EFFECT OF CORPORATE GOVERNANCE PRACTICES MEDIATED BY RISK MANAGEMENT ON SUSTAINABILITY OF AGRICULTURAL COOPERATIVES IN NGOZI PROVINCE, BURUNDI

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A Thesis Submitted to the Graduate School in Partial Fulfilment for the Requirements for Master of Sciences in Agricultural and Applied Economics of Egerton University

EGERTON UNIVERSITY

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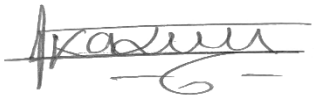
DECLARATION AND RECOMMENDATION

Declaration

This thesis is my original work and has not been presented in this university or any other for the award of a degree.

Signature  Date: 22/09/2025

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Recommendation

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DEDICATION

This thesis is dedicated to my late parents, my siblings, my friends, and especially my aunt for their support and prayers.

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My special gratitude goes to my sponsor Inter-University Council for East Africa (IUCEA) who made it possible for me to be in Egerton University. I also extend my appreciation to my two supervisors Dr. Edith Gathungu and Dr. Dickson Otieno Okello for their encouragement, guidance, and constructive criticism throughout the whole research period. I am very grateful to my dear aunt, my siblings, and friends for their tirelessly prayers, moral support, and encouragement during my studies. I also wish to extend my gratitude to the enumerators and respondents who participated in this study. Above all, I am grateful to the Lord God for keeping an eye on me and guarding me throughout the tenure of the study.

ABSTRACT

The growth of agricultural cooperatives in Burundi is very crucial for the rural development. This is due to its critical role in improving the welfare and livelihood of smallholder farmers. With this acknowledgement, the sustainability of cooperatives in Burundi is key. However, in the past decade, performance of cooperatives in Burundi has been declining with majority being inactive. Corporate governance and risk management practices have been viewed as catalysts for improvement of cooperatives longevity. Therefore, this study seeks to determine the effect of corporate governance practices mediated by risk management on sustainability of agricultural cooperatives. Specifically, the objectives of this study were firstly, to determine the factors influencing adoption of corporate governance practices, secondly to determine the effect of corporate governance practices on sustainability of agricultural cooperatives, and lastly to determine the effect of corporate governance mediated by risk management on sustainability of agricultural cooperatives in Ngozi province. A multistage sampling method was used to select an initial sample of 293 members of the agricultural cooperatives. An additional 14 respondents were later included, bringing the total sample size to 307. The data collected will be analysed using statistical software (STATA) and Smart PLS version 3. Through a cross-sectional survey, data were collected using a standardized questionnaire. Factors that significantly influenced the implementation of corporate governance practices were gender, education level, years of membership, level of position, number of meetings, information dissemination, credit facilities, and participation in trainings, understanding tasks assigned to leaders, involvement of members in decision making, understanding of principles by members, leadership style and organizational culture. Secondly, the findings indicated that there was a positive and significant relationship between responsibility CGP and economic, social, environment sustainability. The results also revealed a positive and significant relationship between participation CGP and social, environmental sustainability; rule by law CGP and social, environmental sustainability; transparency CGP and economic, environmental sustainability. However, fairness was found to have a negative relationship with environmental sustainability. As recommendations, in order for cooperatives to sustain economically, socially, and environmentally in the long term; the study recommended to develop a cooperative governance capacity-building program, to set up a support system for agricultural cooperatives, and to promote stakeholder involvement in the risk management process.

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LIST OF ABBREVIATIONS AND ACRONYMS

ADISCO	Appui au Développement Intégral et à la Solidarité sur les Collines
ANAACOP	Agence Nationale de Promotion et de Régulation des Sociétés Coopératives
BIF	Burundian Francs
BOD	Board of Directors
CGP	Corporate Governance Practices
CAPAD	Confédération des Associations des Producteurs Agricoles pour le Dévelopment
FAO	Food and Agriculture Organization of the United Nations
ICA	International Cooperative Alliance
ILO	International Labor Organizations
INADES-Formation	Institut Africain de Développement Économique Social-Formation
IUCEA	Inter-University Council of East Africa
MINEAGRIE	ministère de l'Environnement, de l'Agriculture et de l'Élevage
NGO	Non-Governmental Organization
OECD:	Organization for Economic Co-operation and Development
P4P	Purchase for Progress
SACCOs	Savings and Credit Co-Operative Society
SDG	Sustainable Development Goal
SEM	Structural Equation Modelling
UCODE	Union of Cooperation and Development
UN	United Nations

CHAPTER ONE
INTRODUCTION

1.1 Background of the Study

The United Nations has consistently highlighted the importance of supporting and developing cooperatives, recognized as inclusive and socially responsible entities with significant growth potential (United Nations, 2019). According to Tumenta *et al.* (2021), agricultural cooperatives have been important since the past in rural communities to improve the standards of living of their members. Their establishment is justified by the ability to generate income, enhance member skills, strengthen bargaining power, provide access to finance, incubate social capital, spur investment and job creation, improve access to education, enable market access, and ultimately relieve poverty (Birchall, 2018). Rural development is the result of a mechanism called Agricultural Co-operatives. They help farmers reduce poverty and lessen the possibility of falling back into vulnerability (Gava *et al.,* 2021).

Since the colonial era, the cooperative model in Burundi has been promoted, and numerous successive governments have focused on it as it is a driving power of rural development. According to FAO (2020), these structures has greatly increased from less than 100 in the 1990s to more than 2000 by 2020. Despite the growing number of cooperatives, they are having challenges that impede their success toward achieving their main goal of defending the immediate interests of producers (Ndayisaba, 2019).

According to Mhembwe and Dube (2017), cooperatives have been facing similar challenges such as ineffective management, lack of market access, inadequate member commitment, and insufficient financial and other relevant services. Ndayisaba (2019) noticed that they are handicapped either by the influence of public authorities or by the incompetence of leadership, whereas Aref and Alibeigi (2021) highlighted poor management as a key reason why cooperatives fail, whereas Mensah and Okyere (2018) found that poor governance is a significant factor hindering the sustainability of cooperatives.

Corporate governance is very important for sustainability of agricultural cooperatives. In fact, good governance aims to add value to the organization while minimizing financial, business and operational risk (Mukabi, 2017). According to Rathod (2018), corporate governance facilitates decision-making, managing of risks, ensuring compliance, achieving goals and guiding the firm in taking effective decisions.

Corporate governance emerges as a key asset for organizational success. This view is supported by Kamau and Mutua (2021) in their study conducted in Kakamega County which established a positive relationship between corporate governance and performance of SACCOs. The preceding views also reinforce the belief that corporate governance plays an essential role in effective risk management. This means that risk management is also important for the success of any organization. Kaliti (2015) supports this claim, stating that the risk management practices impact the financial performance of firms in the hospitality sector to a very large degree.

Wagacha (2017), added that the risk management process is among the key building blocks of good corporate governance practice; it aims at anticipating and managing risks that may impede the organization from achieving its objectives. As a result, corporate governance and risk management of agricultural cooperatives should be considered to make it sustainable. The Government of Burundi, with the aim of promoting the creation of cooperatives and stimulating existing ones, enacted a law on cooperative societies on June 26, 2017, with the objective of promoting and regulating cooperatives societies in Burundi.

The main aim of the law is to revitalize existing cooperatives and encourage the creation of new ones by providing them with legal protection and assisting them in management and operating procedures (National Assembly of Burundi, 2017). As stipulated in Chapter Five of the promulgated law, in order to ensure proper functioning of cooperatives, the national agency will determine the suitable composition and functioning of the administrative, management and control bodies of cooperative societies (National Assembly of Burundi, 2017).

Accordingly, the law foresees a governance system composed of four bodies, namely the general meeting, the board of directors, the management, and the supervisory board, whose mode of operation, duration, and number of directors are defined in the articles of association (Manirakiza, 2021). Therefore, based on the above insights, it is evident that the government acknowledges the crucial role of supporting the governance system in the development and sustainability of cooperatives. García-Sánchez *et al.* (2020) stated that corporate governance can improve sustainability performance of a company. While this recognition is known, little empirical evidence exists on the impact of corporate governance practices mediated by risk management on sustainable agricultural cooperatives.

1.2 Statement of the Problem

In Burundi, agricultural cooperatives are viewed as an effective means of rural development and poverty eradication. These have assigned various authorities and institutions for its promotion and development. To a great extent, the number of cooperatives has increased from less than 100 in the 1990s to more than 2,000 in 2020 (FAO, 2020). Even with this expansion, a large number of cooperatives are still facing challenges on sustainability with consequence they do not meet their core goal of protecting smallholder farmers' interests (Ndayisaba, 2019). It is not the issue of the future. Rather, it happens to be current and persistent. And there are various reasons for that problem. Incompetent leaders, minimal members involvement, no access to market, insufficient financial services (Ndayisaba, 2019). The governance capacity of cooperatives is also weakened by socio-economic problems like low educational levels and gender discrimination. While Manirakiza (2021) and Niyokwizera (2023) studied the role of cooperatives in raising household income and earning a livelihood for rural Burundians, the implementation of corporate governance and risk management practices is largely unexplored. The goal of this study was to assess the effect of corporate governance practices mediated by risk management on the sustainability of agricultural cooperatives in Ngozi Province, Burundi.

1.3 Objectives of the Study

1.3.1 General Objective

The study's general aim is to improve agricultural cooperatives' sustainability through corporate governance and risk management in Burundi's Ngozi province.

1.3.2 Specific Objectives

i. To identify the institutional and governance factors that influence the adoption of corporate governance practices in agricultural cooperatives in Ngozi province.
ii. To assess the effect of corporate governance practices on the sustainability of agricultural cooperatives in Ngozi province.
iii. To determine the effect of corporate governance practices mediated by risk management on sustainability of agricultural cooperatives in Ngozi province.

1.4 Research Questions

i. What are the institutional and governance factors influencing utilization of corporate governance practices in agricultural cooperatives in Ngozi province?

ii. What is the effect of corporate governance practices on sustainability of agricultural cooperatives in Ngozi province?

iii. What is the effect of corporate governance practices mediated by risk management on sustainability of agricultural cooperatives in Ngozi province?

1.5 Justification of the Study

Agricultural cooperatives play an important role in the economy of Burundi as they significantly help to create employment, generate income for smallholder rural farmer, improve the standard of living and reduce poverty (Mhembwe & Dube, 2017). The Government of Burundi has seized the opportunity of cooperatives and taken steps to develop them. The Law No. 1/12 of June 26, 2017 regulating cooperatives in Burundi; the creation of ANACOOP, a support fund responsible for the promotion and regulation of cooperatives; the allocation of a budget exceeding 87 million BIF since 2020 for the support of Burundi's hillside cooperatives; and the establishment of a department for the promotion of cooperatives within the Ministry of Communal Development.

NGOs and other financial and technical partners have come up with different approaches to help in the development of cooperatives. As one example, the Purchase for Progress (P4P) initiative of the World Food Programme works in close cooperation with agricultural cooperatives to enable them to produce surpluses and access markets to increase their income. Projects initiated by INADES-Formations are intended to support rural populations in Burundi in their development through the establishment of agricultural cooperatives and savings and credit structures.

The promotion and expansion of agricultural cooperatives is also an international concern due to their contribution to sustainable development goals. Indeed, cooperatives contribute to SDG 1: No Poverty, by mobilizing self-help mechanisms that simultaneously create opportunities, extend protection, and facilitate empowerment. Agricultural cooperatives also help achieve SDG 2: Zero Hunger, by generating economies of scale and scope through the shared use of technologically advanced equipment, division of labour among members, and the exchange of knowledge and innovation (International Co-operative Alliance, 2018). According to the International Labour Organization (2017), agricultural cooperatives also support SDG 5: Gender Equality, by increasing female membership and expanding opportunities for women in local economies and societies in many parts of the world.

Therefore, the results of this study will benefit several stakeholders. The findings will be useful to government agencies in charge of cooperatives, as well as NGOs aiming to develop cooperatives in Burundi, as they will be able to provide appropriate assistance to cooperatives in terms of strengthening governance systems and risk management. Furthermore, the study's findings will assist policymakers in making informed decisions and enacting laws that will increase the efficiency and sustainability of agricultural cooperatives in Burundi.

1.6 Scope and Limitations

The study will be carried out in the Northern Burundi, Ngozi province. The study focused on the effect of corporate governance practices mediated by risk management on sustainability of agricultural cooperatives. The corporate governance practices included: participation, transparency, responsibility, fairness, and rule by law. The moderating variable was risk management practices which were composed of anticipation, identification, assessment, prioritization, monitor and evaluation of risks. Data were collected using standardized questionnaires and the recall period was the past 2 years. The study was constrained by the inability of the members of cooperatives to provide accurate information regarding their cooperatives since the study depends on recall.

1.7 Definition of Terms

Cooperative: is an association of persons working together to achieve a common goal through a jointly owned enterprise. Within the study context, these are agricultural cooperatives engaged in production and commercialization of food crops.

Corporate governance: refers to "a set of qualitative characteristics relating to processes of rulemaking and their institutional foundations. This study will include participation, transparency, responsibility, fairness, and rule by law.

Mediating effect: in relation to this study, mediating effect is assumed when the independent variable (corporate governance practices) affects the dependent variable (sustainability) through an intervening variable (risk management practices) also known as a mediator.

Risk management practices: refers to structure for the actions that need to be taken and coherent approaches to identify, assess and manage risks. According to this study, the structure will include anticipation and identification of risk, assessment, and prioritization of risk, monitoring and evaluation of risk.

Sustainability: the ability of cooperatives to meet a wide range of needs and challenges of members leading to the longevity of the cooperative. In this study, cooperatives' sustainability

will refer to the 3Ps of the sustainability hence concepts of social (people), environmental (planet), and economic (profit).

CHAPTER TWO

LITERATURE REVIEW

2.1 Economic Importance of Agricultural Cooperatives

Agricultural cooperatives play an important role in improving livelihoods conditions of farmers. According to FAO (2022), agricultural cooperatives offer to small agricultural producers' opportunities and a wide range of services. Those services and opportunities include access to inputs and shared machinery (Abate *et al*., 2019; Ji *et al*., 2019; Zamagni, 2017); strengthening farmers' bargaining power and facilitating access to wider markets (Chagwiza *et al*., 2016; Mojo *et al*., 2017; Poole, 2017); creating linkages between farmers and supply chain actors (Mohammed & Wan Lee, 2019); and contributing to women's empowerment (Lecoutere, 2017).". Hence by working together, members of a cooperative can reach objectives that none of them could achieve alone (Dogarawa, 2020). Therefore, given the key role that agricultural cooperatives play in development, the United States has consistently called for the promotion and development of cooperatives as inclusive and socially responsible enterprises with a huge potential for growth (United Nations, 2019).

In Africa, the cooperatives movement plays an essential economic and social role. Cooperatives are the mostly used approach to improve livelihoods, fight poverty and promote equity (Munyoro *et al*., 2019). Studies conducted in different part of the continent have confirmed the importance of cooperatives. For example, Verhofstadt *et al*. (2021), found that cooperative membership increases income and reduces poverty of households in Rwanda. In Kenya, cooperatives have been forefront in mobilizing savings and investments through provision of affordable loans, which has resulted to huge impact in financial deepening among Kenyans (Otieno, 2019).

While in Ethiopia, cooperatives play a key role in addressing socio-economic challenges such as gender inequity, whereby women members have improved their income, livestock holdings, autonomous decision making and spending power after joining their cooperatives (Hailemariam & Hagos, 2020). In South Africa, small scale producer cooperatives proved capable to provide employment to worker members through their participation (Mapetla & Turok, 2018). These findings show the important role cooperatives plays in socio-economic development which necessitates their sustainability.

In Burundi, cooperatives are considered as a vehicle for economic, social and human development since colonial times (ANACOOP, 2020). According to a research survey done in the North of Burundi, through access to financial opportunities within the cooperatives,

members have improved the quality of their houses (12%), subscribed to supplementary health insurance (38%), paid easily the school fees for their children and equipped themselves with household equipment, (Manirakiza *et al*., 2020). However, Nkurunziza *et al*. (2019), stresses that members of only well-organized cooperatives were able to enhance their livelihood and were more resilient to climate change and conflicts crisis.

This depicts the importance of governance in cooperatives in order to achieve the livelihood improvement of members. Despite the acknowledgement, cooperatives in Burundi are suffering from poor governance, consequently the sustainability aspect is missed out, missing at the same time the benefits of cooperatives for members and the country in general. Therefore, even if considerable efforts are made to promote cooperatives, proportional efforts should be invested towards strengthening the governance within cooperatives.

2.2 Principles of Cooperatives

The International Cooperative Alliance (2015) defines a cooperative as "an autonomous association of persons united voluntarily to meet their common economic, social, and cultural needs and aspirations through a jointly owned and democratically controlled enterprise". On the other hand, agricultural cooperatives are cooperatives whose members are agricultural producers or involved in agriculture related activities (Nnadozie *et al*., 2015). Therefore, agricultural cooperatives are essentially voluntary associations of individuals working together towards shared objectives through jointly owned and democratically controlled enterprise.

According to Kumar *et al*. (2015), cooperatives are guided by several values and seven fundamental principles that ensure their viability. The seven principles outlined by ICA (2015) include: voluntary and open membership, democratic member control, member economic participation, autonomy and independence, education, training and Information, cooperation among cooperatives, concern for community. (1) The principle of voluntary and open membership stipulates that any individual willing to accept the associated obligations may access the services provided, irrespective of gender or socioeconomic status. The second principles, democratic member control, emphasizes that cooperatives are democratic organizations where members actively participate in decision-making, with equal voting rights given to all members (one member, one vote). The third principle is member economic participation. Members must provide adequate capital to the cooperative. Additional requirement is that the capital must be subjected to democratic control. The fourth principle, autonomy and independence, means that cooperatives are controlled by their members. They

can work with governments or external funders but only under terms that do not compromise their independence or democratic accountability.

Education, training and information form the fifth principle. Cooperatives are expected to educate and train their members, leaders, and staff so that they can effectively contribute to the growth and sustainability of the organization. The sixth principle is about cooperation among cooperatives, it emphasizes the importance of working together at local, national, regional, and international levels to strengthen the cooperative movement. Finally, the seventh principle, concern for community, stresses that cooperatives should pursue the sustainable development of their communities through policies and initiatives that are approved by their members (Mhembwe & Dube, 2017).

Mhembwe and Dube (2017), stated that if properly followed and implemented, these principles would guide cooperatives towards the achievement of their objectives. Yet, corporate governance is necessary for compliance to set rules, practices and institutional foundations to achieve a common goal (OECD, 2021). Therefore, corporate governance constitutes the structure or serve as a guideline for the cooperative to abide by the respect of rules, cooperatives' principles leading to the performance and the sustainability of cooperatives.

2.3 Concept of Corporate Governance in the Context of Cooperatives

According to OECD (2021), corporate governance provides the structure through which company's objectives are set, the means of attaining those objectives and monitoring performance, structure which, in its turn, supports the board of directors and managers in creating and maintaining an effective and sustainable business. Corporate governance also refers to a set of clearly defined rules and processes that regulate the system of relationships between different stakeholders in the company and beyond, all with the aim of implementing strategic decisions, ensuring long-term growth, development of companies and increasing the wealth of shareholders (Vučković & Vučković, 2021).

Additionally, the main function of corporate governance practices is to ensure that executives pursue the goals determined either by owners or by those responsible for strategic decisions and not their own goals (Gowda, 2016). Sugiyanto and Rahayu (2019) identified five principles of corporate governance namely: transparency, responsibility, accountability, fairness, and cooperatives-by-laws. Khan and Banerji (2016); Shehata (2015); Veldman and Willmott (2016), have pointed out commitment to the implementation of corporate governance,

the role of capital owners in corporate governance, directors, and information disclosure and transparency as dimensions of corporate governance.

In this study, principles of transparency, participation, responsibility, fairness, and rule of law will be considered. OECD (2021) defines transparency as timely and accurate disclosure of significant information pertaining to the corporation including its financial status, performance, ownership and governance, Fairness on the other hand is defined as an equitable treatment for all stakeholders including minority and foreign shareholders. Participation encourages all stakeholders to actively participate in cooperatives' operations while the rule of law ensures effective supervision and enforcement of regulations. Sugiyanto and Rahayu (2019) define responsibility as adhering to laws and fulfilling community commitments to maintain business continuity.

A study by Ndege *et al.* (2019), on good governance practices for community organizations established that governance is crucial in achieving development and poverty alleviation of community groups According to a study from Puri and Walsh, good governance mechanism by the corporate sector is essential to improving members economic, social and technologic life. Dominic and Memba (2020) found that effective corporate governance results in financial performance while Yilmaz and Buyuklu (2016) observed that corporate governance variables affect business performance significantly.

Wanjohi and Ombui (2016) reported that poor governance reduces the performance of insurance companies. According to Nganga and Njenga (2019), poor performance in organizations and institutions is as a result of bad governance. The failure of managers may cause stagnation in corporations, fostering a lack of progress. Though literature generally identifies the relationship between governance and performance, it is unknown to what extent corporate governance influence cooperatives, especially in agriculture.

2.4 Governance Issues in Agricultural Cooperatives and Policy Implications

Agricultural cooperatives in Burundi are important as they improve smallholders' access to markets, agricultural inputs, financial services, and training. Ndayisaba (2019) notes challenges which have occurred during NURERIV's existence, particularly the poor internal governance systems, opacity, leadership failings, and few member engagements. When member violations occur, it can lead to inappropriate decisions, inefficient resources allocation, poor financial management, and a loss of trust between leaders and members.

This reduces the cooperative's capacity to achieve its objectives. Poor governance has serious consequences which affects not just internal management but also shapes the effectiveness of agricultural and rural development policies. For example, cooperatives that do not have strong accountability systems are less able to get, implement or maintain government backed programs such as input subsidies, credit or market access.

Since 2020, the Burundian government has poured over 87 million Burundian francs into cooperatives located in up country. When leaders are not elected democratically or members participation is limited, the use and impact of funding are restricted resulting in waste of resources and low return. The OECD (2023) further elaborates that weak legal and regulatory frameworks as well as lack of transparency and communication hamper the monitoring and accountability of public policies. Poor governance can limit the effectiveness of monitoring and control mechanisms which in turn may limit transparency and the effective use of public money.

Therefore, enhancing governance systems in agricultural cooperatives has become a key policy agenda. Cooperatives with good governance are capable of optimally absorbing government assistance, maintaining financial discipline, and ensuring inclusiveness of members in decision-making. Thus, the national policy should emphasize leadership and governance training for cooperative leaders, Enforcement of regulatory compliance through cooperative audits and reporting and integration of governance standards into registration and evaluation of cooperatives. Embedding these reforms in the national cooperative development agenda helps achieve greater alignment of cooperatives' activities and public policy objectives.

2.5 Determinants of Corporate Governance Practices

A study has been conducted by Maswanto (2019) to analyse good corporate governance and organizational commitments using structural equation models. According to the study´s findings, Leadership has a positive and significant effect on Good Corporate Governance Islamic banks; meaning more leadership will result in better governance. Competence had a good effect on governance which was strengthened by organisational culture, thus improving performance. The combination of these three factors had a 69% coefficient of determination on corporate governance.

In a study by Kimenju (2016), the use of descriptive statistics revealed that transparency and disclosure, board responsibility and internal controls have a huge influence on corporate governance. Internal controls had a mean of 3.70, transparency and disclosure 3.49 and board

responsibility 3.32. The internal controls had low standard deviation indicating that they generally agreed that it was important for governance in SACCOs.

Maingi (2016) examined factors affecting governance quality in Kenya and discovered that 97% of respondents thought financial disclosure and the size of the bank have a large effect on governance. Also, the researchers found that 98.8% said board characteristics influence governance practices. De Carvalho *et al*. (2021) reviewed the determinants of Corporate Governance (CG) practices in Brazil using hand-collected data. He developed subindices for Board Structure, Procedures, Minority Shareholders' Rights, and Disclosure, and built an overall Corporate Governance Index (BCGI). The tangible and liquid nature of resources significantly influences the general level of governance. Adegbite *et al*. (2018) found that company size significantly foresees the increased adoption of good corporate governance practices in their study on governance emerging economies.

The findings demonstrate that many internal and external factors influence governance practices. However, their significance has not been thoroughly investigated in the context of agricultural cooperative. The study aimed at filling this gap by applying a multivariate probit model to test the variables that determine the adoption of governance practices in agricultural cooperatives in the province of Ngozi.

2.6 Role of Risk Management Practices in Cooperatives

According to Omondi (2022), risk can be defined as the likelihood of harm, loss, or threat that could cripple economic activities and therefore there is a need to focus on the proactive approach. As Rejda (2019) highlighted, the risks cannot be completely removed, but still, with the help of strict control, it is possible to foresee the threats, reduce their adverse impact and reach the established objectives. Kikwasi (2018) emphasized the need to intertwine the risk management with the goals of the organization at all levels to achieve success in the long run.

According to Ngugi *et al*. (2020), risk management is a process that involves the identification, assessment, mitigation measures, and performance analysis. In the same manner, Akinyi (2018) assumed that a good system must detect the possible threats, evaluate their effects, choose appropriate responses, and deploy strategies to reduce or eradicate exposure. This paper therefore features a risk management analysis based on three levels, that is, (1) the anticipation and identification of risks, (2) the assessment and prioritization of risks, and (3) monitoring and control of risks.

Mburu and Odhiambo (2021) pointed out that farming is especially vulnerable to climate change, infestation, and financial instability issues. The latter vulnerabilities have been exerted by COVID-19 pandemic, with the USAID (2020) survey indicating that 35 percent of the 89 cooperatives interviewed lost their earnings. Similarly, Holst (2020) observed an overall decline in revenue by an average of 30 percent among kenyan cooperatives, although some of them incurred losses amounting to 60 percent. Nevertheless, Hamilton (2020) noted that cooperatives that took proactive risk management practices successfully managed to mitigate such challenges by offering financial and informational assistance to their members and thus prevent the loss of their livelihoods.

Comprehensively, risk management is an essential protection in the event of disruption. Nevertheless, most agricultural cooperatives do not have adequate risk management systems, which limits their ability to overcome crises at the moment. This fact highlights the importance of examining the connection between risk management and sustainable organizational performance.

2.7 Concept of Corporate Sustainability

Corporate sustainability refers to the strategic and practical approaches of creating value to the stakeholders and the incorporation of economic, social, and environmental aspects in a balanced manner (Afzal *et al*., 2017). The concept is becoming more and more popular, particularly in the wake of the world economic crises of unethical business conduct and the failure to balance financial goals with social responsibility (Idrus, 2016). In this respect, Macikov *et al*. (2018) noted that there is an increasing tendency of sustainable financial practices that show social responsibility and environmental management.

Marzuki *et al*. (2019) show that the interaction between economic performance, social values, and environmental issues has led to a strategic reversal in the organization. Elkington, with the concept of the triple bottom line (TBL) made a great breakthrough/ the author showed that companies cannot be successful in isolation but within the context of the social and environmental system where they function. It is based on three pillars namely: people, planet and profit; this framework has become a benchmark of measuring sustainability.

Schreck and Raithel (2018) head in this direction by creating a comprehensive model which involves the economic, social, and environmental aspects. Continuing the topic, the present study examined sustainability of cooperatives in terms of three dimensions suggested by Loor *et al*. (2020): the economic dimension that dwells on value creation and the long-term competitiveness. The social one that deals with the minimization of disparities and

improvement of living standards. Finally, environmental dimension that focuses on the mitigation of the ecological impact of activities of cooperatives.

2.8 Effect of Corporate Governance Mediated by Risk Management Practices on Sustainability of Agricultural Cooperatives

According to Mwanja *et al*. (2021), corporate governance is essential to the achievement of sustainability goals and defines it as a fundamental part of economic success in the long run. Good governance behaviors are associated with a lot of economic, social and environmental improvements. Wangui (2019) demonstrated in the case of Kenya that the corporate governance played a decisive role in determining the performance of SACCOs.

According to Kyazze *et al*. (2017), cooperative governance is important in the process of affecting social impact; however, Novak and Hossain (2020) declared that efficient governance mechanisms play a severely positive role in reinforcing social and environmental sustainability actions. Corporate governance in turn becomes very vital in reinforcing organizational sustainability. However, risk management is equally valuable. Ping and Muthuvelo (2018) found that effective application of risk management practices can boost the organizational performance in a significant way.

Equally, Murwaningsari and Mayangsari (2020) reported that risk management contributes to sustainability in an equal manner to the governance mechanisms.

According to Sugiyanto and Rahayu (2019), the performance of cooperatives depends on whether the robust nature of governance and effective risk management is integrated. On the other hand, organizations had to face significant losses because of the lack of proper risk management mechanisms.

Senjaya *et al*. (2020) proved that mining corporations employing both integrated governance and risk management systems were better placed to avoid the risks of operational disruption and financial instability. The net effect of these findings is that the integration of governance and risk management creates a strong platform of achieving the sustainability objectives of the agricultural cooperatives. It has been empirically shown that the two dimensions are essential to the realization of sustainable performance. However, little has been done to understand the impact of governance played through risk management on sustainability in agricultural cooperatives. This study seeks then to address that gap by examining the specific interplay of those factors in the context of Ngozi province, Burundi.

2.9 Theoretical Framework

There are several theories that could be used to explain the relationship between corporate governance, risk management and sustainability. Some of these theories include stakeholder theory, agency theory, shareholder theory, and stewardship theory. However, theories like shareholder and stewardship theory do not fully encompass all the factors influencing sustainability of cooperatives. Indeed, according to ILO, cooperatives are enterprises that endeavor to meet the economic progress of members while satisfying their sociocultural interests and protecting the environment.

Hence, shareholder theory fails to consider that shareholders and corporates may have other objectives that are not based on financial performance. Whereas for stewardship theory, it is not suitable for this study because it does not adequately represent the governance system of cooperatives. By definition, a cooperative is "an autonomous association of people united voluntarily to meet their common economic, social, and cultural needs and aspirations through jointly owned and democratically controlled enterprises." Moreover, cooperatives are owned, managed, and patronized by members. Yet, stewards are typically company executives and managers working on behalf of shareholders, focusing primarily on maximizing returns. Thus, stakeholder and agency theories provide more appropriate frameworks for this study, as they offer a better understanding of the factors that influence sustainability in cooperatives. Accordingly, this study is grounded in stakeholder and agency theory.

2.9.1 Stakeholder Theory

Freeman (1984) describes all groups or individuals that can affect or be affected by a corporation's purpose; stakeholder theory which is an important tool for corporate governance. According to this theory, an organization action's effect on all constituents is focused on governance sustainability of the cooperative and their linkages. According to Jones (1995), the approach requires the considered group or individual to have the ability to influence decisions, forcing managers to consider their interest. When key stakeholders do not provide the necessary support, an organization may fail (Donaldson and Preston, 1995).

In the context of this research, the sustainability of cooperatives is contingent upon governance quality, decision-making relevance, and member participation. Since members of cooperatives are also stakeholders that take various roles, it is important to involve everyone in the process of the decision-making process. The cooperative leaders should therefore incorporate the interests of all and make them involved in governance. It is considered that the stakeholder theory is relevant because it guides the work of actors in a common direction. It

still plays a significant role in the contemporary business scenario and affects a range of fields (Harrison *et al*., 2015).

This model helps to understand the concepts of cooperation and their effects on the performance of organizations. According to Carroll and Buchholtz (2014), this method enhances the perception and operations of organizations, hence the need to apply the same technique in the for-profit and no-profit sectors. The model emphasizes the importance of the stakeholders and the responsibility of the members towards achieving common goals. The only way to succeed in terms of profitability, growth and sustainability is therefore based on the good governance practices that are adopted by the stakeholders.

2.9.2 Agency Theory

The agency theory is an important theory to analyze the relationship in an organization including agricultural cooperatives. It is developed by Jensen and Meckling (1976) and is founded on the notion that an agency relationship is formed when a principal gives an agent the power to act and make decisions on his behalf. In traditional corporations, the owner or shareholders delegate their power to the agents (managers), whose purpose might be different. Shareholders tend to maximize the profits, but agents can serve their own interests.

In cooperatives, every member holds co-owner status. However, to facilitate decision-making and mitigate the expenses linked to collective processes, certain members take on the roles of managers or agents. Since cooperatives promote member service and support over exclusive pursuit of profit, the absence of strong financial incentives, limited market discipline and the dispersed nature of ownership can lead to agency problems (Richards *et al*., 1998).

2.10 Conceptual Framework

The proposed conceptual framework on determinants of the sustainability of the agricultural cooperatives, with emphasis on corporate governance and its relationship with risk management. The analysis assesses governance practices and the socio-economic characteristics and institutional and governance factors as independent variables. Risk management is a system which is used to intermediate variability and sustainability is measured through the indicators which are economic, social and environmental it is dependent variable.

Corporate governance is believed to have a direct and indirect impact on sustainability through risk management. The dimensions of governance analyzed are participation, transparency, responsibility, fairness, and rule of law. Risk management is the identification, assessment, prioritization, and monitoring of risks to inform decision-making in the organization. Linking strong governance frameworks and effective risk management allows

agricultural co-operatives to increase resilience and achieve better economic, social and environmental outcomes.

outcomes.

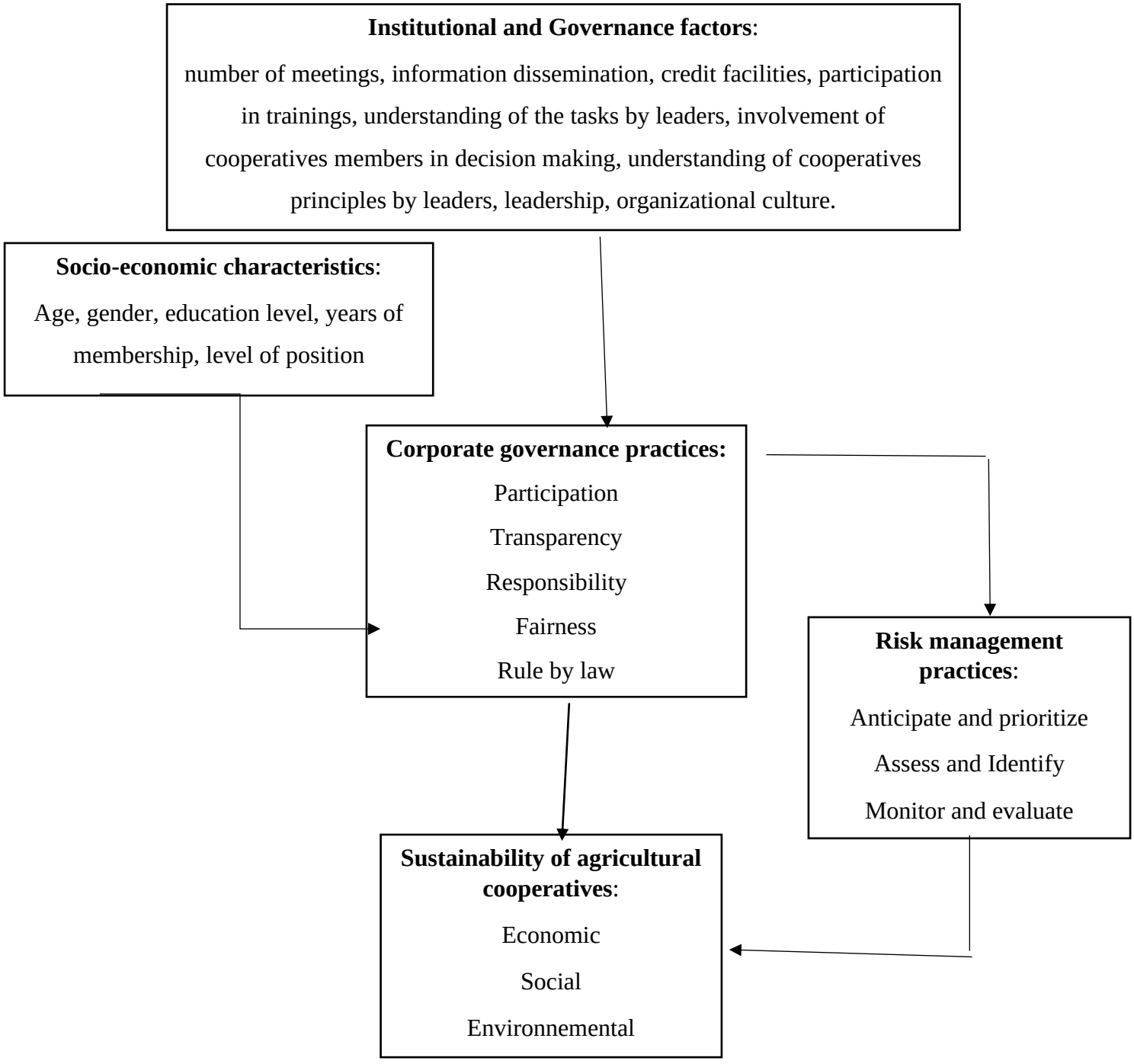

Figure 2.1: Conceptual framework

CHAPTER THREE
RESEARCH METHODOLOGY

3.1 Study Location

The study was carried out in the province of Ngozi which is one of the eighteen provinces of Burundi. The choice of the province was motivated in large part by the fact that Ngozi ranks among the top five provinces which have a high membership in agricultural cooperatives of food crops with a rate of 22.7%, (Manirakiza *et al*., 2020). In the north, the province shares its border with Rwanda and the province of Gitega borders it in the south. In the north-east is the province of Kirundo. To the west it is bounded by the province of Kayanza while to the east is the provinces of Muyinga and Karusi. The geographic coordinates of the province are -2 ° 52 '30' 'South and 29 ° 55' 30 " East. The province is divided into nine municipalities namely: Busiga, Gashikanwa, Kiremba, Marangara, Mwumba, Ngozi, Nyamurenza, Ruhororo, and Tangara. Ngozi is one of the most populous provinces with 904,651 inhabitants (2019) and a density of 614 inhabitants / km2. The province covers an area of 1,474 km2 representing 5.3% of the territory of Burundi.

The study was conducted specifically in the commune of Ngozi which is located in the west of Ngozi province. It has an estimated area of 184.46 km2 or 12.5% of the province (1,478.36 km2) and 0.6% of the country (27,834 km2). The commune is bounded to the north by Mwumba commune; to the south by Kayanza province, to the east by Gashikanwa and Ruhororo communes and to the west by Busiga commune and Kayanza province. The population of Ngozi commune is estimated at 107,416 inhabitants and is spread over an area of 184.46 km2 (province). The municipality has an average density of 582 inhabitants/ Km², which higher than the average density of the province (475 inhabitants / km2). This density is one of the highest in the province and the country. Ngozi commune is located in the Buyenzi Natural Region which is characterized by an average altitude of between 1,500 and 1,900mm, a humid tropical climate with an average annual rainfall of 1,200 and 1,500mm.

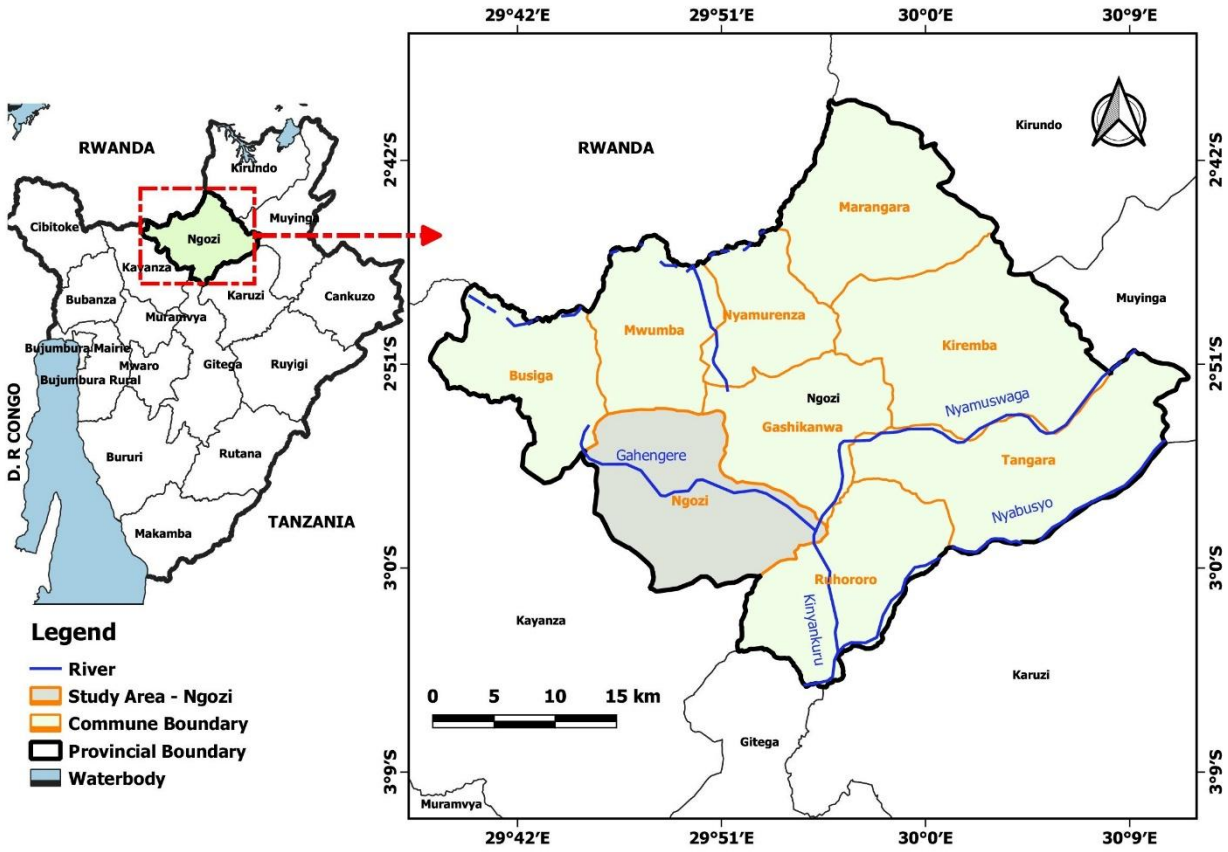

Figure 3.1: Map of Burundi and Ngozi Province

3.2 Research Design

The study used a cross-sectional survey to get data for the study which will allow the collection of primary data.

3.3 Data and Sampling approach

3.3.1 Population of Study

The target population of this study was made of agricultural cooperatives registered in the municipality of Ngozi.

3.3.2 Sampling Unit

The sample was made up of the cooperatives of two main umbrella organizations present in the municipality of Ngozi, namely ADISCO (Support for integral development and solidarity on the hills), UCODE (Union for cooperation and development). The respondents were selected among members of the cooperatives from two categories of cooperatives.

3.3.3 Sampling Size

The sample size determination followed Yamane's Formula (Yamane, 1967):

$n = \frac{N}{1+N\,(e)^2}$ …… (1)

Where: n= sample size, N= population of study and e= margin of error

Based on an exploratory survey and campaign reports carried out in the province of Ngozi, the number of registered members of cooperatives stands at 1093 in the commune of Ngozi (Manirakiza *et al*., 2020).

Table 3. 1: Membership in food crop cooperatives

Communes	**ADISCO**	**CAPAD**	**UCODE-AMR**	**Total**	**%**
Busiga	310	318	1402	2030	26.67893
Kiremba	-	-	363	363	4.770666
Gashikanwa	223	50	511	784	10.30359
Marangara	-	-	838	838	11.01327
Mwumba	-	-	800	800	10.51387
Ngozi	295	-	798	1093	14.36457
Nyamurenza	110	-	363	473	6.216323
Ruhoro	-	-	435	435	5.716914
Tangara	-	-	793	793	10.42187
Total	938	368	6303	7609	100

Using the above formula, $n = \frac{1093}{1+1093\times\,(0.05)^2} = 293$

The number of the respondents for each strata (n_1) is obtained by multiplying the population (N_1) of each strata by the sample size (n) and dividing the product by the total population size.

Table 3.2: Distribution of sample size by strata

Strata	**Population**	**Sample size**
ADISCO	295	79
UCODE	798	214

Total	1093	293

3.4 Sampling Method

The study used a multistage sampling technique to select respondents. In the first stage, the province of Ngozi was chosen on purpose because it is the second province with the highest rate of membership in agricultural cooperatives of food crops, 22.7% (Manirakiza *et al*., 2020). In addition, the province has recorded a high level of agricultural production, (MINEAGRIE/FAO, 2019). The second step concerned the selection of the municipality of Ngozi whose choice was motivated by the fact that the municipality constitutes the target intervention zone for most of the projects of the State and of Non-Governmental Organizations (NGO) hence information became easily accessible. The third step consisted of choosing the cooperatives. In the case of our study, the sample was made up of the cooperatives of two main umbrella organizations present in the municipality of Ngozi namely ADISCO (Support for Integral and Solidarity Development of the Hills), UCODE (Union of Cooperation and Development). In the last step, simple random sampling was used to select the respondents. A proportional number of respondents was selected from the selected cooperatives.

3.5 Tools for Data Collection

Primary data for the study were collected from 307 respondents using a semi-structured questionnaire that was administered through face-to-face interviews by trained enumerators.

3.6 Pilot Study

In order to verify the suitability and validity of the data collection instruments, a pilot test of questionnaire was first be carried out. According to Mugenda and Mugenda (2013), reliability is the degree to which a research instrument would yield the same results or data after repeated trials while validity is the accuracy and meaningfulness of inferences, which are based on the research results. In addition, I have increased the number of respondents from 293 to 307, adding 14 individuals to the total count.

3.7 Data Type and Sources

Primary and secondary data were both used in this study. Primary data were collected from surveys and interviews. Whereas secondary sources will be collected from publications, journals, relevant websites and books. The data included information socio-economic, institutional and governance characteristics of respondents including members of cooperatives, managers, board of directors.

3.8 Data Analysis

The data collected were cleaned and processed using statistical software (STATA) and Smart PLS version 3.

3.9 Ethical Consideration

Before collecting data, research permits were secured from graduate schools, the government of Burundi, and two organizations ADISCO and UCODE. In addition, the researcher looked for approval from the province of Ngozi, the commune of Ngozi as well as the board of directors of targeted cooperatives. The respondents were informed of the purpose of the study and assured of confidentiality.

3.10. Data Collection Instruments and Measurement of Variables

The study utilized a structured questionnaire to collect quantitative data on the socio-economic, institutional, and governance characteristics of members within agricultural cooperatives. Socio-economic variables included sex (coded as 1 = male, 2 = female), age (in years), education level (measured on an ordinal scale from 1 = no formal education to 5 = university education), years of cooperative membership (continuous), and position held within the cooperative (coded as 1 = director, 2 = manager, 3 = member). These variables were used to establish respondents' demographic and professional profiles and were incorporated as control variables in subsequent analyses.

Institutional and governance characteristics were measured using structured items that captured factors such as the frequency of general meetings, availability and sources of management information, access to credit facilities, and participation in training related to cooperative management. In addition, members' understanding of their leadership responsibilities and their adherence to cooperative principles were evaluated using a three-point ordinal scale (1 = low extent, 2 = moderate extent, 3 = high extent).

Variables such as leadership style and organizational culture were assessed using categorical response formats to capture members' perceptions of their influence on governance practices. Participation in decision-making was evaluated using a binary measure, asking whether all members are involved in the decision-making process (Yes = 1, No = 0). Collectively, these indicators reflected the structural, procedural, and behavioural aspects of cooperative governance. Their inclusion allowed for a robust analysis of how governance and institutional dynamics relate to sustainability outcomes.

3.11 Analytical Framework

Objective one: To identify factors affecting utilization of corporate governance practices among agricultural cooperatives in Ngozi province

To meet this objective, the participation, transparency, responsibility, fair and rule of law the five corporate governance practices were examined. Similar studies were referred to in this research such as Kimenju (2016), Maswanto (2019), OECD (2015), Sugiyanto and Rahayu (2019). Each of the governance practice was treated as binary dependent variable (1 = practice is highly utilized, 0 = otherwise). The Likert-scale responses of the governance practices were converted into binary variable for estimation using the Multivariate Probit Model.

As the governance practices may have some correlation between themselves, estimating each governance practice separately will lead to biased and inefficient estimates due to correlation between the error terms across the models (Wooldridge, 2019) To make it simple, substitution or complementarity between governance principles (e.g. participation and transparency) calls for a model that fully reflects their interdependence. To solve this, Multivariate Probit Model (MVP) is used. The MVP model estimates several binary outcomes simultaneously while accounting for the correlation among the error terms of the different equations. This technique yields reliable and effective estimates of the drivers of the adoption of corporate governance practices and illustrates the inter-connectedness of the governance dimensions of agricultural cooperatives. Equation 3 shows how the model works in practice.

Empirically the model can be specified as shown in Equation 3.

$$\left.\begin{aligned} Y_{i1} &= X'_{ij1} + \varepsilon_{i1} \\ Y_{i2} &= X'_{ij2} + \varepsilon_{i2} \\ Y_{i3} &= X'_{ij3} + \varepsilon_{i3} \\ Y_{i4} &= X'_{ij4} + \varepsilon_{i4} \end{aligned}\right\} \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \quad (3)$$

Where, i = identification of cooperatives' members, Y_{i1} = 1, if agricultural cooperatives adopt CGP (0 = otherwise), Y_{i2} = 1, if agricultural cooperatives adopt CGP (0 = otherwise), Y_{i3} =1, if agricultural cooperatives adopt CGP (0 = otherwise), Y_{i4} = 1, if

agricultural cooperatives adopt CGP (0 = otherwise), X′i = Vector of factors affecting adoption of CGP,βj = Vector of unknown parameters (j = 1, 2, 3, 4), and ε = is the error term. To identify the determinants of CGP adoption, a multivariate probit model of the following form (Equation 4) was used to test the hypothesis:

$$Y_{i1} = X'_{ij}\beta_j + \varepsilon_{ij} \quad \ldots\ldots (4$$

Where Y_{ij} (j =1….,5) represent the five CGP used by the i^{th} member of the agricultural cooperative (i = 1..…293), X'_{ij} is a 1 × k vector of observed variables that affect the choice decision of members, β_j is a k × 1 vector of unknown parameters (to be estimated), and ε_{ij} is the unobserved error term. It is assumed that the error terms (across j = 1… m alternatives) are multivariate and are normally distributed with mean vector equal to zero. Therefore, the unknown parameters in Equation (3) are estimated using simulated maximum likelihood. The explanatory variables that were used in the study include: age, gender, education, years of membership, level of position, number of meetings, access to information, access to credit, access to training, understanding of tasks by leaders, decision making, understanding of cooperatives principles by leaders, leadership, organizational culture.

Table 3.3: Description of variables that will be used in MVP

Variables	**Description of variables**	**Hypothesized sign**
Dependent		
Participation	Low=1, Moderate=2, High=3	
Transparency		
Responsibility		
Fairness		
Rule by law		
Independent		

Age1	Age of the members of Board of	+
Age 2	Directors	+
Gender	Age of the members of cooperatives	+
Education1	Gender of the BOD members	+
Education 2	Level of education of BOD members	+
Years of membership	Level of education of members of	+
Level of position	cooperative	+
Number of meetings	Years of membership of BOD	+/-
	Level of position of members of BOD	
Information	Number of meetings attended by	+/-
dissemination	members of BOD	
		+/-
Credit facilities	Dummy=1 if members have	
	information dissemination, 0	+/-
Participation in trainings	otherwise	
	Dummy=1 if members have credit	+/-
Understanding of the	facilities, 0 otherwise	
tasks by leaders	Dummy=1 if members have	+/-
Involvement of	participation in trainings, 0 otherwise	
cooperatives' members in	Categorical 1= low understanding, 2=	+/-
decision making	moderate, 3= high	
	Binary 1= Yes 0=No	+/-
Understanding of		+/-
cooperatives principles		+/-
by leaders	Categorical 1=low understanding, 2=	
Leadership	moderate, 3= high	
Organizational culture	Binary 1= Democracy 0=Dictatorship	
	Categorical 1= Bureaucratic culture,	
	2= Supportive culture, 3= Innovative	

Objective two: To determine the effect of corporate governance practices on sustainability of agricultural cooperatives in Ngozi province

In this objective the dependent variable was sustainability, an abstract concept that cannot be seen directly. It was therefore measured through economic, social, and environmental sustainability by means of a latent dependent variable. Cooperative members rated observable indicators on a five-point Likert scale for each of the dimensions. Economic sustainability included financial transparency, saving practices, and access to markets. Social sustainability included common vision, trust, inclusiveness & internal conflict resolution. Environmental sustainability reflected shared awareness of ecological interdependence, conservation practices, and efficient use of resources. Because both observed and unobserved variables are plenty, Structural Equation Modelling (SEM) was used to evaluate the impact of corporate governance (independent variable) on sustainability.

SEM is particularly suitable for this study because it allows for the analysis of complex relationships among latent constructs while accounting for measurement error (Tarka, 2018). It also facilitates the evaluation of direct and indirect effects, model fit, and the construct validity of abstract concepts such as sustainability, making it more appropriate than traditional regression techniques (Hair *et al*., 2021).

The general model is represented by the following equations consisting of measurement and structural models:

$$Y = v + \Lambda n + \varepsilon, \quad (5)$$

$$\eta = \alpha + B\eta + \xi \quad (6)$$

where Y is the vector of *p* observed variables in a considered study ($p > 1$), ν the p × 1 vector of observed variable mean intercepts, Λ is the $p \times q$ matrix of factor loadings, η is the of q x 1 latentfactors assumed in it ($q > 0$), ε the vector of *p* pertinent residuals (error terms), α is the $q \times 1$ vectorof latent variable intercepts, B is a q x q matrix of latent regression coefficients and ξ is the $q \times 1$ vector of corresponding latent disturbance terms.

Based on the general equation (7) and (8), the following structural equation model for the five factors namely participation (ξ_1), transparency (ξ_2), responsibility (ξ_3) fairness (ξ_4) and rule-by-law (ξ_5) with manifest endogenous variables corporate sustainability (Y_1) will be given in the following structural equation models:

$$Y_1 = \alpha_1 + \beta_{11}\xi_1 + \beta_{12}\xi_2 + \beta_{13}\xi_3 + \beta_{14}\xi_4 + + \beta_{15}\xi_5 + \xi \quad (7)$$

The general matrix expression is given in the following equation:

$$Y_1 = \alpha_1 + \Gamma_1 \xi_1 + \xi \quad \text{.....(8)}$$

Where,

$\Gamma_1 = (\beta_{11}, \beta_{12}, \beta_{13}, \beta_{14}, \beta_{15})$, $\xi_1 = (\xi_1, \xi_2, \xi_3, \xi_4, \xi_5)$

In the above equation (9), Y1 is the manifest endogenous variables, α_1 is the latent intercept, Γ_1 is the coefficient vector for the linear effects of n latent predictors, ξ_1 is the latent factors and finally ξ is the latent disturbance. The above model in equations (8) will be constructed in Smart PLS version 3 and it finalized the significant factors.

Therefore, to illustrate the sustainability of agricultural cooperatives in terms of the five indicators of independent variables regression analysis will be used as presented in equation 9.

$$SAC = (\beta_0 + \beta_1 PAR + \beta_2 TRANS + \beta_3 RESP + \beta_4 FAIR + \beta_5 RBL) + \varepsilon \quad \text{.....(9)}$$

Where SAC= Sustainability of Agricultural cooperative, β0 = constant which is the value of Y when X is zero; βi = correlation coefficient, Pearson's correlation; PAR= Participation, TRANS=Transparency, RESP= Responsibility, FAIR=Fairness, RBL=Rule by law.

Objective three: To determine the effect of corporate governance practices mediated by risk management on sustainability of agricultural cooperatives in Ngozi province

In relation to this objective, sustainability was treated as a latent dependent variable, while corporate governance practices and risk management were modelled as the independent and mediating variables, respectively. Since sustainability is an abstract concept that cannot be directly observed, it was operationalized using observable indicators grouped into three key dimensions: economic, social, and environmental sustainability. These dimensions were measured using a structured questionnaire with a five-point Likert scale (1 = Strongly Disagree to 5 = Strongly Agree), based on cross-sectional data collected in 2022.

According to the evaluation, financial transparency, market access, and savings management were six items for Economic sustainability assessment. Five items on trustworthiness, inclusiveness, resolving conflicts, and leading democratically captured social sustainability. Environmental sustainability was assessed using three items considering efficient use of resources, conservation, and awareness of the environment.

To analyze the mediation effect of risk management practices on the association between corporate governance and sustainability, the product of coefficients approach was applied (Fairchild and MacKinnon, 2009). The study adopted Structural Equation Modelling

(SEM) due to the presence of both observed and unobserved variables and the complexity of their interrelationships. SEM is particularly suitable for this kind of analysis because it allows for the simultaneous estimation of multiple relationships, accounts for measurement error, and provides model fit indices to validate the overall structure (Hair *et al*., 2017; Okello, 2021). Furthermore, sustainability was modelled as a second-order latent construct, built from the three first-order constructs—economic, social, and environmental sustainability—making SEM the most appropriate analytical technique over traditional regression methods.

The equations that were used to analyse the products of coefficients are as specified in equation 10 and 11

$Y=\beta_0+C^1X+bM+\varepsilon_i$…….. (10)

$EC = \beta_0 + aX + \varepsilon_i$…….. (11)

Fairchild and MacKinnon (2009) indicate that the above equations are then used to test for mediation effects by application of the product of coefficients strategy as depicted in the formula equation 12.

$$S\hat{a}\hat{b} = \sqrt{S_{\hat{a}}^2\,\hat{b}^2 + S_{\hat{b}}^2\hat{a}^2} \quad \text{…… ……. (12)}$$

Where, $S_{\hat{a}}^2$ is the variance of $\hat{a}^2$ coefficient, and $S_{\hat{b}}^2$ is the variance of the $\hat{b}^2$ coefficient.

Therefore, to illustrate the sustainability of agricultural cooperatives in terms of the five indicators of independent variables while considering the mediation effect (ME) of risk management on this relationship, regression analysis was used as presented in equation 13.

$SAC = (\beta_0 + \beta_1 PAR + \beta_2 TRANS + \beta_3 RESP + \beta_4 FAIR + \beta_5 RBL + \beta_6 RM \times PAR + \beta_7 RM \times TRANS + \beta_8 RM \times RESP + \beta_9 RM \times FAIR + \beta_{10} RM \times RBL) + \varepsilon$ ..... (13)

where: SAC = Sustainability of Agricultural Cooperative; β0 = constant which is the value of Y when X is zero; βi = correlation coefficient, Pearson's correlation; PAR= Participation, TRANS=Transparency, RESP= Responsibility, FAIR=Fairness, RBL=Rule by law, RM= Risk Management; RM× PAR = mediation effect by participation and risk management on SAC; RM × TRANS = mediation effect by transparency and risk management on SAC; RM × RESP = mediation effect by responsibility and risk management on SAC. RM× FAIR = mediation effect by fairness and risk management on SAC; RM× RBL = mediation effect by rule by law and risk management on SAC.

E = error term indicating proportion of EAPA (Equilibrium Adjustment Path) that was not explained by constructs PAR, TRANS, RESP, FAIR, RBL, RM × PAR, RM× TRANS, RM × RESP and RM × FAIR, RM × RBL.

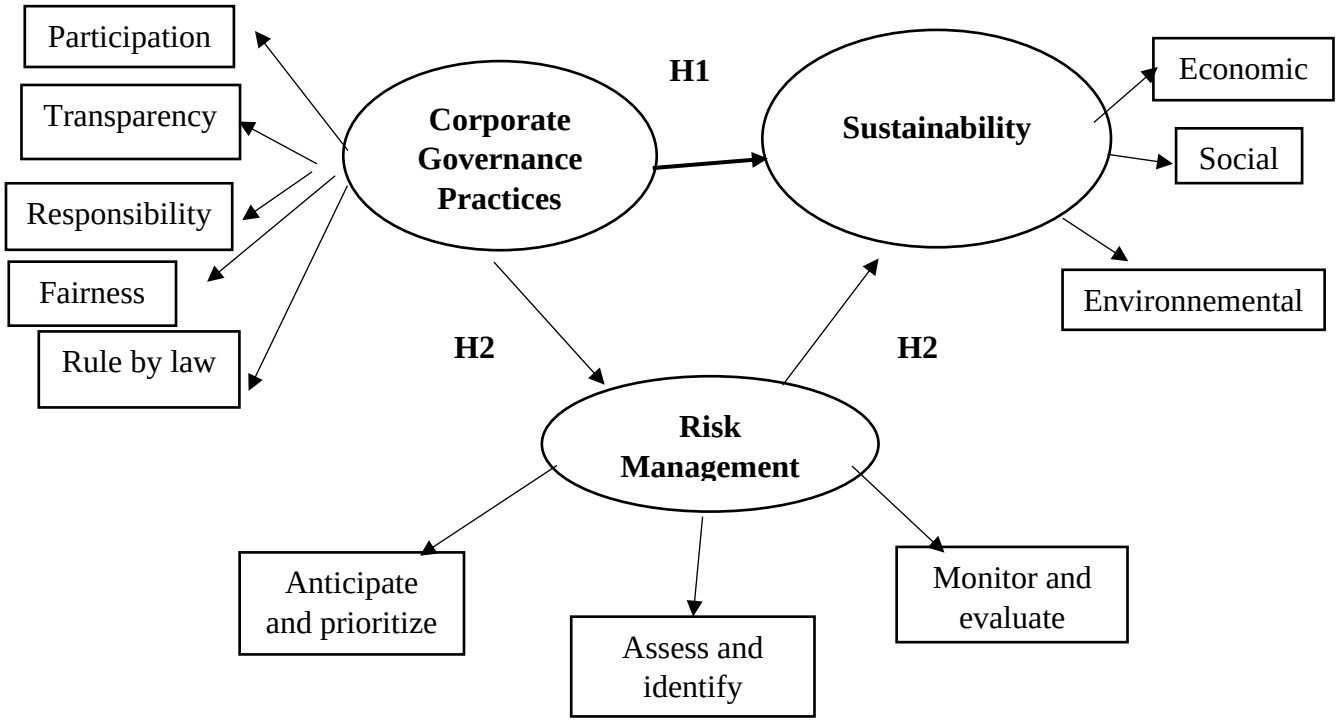

Figure 3.2: Diagram of the structural model

H1: Corporate governance practices directly affect sustainability of agricultural cooperatives.

H2: Corporate governance practices affect indirectly sustainability of agricultural cooperatives through risk management practices.

CHAPTER FOUR
RESULTS AND DISCUSSIONS

This chapter presents results and discussion of the findings on effect of corporate governance practices mediated by risk management on sustainability of agricultural cooperatives in Ngozi, Burundi. The corporate governance practices considered in the study were participation, transparency, responsibility, fairness, and rule by law. Members of cooperatives were divided into two categories belonging to two main umbrella organizations namely ADISCO and UCODE. This chapter is divided into three sections. Section 1 reported factors influencing adoption of corporate governance practices and Multivariate Probit was used to analyse the data. The second section presented the direct effect of corporate governance practices on sustainability of agricultural cooperatives whereas the last section discussed about the indirect effect of corporate governance practices on sustainability of agricultural cooperatives, with the risk management practices being the mediator. Structural Equation Modelling (SEMs) and product of coefficients approach with SEMS were used respectively for data analysis. The analysed results are for 307 respondents.

4.2 Descriptive Statistics

4.2.1 Socio-Economic Characteristics

The results on socio-economics characteristics are presented in Table 4.1. In terms of the gender of the respondents, men accounted for the higher representation in the cooperatives with 51.5% while women represented 48.53%. Indeed, this study dealt with cooperatives involved in agricultural sector implying growing crops, transformation of crops to add value and commercialise the final products. Hence since membership in an agricultural cooperative requires one to have access to resources, therefore men will be favoured because they tend to have higher access to productive resources compared to women. This is supported by Akalu and Wang (2023) who said that male-headed households have better access to different types of productive resources and underlined by Woldu *et al*. (2018) who found out that women's membership in agricultural cooperatives is very limited.

Education level of the respondents was broken down into five categories, no formal education, adult education, primary, secondary and university education. Majority of members of the agricultural cooperatives (41.69%) had attained primary education, followed by the adult education category representing 20.2% and only 2.28% of respondents who had attained university education. The results highlighted a low literacy level in the primary sector that may hinder development. For instance, low level of literacy can slow down adoption of new

technologies that may boost productivity and increase income and resilience as well. This is consistent with Thakur (2022) who said that education is important for the farmers because its improves agricultural productivity. Moreover, low level of literacy may cause the inability to manage properly the cooperatives financially, socially, and even environmentally. This is supported by Niyonzima *et al*. (2021) who revealed in his study that financial illiteracy among agricultural cooperatives members' affected the quality, scope and depth of understanding and use of financial reports in decision making.

Concerning the age of cooperative's members; the average age was 43 years old. That average indicates that most of members are middle-aged. A plausible explanation is that most activities performed in the agricultural cooperatives are demanding in terms of strength, which is the reason why people of middle age represent the highest proportion in the agricultural cooperatives. This is in accordance with Isleib (2018) who stated farming is still a very physically demanding occupation.

The findings about level of position showed that majority of directors have education level. From the sample, all directors representing 5.54% have attained either primary, secondary or university level. This suggests that educated members are more likely to be trusted than less educated members. The rationale behind this observation lies in the fact that board members are entrusted with specific responsibilities which may require a minimum level of education to effectively contribute to the financial performance of the cooperative. This aligns with the findings of Deusdedit *et al*. (2017) who assert that education level contributes to the financial performance of cooperatives. The average number of years of membership was 8.15 which shows that most of the members of the cooperative have been a member of the cooperative for about 8 years.

Table 4.1: Sample demographic profile of respondents

Categorical Variables		**Frequency**	**Percentage (%)**
Gender	Female	149	48.53
	Male	158	51.47
Education level	No formal education	61	19.57
	Adult education	62	20.2
	Primary education	128	41.69

	Secondary education		49	15.96
	University education		7	2.28
Level of position	Directors		17	5.54
	Managers		18	5.86
	Members		272	88.6
Continuous variables	**Minimum**	**Maximum**	**Mean**	**Standard deviation**
Age	20	72	202.89	529.65
Years of membership	1	14	8.48	2.65

4.2.2 Institutional and Governance Factors

Table 4.2 presents the institutional characteristics influencing corporate governance practices. The findings showed that majority of members (74.3%) participate in the annual cooperative meetings. The frequency of these meetings holds significance as it contributes to members' increased engagement in the cooperatives' management, activities and decision making. This is supported by Hanh *et al*. (2018), who demonstrated a positive correlation between board meetings and firm financial performance. Hence, frequency of meetings can have a positive impact on the performance of cooperatives.

With regards to information dissemination on the management of cooperative, the results found that majority of the respondents (79.2%) had information dissemination. A similar trend was observed in relation to credit facilities and trainings as 69.1% and 87% of the respondents reported to have credit facilities and trainings regarding the management of cooperative respectively. The above findings can be explained by the fact that this study considered cooperatives that are mentored by organizations such ADISCO and UCODE, which implies that cooperatives can have an easy access to financial institutions, information dissemination as well as trainings. For instance, UCODE has also a microfinance, thus cooperatives under his supervision will more likely access to financial facilities such as credit.

Table 4.2: Institutional and governance characteristics influencing corporate governance practices

Categorical variables		Frequency	Percentage (%)
Frequency of meetings	Monthly	4	1.3
	Quartely	75	24.4
	Annually	228	74.3
Information dissemination	Yes	243	79.2
	No	64	20.8
Credit facilities	Yes	212	69.1
	No	95	30.9
Participation in trainings	Yes	267	87
	No	40	13

The results indicated that most of the respondents 45% considered that leaders have a high-level of understanding of the tasks assigned to them. The level at which leaders understand cooperatives' tasks is important for implementation of corporate governance practices because responsibilities of cooperatives' leaders are interrelated to the corporate governance practices. For instance, as a financial manager, a leader has the responsibility to provide financial statement to all stakeholders, a responsibility that is closely related to transparency which implies disclosure of information to every member.

Moreover, leaders who understand their tasks can better guide and motivate their team, fostering a positive and productive work environment therefore boosting active participation among members of the cooperative. Mazzetti and Schaufeli (2022) is of the same opinion, as he stated that engaging leaders who understand their roles and tasks can effectively influence their teams, satisfy essential psychological needs and boosting engagement levels.

With regard to the level of understanding and respect for cooperative principles by leaders, data show that most of the respondents (41.7%) agree that they have a high level of understanding and respect. Training and accreditation achievements have impact on priorities among other changes and avenues for use. The objective of the program looks to create a honourable and respectful organisations. It respects the cooperative principles and values.

According to a Guzmán *et al.* (2020) study, following the principles of cooperativeness has a positive impact on a cooperative's performance. In this way, the effective functioning of a cooperative is closely related to the observance of principles.

An overwhelming 81.4% of the respondents are involved in the decision-making process. Being a collective organization owned by its members, a cooperative requires listening to all opinions so that everybody can achieve common goals, as opposed to individual aims. This idea improves fair representation of people's voices and strengthens ownership as well as commitment, which is essential for the cohesion and success of the cooperative.

According to Ragazou *et al.* (2021), increased participation of its members validates the democratic character of the cooperative and its efficient functioning. The effectiveness of governance highly depends on the participation of members in decision-making processes. Likewise, 90.2% said that the governance model employed by the cooperatives is democratic. This structure enhances transparency, promotes member participation, and enables collective decision-making in line with cooperative values and organizational ethics.

Also, democratic leadership allows every member's voice to be heard which increases ownership as well as engagement in the members. According to Bijman *et al.* (2021), agricultural cooperatives are often regarded as schools of democracy, in which members learn to engage in decision-making and collectively advocate for their interests. Because members are involved in all activities of the cooperatives and their opinions are taken into consideration when making decision regarding the cooperatives, leadership acts an important factor in the adoption of CGP.

Concerning the type of organizational culture, most of respondents (73.6%) have agreed that the supportive type was the one adopted in their cooperatives. Indeed, the supportive type of organizational culture encourages open and transparent communication among members thus enhancing transparency which is a key to good governance. Moreover, members are more likely to be actively engaged in a supportive culture. When members feel supported and valued, they are more motivated to participate in governance processes, attending meetings to voting on key issues and so on.

In addition, it cultivates a sense of ownership and responsibility in a way that members act in the best interest of the cooperative, thus contributing positively to its governance and long-term sustainability. Citing the above findings, many studies reveal this phenomenon. For instance, Vassili *et al.* (2016) mention identity along with equality among members helps strengthens the cooperative. Thus, a supportive organizational culture will have a conducive operation of the cooperative. The study of Daher-Moreno and Arnold (2023) also underscores

the value of cooperative culture in organizations, which aligns with the principles of good governance in cooperatives.

Table 4.3: Institutional and governance characteristics influencing corporate governance practices

Institutional characteristics	governance	Frequency	Percentage (%)
Understanding of cooperatives' tasks	Low extent	51	16.6
	Moderate extent	118	38.4
	High extent	138	45
Understanding of cooperatives' principles	Low extent	58	18.9
	Moderate extent	121	39.4
	High extent	128	41.7
Involvement in decision making	Yes	250	81.4
	No	57	18.6
Leadership style	Democratic	277	90.2
	Dictatorship	30	9.8
Organizational culture	Supportive	226	73.6
	Innovative	29	9.4
	Bureaucratic	52	16.9

4.3 Factors Influencing Adoption of Corporate Governance Practices in Agricultural Cooperatives

Multivariate Probit (MVP) model was used to determine the factors influencing adoption of corporate governance practices in agricultural cooperatives. Table 4.4 shows the pairwise correlation coefficients between the error terms of the five equations of corporate governance practices. All the five pairs of the estimated correlation coefficients were statistically significant from zero implying a strong interdependence among the five corporate governance practices.

Table 4.4: Correlation coefficients for Multivariate Probit regression equations

Variables	Participation	Transparency	Responsibility	Fairness	Rule by law
Participation	1.000				
Transparency	0.573***	1.000			
Responsibility	0.613***	0.568***	1.000		
Fairness	0.531***	0.626***	0.547***	1.000	
Rule by law	0.520***	0.498***	0.563***	0.536***	1.000

4.3.1 Analysis of Factors Influencing Adoption of Corporate Governance Practices in Agricultural Cooperatives

The results of multivariate probit estimation is presented in Table 4.5, which revealed significant variables that influenced the adoption of corporate goverance practices. The Wald test $\{\chi^2(70) = 190.86, \mathrm{p} = 0.0000\}$ implied that multivariate regression is highly significant and the likelihood ratio test $\{\chi^2(10) = 353.20, \mathrm{p} = 0.0000\}$ of the independence of multiple usage of various corporate goverance practices was strongly rejected. This indicates that multiple use of different corporate goverance practices among cooperative members is not mutually independent and multivariate probit specification fits the data.

Table 4.5: Factors influencing adoption of corporate governance practices in agricultural cooperative**s**

	Multivariate probit estimates				
Variables	**Participation**	**Transparency**	**Responsibility**	**Fairness**	**Rule by law**
Age	-0.012613	-0.0077172	-0.0022965	-0.0008804	0.0002347
	(0.0077817)	(0.0076139)	(0.0076439)	(0.0076349)	(0.0076971)
Gender	0.0126468	-0.2708959*	-0.0240741	-0.2707719*	0.1492748
	(0.1578384)	(0.1619141)	(0.1580105)	(0.1624584)	(0.1608681)
Education	0.2107317***	-0.1239261	-0.1416332*	-0.1441849*	-0.0831065
	(0.0826589)	(0.0864445)	(0.0845917)	(0.0869609)	(0.0854003)

Membership years	0.006779 (0.0367374)	0.0378798 (0.038244)	-0.0127734 (0.0352059)	0.0907235** (0.0386277)	0.0375003 (0.0358807)
Level of position	0.0357631 (0.1771164)	0.1682654 (0.1697223)	0.1663949 (0.1652923)	0.066832 (0.1724742)	0.4246418*** (0.1638718)
number of meetings	0.4573009** (0.1885166)	0.1824506 (0.1983676)	0.3776576** (0.19185)	0.206997 (0.1906897)	0.1172898 (0.1879465)
Information dissemination	0.5189532* (0.281429)	0.5142764** (0.2641149)	-0.0013362 (0.2658799)	0.0308954 (0.2601315)	-0.1586544 (0.2679857)
Credit facilities	0.0585869 (0.1971864)	-0.2200647 (0.1981547)	0.2507848 (0.1927952)	-0.3640502* (0.2017525)	-0.0944912 (0.1993051)
Participation in trainings	0.029808 (0.4101439)	-0.1355495 (0.4054903)	-0.4246557 (0.4034592)	-0.8096924* (0.4534826)	0.1092785 (0.3743039
Leaders understanding of tasks	0.5397961*** (0.1479535)	0.5822527 (0.1473178)	0.5699717*** (0.1433325)	0.8075077*** (0.1530576)	0.552258*** (0.1473118)
Decision making	0.3523483 (0.3189409)	0.1325049*** (0.321813)	0.8025243*** (0.311911)	1.124235*** (0.3496447)	0.8239366*** (0.2918699)
Leaders understanding cooperative principles	0.1147752 (0.137297)	0.4164486*** (0.1371435)	0.3814222*** (0.1310445)	0.3209378** (0.1432927)	0.2245472* (0.1321267)
Leadership style	0.0760821 (0.4761693)	-0.7318466 (0.5538731)	0.0449299 (0.449704)	-1.447853*** (.5872534)	-0.0182269 (0.3855209)
Organizational culture	-0.3097559 (0.2061646)	0.1685362 (0.1937364)	0.0529324 (0.1958935)	-0.4665767**	-0.2723943 (0.1923797)

				(0.2014772)	
Constant	-2.094618	-1.980569	-	-0.2068493	-3.106623**
	(1.399729)	(1.371063)	3.583783***	(1.362856)	(1.275823)
			(1.350724)		

Wald chi2(70) = 190.86; Prob > chi2 = 0.0000

Likelihood ratio test of rho21 = rho31 = rho41 = rho51 = rho32 = rho42 = rho52 = rho43 = rho53 = rho54> = 0: chi2(10) = 353.197 Prob > chi2 = 0.0000

*, **, *** = significant at 10%, 5% and 1% level, respectively (Figures in parentheses are robust standard error

The aim of this study was to identify factors that influence adoption of corporate governance practices which are related to agricultural cooperatives. The corporate governance practices were categorized into participation, transparency, responsibility, fairness, and rule by law. The results suggested that gender negatively affect participation CGP (p=0.1) and fairness CGP (p=0.1). This suggest that the more there is gender imbalance in the cooperative, the less likelihood participation and fairness CGP is adopted. The diminishing participation due to gender imbalance implies that as the disparity between representation of different genders in a cooperative increase, the overall level of participation in the cooperative's activities, decision-making, and governance is likely to decrease.

As consequence, without the active participation of women, cooperatives may miss out on valuable insights and experiences that could inform effective and equitable governance. it may lead to reduced diversity in decision-making. The above opinion is supported by ILO (2018) who noted that "women remain under-represented in leadership and decision-making roles in cooperatives" and are "often excluded from full participation due to cultural norms, time burdens, and lack of access to resources, education and information.

The findings also found an inverse association between gender and fairness. Certainly, women representation may weaken the essence of equity and fairness as the decisions may get unbalanced or distorted not accounting collectively the best interest of the whole members. Moreover, the underrepresentation of women may perpetuate existing patterns of gender inequality as it may reinforces the notion that women are less capable or less deserving of leadership roles, which can have broader social implications beyond the cooperative itself.

The negative relationship can also be explained by the disadvantages of women in terms of accessing resources. In fact, ILO (2018) emphasized that "women's lack of access to assets, including land and credit, restricts their ability to become full members of cooperatives or to benefit equally from services. In fact, in some countries, women face discrimination in areas such as property ownership and inheritance. Consequently, cooperative by-laws formulated by the members themselves for instance a law stipulating each member must own a land; may inadvertently hinder women's participation. Therefore, the open and voluntary principle is no longer respected and fairness CGP cannot be achieved.

Education level had a positive effect on adoption of participation governance practices (p=0.1) and a negative effect on responsibility (p=0.01) and fairness governance practices (p=0.01). Regarding the relationship between education level and participation, the results imply that attainment of a higher education increases the likelihood of adopting participation governance practices. The plausible explanation is that educated members are more likely to

engage actively in discussion, decision-making processes, and problem solving due their increased ability to comprehend and analyze various aspects of cooperative functioning.

This aligns with Parvizi (2016) who found a significant relationship at the level of 0.05 between cooperatives' managers' abilities and the members' participation in cooperatives of the city of Bushehr. Additionally, educated members can contribute to more informed and thoughtful decision-making. This is supported by Mamouni-Limnios *et al*. (2018) who focused on the technical aspects of cooperative governance implies that a higher level of education among cooperative members could significantly contribute to more informed and strategic decision-making in these areas.

Regarding the negative relationship between education and fairness CGP; the results suggest that a higher education level decreases the likelihood of adopting fairness CGP. That negative relationship can be explained through the disequilibrium of opportunities between men and women. Indeed, if men have more access to education, they might dominate leadership positions within cooperatives which may lead to perceptions of unfairness and underrepresentation or marginalization in decision-making processes. Hence, according to ILO (2018), "capacity building, particularly of women, is key to overcoming barriers to participation and enhancing gender equality in cooperatives. Therefore, in order to ensure equal treatment of all members and the respect of cooperatives' principles; cooperatives should make sure that their female members are properly and equitably represented in all training and capacity building programs.

The findings revealed a negative relationship between education level and CGP accountability. Higher levels of education of group members will lower the likelihood of them adopting CGP responsibility according to this result. It is quite interesting to find out that those with a higher educational level may have a better comprehension of corporate governance. Education equips students bring appropriate knowledge of business principles, ethics, strategic decision-making, to govern its working effectively. So, they can interpret and implement the corporate governance guidelines much better with the background and skills they possess. Rwekaza and Anania (2020) confirm our finding where they suggest that lack of education among members limits their understanding of their rights and obligations which consequently makes them less involved in attending the co-operatives meetings and decision-making processes. Because of this, education is important to create responsible cooperatives (ICA 2015). Further, education and training have a positive effect on the development of cooperatives.

Membership years positively influenced fairness governance practices (p=0.05). The finding that membership years positively influence fairness in governance practices within cooperatives is both intuitive and supported by the principles underlying cooperative organization. Indeed, cooperatives are founded on principles of mutual aid, democracy, equality, and equity. Thus, long term members have more time to understand and internalize these principles, consequently adopting principles aligning with principles of fairness in treatment and decision-making. From the results of the regressions presented in the study of Birchall (2015), he directly links length of membership with greater commitment, trust, shared values, and adherence to cooperative principles including fairness. He concluded that the higher levels of social traits may be a product of long membership, which has made people more social. As a result, when members are more social, they exhibit a tendency to treat every member fairly and equally.

Level of position had a positive effect on adoption of rule by law governance practice at 1% significance level. This implies that the higher the level of position a cooperative member held the more likely they were to adopt rule by law CGP. This is probably because those in higher position are more accountable and are expected to set an example in following legal and ethical guidelines. In an article on principles of good governance for cooperatives published in the government gazette; Staatskoerant (2019) stipulated that the principles of good governance for co-operatives provide guidelines to members, boards of directors and managers to ensure compliance with all legal requirements. Yet, according to the democratic member control principle, Men and women serving as elected representatives are accountable to the membership. Therefore, elected members have a duty to fulfill their roles and responsibilities by ensuring compliance with the rules and regulations in force.

The probability of adopting participation and responsibility governance practices was positively affected by the frequency of meeting at 10% and 5% levels of significance respectively. The number of meetings was found to influence the adoption of participation CGP positively and significantly at a 5% significance level. This implies that the more the cooperative conduct meeting occurs, the more likely the cooperative will embrace participation CGP. The number of meetings is a major determinant. It improves the involvement of members, sharing ideas and collective decision making helping in the strengthening of teamwork and feeling of being a part of the cooperative. According to Anania (2022), such meetings allow the members to exercise their democratic rights to the maximum. Moreover, as Rwekaza and Anania (2020) note, poor attendance of meetings could constrain the power of cooperatives, particularly, regarding their relationships with external stakeholders.

The study also revealed that there was a relation between the frequency of meetings and the responsibility CGP at the level of 5% significance. That is, the more a cooperative structures exchange sessions, the higher the chances that a cooperative will embrace the responsibility CGP. The reason why that positive relation could be achieved is because frequent meetings allow members to closely participate in the decision-making process, promote the open nature of communication, and ensure the ethical and responsible actions of the cooperative. This constant communication and cooperation among members through regular meetings lead to an atmosphere that provides and fosters responsible practices through the cooperative system. This claim is supported by Ju Ahmad *et al*. (2017) who opined that board directors, who hold more frequent meetings, tend to fulfil their responsibilities in the best interest of the shareholders. Hence, participation actively in meetings contributes to the adoption of more responsible practices.

Making sure information was available increased participation. And it also increased transparency. This means that members with better dissemination of information, the greater the likelihood of being involved in the activities of the cooperatives and adopting a transparent management. In fact, members become more engaged in the cooperative as a result of the information dissemination. This link creates a sense of belonging and stake in the cooperative's success, leading to greater participation in meetings, voting and other governance functions. In addition, the dissemination of information further empowers the members of the organization. Awareness enables the members to ask informed questions about pricing on the international and the national market. In turn, informed decision-making will lead to active governance as the members engage in discussions at relevant forums. ICA (2015) reinforced this finding by articulating agricultural cooperatives enable farmers to overcome obstacles facing them, help build the skills of small producers, provide them with knowledge and information, and help them to innovate and adapt to evolving markets. Information dissemination helps members to access the market information on food prices in both national and international markets, share experience so as to get all members actively involved.

The level of dissemination of information positively and significantly influenced the adoption of transparency CGP at the 1% significance level. The relationship between information dissemination and transparency of a cooperative is positive, meaning that when members of the cooperative are able to easily obtain information regarding the management of the cooperative, the cooperative is more likely to be transparent. On the other hand, when communication among members is limited, they will not know what is happening in the cooperative. This will lead to almost no transparency in decision-making and information

sharing. Moreover, transparency adds to the effectiveness in the overall running of the cooperative. It does so by making information available to members for decision making. According to Transparency International (2018), "transparency builds trust and is the cornerstone of good governance and effective performance in any institution, including cooperatives".

Regarding credit facilities, the lower fairness CGP is implemented in the cooperative, the more member cooperatives that have credit facilities. The negative relationship can be explained by various factors such as unequal access and distribution. If some members are able to gain easier access or more favourable credit terms because of their position, status or relationship, this could be perceived as unfair. The negative behaviour is aggravated by gender imbalance, women sometimes do not have access to some resources. According to ILO (2018): "Women are unable to become full members of cooperatives or to benefit on equal terms from services because they do not have access to assets, including land and credit." For this reason, cooperatives must adopt clear, equitable and inclusive policies on credit.

Training participation had negative effect on governance practices. ($p=0.1$) This indicates that the adoption of fairness CGP is less likely as more members gain access to training and knowledge. Unequal opportunities and access provide an explanation for the negative relationship. An example might be scheduling training sessions at times that suit everyone except for certain members (for e.g., at the time when the mothers are cooking for their families). Moreover, the content and delivery of the training might also be one factor leading to perception of unfair treatment if the training is too advanced, leading some to feel excluded. Therefore, it is important to integrate diversity, equity and inclusion principles into learning and development initiatives. Indeed, Verlinden (2023) emphasizes that "diversity, equity, and inclusion initiatives are essential components that help to promote a sense of belonging, as they focus on representation, fair treatment, and integration of individuals from diverse backgrounds." In other words, cooperatives need to ensure that training opportunities are inclusive, tailored, meet the diverse needs of all members and are transparent.

At 1% level of significance, leaders' ability to comprehend tasks assigned to them influenced positively participation, responsibility, fairness, and rule by law governance practices. The more leaders understood the task allocated to them, the more their cooperatives are likely to adopt participative CGP. The leaders who explicitly understand their roles tend to promote and facilitate participation of all members. This approach creates an atmosphere that encourages communication and ensures all voices in the cooperative are heard and taken into account.

Thirdly, findings revealed that leadership understanding of tasks was positively and significantly related to adoption of fairness CGP at a 1% significance level. This implies that the more members understood the tasks assigned to them as leaders, the more likely the cooperative was to adopt fairness CGP. Indeed, leaders with a good grasp of their responsibilities are more likely to treat members equitably and make impartial decisions.

In addition, that positive relationship is embedded in the democratic member control principle which stipulated that cooperatives are democratic organizations whereby representatives (directors/trustees) are elected among the membership and are accountable to them (ICA, 2015). In short, elected representatives are responsible for enforcing laws, ensuring that everyone enjoys their rights and is thus treated fairly and without favouritism.

Lastly, the results showed that leadership understanding of tasks was positively and significantly related to adoption of rule by law CGP at a 1% significance level. This implies that the more members understood the tasks assigned to them as leaders, the more likely the cooperative was to adopt rule by law CGP. In fact, understanding their tasks also includes being aware of the legal and regulatory framework within which the cooperative operates. Hence, leaders who are knowledgeable about these aspects are more likely to ensure that the cooperative complies with laws and regulations. In other words, leaders are accountable to all members which implies understanding their tasks and fulfilling their duties in accordance with rules and regulations. This is in accordance with Staatskoerant (2019) who stated that all cooperative members as well as directors and managers must be enabled in order to realize their roles and responsibilities in ensuring compliance with good cooperative governance.

Decision-making had a positive influence on transparency, responsibility, fairness, and rule by law governance practices at 1% significance. Decision-making CGP was found to affect transparency CGP positively and significantly at a 5% significance level. This means that the more cooperative members get involved in the decision-making process of the cooperative, the more likely the cooperative is to adopt the transparency CGP. Indeed, when members actively participate in the decision-making process, it fosters an environment of openness and accountability.

The results also revealed a positive relationship between decision-making and fairness CGP. This implies that the more members are involved in the decision-making process, the more likely there is adoption of fairness CGP. That positive relationship is embedded in equal voting rights (one member, one vote) of members. Indeed, members of the cooperatives have equal rights despite their financial situation, age, or gender; thus, they have the right to participate in the decision-making process. Furthermore, active participation in decision-

making also helps prevent favouritism and ensures that decisions are not biased or driven by the interests of a select few.

The above assertion is opposite to Mwambi *et al*. (2020) who found out that members who are older, male and specialize in farming are more likely to participate in decision-making. Whereas Rwekaza and Anania (2020) emphasized that the participation of members in decision-making processes needs to be inclusive of all sexes and age groups. Therefore, fairness in decision-making is particularly evident when cooperative members have an equal opportunity to voice their opinions and contribute to the choices that affect the organization.

The positive correlation between decision-making and responsibility suggests that the more members are involved in the decision-making process, the more likely the cooperative adopts responsibility CGP. Indeed, when members are involved in the decision-making process, they feel more empowered and responsible for the outcomes. This sense of ownership encourages them to take their roles seriously and act in the best interest of the organization. Moreover, cooperatives are democratic organizations controlled by their members, who actively participate in setting policies and making decisions; in other words, being involved in the decision-making process is part of their responsibility. This is seconded by Magigi (2016) who stated that members must be the ones making major decisions such as adopting the by-laws and other governing instruments and their amendments; electing leaders; approving changes in capital structure, approving loans and marketing contracts, among others. Therefore, all stakeholders have the responsibility to be actively involved in all decision-making processes to meet their common economic, social, and cultural needs and aspirations.

The results also showed that involvement of members in decision-making has a positive influence on rule by law. This implies that the more members are involved in the decision-making process, the more likely the cooperative adheres to the rule by law practice. Indeed, that relationship is embedded in the democratic member control principle where each member has the right to vote — "one member, one vote." In addition, members of the cooperatives have the obligation of actively participating in setting their policies and making decisions. This was confirmed by Rwekaza and Anania (2020) who stated that each stakeholder in various situations has a right to make certain decisions but should not contradict the existing by-laws, policies, regulations, and laws, as well as the interests of the majority of members.

Leaders' level of understanding of cooperatives' principles influenced positively transparency, responsibility, fairness, and rule by law governance practices at 1%, 1%, 5%, and 10% significance respectively. The results indicated that understanding of cooperative principles by leaders positively and significantly related to adoption of transparency CGP at a

5% significance level, implying that the more cooperative leaders understood and respected cooperative principles, the more transparent they would be. The assertion by Watt (2019) that complying with applicable laws; and acting in the best interests of the member and the Cooperative are the standards used to assess the performance of Board members and key management staff is confirmed by the above provisions.

The leadership understanding of cooperative principles was found to adoption of responsibility CGP at 5% significance level positive and significantly relate. It means the more cooperative leaders understand and respect cooperative principles, the more responsible they will be. When a leader is familiar with the cooperative's principles, the cooperative's conduct is in conformity with the principles of the cooperative. This awareness instils in the leader the responsibility for the identity of the cooperative as well as ensuring that organisational decisions and action are based on cooperative principles. If one of the principles of cooperatives highlights democratic member control, then a leader who gets this principle will more likely use reasoning that promotes transparency of decision-making and the involvement of members in decision-making. Mwambi et al. (2020), based on data involving 595 smallholder dairy farmers' cooperatives in Kenya, similarly found that a member's willingness to speak at the annual general meeting is influenced by their trust in the cooperative which is represented by the board members.

According to the results, it was indicated that leadership understanding of cooperative principles positively and significantly relates to fairness CGP adoption at 5% significance level, which means the more cooperative leaders understand and respect cooperative principles, the fairer they are. Equity in cooperatives means that all members must be treated equally without discrimination. According to ICA (2021), the principle of voluntary and open membership says, "Membership of cooperatives is open to all persons able to use their services and willing to accept the responsibilities of the membership, without discrimination." Moreover, in case of primary cooperatives, members have equal vote. Thus, if the members understand the cooperative principles of their society fully, they will receive equal treatment without any discrimination or bias.

The results also show that leadership understanding of cooperative principle has a positive and significant relationship to adoption of rule by law CGP at 5% significance level which implies that the more cooperatives' leaders understanding and respect of cooperative principle, the more likely they will implement rule by law CGP. In fact, knowing and respecting cooperative principles means applying simple laws or rules called the Bylaws. Leaders within cooperative organizations must not only understand the principles of cooperative functioning

but also behave according to the laws of the regulator. This observation follows Díaz-Foncea and Marcuello (2015), who state that "the awareness and training of cooperative leaders in legal framework and cooperative philosophy is essential for ensuring that control remains with the members, and good governance occurs". Thus, the elected members have the duty to represent all stakeholders and to comply with and enforce laws.

The study showed that leadership style has a negative impact on the application of the fairness governance principle and a high level was derived at 1% (p=0.1). This means that the way leaders lead the collaborative organization may undermine the adoption of equity. Power centralization and decision making that are characterized by an authoritarian style are likely to compromise inclusiveness and equity. On the other hand, a democratic type of government encourages participatory democracy and a spirit of fairness and equilibrium amongst members. This finding is in line with other studies conducted by Ashikali *et al*. (2021) who argue that inclusive leadership is one of the determinants of enhancing inclusiveness within a diverse team. This finding is supported by Guillaume *et al*. (2016) who indicate that open leadership consolidates diversity within teams and reduces tensions as well as promotes equity.

The organizational culture also has negative impact on the governing practices of fairness (p=0.05). That is, a narrow or restrictive cooperative culture will lower the chances o adopting equity. It will depend on whether the organizational environment is positive or negative. A culture where favoritism, obscurity, sexism or exclusion is acceptable compromises fairness and makes a firm less integrated. On the other hand, a positive organizational culture is based on respect, open communication, and equal opportunity and creates an atmosphere of trust and cooperation. This is along with the claims of Abbas (2023) who states that a diverse and inclusive culture is the most important in developing a perception of fairness as a clear sign of an organization commitment to equality where people of diverse heritage feel respected, valued, and motivated.

Finally, the analysis gleaned the important areas of consideration in embracing the practices of corporate governance including participation, transparency, responsibility, fairness, and rule by law. Findings revealed that gender imbalance has a negative impact on participation and fairness, which proves that women underrepresentation limits the diversity of contributions and aggravates the inequalities during decision-making. The level of education offered mixed results, as it increases participation as per its greater engagement ability, but it negatively affects responsibility and fairness, likely because of the inequality in access to education. The years of membership demonstrate realism to the values of cooperatives such as

equity by the older members. Increased position, however, is linked to adherence to rule of law since players of leadership rules are more responsible to rules and regulations.

Moreover, the number of meetings is a paramount feature towards improving participation and accountability as more chances of democratic dialogue are provided. The sharing of information fosters transparency and increased involvement of the members. On the other hand, equity is likely to be compromised by credit facilities and access to training, likely because of perceived or actual differences. Lastly, clear understanding of obligations by leaders has been demonstrated to positively impact all areas of corporate governance hence the importance of proficient and mindful leadership. Involvement in decision making is also very central in creating transparency, accountability, equity, and standards compliance thereby improving sustainability of cooperatives. A negative influence was however on fairness in terms of leadership style and organizational culture where the tendencies of autocracy and exclusivity were experienced. All these insights have shown that inclusive leadership, fair information and resources access, and member involvement are important to governance practices adoption and success in agricultural cooperatives.

4.4 Effect of CGP on Sustainability of Agricultural Cooperatives in Ngozi Province

4.4.1 Tests of Constructs Reliability and Validity.

Hair *et al*. (2017) define the convergent validity as the achievement of convergence or a sufficient measure of a single construct among a group of construct indicators. Hence, the validity in this case of this study was measured using Cronbach alpha (CA), rho A, Composite Reliability (CR) and Average Variance Extracted (AVE). Table 4.6 results indicated that composite reliability (CR) range between 0.867 and 0.948, rho A range between 0.769 and 0.933 and Cronbach alpha (CA) range between 0.692 to 0.929, signified that internal consistency reliability was achieved since the thresholds are above the level of 0.7 minimum requirement.

Mean error variance (AVE) was also applied in assessment of convergent validity. The values that surpassed the cutoff of 0.5 were regarded as valid (Hair *et al*., 2017). The reason behind the multicollinearity of the variables was examined through the variable inflation factor (VIF). Table 4.6 results indicate that the constructs were not collinear. The existence of multicollinearity is present when the variance inflation factor and tolerance are between 5 to 10 and below 0.1 to 0.2 as stated by Kim (2019).

Table 4.6: Reliability and validity of scale items for cooperate governance practices (CGP) and sustainability indicators (SI**)**

	Items	**CA**	**rho_A**	**CR**	**AVE**	**VIF**
Participation CGP	5	0.917	0.920	0.938	0.751	4.023
Transparency CGP	4	0.927	0.927	0.948	0.82	5.471
Responsibility CGP	4	0.891	0.895	0.925	0.755	4.855
Fairness CGP	2	0.692	0.769	0.867	0.765	1.094
Rule by law CGP	4	0.880	0.887	0.918	0.737	4.438
Economic SI	6	0.929	0.933	0.945	0.74	2.615
Social SI	5	0.827	0.876	0.885	0.622	2.652
Environmental SI	3	0.818	0.855	0.892	0.735	1.734

In order to make sure that the constructs used in the study were not related, discriminant validity was tested using two criteria: cross-loadings and the Heterotrait-Monotrait Ratio (HTMT). Hair *et al*. (2017) asserts that "an indicator's loading on its associated construct should be higher than all of its cross-loadings with other constructs in the model" to establish discriminant validity. Therefore, as seen in Table 4.7, all the loadings for individual items were higher for their respective constructs than for other constructs, implying that the data used in the study are valid and reliable for hypothesis testing using SmartPLS-SEM.

Table 4.7: Cross loading test for constructs of CGP and SI

	Participation CGP	Transparency CGP	Responsibility CGP	Fairness CGP	Rule by law CGP	Economic SI	Social SI	Environmental SI
Participation 1	(0.868)	0.023	0.167	0.078	-0.228	0.101	-0.022	-0.065
Participation 2	(0.839)	-0.239	0.208	0.102	0.031	0.217	-0.117	-0.010
Participation 3	(0.881)	-0.040	-0.002	0.006	-0.042	-0.201	0.089	0.118
Participation 4	(0.904)	0.108	-0.030	-0.035	-0.004	-0.162	0.181	0.076
Participation 5	(0.838)	0.142	-0.346	-0.152	0.254	0.065	-0.150	-0.130
Transparency 1	-0.012	(0.892)	-0.036	0.148	0.026	0.133	-0.057	-0.075
Transparency 2	-0.081	(0.916)	0.209	0.038	-0.063	0.063	0.009	-0.051
Transparency 3	-0.009	(0.910)	-0.109	-0.082	0.110	-0.084	0.010	0.064
Transparency4	0.103	(0.903)	-0.066	-0.101	-0.073	-0.111	0.038	0.061
Responsibility 1	-0.047	0.089	(0.906)	0.060	-0.210	0.114	-0.072	0.006
Responsibility2	-0.147	-0.051	(0.894)	-0.016	0.147	-0.106	0.146	-0.006
Responsibility 3	0.131	-0.010	(0.879)	0.028	-0.004	-0.012	0.007	-0.040
Responsibility 4	0.074	-0.033	(0.793)	-0.081	0.079	0.003	-0.090	0.045
Fairness 1	-0.206	0.043	0.010	(0.874)	0.033	-0.002	0.164	-0.086
Fairness 2	0.206	-0.043	-0.010	(0.874)	-0.033	0.002	-0.164	0.086
Rule by law 1	-0.324	0.236	-0.341	-0.086	(0.786)	0.083	0.051	-0.094
Rule by law 2	0.066	-0.061	0.008	0.078	(0.879)	0.074	-0.056	0.017
Rule by law 3	0.142	-0.088	0.219	0.015	(0.870)	-0.140	0.073	0.065

Rule by law 4	0.081	-0.063	0.079	-0.016	(0.893)	-0.010	-0.061	0.003
Sustainability economic indicators 1	0.100	0.068	-0.059	0.117	0.002	(0.845)	-0.032	-0.117
Sustainability economic indicators 2	-0.313	-0.096	0.254	-0.028	0.018	(0.776)	0.006	0.119
Sustainability economic indicators 3	-0.162	0.253	-0.041	-0.032	-0.124	(0.903)	0.046	-0.003
Sustainability economic indicators 4	0.217	-0.007	-0.138	-0.010	-0.172	(0.879)	0.060	0.105
Sustainability economic indicators 5	0.128	-0.171	0.127	-0.043	0.056	(0.899)	-0.085	-0.046
Sustainability economic indicators 6	-0.001	-0.061	-0.120	0.000	0.230	(0.854)	0.006	-0.050
Sustainability social indicators 1	0.098	-0.320	-0.122	-0.166	0.249	-0.058	(0.796)	-0.099

Sustainability social indicators 2	-0.066	0.057	-0.021	-0.100	0.017	-0.093	(0.911)	0.073
Sustainability social indicators 3	0.136	0.120	-0.151	-0.044	-0.194	-0.035	(0.910)	0.043
Sustainability social indicators 4	-0.165	0.237	-0.083	0.742	-0.044	0.016	(0.364)	-0.300
Sustainability social indicators 5	-0.098	0.008	0.342	-0.009	-0.025	0.189	(0.827)	0.099
Sustainability environmental indicators 1	-0.272	-0.100	0.018	-0.002	0.113	0.002	-0.050	(0.880)
Sustainability environmental indicators 2	0.193	0.183	0.091	0.016	-0.063	-0.054	0.170	(0.791)
Sustainability environmental indicators 3	0.097	-0.064	-0.098	-0.012	-0.055	0.046	-0.101	(0.897)

According to Henseler *et al*. (2015), the heterotrait-monotrait ratio of correlations (HTMT) should be used as a more appropriate criterion to evaluate discriminant validity. According to Henseler *et al*. (2015) discriminant validity is established between two reflective constructs if the HTMT value is below 0.9.

Table 4.8: HTMT ratios

	Participation CGP	Transparency CGP	Responsibility CGP	Fairness CGP	Rule by law CGP	Economic SI	Social SI	Environmental SI
Participation CGP								
Transparency CGP	0.89							
Responsibility CGP	0.894	0.93						
Fairness CGP	0.188	0.251	0.205					
Rule by law CGP	0.874	0.924	0.928	0.138				
Economic SI	0.713	0.748	0.797	0.059	0.793			
Social SI	0.795	0.777	0.81	0.34	0.812	0.762		
Environmental SI	0.699	0.717	0.642	0.119	0.659	0.536	0.65	

4.4.2 Model Fit

In order to avoid model misspecification, Henseler *et al*. (2014) introduce the SRMR as a goodness of fit measure for PLS-SEM. The SRMR is defined as the difference between the observed correlation and the model implied correlation matrix. Thus, it allows assessing the average magnitude of the discrepancies between observed and expected correlations as an absolute measure of (model) fit criterion. As shown in the table above, the model has an SRMR

score of 0.09 indicating good fit because a value less than 0.10 or of 0.08 are considered a good fit.

4.4.3. Structural Model and Directs Effects of CGP on Sustainability

The direct effects between CGP and sustainability was tested using partial least squares structural equation modelling. The results of the path model are shown in the Table 4.9 and Figure 4.1. These findings suggests that agricultural cooperatives which exhibit higher levels of responsibility and fairness are more likely to be economically, socially, and environmentally sustainable. Agricultural cooperatives that have implemented participation are more likely to be sustainable in social and environmental way. Whereas agricultural cooperatives that have implemented transparency are more likely to be economically and environmentally sustainable. For the cooperative which shows high level of rule by law are more likely to be sustainable in an economic and social way.

Table 4.9: Hypothesis testing

Hypothesis/Path relationship	**Standard errors**	**Effect size**	**Path coefficient**	**P-values**	**Decision**
Participation CGP →Economic SI	0.057	0.031	0.048	0.200	Not supported
Participation CGP →Social SI	0.055	0.217	0.292	<0.001***	Supported
Participation CGP →Environmental SI	0.054	0.232	0.373	<0.001***	Supported
Transparency CGP →Economic SI	0.056	0.068	0.097	0.042**	Supported
Transparency CGP →Social SI	0.057	0.010	-0.014	0.404	Not supported
Transparency CGP →Environmental SI	0.055	0.185	0.297	<0.001***	Supported

Responsibility CGP →Economic SI	0.054	0.237	0.326	<0.001***	Supported
Responsibility CGP →Social SI	0.056	0.121	0.165	0.002*	Supported
Responsibility CGP →Environmental SI	0.056	0.054	0.100	0.038**	Supported
Fairness CGP →Economic SI	0.056	0.033	-0.093	0.049**	Supported
Fairness CGP →Social SI	0.056	0.030	0.091	0.053*	Supported
Fairness CGP →Environmental SI	0.055	0.072	-0.183	<0.001***	Supported
Rule by law CGP →Economic SI	0.054	0.214	0.298	<0.001***	Supported
Rule by law CGP →Social SI	0.054	0.259	0.345	<0.001***	Supported
Rule by law CGP →Environmental SI	0.057	0.036	0.063	0.131	Not supported

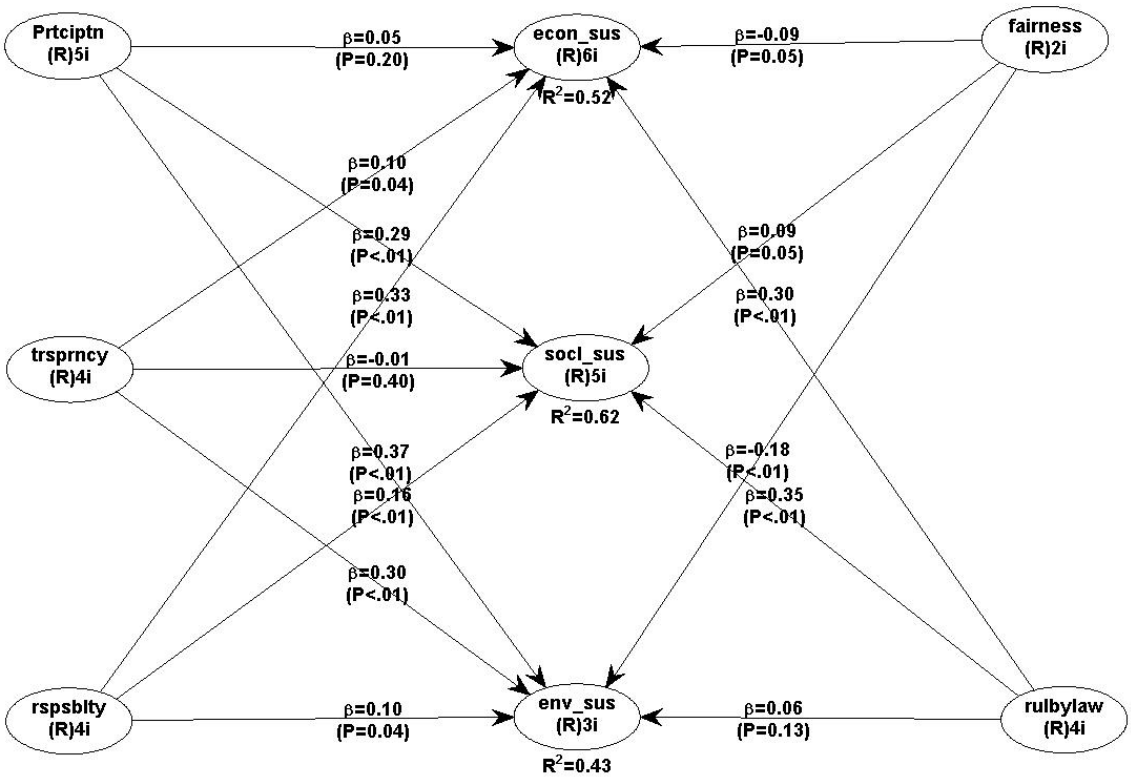

Figure 4.1: Coefficient of structural model

The relationship between participation CGP, social sustainability (p=0.001) and environmental sustainability (p=0.001) displayed a positive and significant relationship at a 1% significance level. These findings suggest that agricultural cooperatives that exhibit higher levels of participation are more likely to be socially and environmentally sustainable. Regarding the positive relationship between participation and social sustainability, it implies that encouragement of the active involvement of every stakeholder in the activities of the cooperatives promotes social equality, builds trust among members, and leads to improvements in the quality of life of all cooperative members.

This reciprocal participation also means that the decisions and initiatives take into account the various views and eventually lead to the long-term well-being and sustainability of the cooperative. Ng'ang'a and Banturaki (2016) supported this effort by saying that by joining cooperatives, women had been able to advance their access to income, increase decision-

making authority in the household as well as to become more active in leadership and community development.

The correlation between environmental sustainability and participation in cooperatives is positive and thus, when the participation of the members and other stakeholders in the cooperatives is active in cooperative governance, decisions and actions that are more environmentally conscious will be attained. In fact, with everyone having a voice and collaborating, there are higher chances of disorienting the individual-focused decisions and reaching the interests of all, hence making sure that the activities of the cooperative serve the interests and objectives of its stakeholders within the environment. As an example, when farming cooperative members are used in the decision-making process on whether to use certain farming methods, they may opt to use eco-friendly processes such as organic farming by shunning the use of synthetic fertilizers and encouraging application of natural alternatives. Aloni et al. (2015) justify this idea by stressing on widespread stakeholder engagement to conduct successful environmental assessments. Moreover, the principle of community concern suggests that cooperatives must strive to achieve a sustainable development of their communities with the help of approved enabling policies that its members approve (ICA, 2015). Hence, it is necessary to involve different stakeholders to accommodate the implementation of sustainable development (Filho & Brandli, 2016).

The relationships between transparency CGP and economic sustainability ($p=0.042$) and environmental sustainability ($p=0.001$) were found to have positive and significant relationship at 5% and 1% level of significance respectively. The positive association between transparency in cooperative governance practices (CGP) and economic sustainability indicates that when business and organizations are transparent in their financial practices, decision making processes and the entire business, confidence to stakeholders, including investors, customers and partners is established. This is a trust that is necessary to draw in investment and to keep long term relationships in high standing. In addition, it is possible to conduct the risk assessment and make informed decisions because of the transparent financial reporting to have more sound financial management. Transparency also deters frauds, competition and overall integrity in the market in a conducive economically sustainable environment. This confirms the conclusions of Wong and Zhang (2022) who have presented evidence that financial disclosure has the ability to reduce information asymmetry and thereby leading to the reduction of the cost of capital. Finally, an open business culture provides a platform to economic sustainability as it ensures responsible and ethical business approaches that foster the economic growth and resilience over the long term.

Transparent practices also suggest that it pays attention to the effect on the environment, which is consistent with sustainable operating objectives. The association between transparency in cooperative governance practices and environmental sustainability is positive, which highlights the fact that making plans and accessible actions of a cooperative to any stakeholder results in more environmental-conscious decisions. This openness will allow stakeholders to give feedback on the possible environmental effects, which will establish a more conscious and environmentally sensitive organizational culture. Such a strategy is justified by Nashar (2023) who studied the correlation between transparency and sustainability in Indonesian cooperatives and proposed that adopting sustainable processes and promoting transparency by means of good governance practices such as open financial reporting and involvement of stakeholders makes a cooperative more reputable and opens more environmentally friendly decisions. Transparency in cooperatives is consequently useful in facilitating more environmentally sustainable decisions.

The economic (p=0.001), social (p=0.002) and environmental sustainability (p=0.038) were found to have a positive and significant relationship with responsibility CGP at 1, 10 and 5 percent significance levels respectively. The fact that responsibility CGP is positively related to economic sustainability implies that when the members of cooperatives understand their rights and are serious about their responsibilities, the cooperative will be able to flourish in the long run. In practice, responsible practices can be represented by responsible financial practices and effective utilization of funds, fund responsibility and thorough record keeping. Conscientious management also assists in the minimization of inefficiency due to negligence and inappropriate practice and corruption that lead to the ultimate increase in the resilience and longevity of cooperative. According to a paper by the Ministry of Trade and Industry (2018), in his article on the National policy on cooperatives in Rwanda, the author highlights the importance of adopting responsible outcomes in achieving economic sustainability. The guidance points out that cooperatives are urged to make sure that the acquired resources are managed appropriately, they avoid misuse and use the available financial facilities such as a business guaranty fund to spread the investment, which encourages self-reliance and financial sustainability.

The positive relationship between the responsibility in cooperative governance practices and social sustainability shows that socially equitable environment is created when the members understand and follow their rights and obligations. Responsible behaviour in cooperatives goes further than environmental and economics and has a social feature. Responsibility therefore involves treating everyone fairly and in a just manner irrespective of

the size of his/her investments, position and background. This point is in line with the experience of ICA (2015), who notes that cooperative values and principle, like honesty, openness, and social responsibility, will reduce the social inequalities. It helps the members to focus on the overall benefits rather than personal interests, to make decisions that are just, cordial and trustworthy to the cooperative community. This is the key to an attainable socially sustainable cooperative, devoid of discrimination and favouritism.

A sustainable environment in their practices is more strongly associated with cooperatives that are conscious of their environmental footprint. In particular, the responsibility of cooperatives in the practice of cooperative governance reveals a positive correlation. The foundation of that positive relationship is the principle of concern for community stipulating that cooperatives work for the sustainable development of their communities. Essentially, the cooperatives' activities must go forward with the knowledge that individual and collective choices will have an effect on the environment. Moreover, they must adopt a responsible attitude in this regard. Sugiyanto and Rahayu (2019) state that the members must maintain their obligation towards the society and also the environment. Cooperatives adopt a commitment to responsibility towards the environment by implementing goals and actions that are environmentally conscious.

There is a significant positive relationship between fair CGP and social sustainability at 10% significant level, p=0.053. Similarly, a significant negative relationship exists with economic at 5% significant level, p=0.049 and environmental sustainability at 1% significance level, p=0.01. Social sustainability will be promoted when fairness in cooperative governance leads to reduced social inequality. According to the principle of open and voluntary membership, co-operatives should offer their service to all those in a community who are able to use it in a manner consistent with its efficiency and viability. Furthermore, the member's race, religion, gender, social status or political affiliation should be irrelevant (NRECA, 2016). When everyone has access to the same services and everything is within grasp, it promotes social equality. Moreover, democratic control states that members should have the same voting power (one member, one vote) (ICA, 2015). It is fair when no one person has more influence than another person in the decision-making process. In brief, treating all members equitable tends to create justice, well-being and a favourable social environment inside the cooperative. This can lead to social cohesion, trust, and collaboration with fellow members, and support.

The unfavorable link between fairness in cooperative governance and economic sustainability indicates that when everyone cooperates freely, we can develop a culture, we might not be able to set a competitive advantage. This is because the principle of equal rights

and votes for all members, regardless of their investment size, might discourage larger investors. These investors, whose significant contributions are crucial for the cooperative's growth, may feel undervalued in a system where their larger investments don't translate to greater decision-making power. López-Arceiz *et al*. (2017) explain that "governance systems that overly prioritize equality, such as one-member-one-vote, can reduce capital contributions from large investors who seek influence aligned with their input." However, the above finding contrasts with Shearer (2023), who stated that a positive company culture that promotes fairness and inclusivity can have a significant impact on a company's bottom line. Indeed, when cooperative members are treated equally with respect and given equal opportunities, they tend to contribute at a high level in terms of their experiences, strengths, and finances thus achieving better performance.

The negative correlation between fairness CGP and environmental sustainability implies that by promoting the equitable treatment of all stakeholders, a cooperative may compromise its ability to manage operations in ways that reduce environmental impacts. A plausible explanation is that since a cooperative exists within supply chains, it has responsibilities not only to its members but also to clients such as processors or exporters. Consequently, when a cooperative fulfils its obligations through service delivery, it may inadvertently encourage agricultural practices with adverse environmental effects. Lambrechts *et al*. (2020) noted that although cooperation is central to sustainability, some collective business decisions still unintentionally contribute to environmental degradation, particularly in agriculture-based cooperatives.

The results showed that rule by law CGP displayed a positive and significant relationship with economic (p=0.001) and social responsibility at a 1% significance level (p=0.001) for both sustainability indicators. The positive relationship between rule by law CGP and economic implies that by cooperatives supporting the effective supervision and enforcement of all rules and regulations in force in the cooperative, they can survive with the passing of time through the creation of competitive value and advantage. Indeed, a cooperative operating within a framework of well-defined rules and regulations, is more likely to experience operational efficiency because everyone follows the guidelines for decision-making, resource allocation and overall operations.

Moreover, adherence to rules implies that the cooperative operates in an open and transparent manner hence preventing unethical practices such as corruption or misuse of resources. In addition, when a cooperative is governed by a set of clearly defined rules, it promotes a sense of stability and reliability, hence attracting and retaining the support of those

involved. The importance of management by strict compliance with rules and regulations in boosting the cooperative's economic performance is highlighted by Polcini (2017) who said that rule by law is instrumentally valuable to economic sustainable growth delivering concrete development.

There is a positive link between rules fostered by a cooperative governance policy and social sustainability. In other words, an effective supervision and enforcement of these rules by cooperatives ensures that social inequalities affecting stakeholders are reduced. The effective implementation of regulations which guarantee similar treatment of everyone is the cause of that relationship. When cooperatives comply with the stipulated rules of the game, they can guarantee that all members are treated fairly and equally. This means that no one will be discriminated to or carried favor due to any reason like their background or status. The member control principle directs governance and puts up further proof of this good relationship. It stresses that all members have a voice through equal vote in decision-making processes (NRECA, 2016). This democratic approach makes people feel valued and treated fairly at the cooperative. Due to this, strict compliance with and non-discriminatory and impartial enforcement of the rules in cooperatives leads to an overall reduction in social inequalities.

The results related our second objective demonstrate how governance practices affect the three dimensions of sustainability. As per the author, responsible CGP is the one that had most consistent and positive correlation with economic, social and environmental issues. Thus, the significance of responsible behaviour and proper professional ethics cannot be overestimated when it comes to the sustainability of cooperatives. Participation is one of the key indicators of social and environmental sustainability, which indicates that there is a need for inclusive governance during decision-making, which in turn builds trust and promotes pro-environmental behaviour. Clear information is also important for financial integrity and environmental accountability.

Conversely, despite favouring social sustainability, fairness is adversely correlated with economic and environmental performance implying that an inclusiveness and efficiency can be under a trade-off. The rule of law stands out as a practice that fosters economic and social sustainability in a balanced manner, via obedience and organized government. Overall, these remarks indicate that balanced governance strategy which is devoted to transparency, fairness and participation is a crucial instrument of making cooperatives sustainable. Nevertheless, fairness-focused approaches should be applied with caution to prevent unintended operational constraints.

4.5. The Effect of Corporate Governance Practices Mediated by Risk Management on Sustainability of Agricultural Cooperatives in Ngozi Province

4.5.1 Reliability and Validity of the Constructs

Convergent validity, according to Hair *et al*. (2017), is attained when a set of construct indicators converges or adequately captures a single underlying construct. Cronbach's alpha (CA), rho A, Composite Reliability (CR), and Average Variance Extracted (AVE) were used to assess validity. According to Table 4.10, composite reliability (CR) ranged between 0.867 and 0.977, rho A ranged between 0.772 and 0.975, while Cronbach's alpha (CA) ranged from 0.692 to 0.974. Since these thresholds are higher than the 0.7 minimum requirement level, internal consistency reliability was attained. Average variance extracted (AVE) was used to evaluate convergent validity, and values which were above the cutoff of 0.5 were considered valid (Hair *et al*., 2017). Using the variance inflation factor, the variables' multicollinearity was examined (VIF). The results in Table 4.10 show that there was no collinearity among the constructs. According to Kim (2019) multicollinearity exists if the variance inflation factor and tolerance are greater than 5 to 10 and lower than 0.1 to 0.2, respectively.

Table 4.10: Reliability and validity of scale items for cooperate governance practices (CGP) and Sustainability and risk management

	Items	**CA**	**rho_A**	**CR**	**AVE**	**VIF**
Participation CGP	5	0.917	0.919	0.938	0.751	3.84
Transparency CGP	4	0.927	0.93	0.948	0.82	5.193
Responsibility CGP	4	0.891	0.893	0.925	0.755	4.846
Fairness CGP	2	0.692	0.772	0.867	0.765	1.133
Rule by law CGP	4	0.88	0.881	0.918	0.737	4.437
Sustainability	11	0.937	0.941	0.947	0.619	4.041
Risk management	15	0.974	0.975	0.977	0.737	1.737

4.5.2 Discriminant Validity

Cross loading and the HTMT ratio were employed in this study's validity testing. Hair *et al*. (2013) assert that no indicator should have higher punctuation than the concept being evaluated for cross loading to achieve discriminant validity. As seen in Table 4.11, all the loadings for individual items' constructions were higher for their particular constructs than for other constructs.

Table 4.11: Cross loading Test for constructs of CGP sustainability and risk management

	Participation CGP	**Transparency CGP**	**Responsibility CGP**	**Fairness CGP**	**Rule by law CGP**	**Sustainability**	**Risk management**
Participation 1	(0.868)	0.005	0.180	0.046	-0.218	0.122	-0.065
Participation 2	(0.839)	-0.257	0.296	0.094	0.026	0.060	0.083
Participation 3	(0.881)	0.029	-0.098	0.028	-0.054	-0.121	0.018
Participation 4	(0.904)	0.143	-0.128	-0.020	0.004	0.042	-0.064
Participation 5	(0.838)	0.067	-0.241	-0.150	0.253	-0.105	0.033
Transparency 1	-0.090	(0.892)	0.032	0.114	0.030	0.090	-0.038
Transparency 2	-0.128	(0.916)	0.255	0.050	-0.058	0.048	0.013
Transparency 3	0.043	(0.910)	-0.165	-0.069	0.108	-0.066	0.009
Transparency4	0.175	(0.903)	-0.125	-0.093	-0.080	-0.072	0.016
Responsibility 1	-0.089	0.097	(0.906)	0.025	-0.225	0.038	0.002
Responsibility2	-0.082	-0.077	(0.894)	0.023	0.162	-0.003	0.014
Responsibility 3	0.122	-0.054	(0.879)	0.036	0.008	-0.006	-0.010
Responsibility 4	0.058	0.037	(0.793)	-0.094	0.066	-0.034	-0.007
Fairness 1	-0.187	-0.055	0.033	(0.874)	0.064	0.057	0.070
Fairness 2	0.187	0.055	-0.033	(0.874)	-0.064	-0.057	-0.070
Rule by law 1	-0.353	0.119	-0.245	-0.065	(0.786)	0.033	0.077
Rule by law 2	0.039	-0.065	0.033	0.074	(0.879)	0.016	0.025
Rule by law 3	0.212	-0.028	0.146	0.020	(0.870)	-0.031	-0.060

Rule by law 4	0.065	-0.013	0.041	-0.034	(0.893)	-0.015	-0.034
Risk anticipation and prioritization 1	-0.186	0.017	0.102	0.105	-0.017	(0.797)	0.050
Risk anticipation and prioritization 2	-0.499	0.019	0.328	-0.013	-0.057	(0.729)	0.164
Risk anticipation and prioritization 3	-0.413	0.292	0.067	-0.040	-0.162	(0.850)	0.063
Risk anticipation and prioritization 4	0.012	0.127	-0.138	-0.033	-0.215	(0.852)	-0.021
Risk anticipation and prioritization 5	-0.172	-0.137	0.234	-0.084	0.031	(0.841)	-0.005
Risk identification and assessment 1	-0.248	-0.059	-0.021	-0.046	0.217	(0.802)	-0.018
Risk identification and assessment 2	0.419	-0.622	-0.192	0.000	0.353	(0.670)	0.076
Risk identification and assessment 3	0.297	-0.106	-0.214	0.023	0.120	(0.785)	-0.072
Risk identification and assessment 4	0.467	-0.048	-0.331	0.074	-0.086	(0.781)	-0.116
Risk identification and assessment 5	0.032	-0.023	0.256	0.026	0.005	(0.827)	-0.064

Risk monitoring and evaluation 1	0.421	0.485	-0.140	-0.002	-0.132	(0.693)	-0.039
Risk monitoring and evaluation 2	0.044	0.070	0.339	-0.005	-0.108	-0.210	(0.789)
Risk monitoring and evaluation 3	-0.059	0.089	0.337	0.131	-0.103	-0.395	(0.856)
Risk monitoring and evaluation 4	0.047	-0.157	0.195	0.007	0.008	-0.117	(0.856)
Risk monitoring and evaluation 5	-0.031	-0.138	0.065	0.025	-0.070	0.085	(0.857)
Sustainability economic indicators 1	0.012	-0.200	0.048	-0.024	0.069	-0.005	(0.867)
Sustainability economic indicators 2	0.287	-0.119	0.067	-0.135	0.124	-0.044	(0.781)
Sustainability economic indicators 3	0.059	-0.062	-0.105	0.028	0.031	0.033	(0.911)
Sustainability economic indicators 4	0.029	-0.035	-0.101	-0.032	0.000	0.126	(0.906)
Sustainability economic indicators 5	-0.099	0.066	-0.119	-0.025	0.044	0.069	(0.909)
Sustainability economic indicators 6	0.017	-0.042	-0.177	-0.040	0.013	0.228	(0.899)

Sustainability indicators 1	**social**	0.137	-0.231	0.248	-0.306	0.046	-0.005	(0.670)
Sustainability indicators 2	**social**	-0.086	0.208	-0.164	0.108	-0.051	0.021	(0.887)
Sustainability indicators 3	**social**	-0.169	0.085	-0.024	0.057	0.042	0.005	(0.883)
Sustainability indicators 5	**social**	0.016	0.185	-0.301	0.041	-0.044	0.062	(0.906)
Sustainability environmental indicators 2		-0.138	0.208	-0.169	0.085	0.010	0.095	(0.866)

The heterotrait-monotrait ratio of correlations (HTMT), according to Henseler *et al*. (2015), should be used as a more appropriate criterion to evaluate discriminant validity. According to Henseler *et al*. (2015) discriminant validity is established between two reflective constructs if the HTMT value is below 0.9.

Table 4.12: HTMT Ratios

	Participation CGP	**Transparency CGP**	**Responsibility CGP**	**Fairness CGP**	**Rule by law CGP**	**Sustainability**	**Risk management**
Participation CGP							
Transparency CGP	0.89						
Responsibility CGP	0.894	0.93					
Fairness CGP	0.188	0.251	0.205				
Rule by law CGP	0.874	0.924	0.928	0.138			
Sustainability	0.821	0.826	0.869	0.102	0.869		
Risk management	0.499	0.499	0.512	0.187	0.542	0.654	

4.5.3 Model Fit

The model fit was assessed using Standardized root mean squared residual (SRMR). The SRMR is defined as the difference between the observed correlation and the model implied correlation matrix. Thus, it allows assessing the average magnitude of the discrepancies

between observed and expected correlations as an absolute measure of (model) fit criterion. A value less than 0.10 or of 0.08 are considered a good fit. Henseler *et al*. (2014) introduce the SRMR as a goodness of fit measure for PLS-SEM that can be used to avoid model misspecification. The model has an SRMR score of 0.069 indicating good fit.

4.5.4 Mediation Analysis for RMP on Relationship between CGP and Sustainability

The mediation analysis was done using bootstrapping method (Hair *et al*., 2017). The results in Table 4.3 show that risk management positively mediated the relationship between corporate governance practices and sustainability.

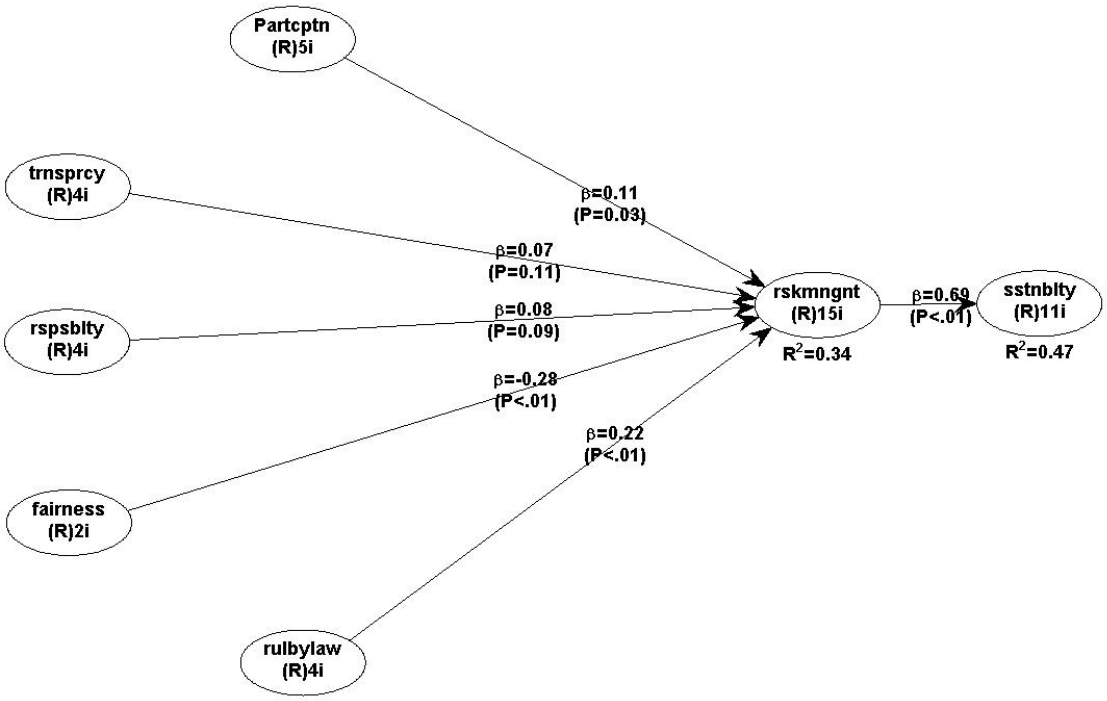

Figure 4. 2: Coefficient of structural model

4.13 Hypothesis testing

Table 4.13: Hypothesis testing

Hypothesis/Path relationship	Standard errors	Effect size	Path coefficient	P-values	Decision
Participation CGP → Risk	0.04	0.056	0.074	0.033**	Supported

management→ Sustainability					
Transparency CGP → Risk management → Sustainability	0.04	0.037	0.048	0.117	Not supported
Responsibility CGP → Risk management → Sustainability	0.04	0.041	0.052	0.099*	Supported
Fairness CGP → Risk management → Sustainability	0.039	0.013	-0.195	<0.001***	Supported
Rule by law CGP → Risk management → Sustainability	0.039	0.117	0.149	<0.001***	Supported

The results indicated that the relationship between participation CGP and sustainability with risk management as a mediator was significant and positive at a 5% significance level (p=0.033). This finding implies that risk management explains the relationship between participation CGP and sustainability. The plausible reason is that risk identification depends on the expertise and experience of stakeholders. For example, experienced farmers can identify potential risks related to natural hazard and suggest ways of mitigation. Therefore, involving members in all activities as well as in the decision-making process whereby they can provide insights in the risks associated with cooperatives plans and activities, will likely lead to risk mitigation consequently to sustainability. This is reinforced by Kalia and Gill (2023) who stated that strong governance mechanisms, like active participation in decision-making, can effectively manage corporate risks, which aligns with the notion that participation in cooperatives enhances sustainability through effective risk management.

The findings showed that the relationship between responsibility CGP and sustainability with risk management as a mediator was significant and positive at a 10% significance level (p=0.099). These results suggest that risk management explains the relationship between responsibility CGP and sustainability. Indeed, cooperatives are held

responsible to all stakeholders, the community and environment to maintain business continuity in the long term, and they must take into consideration risks attached to their activities and get involved in the risk management process. This is highlighted in the concern for community principle; whereby cooperatives work for the sustainable development of their communities through policies supported by the membership.

Consequently, since a cooperative is a joint association whose members share the same objective, each member has a responsibility to actively participate in the risk management process. This is in accordance with Florin and Parker (2020) who stipulated that stakeholders ensure that important values and priorities (such as political preferences or economic interests) are taken into account during risk characterization and evaluation; and stakeholders may be involved in the risk management stage, both in identifying and selecting the most appropriate risk management options and in their implementation.

Contrary to expectations, adoption of fairness CGP in a cooperative is associated with lower sustainability even when mediated with risk management. The results exposed a negative and significant relationship at a 10% significance level (p=0.001). The plausible explanation that can be drawn from the above findings is that a cooperative exists within supply chains, implying that it not only has a responsibility to its environment but also to its clients who are members, processors, or exporters. As a result, when a cooperative is taking into consideration every need of all its stakeholders, the cooperative may promote agricultural practices that are detrimental to the environment or affecting negatively economic performance. That point of view is also shared by Zelenski *et al*. (2015), who said that most current environmental crises result from economic activity that requires some cooperation among individuals and groups.

The results indicated that the relationship between rule by law CGP and sustainability with risk management as a mediator was significant and positive at a 1% significance level (p=0.001). This implies that risk management explains the relationship between rule by law CGP and sustainability. This means that effective supervision and enforcement of all rules and regulations in force in the cooperative leads to the identification of potential losses to the business. In practice, risks and uncertainties arising from negligence and illegal practices such as corruption are eliminated when cooperatives are managed in strict compliance with standard operating procedures for all activities. This is supported by OECD (2023), who emphasized that effective risk management must be embedded within a framework of strong corporate

governance, where compliance to policies and procedures ensures identification, mitigation, and monitoring of potential threats.

Furthermore, the rule of law provides the necessary foundation for the establishment of transparent, responsive, and accountable institutions. Thus, compliance with cooperative's rules and regulations encourage members to get involved in risk prevention. For example, corruption can be avoided if everyone strictly complies with the provisions in force. The research of Kalia and Gill (2023) confirms the link between the rule of law, good governance (CGP), and sustainability, showing that organizations with strong governance practices, particularly. In terms of compliance, are less exposed to risk. It follows that rigorous control and effective enforcement of regulations in cooperatives are major levels for anticipating and managing risks, thereby ensuring their sustainability.

In general, the findings demonstrate the key position of risk management as the intermediary between corporate governance and sustainability in agricultural cooperatives. It seems that the engagement, responsibility, and adherence to regulations positively and substantially affect sustainability by means of improved risk management. Engaging the members at a level of active participation, responsibility ownership, and adherence to the set of standards play a decisive role in the detection and mitigation of threats that may undermine the cooperative. The findings are aligned with the results presented by Kalia and Gill (2023) and Florin and Parker (2020), who emphasize the role of the stakeholder in organizational risk management and governance. Nevertheless, the inclusion of equity as a principle of governance indicated a negative correlation with sustainability even when risk management acted as an intermediate. This implies that acting with the intent to fulfil the needs of all stakeholder groups blindly, one may end up making decisions that are economically or environmentally unsustainable, as it is demonstrated by Zelenski *et al.* (2015). Finally, these findings demonstrate that though the governance practices play a critical role in ensuring sustainability, their effects are highly contingent on their implementation and balance by ensuring their sound risk management practices.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Summary of the findings

The aim of the research was to investigate the effect of corporate governance of agricultural cooperatives sustainability with risk management as a mediation variable. The results show that socioeconomic variables (gender, education level, length of membership, and position level), institutional factors and governance factors significantly affect the adoption of governance practices. The impact of the important governance dimensions like participation, transparency, accountability, fairness and the rule of law on sustainability differed. The factors that help make sustainable decisions are participation, transparency, responsibility, and rule of law. The fair process sometimes had negative impacts on economic and environmental sustainability. Once risk management was placed as an intervening variable, the positive impact of participation, transparency, responsibility, and rule of law on sustainability was reinforced. The results show that good governance and appropriate risk management practices are necessary for ensuring the sustainability and survival of agricultural cooperatives in Burundi.

5.2. Conclusions

The following are key conclusions of the study according to the objectives.

i) The objective one was about determining factors influencing adoption of corporate governance practices in agricultural cooperatives. Five corporate governance practices were considered in this study namely: participation, transparency, responsibility, fairness, and rule by law. Socio economic characteristics as well as institutional and governance factors were considered as dependent variables. The findings revealed that gender, education, membership years and level of position were major socio-economic factors influencing adoption of corporate governance practices. The study also found institutional and governance factors influencing adoption of corporate governance practices. The factors highlighted in the study were: frequency of meetings, information dissemination, credit and trainings, leaders' ability to understand tasks, involvement in decision making, leaders' level of understanding of cooperatives' principles, leadership style and organization culture.

ii) The objective two aimed at finding the effect of corporate governance practices on sustainability of agricultural cooperatives. The findings indicated that transparency, responsibility, and rule by law had a positive effect on economic sustainability. Social sustainability, on the other hand, was positively affected by participation,

responsibility, fairness, and rule by law. Participation, transparency, and responsibility had a positive effect on environmental sustainability. However, fairness had a negative effect on environmental and economic sustainability.

iii) The objective three sought to determine the effect of corporate governance practices mediated by risk management practices on the sustainability of agricultural cooperatives in Ngozi, Burundi. The conclusion is that corporate governance practices including participation, transparency, responsibility, rule of law indirectly and positively influences the sustainability of the enterprise through risk management practices. However, fairness, even when mediated by risk management, is associated with a negative and significant level.

5.3. Recommendations

The findings of the study lead to the following policy recommendations.

i) *Develop a capacity-building program for cooperative governance program* - To improve the board's ability to lead effectively and the members' ability to make decisions that will promote the cooperative's development. The study recommends a good governance capacity-building program targeting managers and members in general. The focus should be on institutional as well as governance factors that influence the adoption of corporate governance practices in cooperatives. Capacity-building can focus, for instance, on the frequency at which meetings should be held and how they should be organized (minute-taking, follow-up of recommendations, etc.). Training initiatives could also delve into the separation of duties in cooperatives, and the importance of a job description for each manager. Another point to consider is the importance of thoroughly explaining the cooperative principle to all members and stakeholders and highlighting the importance of member involvement in decision-making processes can also be a pertinent focus of the program.

ii) *Establish a supportive environment for farmers' cooperatives* - So that farmers' cooperatives remain viable on a sustainable basis. So that members of an agricultural cooperative derive all the benefits associated with being a member of a cooperative. Policymakers should take the lead in promoting a supportive framework to encourage and monitor corporate governance practices in a sustainable and resilient manner. The strategy is to place all cooperatives under the control of an organization that is linked to the sector of production. The goal of the mentorship would be to strengthen their presence and voice in national development plan and policy debates.

iii) *Awareness-raising program to promote stakeholder involvement in the risk management process* - For agricultural cooperatives to sustain themselves in the long term and have an impact on the livelihoods of their members; the adoption of corporate governance and risk management practices must be a priority not only for cooperative members but also for all stakeholders in the value chain. Awareness-raising programs need to be put in place to ensure that every stakeholder is directly involved in the design, revision or review of regulations and risk management measures, rule-making processes, or risk monitoring programs. In other words, each member must commit to taking responsibility and modifying behaviours and attitudes in order to initiate or participate in specific risk management measures. As part of the risk management measures, agricultural cooperatives can for instance, opt for eco-friendly practices like the use of biodegradable materials such banana leaves instead of plastic bags in garden centres, thus contributing to environmental preservation.

5.4. Suggestions for Further Research

This study only examined the effect of corporate governance practices mediated by risk management on the sustainability of agricultural cooperatives in Ngozi province among 307 respondents in one commune. The study hence needs to be expanded to other locations and the sample size increased to determine the actual impact of corporate governance and risk management practices and avoid bias. The study was limited to improving the sustainability of cooperatives and thus the life span of organizations. Further research can be conducted to see the direct effect of cooperative sustainability on household income. In addition, the study was only conducted among cooperatives that are under the umbrella of organizations such as UCODE and ADISCO, so there should be a comparative study between cooperatives that are not under guardianship and cooperatives that are under guardianship to compare the impact of corporate governance and risk management practices.

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APPENDICES

Appendix A : Questionnaire

Introduction

I am Bernice Nasangwe, pursuing MSc in Agricultural and Applied Economics at Egerton University in Kenya. I am conducting research on the *Effect of corporate governance practices mediated by risk management practices on the sustainability of agricultural cooperatives in Ngozi province, Burundi.* The purpose of this study is purely academic. You have been selected to participate in this research survey. I humbly request you to allow me to ask you some questions about my research. The information you provide shall be held strictly confidential.

Date of data collection.....

Questionnaire Number.....

Name of the cooperative.....

Enumerator's Name.....

SECTION A: Socioeconomic and demographic information on members of the cooperatives

A.1. Provide the following details about the member of the agricultural cooperative.

Sex: 1=Male, 2=Female	**Age** (years)	**Highest education level (years) (CODE A)**	**Years of membership**	**Level of position in the cooperative (CODE B)**

CODE A: Education levels

1=No formal education 2= Adult education 3= Primary education 4= Secondary education 5= University education

CODE B: Level of position

1= Directors 2= Managers 3= Members

SECTION B: Information on Institutional and Governance characteristics

1. What is the frequency of meetings?
    1. Monthly

2. Quarterly
3. Annually

2. Do you have information dissemination on the management of the cooperative?
   1. Yes [ ]
   0. No [ ]
3. If yes to question 2, what is your source of information?

   …….
4. Do you have credit facilities loans?
   1. Yes [ ]
   0. No [ ]
5. If yes to question 4, what is your source of credit?

   ……
6. Do you have participation in trainings regarding the management of the cooperative?
   1. Yes [ ]
   0. No [ ]
7. If yes to question 6, what are the types of training that you have access to?

   ……..

8. To which extent do you understand the tasks assigned to you as a leader?
   1. Low extent [ ]
   2. Moderate extent [ ]
   3. High extent [ ]
9. In your own opinion, is every member of the cooperative involved in the decision making process?

   1. Yes [ ]

   0. No [ ]
10. At which extent do you understand and respect the principles of cooperatives?
    1. Low extent [ ]
    2. Moderate extent [ ]
    3. High extent [ ]
11. In your own opinion, do leadership style affect corporate governance?

    1. Yes [ ]

0. No [ ]

12. If yes to question 11, in your own opinion, which leadership style affects corporate governance?
    1. Democracy [ ]
    2. Dictatorship [ ]
13. In your own opinion, do organizational culture affects corporate governance?

    1. Yes [ ]

    0. No [ ]
14. If yes to question 13, which type of organizational culture affects corporate governance in your cooperative?
    1. Bureaucratic culture [ ] - form of management that has a pyramidal command structure
    2. Supportive culture [ ] - empowers employees to do their best work

    3. Innovative culture [ ] - supports creative thinking

Section C: Information on the agricultural cooperatives

C.1 Which activities is your cooperative involved in?	**C.2** Is there an organizational chart in your cooperative?	**C.3** How is the relationship between leaders and ordinal members?	**C.4** Is there a policy on delegation of duties in your cooperative?	**C.5** Are there laid down rules, policies and procedures in your cooperative?	**C.6** How often does your cooperatives hold election of committee?
1= Production 2= Transformation	1= Yes 0= No	1= Very good 2= Good 3= Fair	1= Yes [ ] 0= No [ ]	1= Yes [ ] 0= No [ ]	1= Annually [ ]

3= Commercialization 4= Others, specify		4= Poor			2= Biannually[ ] 3= Quarterly[ ] 4= Never [ ]
CODES					

Section D: Use of corporate governance practices in the agricultural cooperative.

1. In your own opinion, to what extent is the following corporate governance practices used by the board of directors of your cooperative?

Corporate governance practices	LOW	MODERATE	HIGH
Participation			
Transparency			
Responsibility			
Fairness			
Rule by law			

2. Please rate by ticking the extent to which the following is necessary to be put in place in order to improve corporate governance

Statements	**Low extent**	**Moderate extent**	**High extent**
Clear distinction of the role of all stakeholders			
Putting in place a clear organizational structure, systems and procedures			
Establishment of ethical codes of best practices and control			
The auditors should present the audit account regularly			

The supervision committee should report regularly to members			
Corporate governance committee should be formed			

3. In your own opinion, does the following statement about corporate governance practices apply to your cooperative?

PARTICIPATION	**Strongly disagree**	**Disagree**	**Neutral**	**Agree**	**Strongly agree**
Board of directors encourage active involvement of every member in the activities.					
BOD encourage active involvement of every stakeholder in decision making.					
Each member have a voting right.					
All stakeholder are allowed to participate and to vote at the general assembly.					
Members are involved in drafting regulations and internal rules in the cooperative.					

TRANSPARENCY	**Strongly disagree**	**Disagree**	**Neutral**	**Agree**	**Strongly agree**
BOD publish in its annual reports all relevant information and business operation.					
BOD publish adopted decision and minutes of the meetings.					
There is a clear documentation of the duties of all members.					
All relevant data and information are announced publicly in the meetings.					
RESPONSIBILITY	**Strongly disagree**	**Disagree**	**Neutral**	**Agree**	**Strongly agree**
Members of the board understand their tasks in the cooperative.					
BOD have clearly defined roles.					
BOD takes into account the interests of all stakeholders while making decisions.					
The responsibilities of each member of BOD are clearly set out in writing.					
FAIRNESS	**Strongly disagree**	**Disagree**	**Neutral**	**Agree**	**Strongly agree**
BOD encourages ethnic and gender diversity in the cooperative.					

BOD ensures equitable treatment of every member.					
Members can vocalize their grievance freely and be addressed in a transparent way.					
RULE BY LAW	**Strongly disagree**	**Disagree**	**Neutral**	**Agree**	**Strongly agree**
Principles of cooperatives are understood and respected by each member.					
BOD has establish mechanism for prevention and settlement of possible conflicts within the cooperative.					
The cooperative has adopted and applied an internal code of conduct.					
There is an established mechanism to ensure supervision and enforcement of all rules and regulations.					

Section E: Risk management practices

E.1. In your own opinion, rate your level of agreement on the adoption of the following risk management practices in your cooperative. (1=strongly disagree, 2=disagree, 3=neutral, 4=agree, 5=strongly agree)

Risk management practices	**1=SD**	**2=D**	**3=N**	**4=A**	**5=SA**
1. Anticipate and prioritize					
2. Identify and assess					
3. Monitor and evaluate					

E.2. What is the most significant source of risk that affects your cooperatives?

……

E.3. In your own opinion, rate your level of agreement to the following statements on how risk anticipation and prioritization apply in your cooperative. (1=strongly disagree,2=disagree, 3=neutral, 4=agree, 5=strongly agree)

Risk anticipation and prioritization	**1=SD**	**2=D**	**3=N**	**4=A**	**5=SA**
1. The BOD is aware of the unfavorable event that may occur and their impacts on the performance of the cooperative.					
2. The BOD communicate to all members the potential risks that may affect the					

cooperative.					
3. The BOD established standards and procedures for risk prioritization.					
4. The cooperative has establish a rating system for risk prioritization.					
5. The BOD can clearly distinguish risk having high potential loss and low probability of occurrence from risk having low potential loss and a high likelihood of occurrence.					

E.4. In your own opinion, rate your level of agreement to the following statements on how risk identification and assessment apply in your cooperative. (1=strongly disagree, 2=disagree, 3=neutral, 4=agree, 5=strongly agree)

Risk identification and assessment	**1=SD**	**2=D**	**3=N**	**4=A**	**5=SA**
1. The Board of directors do a regular risk inspection by identifying risks and selecting action based on priorities.					
2. The BOD evaluate the losses and select appropriate techniques to handle loss exposures.					
3. The BOD established standards and procedures for					

risk assessment.					
4. Risk is assessed using both qualitative and quantitative methods.					
5. The assessment of risk in terms of potential loss and its probability of occurrence is done regularly by the cooperative.					

E.5. In your own opinion, rate your level of agreement to the following statements on how risk identification and assessment apply in your cooperative. (1=strongly disagree, 2=disagree, 3=neutral, 4=agree, 5=strongly agree)

Risk monitoring and evaluation	**1=SD**	**2=D**	**3=N**	**4=A**	**5=SA**
1. The framework for monitoring risk is designed and well documented by the BOD.					
2. Members of the cooperative are trained on policies of the cooperative regarding risk management.					
3. The risk management approach is continually reviewed and communicated to members.					
4. There are controls in place for proper evaluation of the efficiency of risk					

management practices.					
5. There are regular reviews and reports produced by the BOD on risk management improvements.					

Section F: Sustainability of agricultural cooperatives.

1. In your own opinion, does the following statement about economic indicators apply to your cooperative?

Economic indicators	**Strongly disagree**	**Disagree**	**Neutral**	**Agree**	**Strongly agree**
Funds are managed transparently by the board of directors.					
Savings are made regularly and well managed so these are protected.					
Profitable opportunities for market demand are identified and analyzed.					
Records about business and production are kept.					
Market information are easily available					
Market relationships and scope for negotiation with buyers and suppliers are built by leaders.					

2. In your own opinion, does the following statement about social indicators apply to your cooperative?

Social indicators	**Strongly disagree**	**Disagree**	**Neutral**	**Agree**	**Strongly agree**
Members have a shared vision					
There is capability of resolving internal conflicts within the cooperative					
Members have built active relationships/trust					
There is no discrimination in the cooperative, everyone is included.					
The democratic leadership and managements enforce compliance with internal rules.					

3. In your own opinion, does the following statement about environmental indicators apply to your cooperative?

Environmental indicators	**Strongly disagree**	**Disagree**	**Neutral**	**Agree**	**Strongly agree**
Every member can identify and understand the interdependence among agricultural activities of and wider landscape					
The cooperative is able to design and implement effective conservation rehabilitation or sustainable production plans.					

Natural resources are used efficiently by cooperatives' members.					

Appendix B: Ethical approval

EGERTON UNIVERSITY INSTITUTIONAL SCIENTIFIC AND ETHICS REVIEW COMMITTEE

EU/RE/DIR/009

Approval No. EUISERC/APP/269/2023 ***10th July* 2023**

EGERTON UNIVERSITY PO BOX 536
TEL: (051) 2217808
FAX: 051-2217942

Bernice
Nasangwe
Ngozi,
Burundi
Telephone: +25776566377
E-mail: nabernice12@gmail.com

Dear Bernice,

RE: ETHICAL APPROVAL: EFFECT OF CORPORATE GOVERNANCE PRACTICES MEDIATED BY RISK MANAGEMENT PRACTICES ON SUSTAINABILITY OF AGRICULTURAL COOPERATIVES IN NGOZI PROVINCE, BURUNDI.

This is to inform you that ***Egerton University Institutional Scientific and Ethics Review Committee*** has reviewed and approved your above research proposal. Your application approval number is ***EUISERC/APP/269/2023.*** The approval period is ***10th July 2023 –11th July, 2024***

This approval is subject to compliance with the following requirements.

i. Only approved documents including (informed consents, study instruments, MTA) will be used.
ii. All changes including (amendments, deviations, and violations) are submitted for review and approval by ***Egerton University Institutional Scientific and Ethics Review Committee***.
iii. Death and life-threatening problems and serious adverse events or unexpected adverse events whether related or unrelated to the study must be reported to ***Egerton University Institutional Scientific and Ethics Review Committee*** within 72 hours of notification
iv. Any changes, anticipated or otherwise that may increase the risks or affect safety or welfare of study participants and others or affect the integrity of the research must be reported to ***Egerton University Institutional Scientific and Ethics Review Committee*** within 72 hours.
v. Clearance for Material Transfer of biological specimens must be obtained from relevant institutions.
vi. Submission of a request for renewal of approval at least 60 days prior to expiry of the approval period. Attach a comprehensive progress report to support the renewal.
vii. Submission of an executive summary report within 90 days upon completion of the study to ***Egerton University Institutional Scientific and Ethics Review Committee***.

Prior to commencing your study, you will be expected to obtain a research license from National Commission for Science, Technology and Innovation (NACOSTI) https://oris.nacosti.go.ke and also obtain other clearances needed.

Yours sincerely. 10/07/2023

EGERTON UNIVERSITY RESEARCH ETHICS Date.....

Prof. Raphael M. Ngure
CHAIRMAN, EGERTON UNIVERSITY INSTITUTIONAL SCIENTIFIC AND ETHICS REVIEW CTTEE
RMN/BK/

Appendix C. Results of MVP on factors influencing implementation of corporate governance practices.

```
. mvprobit (part= Age Gender Education Membershipyears Levelofposition
numberofmeetings Informationdissemination Creditfacilities Participationintrainings
Leadersunderstandingoftasks Decisionmaking Leadersunderstandingcoopprincipl
Leadership_style organizationalculture) (trans= Age Gender Education Membershipyears
Levelofposition numberofmeetings Informationdissemination Creditfacilities
Participationintrainings Leadersunderstandingoftasks Decisionmaking
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Participationintrainings Leadersunderstandingoftasks Decisionmaking
Leadersunderstandingcoopprincipl Leadership_style organizationalculture) (rule= Age
Gender Education Membershipyears Levelofposition numberofmeetings
Informationdissemination Creditfacilities Participationintrainings
Leadersunderstandingoftasks Decisionmaking Leadersunderstandingcoopprincipl
Leadership_style organizationalculture), nolog

Multivariate probit (SML, # draws = 5)          Number of obs   =        307
                                                Wald chi2(70)   =     190.86
Log likelihood =  -650.5942                     Prob > chi2     =     0.0000

------------------------------------------------------------------------------
                             |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-----------------------------+------------------------------------------------------------------
part                         |
                         Age |   -.012613   .0077817    -1.62   0.105    -.0278649    .0026389
                      Gender |   .0126468   .1578384     0.08   0.936    -.2967107    .3220043
                   Education |  -.2107317   .0826589    -2.55   0.011    -.3727402   -.0487232
             Membershipyears |    .006779   .0367374     0.18   0.854    -.0652249    .0787829
             Levelofposition |   .0357631   .1771164     0.20   0.840    -.3113787    .3829049
```

numberofmeetings | .4573009 .1885166 2.43 0.015 .0878151 .8267867
Informationdissemination | .5189532 .281429 1.84 0.065 -.0326375
1.070544
creditfacilities | .0585869 .1971864 0.30 0.766 -.3278914 .4450651
participationintrainings | .029808 .4101439 0.07 0.942 -.7740593
.8336753
Leadersunderstandingoftasks | .5397961 .1479535 3.65 0.000 .2498126
.8297797
Decisionmaking | .3523483 .3189409 1.10 0.269 -.2727644 .977461
Leadersunderstandingcoopprincipl | .1147752 .137297 0.84 0.403 -.154322
.3838724
Leadership_style | .0760821 .4761693 0.16 0.873 -.8571926 1.009357
organizationalculture | -.3097559 .2061646 -1.50 0.133 -.7138311 .0943194
_cons | -2.094618 1.399729 -1.50 0.135 -4.838036 .6487997
---+---
trans |
Age | -.0077172 .0076139 -1.01 0.311 -.0226402 .0072059
Gender | -.2708959 .1619141 -1.67 0.094 -.5882417 .04645
Education | -.1239261 .0864445 -1.43 0.152 -.2933542 .0455021
Membershipyears | .0378798 .038244 0.99 0.322 -.037077 .1128367
Levelofposition | .1682654 .1697223 0.99 0.321 -.1643842 .500915
numberofmeetings | .1824506 .1983676 0.92 0.358 -.2063428 .5712439
Informationdissemination | .5142764 .2641149 1.95 0.052 -.0033792
1.031932
Creditfacilities | -.2200647 .1981547 -1.11 0.267 -.6084409 .1683114
participationintrainings | -.1355495 .4054903 -0.33 0.738 -.9302958
.6591969
Leadersunderstandingoftasks | .5822527 .1473178 3.95 0.000 .293515
.8709903
Decisionmaking | .1325049 .321813 0.41 0.681 -.4982369 .7632467
Leadersunderstandingcoopprincipl | .4164486 .1371435 3.04 0.002 .1476523
.6852449
Leadership_style | -.7318466 .5538731 -1.32 0.186 -1.817418 .3537246
organizationalculture | .1685362 .1937364 0.87 0.384 -.2111802 .5482527

```
                _cons |  -1.980569   1.371063    -1.44   0.149    -4.667803    .7066647
------------------------------+------------------------------------------------------------------
respo                         |
                 Age |  -.0022965   .0076439    -0.30   0.764    -.0172782    .0126851
              Gender |  -.0240741   .1580105    -0.15   0.879    -.3337689    .2856208
           Education |  -.1416332   .0845917    -1.67   0.094     -.30743    .0241636
     Membershipyears |  -.0127734   .0352059    -0.36   0.717    -.0817756    .0562288
     Levelofposition |   .1663949   .1652923     1.01   0.314    -.1575719    .4903618
    numberofmeetings |   .3776576    .19185     1.97   0.049     .0016385    .7536767
Informationdissemination |  -.0013362   .2658799    -0.01   0.996    -.5224513
.5197788
     Creditfacilities |   .2507848   .1927952     1.30   0.193    -.127087    .6286565
    Participationintrainings |  -.4246557   .4034592    -1.05   0.293    -1.215421
.3661099
  Leadersunderstandingoftasks |   .5699717   .1433325     3.98   0.000     .2890451
.8508983
     Decisionmaking |   .8025243    .311911     2.57   0.010     .1911901    1.413859
Leadersunderstandingcoopprincipl |   .3814222   .1310445     2.91   0.004     .1245798
.6382647
     Leadership_style |   .0449299    .449704     0.10   0.920    -.8364737    .9263335
organizationalculture |   .0529324   .1958935     0.27   0.787    -.3310118    .4368767
                _cons |  -3.583783   1.350724    -2.65   0.008    -6.231153   -.9364135
------------------------------+------------------------------------------------------------------
fair                          |
                 Age |  -.0008804   .0076349    -0.12   0.908    -.0158445    .0140838
              Gender |  -.2707719   .1624584    -1.67   0.096    -.5891845    .0476407
           Education |  -.1441849   .0869609    -1.66   0.097    -.3146252    .0262553
     Membershipyears |   .0907235   .0386277     2.35   0.019     .0150146    .1664325
     Levelofposition |    .066832   .1724742     0.39   0.698    -.2712113    .4048752
    numberofmeetings |   .206997   .1906897     1.09   0.278    -.166748     .580742
Informationdissemination |   .0308954   .2601315     0.12   0.905    -.4789529
.5407438
     Creditfacilities |  -.3640502   .2017525    -1.80   0.071    -.7594779    .0313775
```

Participationintrainings | -.8096924 .4534826 -1.79 0.074 -1.698502 .0791171

Leadersunderstandingoftasks | .8075077 .1530576 5.28 0.000 .5075203 1.107495

Decisionmaking | 1.124235 .3496447 3.22 0.001 .4389441 1.809526

Leadersunderstandingcoopprincipl | .3209378 .1432927 2.24 0.025 .0400893 .6017864

Leadership_style | -1.447853 .5872534 -2.47 0.014 -2.598849 -.2968577

organizationalculture | -.4665767 .2014772 -2.32 0.021 -.8614648 -.0716887

_cons | -.2068493 1.362856 -0.15 0.879 -2.877999 2.4643

---

rule |

Age | .0002347 .0076971 0.03 0.976 -.0148513 .0153206

Gender | .1492748 .1608681 0.93 0.353 -.166021 .4645705

Education | -.0831065 .0854003 -0.97 0.330 -.2504879 .0842749

Membershipyears | .0375003 .0358807 1.05 0.296 -.0328246 .1078252

Levelofposition | .4246418 .1638718 2.59 0.010 .103459 .7458247

numberofmeetings | .1172898 .1879465 0.62 0.533 -.2510786 .4856583

Informationdissemination | -.1586544 .2679857 -0.59 0.554 -.6838967 .3665879

Creditfacilities | -.0944912 .1993051 -0.47 0.635 -.4851219 .2961396

Participationintrainings | .1092785 .3743039 0.29 0.770 -.6243436 .8429006

Leadersunderstandingoftasks | .552258 .1473118 3.75 0.000 .2635321 .8409838

Decisionmaking | .8239366 .2918699 2.82 0.005 .251882 1.395991

Leadersunderstandingcoopprincipl | .2245472 .1321267 1.70 0.089 -.0344163 .4835107

Leadership_style | -.0182269 .3855209 -0.05 0.962 -.773834 .7373802

organizationalculture | -.2723943 .1923797 -1.42 0.157 -.6494516 .1046629

_cons | -3.106623 1.275823 -2.43 0.015 -5.607191 -.6060552

/atrho21 | 1.008359 .1258881 8.01 0.000 .7616229 1.255095

/atrho31	1.069385	.1329266	8.04	0.000	.8088532	1.329916
/atrho41	.9055079	.1269427	7.13	0.000	.6567049	1.154311
/atrho51	.8161722	.1151396	7.09	0.000	.5905028	1.041842
/atrho32	.873941	.1255911	6.96	0.000	.627787	1.120095
/atrho42	.9551318	.1267646	7.53	0.000	.7066778	1.203586
/atrho52	.7873091	.1168472	6.74	0.000	.5582928	1.016325
/atrho43	.9436091	.1242765	7.59	0.000	.7000318	1.187187
/atrho53	.9789183	.1211379	8.08	0.000	.7414924	1.216344
/atrho54	.8680248	.1213395	7.15	0.000	.6302037	1.105846
rho21	.7650825	.0521994	14.66	0.000	.6420319	.8497063
rho31	.7892292	.0501289	15.74	0.000	.6689571	.8692288
rho41	.7189692	.0613239	11.72	0.000	.5761664	.8191772
rho51	.6729811	.0629924	10.68	0.000	.5302571	.7786143
rho32	.7033709	.0634573	11.08	0.000	.5565265	.8076019
rho42	.7420975	.0569542	13.03	0.000	.6085893	.8347451
rho52	.656882	.0664283	9.89	0.000	.5067097	.7683656
rho43	.7368761	.056796	12.97	0.000	.6043879	.8297043

```
      rho53 |   .7525972   .0525251    14.33   0.000      .630046    .8385724
------------+----------------------------------------------------------------
      rho54 |   .7003692   .0618204    11.33   0.000     .5581925    .8025891
------------------------------------------------------------------------------
```

Likelihood ratio test of rho21 = rho31 = rho41 = rho51 = rho32 = rho42 = rho52 = rho43 = rho53 = rho54 = 0:

chi2(10) = 353.197 Prob > chi2 = 0.0000

Appendix D: Abstract of Published Paper

Discover Agriculture

Research

Factors that influence the implementation of corporate governance practices in agricultural cooperatives in Ngozi province, Burundi

Bernice Nasangwe[1] · Dickson Otieno Okello[1] · Edith Wambui Gathungu[1]

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Abstract
Corporate governance serves as a vital pillar for ensuring the sustainability and effective operation of agricultural cooperatives, particularly in developing countries like Burundi. This study focused on identifying the factors that influence the adoption of corporate governance practices (CGPs) in agricultural cooperatives withing Ngozi province. Data were collected from 307 respondents using a multistage sampling approach, and the analysis was conducted through the multivariate probit (MVP) regression model. The findings revealed that governance factors, including frequency of meetings ($\beta = 0.46$, significant at 5%), leaders' understanding of tasks ($\beta = 0.54$, significant at 1%), involvement in decision-making ($\beta = 0.35$, significant at 10%), and leaders' understanding of cooperative principles ($\beta = 0.42$, significant at 5%) had the most significant influence on CGPs. Institutional factors, such as access to information ($\beta = 0.52$, significant at 5%) also played a critical role. Socio-economic factors, including gender ($\beta = -0.27$, significant at 10%) and education ($\beta = -0.21$, significant at 1%), showed mixed effects on CGPs with gender negatively influencing transparency and fairness, while education positively influenced participation but negatively affected responsibility. As recommendation, the study underscores the importance of reinforcing governance structure through training programs focusing on building leadership capacity, promoting participatory decision-making. Moreover, improving access to critical information to all members by diversifying channels of communication is primordial to enhance the adoption of CGPs. In addition, addressing socio-economic disparities, such as gender inequality, is essential for fostering fair and sustainable governance practices withing agricultural cooperatives.

Keywords Agricultural cooperatives · Corporate governance · Socioeconomic factor · Institutional and governance factors

1 Introduction

Corporate governance is essential for fostering the development, sustainability, and effective functioning of cooperatives. In agricultural cooperatives, robust governance systems promote transparency, accountability, and inclusivity, which are critical to achieving their goals, alleviating poverty, and improving members' quality of life. Studies by [29] on SACCOs in Kenya and [5] on community organizations underscore the transformative role of good governance

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