it is evident that only human resources management has more sustainable components. The sustainability of agricultural cooperatives in business depends on positive relationships between resource management and sustainability, yet only one area of resource management was found to share this relationship. Thus, it is more important than ever to have efficient strategies for managing resources to maximize productivity, foster collaboration, improve living circumstances, and safeguard the environment.

7.3.4. Research Objective 3

To assess the relationship between the agricultural environment and sustainability of agricultural cooperatives in KwaZulu-Natal

Findings

The relationship between the environment and the sustainability of agricultural cooperatives in KZN in the 21st century is complex and dependent on several factors. While the global impacts of climate change are likely to affect the availability of resources profoundly, local conditions such as topography, soil quality, population density and access to inputs will also be instrumental in determining agricultural cooperative success or failure. According to the regression analysis, the study results revealed that both the environmental aspect of resource usage and practise were significant predictors of sustainability. The correlation analysis provided a more detailed description of the direction and degree of this association. Even though both factors were found to be predictors of sustainability, the environmental aspect of resource usage showed a far stronger positive link with sustainability than the environmental aspect of practice did.

Environmental resource usage

The environmental aspect of usage looked at four aspects. It established that, firstly, farming is a business that depends on natural resources and the sustainability of the land for its continued profitability. Therefore, agriculture cooperatives in KZN are aware of this aspect and have been making efforts to safeguard their environment through responsible farming. Secondly, though the cooperatives indicated to be responsibly farming, further investigation showed that respondents are not making ecologically responsible choices regarding the utility usage of water and electricity. For instance, even though South Africa is amid an energy crisis due to widespread scheduled blackouts, the cooperatives are not taking responsibility for managing their energy use. Thirdly, the study identified that KZN agricultural cooperatives do not use climate-smart technologies in their operations to reduce greenhouse gases. Lastly, the study established that on the environmental aspect of usage, agricultural cooperatives find it challenging to conduct soil tests before planting, which is essential for the output and profitability of the agricultural business.

Environmental resource practice

Components of the environmental aspect of practice revealed eight critical issues. Firstly, it shows that the agricultural cooperatives in KZN were not engaging in water harvesting practises, such as the construction of dams and boreholes, indicating a lack of responsible management of resources. Secondly, it revealed that on top of poor water management, the respondents indicated that they are not involved in dry farming either. Thirdly, the results also indicated that the agricultural cooperatives are struggling with yet another problem associated with water consumption. The cooperative farms do not incorporate recycled water into their practices. Fourth, it was also evident that the agricultural cooperatives in KZN do not use any natural energy sources such as windmills or solar panels, which can be free of cost and have tremendous benefits towards the environment and business impact. The fifth environmental practice identified as challenging is that KZN agriculture cooperatives are not practising no-tillage cultivation. The sixth aspect revealed that most cooperatives practice rotational grazing and have shown significant progress in environmental management. The seventh aspect indicated that greenhouse gas emission reduction is a priority for many businesses that care about the

environment. Selling at community events and farmers' markets is one-way farmers may help make this happen. It was evident that KZN agricultural cooperatives were not following this policy. Finally, it was evident that agricultural cooperatives are not concerned about waste management.

Conclusion and implications

In conclusion, the study established a complicated and multifaceted relationship between the environment and the viability of agricultural cooperatives in KZN. The environmental aspects of resource use and practice were significant predictors of sustainability. However, it was evident that resource usage's environmental component had a larger positive correlation with sustainability than practice's environmental component. This means agricultural cooperatives in KZN have better environmental resource usage than environmental resource practice.

7.3.5. Research Objective 4

To explore the impact of good governance on the sustainability of agricultural cooperatives in KwaZulu-Natal

The study revealed that good governance had the least effect on sustainability for agricultural cooperatives in KZN. The cooperatives are exercising good governance in the membership application, which is voluntary and open for everyone, which increases their ability to entice other farmers to join. Additionally, the cooperatives have been allowed to administer themselves democratically. Results showed that every cooperative member contributed to and participated in decision-making. The findings showed that most agricultural cooperatives lack a farm manager who oversees the day-to-day activities. The lack of farm managers confirms that there are no structures within the cooperatives and also supports the idea that there are many disagreements and little teamwork. However, though one might have expected membership fees to be paid to boost the management of the cooperatives, respondents indicated that they do not contribute their capital as joining fees. More so, the results confirmed that the cooperatives are independent and self-governing.

Agricultural cooperatives in KwaZulu-Natal were found to have a severe lack of education and/or training. The lack of cooperation and knowledge sharing among cooperatives in KwaZulu Natal is another issue that has been identified concerning the governance of these organisations.

It was also determined that agricultural cooperatives lacked a board of governors, furthering the lack of managerial structures. This puts agricultural cooperatives in even more danger and hinders their potential to develop sustainability. Finally, the results established that agricultural cooperatives in KZN lack strategic plans to match their programmes with the vision and mission of their organisations in the absence of farm managers and governing boards. It is an obvious sign of improper governance in areas essential to efficient operation.

7.3.6. Research objective 5

To explore the social and economic factors that impact the sustainability of agricultural cooperatives in KwaZulu-Natal.

Findings

The research showed that sustainability in agriculture cooperatives is strongly related to effective social and economic factors. Nevertheless, linear regression demonstrated that the three variables do not have equal weight/importance in their impact on sustainability. The analysis gave the researcher a way to tell things apart. It established that monetary factors are the most reliable predictors of longevity. Despite this, agricultural cooperatives scored poorly across the board regarding economic indicators.

Economic aspects

The study sought to establish which of the nine economic aspects of sustainability engaged in the study were being utilised by the agricultural cooperatives in KZN. The first aspect was to understand if their existence of any reliable market for the cooperatives. The sole performance area noted was the absence of a reliable market for agricultural cooperatives to sell their produce. The study further identified that; relevant agricultural cooperatives do not operate their own transport mechanisms for getting their products to consumers. This indicates that transportation expenditures remain a burden. It was also evident that cooperatives do not represent their members in pricing negotiations for agricultural inputs. This is a major gap. In addition to not bargaining for lower costs, the data indicates that agricultural cooperatives do not bargain for better rates for their members when selling produce.

Considering that businesses use a range of strategies to increase their market share and stay competitive in the market because it is one of the necessities for a business to flourish. The study

established that KZN's agriculture cooperatives lack efforts to grow their market share. Furthermore, results indicate that turnover has not increased among the agricultural cooperatives in KZN, adding to the expanding list of economic goals they failed to achieve. This is a sign of stagnation and a lack of development which was also confirmed by results that agricultural cooperatives have not grown since their inception. Thus, the results concluded that the cooperatives are not growing in all aspects of business, and members lack company marketing training, resulting in business stagnation of the agricultural cooperatives in KZN.

Social aspects

The study found that social factors were second only to economic factors in determining the sustainability of agricultural cooperatives in KZN. While cooperatives have significant challenges in virtually every area of the economy, they thrive in various social contexts. A more in-depth analysis of performance in all social spheres is required. The study identified that agricultural cooperations should take part in community improvement as part of their social responsibility. However, it became clear that the agricultural cooperatives lacked the plan to foster greater community engagement and social progress. Cooperatives are obligated to the communities upon which they are founded to enhance the quality of life of their residents, particularly their members. The results showed that one of the cooperatives' goals was to raise the standard of living for its members so that they could all advance economically, even though the cooperatives had not adopted Corporate Social Responsibility (CSR) policies.

The study identified that the cooperatives are successful socially because their members have greater autonomy in their daily lives. Cooperatives are not intended to, and should not be given, the power to dictate the members' way of life but rather to serve as a platform from which those members can achieve their own personal goals. In line with the cooperatives' desire to improve the lives of their members, they also ensure basic needs for the members' families. However, respondents claimed that their cooperatives did not offer work opportunities to themselves or others. Results indicate agriculture cooperatives in KZN care about giving members more agency and elevating members' profiles in the community. Finally, the study found that agricultural cooperatives in KZN are fraught with internal conflicts, and while this is inevitable in every business, it has roots in a lack of teamwork and collaboration.

Conclusion and implications

In conclusion, the study established that good governance and social and economic aspects of sustainable agricultural cooperatives in KZN must be considered from various angles. The research showed that sustainability is strongly related to effective governance and social and economic factors. Together, the positive slope and direction of the association indicate that all three factors are important in determining long-term viability. A more desirable improvement in sustainability is achieved when there is effective governance or when there are good social and economic processes.

7.3.6. Sustainability Model

To suggest a model enhance the sustainability of agricultural cooperatives.

Findings

The critical analysis of previous research in Chapter Two provided insight into how agricultural cooperatives operate and the positive impact they can have on the environment. Literature and the models included in the theoretical and conceptual framework both have the drawback of failing to account for contextual factors adequately. Because it is multi-perspective, the sustainability model was designed to help fill the void of different weaknesses in the business operations of agricultural cooperatives. Hence previous studies were synthesized to shape new theoretical insights and empirical findings to provide a framework for agricultural cooperatives in KwaZulu-Natal. Consistent difficulties across all six of the study's pillars of sustainability were found to plague agricultural cooperatives in KwaZulu-Natal. As a result, for optimal economic success, they must ensure that all requirements are met. Thus, a sustainable model for agricultural cooperatives in KZN was developed as a framework for shaping business sustainability.

Conclusion and implications

The results of the investigation showed that there are numerous significant areas of weakness in how the agricultural cooperatives in KwaZulu Natal operate. The researcher was able to determine from the data how much improvement the cooperatives need to make in six key areas, including business monitoring, resource management, environmental management, as well as

issues of economic, social, and governance. The findings of the literature review were supported by the results, which also supported the recommendations made through theoretical engagement with the analysis of theoretical models of sustainability, such as the Pictorial Visualization Model, the Conceptual Model, the Prism Model, the Egg of Sustainability, the Quantitative Model, the Physical Model, and the Standardizing Models, which are the management domains that determine the sustainability of agricultural cooperatives.

7.3.7. Summary of the Key Objectives, Findings and Recommendations

Based on the comprehensive findings and analysis from the research on agricultural cooperatives in KwaZulu-Natal (KZN), South Africa. The following Table 7.1. summarizes each research objective, key themes from the findings, and recommendations to improve the sustainability of these cooperatives.

Table 7.1: Key Objectives, Findings and Recommendations

Research Objective	Key Themes from Findings	Recommendations
1. To determine whether agricultural cooperatives in KZN have monitoring mechanisms to ensure sustainability	<ul style="list-style-type: none"> - Diverse cooperative activities in KZN. - Existence of monitoring systems with varying effectiveness. - Strengths in asset and action monitoring. - Weaknesses in quality control, financial auditing, and risk management. 	<ul style="list-style-type: none"> - Implement comprehensive monitoring systems covering financial, operational, and quality aspects. - Enhance training in financial management and risk assessment. - Regularly audit financial records and operational performance.
2. To examine the relationship between resource management and sustainability of agricultural cooperatives in KZN	<ul style="list-style-type: none"> - Positive correlation between resource management and sustainability - Strengths in human resource management. 	<ul style="list-style-type: none"> - Develop strategic resource management plans encompassing human, financial, and physical assets. - Invest in training and

	<ul style="list-style-type: none"> - Weaknesses in financial and asset management. 	<p>development for cooperative members and leaders.</p> <ul style="list-style-type: none"> - Regularly review and update asset management practices.
<p>3. To assess the relationship between the agricultural environment and sustainability of agricultural cooperatives in KZN</p>	<ul style="list-style-type: none"> - Significant environmental challenges impacting sustainability. - Positive practices in resource usage but poor in environmental practices. 	<ul style="list-style-type: none"> - Adopt climate-smart agricultural practices. - Invest in technologies for efficient water and energy use. - Conduct soil and environmental impact assessments regularly.
<p>4. To explore the impact of good governance on the sustainability of agricultural cooperatives in KZN</p>	<ul style="list-style-type: none"> - Good governance practices are minimal and ineffective. - Lack of structured management and training in governance. 	<ul style="list-style-type: none"> - Establish clear governance structures with defined roles and responsibilities. - Conduct regular governance training and capacity-building. - Develop and implement strategic plans aligned with cooperative goals.
<p>5. To explore the social and economic factors impacting the sustainability of agricultural cooperatives in KZN</p>	<ul style="list-style-type: none"> - Economic factors are critical for sustainability. - Social factors contribute to cooperative cohesion and community support. - Issues with market access, financial management, and internal conflicts. 	<ul style="list-style-type: none"> - Enhance market access and marketing strategies. - Facilitate economic growth through innovation and diversification. - Strengthen community engagement and resolve internal conflicts.
<p>6. To suggest a model to</p>	<ul style="list-style-type: none"> - Need for a contextually 	<ul style="list-style-type: none"> - The developed sustainability

<p>enhance the sustainability of agricultural cooperatives in KZN</p>	<p>relevant sustainability model</p> <ul style="list-style-type: none"> - Identification of six critical sustainability pillars: business monitoring, resource management, environmental management, economic stability, social integration, and governance 	<p>model should be piloted and implemented to address and improve all six identified pillars in agricultural cooperatives in KZN.</p> <ul style="list-style-type: none"> - Piloting the model will provide practical insights and adjustments adaptable to local contexts and capable of addressing specific operational challenges. - Regularly evaluate and refine the model based on feedback and changing environmental, economic, and social conditions
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Source: Own Research

The study established that the sustainability of agricultural cooperatives in KZN hinges on robust monitoring mechanisms, effective resource management, environmental responsibility, good governance, and the interplay of social and economic factors. The provided targeted recommendations can facilitate a more sustainable and prosperous future for agricultural cooperatives in the region.

7.4. Study Limitations

The scope of this study was confined to agricultural cooperatives in KwaZulu-Natal that have benefited from support, either governmental or private entities. Specifically, the research concentrated on 99 out of 176 cooperatives identified, representing a subset of the broader cooperative landscape, with a total of 367 individual members participating. The operational

difficulties and logistical limitations encountered during the research process had an impact on the selection.

The study had an exclusive focus on agricultural cooperatives. Specifically, those given government funding from the KwaZulu-Natal Department of Agriculture and Rural Development (DARD). This focus inherently narrows the study's perspective. It is limiting the generalizability of the findings to other agricultural cooperatives, especially those operating independently of government or private support. The predominance of government-funded cooperatives in the sample (n=89) compared to a smaller representation of privately supported ones (n=10) could skew the research outcomes. Hence, the research reflects more on the dynamics and outcomes of government-supported cooperatives.

Moreover, the research targeted cooperatives with a minimum operational history of three years, excluding newer entities that might exhibit different characteristics, challenges, and performance metrics. This temporal threshold may omit insights into the initial stages of cooperative development and the unique challenges faced during these formative years. While the study provides valuable insights into the supported agricultural cooperatives within KwaZulu-Natal, its findings should be interpreted with caution, considering the sample's specific characteristics and the inherent limitations regarding diversity, operational maturity, and funding sources.

7.5. Areas of Future Research

Considering that this study was purely a quantitative study, future research can engage qualitative research component of the study. Future studies should explore the differences and impacts of external support on agricultural cooperatives. Comparing supported and non-supported cooperatives could yield insights into the effectiveness of governmental and private support programmes. It would highlight their roles in the cooperatives' success or failure. Furthermore, examining the governance models of agricultural cooperatives, particularly the role and impact of boards of directors and management teams. The study will be essential in providing deeper insights into best practices that can be engaged in agricultural cooperative governance and the influence towards cooperative success. Future research should explore the financial strategies of agricultural cooperatives. Exploring how different financial management

practices affect their economic resilience, growth, and overall sustainability. In addition, further studies can investigate the market dynamics, including access and penetration strategies of agricultural cooperatives in KZN or South Africa. This could shed light on how agricultural cooperatives can enhance their market share, improve profitability, and contribute to economic growth in their regions.

7.6. Key Suggestions for Stakeholders

Farmers

Farmers are the main stakeholders in agriculture cooperatives, and they must be more organised. Hence, they should create clusters for cooperatives and a board that promotes and facilitates training and knowledge-sharing practices. Training and providing support services for farmers should be vital to enhance their agricultural practices, business acumen, and understanding of sustainable farming techniques. Getting farmers involved in cooperative activities will ensure transparency and democratic governance. Hence, their interests are adequately represented and addressed. This should be fundamental to creating a more resilient and productive agricultural sector that prioritizes its economic, social, and cultural aspirations.

Cooperatives

Agricultural cooperatives must prioritise establishing robust governance structures and comprehensive training programs. This will help enhance their members' skills and knowledge to improve the overall performance and sustainability of the cooperative. It will also facilitate a culture of continuous learning and professional development. They should also focus on financial management and market expansion strategies to increase profitability and growth. The insights from the study suggest the need for effective engagement between cooperatives and communities to promote social responsibility and environmental sustainability initiatives. This will contribute to broader societal development.

Department of Agriculture and Rural Development

The role of DARD must be more defined, particularly in facilitating and supporting the growth and sustainability of agricultural cooperatives. There should be a sustainability guiding model,

which guides agricultural cooperatives' effective engagements. The model should make provisions for how cooperatives access funding and technical assistance and enhance market opportunities with clear goals for sustainability. DARD should also implement policies that encourage sustainable farming practices and provide knowledge sharing and collaboration platforms. Moreover, the department can assist in developing and disseminating best practices in cooperative management and governance. This will help to build a more vibrant and sustainable agricultural sector in the region.

Funders

Governmental and private funders need to adopt a strategic approach. This involves providing financial resources and mentorship, training, and market access support. Funders should work closely with agricultural cooperatives to understand their needs and challenges. They have to tailor support programmes to facilitate meaningful and sustainable development with long-term goals for their investments. It is pertinent for funders to focus on building the capacity of cooperatives to become self-reliant and economically viable entities. This will contribute positively to their communities and the wider economy.

7.7. General Conclusion

In conclusion, the study research looked at ways to help agricultural cooperatives incorporate their commercial plans into a future sustainability paradigm. The research presented in this thesis shows that a well-structured and managed cooperative model can provide a viable and sustainable solution for farmers. Policymakers might use the study's findings to remove roadblocks that prevent agricultural cooperatives from surviving in the long run. The study's contribution to the body of knowledge rests on its capacity to propose a model that increases the sustainability of agricultural cooperatives in KZN, which is where the study's novelty lies. The key findings suggest that cooperatives in the KZN region can benefit from pursuing collective efforts, such as shared purchasing of inputs, joint production and marketing, common transport arrangements and pooling of risks associated with farming activities, which create economies of scale for members. Furthermore, cooperative societies are instrumental in providing technical assistance to their members and access to formal support services offered by local government agencies; these services have been found to be crucial during drought or other natural calamities when farmers may need additional help. A sustainability model that considers the interrelated

actions of agricultural cooperatives across resource management, good governance, sustainability monitoring, market access, and social and economic dimensions has been lacking in the existing literature. Thus, this study bridged the gap through a detailed survey investigation of 99 agricultural cooperatives in KZN.

The findings of this study have practical implications for agricultural cooperatives in KZN, South Africa, particularly in terms of resource management, good governance, and social and economic aspects. The proposed sustainability model can be used as a tool to improve the viability of agricultural cooperatives in the long term. The study also provides insights for further research in this area, particularly in terms of the impact of sustainability models on cooperative functions and performances. This thesis makes a significant contribution to the literature on agricultural cooperatives in South Africa and their potential for sustainability. The proposed sustainability model provides a framework for improving the viability of agricultural cooperatives, while the findings have practical implications for farmers and cooperative managers. Further research in this area is warranted to build on the insights gained from this study and to develop a more comprehensive understanding of the role of sustainability models in improving cooperative functions and performances.

7.8. Recommendations

According to the study's findings, several recommendations were made to improve agriculture cooperatives, policy implementation, and future research in KwaZulu-Natal.

- Firstly, a training program in the Department of Agriculture and Cooperatives is recommended to equip farmers with the necessary skills and knowledge for efficient and effective cooperative farming. Additionally, the academic curriculum for farming programs in South Africa should be expanded to include more training in the field of cooperatives to enable farmers to fulfil their role as team members.
- The South African Council for Agricultural activities, a legal entity, needs to clarify and confirm the scope of practice for cooperatives to ensure sustainable development. This will facilitate cooperative farming and help avoid confusion and misunderstanding regarding the roles and responsibilities of cooperative members.

- Cooperatives farming training should also include equipping farmers with skills and knowledge in assessing and recognizing mental health disorders to make the correct referrals for the appropriate farming activities. This is essential to maintain good mental health among farmers, which is crucial for effective farming practices.
- It is recommended that agricultural cooperatives establish both external and internal sustainability monitoring and evaluation mechanisms to ensure their operations are sustainable. Cooperatives should consistently identify and record business risks to proactively avert disastrous eventualities that undermine their sustainability.
- Cooperative leaders should be adequately capacitated on how to handle members' conflicts, as conflicts among members contribute significantly to the collapse of many agricultural cooperatives. It is recommended that member satisfaction programs be introduced to avert potential conflicts proactively.
- To strengthen governance aspects of cooperatives, a board of governors should be appointed within the jurisdiction of the local municipality to govern a cluster of cooperatives. The board should have a framework of oversight to ensure that agricultural cooperatives adhere to the culture of transparency and accountability.
- Agricultural cooperatives should adhere to the basic governing principles of cooperatives by the Rochdale Society of Equitable Pioneers, which include voluntary and open membership, democratic member control, and distribution of surplus according to members' participation.
- Agricultural cooperatives should institutionalize social responsibility programs to deepen social cohesion between the cooperative and members of the society. Government should also be the primary market for agricultural cooperatives by procuring produce from them, thus supporting their growth and development.
- Finally, there should be a clear exit strategy to ensure that eligible agricultural cooperatives continue their operations even if the support systems pull out. Agricultural cooperatives should extensively network with their counterparts to learn new practices and share scarce resources, thus facilitating cooperative farming and the sustainable development of agriculture in KwaZulu-Natal.

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Appendix A: Gatekeeper's Letter



KWAZULU-NATAL PROVINCE
AGRICULTURE AND RURAL DEVELOPMENT
REPUBLIC OF SOUTH AFRICA

DIRECTORATE

01 Cedara Road, Pietermaritzburg, 3200
KZN Department of Agriculture & Rural Development,
Private Bag 20059, Pietermaritzburg, 3200
Tel: 033 3559 249 Fax: 033 3559 121

Human Resource Development

Mr Sifiso Buthelezi (Student no. 218084914)
University of KwaZulu-Natal
Graduate School of Business and Leadership
Durban
4001

Dear Sir

1. I have pleasure in informing you that permission is granted to conduct a research project on "*A Sustainability Model for Agricultural Cooperatives in KwaZulu-Natal*" within the Department of Agriculture and Rural Development.
2. You are hereby requested to comply with the following terms and condition:
 - a) Ensure that the Director: Human Resource Development is informed before you commence with your research project;
 - b) The Department will not provide any resources for your project such as transport, research assistant, etc. and
 - c) The Department must be informed for any publication or paper that will be presented or published containing organisational information.
3. Please ensure that you adhere to all government prescripts including departmental policies and procedures.

I take this opportunity to wish you well on your endeavor.



Letter Signed by Dr CB Sibiyi
Director: Human Resource Development

07/06/2022

Date

GROWING KWAZULU-NATAL TOGETHER
#PHEZIKONKHONO

Appendix B: Information & Consent Letter

Research Information Letter

**UNIVERSITY OF KWAZULU-NATAL
GRADUATE SCHOOL OF BUSINESS AND LEADERSHIP**

Dear Respondent,

DBA Research Project

Researcher : **Sifiso Buthelezi (0823280016)**
Supervisor : **Dr. S.M. Taylor (031) 260 8670**
Research Office : **HSSREC@ukzn.ac.za 031 260 3587/4557/8350**

I am (**Sifiso Buthelezi**) a DBA student, at the Graduate School of Business and Leadership, of the University of KwaZulu Natal. You are invited to participate in a research project entitled **A Sustainability Model for agricultural cooperatives in KZN**. The aim of this study is to suggest a model to improve the sustainability of agricultural cooperatives in KwaZulu-Natal.

Through your participation I hope to understand on the issues with regard to sustainability of agricultural cooperatives in KwaZulu Natal Province. The results of the research project are intended to assist agricultural cooperatives to plug their business plans into the sustainability model that will be formulated to enhance success rate.

Your participation in this project is voluntary. You may refuse to participate or withdraw from the project at any time with no negative consequence. There will be no monetary gain from participating in this survey/focus group. Confidentiality and anonymity of records identifying you as a participant will be maintained by the Graduate School of Business and Leadership, UKZN.

If you have any questions or concerns about completing the questionnaire or about participating in this study, you may contact me or my supervisor at the numbers listed above.

The survey should take you about **15** minutes to complete. I hope you will take the time to complete this survey.

Sincerely

Sifiso Buthelezi

Investigator's signature _____ Date _____

Consent Letter

QUESTIONNAIRE: SIFISO WISEMAN BUTHELEZI: UKZN



The Sustainability Model for Agricultural Cooperatives in KZN

This questionnaire should only be completed by members of agricultural Cooperatives in KZN. The researcher is seeking your voluntary participation and informed consent in completing this questionnaire and that the information you provide, and your identity will remain strictly confidential.

For this reason, kindly complete and sign the Informed Consent Declaration section below:

INFORMED CONSENT DECLARATION SECTION OPTION

1: IF CONSENTING OPTION

1: IF CONSENTING

Kindly tick in the box below, sign the declaration and proceed to complete the questionnaire, place it in the attached envelope, seal it and submit this to Mr. Sifiso Buthelezi.

I am willing to contribute my views to this study. I hereby confirm that I fully understand the contents of this document and the nature of the research project, and I consent in this research to participating to this research project, I also understand that I am at liberty to withdraw from the project at any time, should I so desire,

Signature: _____ Date: _____

OPTION 2: IF NOT CONSENTING

Kindly tick in the box below and return to Sifiso Buthelezi

I do not want to participate in this research survey

Signature: _____ Date: _____ I

sincerely thank you for your time, effort and assistance

Mr. Sifiso Wiseman Buthelezi
Student number: 218084914
Cell 0823280016
Email: buthelezisif@gmail.com

Appendix C: Research Survey Questionnaire

**UNIVERSITY OF KWAZULU-NATAL GRADUATE SCHOOL OF BUSINESS AND
LEADERSHIP**

DBA Research Project

Researcher : **Sifiso Buthelezi (0823280016)**

Supervisor : **Dr. S.M. Taylor**

Research Office : **HSSREC@ukzn.ac.za 031 260 3587/4557/8350**

Dear Respondent

As part of my Doctor of Business Administration research at the University of KwaZulu

Natal (UKZN), I am conducting a research project entitled “A Sustainability Model for

agricultural cooperatives in KZN.” The aim of this study is to suggest a model to improve the sustainability of agricultural cooperatives in KwaZulu-Natal.

Your participation in terms of completing the following questionnaire will be appreciated. The results of the research project are intended to assist agricultural cooperatives to plug their business plans into the sustainability model that will be formulated to enhance success rate.

Your participation in this project is voluntary.

You may refuse to participate or withdraw from the research at any time with no negative consequence. There will be no monetary gain from participating in this research. Confidentiality and anonymity of records identifying you as a participant will be maintained by the Graduate School of Business and Leadership, UKZN.

If you have any questions or concerns about completing the questionnaire or about participating in this study, you may contact me or my supervisor at the numbers listed above.
Thank you for your support and feedback.

Sifiso Buthelezi (Researcher)

University of KwaZulu-Natal, KZN For each question, select the response that best applies to you.

Section A Demographics

1. How many years has your cooperative been in operation? _____ years

2. How is the cooperative supported?

Private	Government

3. What type of commodity are you farming?

Crops	Livestock	Mixed farming	Other

If you selected 'OTHER', indicate what you are farming _____

4. How many members does your cooperative have? _____

5. Which of the following is the closest to your "land size"?

1 hectare	2 hectares	3 hectares	4 hectares	>4 hectares

Section B Business management

1. Monitoring mechanisms

Indicate your level of agreement with the following statements:

		Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree
1.1	Regular checks against market standards regarding the quality of the products produced by the cooperative are undertaken						
1.2	The financial records of the cooperative are audited annually by a reputable auditor						
1.3	All assets are regularly monitored for loss or breakage						
1.4	The business risks are identified and recorded annually in a Risk register						
1.5	Financial reports are submitted to both cooperative members and funders at least annually						

1.6	Minutes are taken at meetings in order that follow up actions can be taken, when necessary							
1.7	Operating performance is reviewed regularly against the operational plan							
1.8	Harvest reports are compiled at the end of the harvest							
1.9	Wastage of farming input is monitored							

2. Resource management

2.1 Human Resources

Indicate your level of agreement with the following statements:

		Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree	N/A- we do not have leaders	N/A- we do not have a board
2.1.1	The cooperative leaders promote job satisfaction of its members								
2.1.2	The leaders encourage members to achieve the goals of the cooperatives								
2.1.3	The cooperative members receive technical training at least in every farming season								
2.1.4	Disputes involving employees/cooperative members are handled fairly								
2.1.5	The cooperative's members receive training on business management								
2.1.6	The profit is distributed equally to cooperative members								
2.1.7	Members are given the opportunity for development through attending workshops and short courses								
2.1.8	A performance management system is in place to monitor and review the performance of								

	employees and members							
2.1.9	The recruitment process at this cooperative is fair and transparent							
2.1.10	There is a well-defined structure in this cooperative in which reporting lines, functions and accountability are clear							
2.1.11	The board is accountable to members of the cooperative							

2.2 Financial resources

		Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree
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Indicate your level of agreement with the following statements:

2.2.1	A budget plan is compiled every year						
2.2.2	All operating expenditure incurred on a day to day basis is accounted for through the presentation of invoices						
2.2.3	Monthly cash flow meetings are held in order for members to keep abreast of cooperative finances						
2.2.4	Cooperative members receive training on finance management						
2.2.5	Members of the cooperative are encouraged to report suspicious fraud elements						
2.2.6	Financial statements are compiled annually						
2.2.7	After the distribution of income, the cooperative still maintains enough funds to be used for working capital and as a safety net in times of adverse economic conditions						
2.2.8	Income tax returns are filed annually						

2.3 Assets (equipment and input)

Indicate your level of agreement with the following statements:

		Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree	N/A – we do not have farming inputs
2.3.1	The farming equipment is serviced regularly							
2.3.2	The old model equipment is upgraded after a reasonable time							
2.3.3	The farming equipment is always ensured							
2.3.4	All assets are inspected and registered annually in an asset register							
2.3.5	The abuse of assets (e.g. farming equipment) is avoided							
2.3.6	Farming inputs (e.g. fertilizer, animal feed) are securely stored in a facility onsite.							
2.3.7	Wastage of farming input is minimized							

3. Governance

Indicate your level of agreement with the following statements:

		Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree
3.1	Membership of our cooperative is voluntary and open to anyone						
3.2	All members of the cooperative can participate in and contribute to decision making						
3.3	There is a ‘‘farm manager’’ who manages the business						
3.4	All members contribute their own capital as a joining fee						
3.5	Our cooperative is independent and governs itself						
3.6	Education/training is available to members of the coop to empower them to actively participate in decision making						

3.7	Our cooperative collaborates with other cooperatives in that we share knowledge on new farming practices						
3.8	The cooperative has a board of governors						
3.9	The cooperative has a strategic plan to align its programmes with the businesses' vision and mission						

4. Social aspect

Indicate your level of agreement with the following statements:

		Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree
4.1	Our cooperative has a programme in place to improve social development with the community						
4.2	An aim of our cooperative is to improve the living standards of its members so that we can all better ourselves						
4.3	Being a member of this cooperative provides us with freedom and control over the course of our own lifestyle						
4.4	Our cooperative ensures basic needs for our families						
4.5	There is a cooperation and teamwork amongst members of the cooperative						
4.6	Our cooperative provides employment to us and others						
4.7	Our cooperative improves our empowerment and social recognition in society						
4.8	There are no conflicts among members of the cooperative						

5. Environmental aspect

Indicate your level of agreement with the following statements:

		Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree	N/A to my type of farming
5.1	We strive to farm responsibly in order to protect the environment							
5.2	Our cooperative uses utilities (e.g. energy and water) in an environmentally friendly manner							
5.3	We use climate smart technologies in our operations to reduce greenhouse gases							

5.4	Soil testing is done prior to planting							
5.5	Water is harvested for farming (e.g. dams and boreholes)							
5.6	The cooperative practices dry farming							
5.7	The cooperative uses recycled water							
5.8	The cooperative uses solar panels and wind turbines							
5.9	The cooperative practices no-till cultivation							
5.10	The cooperative practices rotational grazing for the livestock							
5.11	The produce is sold directly at the cooperative market or locally to conserve resources that may cause greenhouse gas (GHG) emission.							
5.12	Our cooperative is concerned about waste management							

6. Economic aspect

Indicate your level of agreement with the following statements:

		Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree
6.1	There is a reliable market where we can sell our produce						
6.2	The cooperative has its own transport to deliver the produce to the market						
6.3	The cooperative negotiates prices for farming inputs on behalf of its members						
6.4	The cooperative negotiates better rates when selling our produce						
6.5	Since the start of the cooperative, our market share has increased						
6.6	Since the inception of the cooperative, turnover has increased						
6.7	Since the inception of the cooperative, the business has grown in size (number of employees /members)						
6.8	There continues to be growth in all aspects of the business						
6.9	The cooperative receives training on the marketing of its business						

7. Sustainability

Indicate your level of agreement with the following statements:

		Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree
7.1	We are able to make a profit with the business, without destroying the environment						
7.2	We have money in savings in case we need it in times of difficulty						
7.3	If our support systems pull out, the business will be able to continue in its operations						
7.4	Through our farming practices, the soil/ grass on the farm in our cooperative will be of a good enough quality to sustain farming in the future						
7.5	Through our careful practices governing the use of natural water, there will be enough available water to sustain farming and living in the future						
7.6	Enough land is available for both farming and habitation into the future						
7.7	Our cooperative has a positive impact on the communities in which we are situated						
7.8	Our cooperative is performing well in all areas (profit, market share, growth) compared to our competitors						
7.9	Our cooperative uses sustainable agricultural practices such as water conservation, conservation tillage, legume, improved seeds varieties, use of animal manure, crop rotation, and livestock grazing rotation.						
7.10	Our cooperative uses farming methods that do not have a negative impact on the environment						

Appendix D: Editor's Letter



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Mobile Number: +27310651929

20 July 2023

To Whom It May Concern,

Re: Editor's Letter

The letter serves to outline the scope of activities that were done during the editing of a thesis titled:

A Sustainability Model for Agricultural Cooperatives in KwaZulu-Natal

The following activities were done.

- Grammar check
- Sentence construction
- Spelling check
- Punctuation
- Additional comments to be addressed by the author

As a professional editor, I pledge that the above aspects of the thesis were meticulously edited to the best of my knowledge at the time the work was sent to me. I am not responsible for any corrections that will be affected post the editing process.

Yours Sincerely

Tigere P. Muringa (Ph.D.)

Appendix E: Ethical Clearance Certificate



24 June 2022

Sifiso Wiseman Buthelezi (218084914)
Grad School of Bus & Leadership
Westville Campus

Dear SW Buthelezi,

Protocol reference number: HSSREC/00004221/2022
Project title: A sustainability model for agricultural cooperatives in KwaZulu-Natal
Degree: PhD

Approval Notification – Expedited Application

This letter serves to notify you that your application received on 23 May 2022 in connection with the above, was reviewed by the Humanities and Social Sciences Research Ethics Committee (HSSREC) and the protocol has been granted **FULL APPROVAL**.

Any alteration/s to the approved research protocol i.e. Questionnaire/Interview Schedule, Informed Consent Form, Title of the Project, Location of the Study, Research Approach and Methods must be reviewed and approved through the amendment/modification prior to its implementation. In case you have further queries, please quote the above reference number. PLEASE NOTE: Research data should be securely stored in the discipline/department for a period of 5 years.

This approval is valid until 24 June 2023.

To ensure uninterrupted approval of this study beyond the approval expiry date, a progress report must be submitted to the Research Office on the appropriate form 2 - 3 months before the expiry date. A close-out report to be submitted when study is finished.

All research conducted during the COVID-19 period must adhere to the national and UKZN guidelines.

HSSREC is registered with the South African National Research Ethics Council (REC-040414-040).

Yours sincerely,



Professor Dipane Hlalele (Chair)

/dd

Humanities and Social Sciences Research Ethics Committee

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Forming Campuses: Edgewood Howard College Medical School Pietermaritzburg Westville

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THANK YOU FOR YOUR TIME!