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Possibilities and role of social economy in Sustainable Rural Development: A Case Study of Farmer cooperatives in Tharaka Nithi County, Kenya.

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Abstract

The increasing impacts of climate change have exacerbated rural poverty and food security challenges in developing countries. Unlike developed countries, sub–Saharan Africa significantly relies on agriculture for GDP contribution and sustenance of rural livelihoods, yet sector remains underdeveloped, less mechanized, and not lucrative to rural youth. A multi-pronged approach is required to address market inefficiencies, ease access to inputs and markets, access to information, and reduce vulnerability to climate change. Social economy is the viable route with farmer cooperatives (FCs) advanced as tools for enhancing the efficiency and effectiveness of the adoption of sustainable farming practices. The study's aim was to establish farmer cooperatives' role in enhancing smallholder farmer participation in sustainable rural development. Using descriptive research design and binary regression model we examined social demographic and economic factors limiting holistic participation in sustainable development practices. The multi-stage sampling procedure selected 359 small-scale farmers in Tharaka Nithi county. SPSS data analysis found 63% of rural farmers were women, the average age of farmers was 44 years, and the household size was 5 members, with the majority 59% of respondents lower-level education. 72% had no cooperative membership, 85% had limited credit access, and 73.5% dependent on only farm income. Binary probit results indicated that cooperative membership, ownership of land, age of the farmers, extension services, and training on SRD were statistically significant. However, non-membership to FCs had negative marginal effect to farmer participation in farming practices. Analysis a significant number of smallholder farmers especially women are not able to access inputs, cooperative membership, credit, extension services and training. Results established the factors driving the adoption of sustainable farming practices can be mutually inclusive with the attainment of cooperative membership as it facilitates access to credit, extension services, land ownership, and improved social capital for environmentally friendly practices. FCs address gender inequality, financial access, and land tenure challenges and opens opportunities to enhance knowledge transfer, collective action, attract resources, and policy advocacy. The study recommends that multi-stakeholder approach to strengthen cooperative movement through enhanced governance systems that guarantee transparency and democratic participation. Effective capacity building with specifically targeted programs for youth and women farmers is recommended.

Key words: Farmer cooperatives, rural development, smallholder farmers, sustainability.

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CHAPTER 1: INTRODUCTION

1.1 Background Information

Agriculture contributes approximately 33% of Kenya's Gross Domestic product GDP (FAO-Kenya, 2020). The sector employs more than 40% of the population through forward and backward linkages. Revitalizing rural productivity creates employment and bolsters livelihoods resilience in increasingly marginalizing local areas. As a developing nation, organizing agriculture remains a problem; the sector is not mechanized, leading to inefficiency and community vulnerability to food insecurity. About 70% of the population lives in rural areas and practices agriculture on smallholder farms. The smallholder farmers still face challenges of growing enterprises that can improve the quality of agricultural goods and returns. The government has advanced rural revitalization strategies recently to enhance smallholder farms' effectiveness in alleviating poverty. Researchers have found that the collectivization of farmers significantly promotes positive income effects (Ortiz-Miranda et al., 2010). Scholars globally have fronted farmer cooperatives as means to achieve market liberalization and commercialization of smallholder farmers' produce amid the threat of globalization and urbanization. Farmer cooperatives are collaborative enterprises formed by members who voluntarily and democratically join to support one another in producing, purchasing, marketing, or selling their goods and services (Hedlund & Knapp, 1962; Mhembwe & Dube, 2017). These cooperatives are established with the aim of achieving both economic and socio-cultural objectives. They are seen as means of achieving sustainable rural development (SRD) by acting as alternatives for market innovations and correction of market imperfections created by profit-maximizing enterprises (PMEs) that threaten the sustenance of rural economies (Shiferaw et al., 2008). In rural areas, farmer cooperatives (FCs) can influence rural development by reducing transaction costs when marketing produce since they enhance economies of scale as well as increase bargaining power (Veronica et al., 2021). The improved marketing coordination shortens marketing chains, directly eliminating brokers and increasing incentives for poor rural farmers.

The cooperative movement has been critical and ubiquitous in the recent past due to congesting urban cities, hazardous climatic impacts, and decreasing rural area productivity in sub-Saharan Africa (SSA) (Gutu Sakketa, 2023). Countries have widely recognized the importance of farmer cooperatives, hence creating policies that promote farmer collective action. Among SSA,

members of farmer cooperatives in Ethiopia may not effectively deploy strategic resources due to the institutional policy environment (Olthaar, 2017). Within SSA, Kenya has the longest history of cooperative movement, where approximately 80% of livelihoods have forward and backward linkages of diverse income output levels (Wanyama, 2009). According to the Cooperative Alliance of Kenya (CAK), over 14,0000 registered cooperatives have mobilized over 1.7 billion USD, accounting for approximately 30% of total national savings. Despite the prowess of the cooperative movement in Kenya, (Wanyama, 2009) found out that the private sector still dominates certain agricultural markets in Kenya, which is an excellent barrier towards SRD. The strong presence of cooperatives, especially in high-potential agricultural rural areas, is seen as a paradigm shift to a sustainable strategic strategy, according to Kenya Vision 2030. The case study of Kenya analyzes farmer cooperatives' role in smallholder farmers' effectiveness in alleviating poverty and fostering the adoption of rural innovation technologies (RITs).

1.2 Statement of the Problem

Although Agriculture plays a significant role in promoting Kenya's GDP, the sector faces a myriad of problems ranging from inefficiency, low mechanization, and vulnerability to food insecurity. Smallholder farmers constitute 70% of the population, which means their critical role in rural development is undebatable (Muyanga & Jayne, 2014). However, this population encounters difficulties in growing enterprises that can enhance the quality of agricultural goods through value addition to improve returns and avert pre- and post-harvest food losses. Developing rural areas post industrial revolution of the West is the clarion call for enhancing the effectiveness of smallholder farmers in alleviating poverty ravaging Kenya's marginalized areas. However, due to poor agricultural organization and decreasing agricultural productivity, government expenditures have been on the decline and overshadowed by other sectors of the economy (Muraya, 2017; Nyoro, 2019). This has made the rural economy heavily reliant on urban remittances, leading to underdevelopment due to the underutilization of affluent rural areas (Johnson & Whitelaw, 1974). The rural areas also face significant challenges of land tenure issues and increasing depopulation of the productive youths due to outmigration, further constraining economic contribution to the economy.

From land degradation, increasing population pressure, and decreasing land productivity contributing to food insecurity and rural poverty (Author & Sindiga, 1984; Jayne et al., 2012),

the possibilities and role of farmer cooperatives promoting sustainable rural development through facilitating the adoption of rural innovation technologies (RITs), remains underexplored. Different scholars have the hope that farmer cooperatives can solve agricultural tribulations faced in Kenya. For instance, land tenure issues faced by women, who form the most significant percentage of rural communities through cooperatives, can access land and capital for agricultural production (Jenifer Lodiaga, 2020; Ortmann & King, 2007). Moreover, accessing resources and technology like extension services and adopting other agricultural technologies is possible (Kumar et al., 2015). Smallholder farmers must attain economies of scale for equitable economic development of rural communities (Ma & Abdulai, 2017). Despite FCs being given a critical role in agricultural transformation, their regulation framework and mode of operation remain complex, and farmers are still skeptical about joining these risky ventures due to ownership, governance, and member attitudes issues (Grashuis & Ye, 2019). Even with evidence about the importance of farmer cooperation in revolutionizing rural development globally, research efforts in Kenya remain scattered and poorly documented.

Additionally, the dominance of the private sector in certain agricultural markets poses a significant barrier to realizing SRD goals. With current research, it is difficult to collate and recommend strategies that will guide the adoption of RITs and revitalize the development of rural areas. There exists a research gap necessitating comprehensive investigation into the impact of farmer cooperatives on the efficacy of smallholder farmers through collectivization, aiming to mitigate rural poverty and facilitate the uptake of Rural Innovative Technologies (RITs) for sustainable rural development (SRD). It is imperative to comprehend the challenges and prospects linked with farmer cooperatives to inform policy measures and advance sustainable rural development initiatives not only in Kenya but also across Sub-Saharan Africa

1.3 Objectives of the study

The study's overall objective is to establish farmer cooperatives' role in enhancing smallholder farmer participation in sustainable rural development in Tharaka Nithi County.

Specific Objectives

1. To assess social demographic characteristics that can influence smallholder farmers' participation in sustainable rural development in Tharaka Nithi County.
2. To find out the role of farmer cooperatives in enhancing market access and Value Chain

Development in Tharaka Nithi County.

3. To examine the perception of smallholder farmers on the role of Farmer Cooperatives towards SRD.
4. To identify challenges and opportunities associated with farmer cooperatives in Tharaka Nithi County.

Hypotheses tested.

1. **H_0:** Age, gender, and education level significantly influence smallholder farmers' participation in sustainable rural development in Tharaka Nithi County.
2. **H_0:** There is no significant relationship between farmer cooperatives and market access and Value Chain Development in Tharaka Nithi County Tharaka Nithi County.
3. **H_0:** There is no significant relationship between farmer cooperatives and market access and Value Chain Development in Tharaka Nithi County Tharaka Nithi County.
4. **H_0:** Challenges associated with farmer cooperatives do not significantly affect their effectiveness in promoting sustainable rural development in Kenya.

1.4 Justification of the study

The government of Kenya introduced the Bottom-Up Economic Transformation Agenda (BETA) medium term plan 2022-2027, a public policy initiative aimed at uplifting the financial status of individuals at the lower end of the economic spectrum. The policy aims to support people living in rural areas and less income earners in promoting agricultural productivity and enhancing its commercialization to raise income for their livelihoods. Under the Ministry of Trade & Cooperatives, a critical docket of micro, small, and medium enterprises (MSMEs) aim to raise the daily revenue of small traders by more than 2 dollars. Since food security remains a threat to Kenya's growth and development, the government in the budget channels Kshs. 250 billion in the financial years 2023-2027. This aims to transform 2 million poor farmers to enhance production through input finance and intensive agricultural extension support. The budget is also aimed at mitigating risks through livestock insurance that drought caused by climatic changes has impacted. Other risk mitigation measures involve price stabilization schemes, forming future contracts with farmers, and investing in more commodity market instruments to ensure stable income through a predictable revenue stream. The government has also invested over 50 billion shillings annually in revitalizing small-scale trade among savings and credit cooperatives, promoting venture capital, and equity funds. These investments require solid agricultural organizations to repatriate the benefits effectively with the most economic efficiency.

In contrast, farmers' cooperatives remain ineffective and not widely practiced in Kenya, making it complex for small-scale farmers to access these funds since they don't have the necessary collateral to safeguard government expenditure. The regulation of FCs is undocumented, and their effective performance can be seen only in dairy-producing cooperatives; however, they have recently been overpowered by monopolizing private investors. This creates the need for this study to provide insights into how FCs can be effectively used in agricultural transformation, hence alleviating rural people from the vicious cycle of poverty. It will also help stakeholders enhance policies that will govern FCs, promote adoptions of RITs, and provide a benchmark for operationalizing FCs nationally. The paper will also provide solutions to existing problems and recommendations that policymakers can address for sustainable rural development.

1.5 Organization of the Thesis

The thesis is organized into five chapters. Chapter 1 is the introduction, which discusses the study's background, the problem statement, the research objectives, and the justification of the study.

Chapter 1 is a literature review of the scope of the study based on existing research. It has an introduction to Kenya agriculture, an understanding of rural revitalization and cooperative concept, an explanation of key objectives, theories underpinning the study, the market nature of cooperatives, and an identification of the research gap based on existing literature. Chapter 3 methodology provides a conceptual framework, research design, sampling procedure, models for analysis, and study area. Chapter 4 presents the results and discussion, presenting a summary of key findings and a brief discussion. Finally, chapter 5 involves conclusions, recommendations, areas of future research, and ethical considerations.

CHAPTER 2: LITERATURE REVIEW

2.1 Introduction to Agriculture in Kenya

Kenya is a developing, middle-income country. Agriculture contributes approximately a third of the country's GDP, employing approximately 86% of the rural labor force (Muraya, 2017; Owuor, 2019). The sector faces significant challenges that hinder its development. Market factors, such as price fluctuations and exchange rate changes, and non-market factors, such as government support and climate change, greatly influence its performance (Mbugua, 2009a). Despite the climate adversity of arid and semi-arid areas of Kenya, agriculture remains the backbone of economic growth and alleviation of rural poverty (Oluoch-Kosura et al., 1999). The role of agriculture in economic growth underscored the sector's mixed performance, which requires appropriate policies to increase agricultural output sustainably (Mbugua, 2009b). Due to changing land tenure policies, smallholder farms dominate agriculture in Kenya and SSA. Smallholder farms play a critical role in the alleviation of poverty, food security, and rural development (Freeman et al., 2017; Larson et al., 2020; Tshuma, 2014). These farms have been found to have varied production objectives and diverse strategies of diversification to support livelihoods (Pienaar & Traub, 2015). Agricultural dominance in rural areas faces significant challenges like low productivity, limited market access, and climate change vulnerability. Sustainable intensification is required to increase productivity, and achieving this understanding of smallholder farms' characteristics is essential for effective organization and solving barriers they face (Vanlauwe et al., 2014). Therefore, farmer cooperatives are essential for smallholder farm organization and sustainable rural development.

2.2 Rural Revitalization and the Concept of Farmer Cooperatives

Rural revitalization is a holistic, complex, dynamic, and multifaceted process that calls for a paradigm shift toward sustainable-green rural development (Xingping, 2019). The approach promotes active participation and calls for locally engineered solutions tailored to meet the specific needs of living in local communities (Wildman et al., 1990). The evidence from China shows that to redevelop rural areas, there is a need for multidimensional land use backed with effective resource identification, capitalization, financialization, and transformation of traditional rural governance models to promote participatory governance (Guo, 2020; Li et al., 2021a). The need to promote rural development has increased over the past decade with threats of

globalization, urbanization, and extensive rural environmental pollution that require an effective governance system (Li et al., 2021b). Cooperation incorporates rural revitalization strategies for sustainable rural development.

The International Cooperative Alliance (ICA) (2005) defined cooperatives as autonomous and voluntary associations of people with joint and mutually inclusive economic and social-cultural goals. These associations are guided by Rochdale principles of voluntary and open membership, democratic member control—equal voting rights, independence, and autonomous control away from external power influence, information sharing through education and training, cooperation among cooperatives, and concern for the community they serve. To summarize the principles, farmer cooperatives can then be described as distinct, mutual-based associations or groups with varied capital and membership bases that are democratically managed (Mhembwe & Dube, 2017). This underscores that cooperatives should bring inclusivity, enhanced participatory governance, and social responsibility to develop a sustainable community. FCs play a crucial role in fostering equity and unity through social solidarity, transparency, ethical accountability, and a positive impact on social well-being, hence suitable frontiers of sustainable rural development.

2.3 Farmer cooperative's role in smallholder farmers organization.

Researchers have found that farmer cooperatives significantly enhance technical efficiency (Abate et al., 2014; Ahado et al., 2021; Beyene et al., 2020). The effectiveness of FCs is influenced by many factors that include institutional characteristics (Sikwela et al., 2016), the type and nature of support services (Nyawo et al., 2023), and diversification of services to non-marketing (Bernard et al., 2010). Despite the benefits of FCs in promoting smallholder effectiveness, their membership in rural areas is significantly low, with capital inadequacy being the main constraint (Lawi et al., 2020). There is a need to explore the constraints and provide solutions for enhanced smallholder effectiveness to spur sustainable rural development.

2.4 Impact of Farmer Cooperatives in Sustainable Rural Development

FCs drive global economic, social, and environmental sustainability in underdeveloped rural areas (Song et al., 2014). FCs help reduce poverty, easing access to technology, financing, and markets (Petri¸sor et al., 2022). Kumar et al. (2015) found that farmer cooperatives improved livelihood welfare and crop productivity, thus improving food security in India. Nlerum (2014) proved that cooperatives enhanced financial literacy and access to enhanced social capital among

members of Nigeria. In Kenya, Cooperatives have enhanced gender inclusivity, income diversity, and social security (Jenifer Lodiaga, 2020). They promote enhanced bargaining power and reductions in transaction costs. FCs face the challenge of low managerial competence and limited implementation capacity, impacting their efficacy in poverty alleviation (Gebremichael & 2014, 2014). Still, research is recommended for deeper understanding and provision of policy dimensions to guide the role of FCs on smallholders' farm's effectiveness (Getnet et al., 2012). Further research should address the gap to guide policymakers on intervention areas.

2.5 Farmer Cooperatives and Adoption of Rural Innovation Technologies (RITs)

Farmer cooperatives have been associated with harnessing the adoption of rural innovation technologies. Abebaw et al. (2013) found that the membership of rural farmers positively impacts the adoption of agricultural technologies such as seeds and fertilizers. The adoption of management interventions in indigenous chicken production is influenced by factors such as access to extension services, education level, and membership of farmer groups (J. Ochieng et al., 2012). Group action ensured that the adoption of technologies was uniform, with a perfect flow of information for effective and timely action. Unfortunately, there were findings that some of the poorest farmers were excluded from the decision-making of the FCs (Bernard et al., 2009). For effective contribution to the adoption of RITs, authors emphasized improving the governance, ensuring access to capital, and networking of these smallholder farmers through enhanced market orientation. The success of small-scale farmers is linked with access to agro-food supply chains that ease access to inputs and product markets. Also, FCs promote collective action that invokes holistic innovation that enhances the adoption of RITs for effective rural revitalization. There is still a gap in enhanced participatory research and appropriate market orientation to which FCs can effectively enhance the adoption of RITs.

2.6 Market Environment for Farmer Cooperatives

Globalization has increased threats to the sustainable development of indigenous local communities due to the changing competitive market structure. Cooperatives are considered strategic drivers of sustainable and inclusive growth against the threat of nationalization and globalization (Bretos & Marcuello, 2017). However, some argue that the wave of a capitalist economy is a threat to the venture viability of cooperatives. This big conversation about the capitalist market environment has deduced high cooperative failures compared to conventional firms, drawing the problems to their size and operational inefficiency, limited financing, and

inadequate leadership capacity. Others argue that there is uncertainty in enterprises' performance, and their viability has increased due to complex and dynamic liberal market systems that are predominant with profit-maximizing goals. Consumer interests in cooperatives have grown since they try to enhance Pareto optimality by maximizing social goals and reversing negative externalities to the environment caused by profit-maximizing enterprises (PMEs). They also improve market performance by spurring economic and social improvement through increased access to goods and services, especially in rural areas (Liang et al., 2023).

Today, cooperatives are believed to be efficient alternatives to philanthropic practices done by PME in corporate social responsibility (CSR), hence effective drivers of sustainable rural development (Mukherjee & Pyne, 2016). In the rural development concept, cooperatives are at the front in harnessing challenges resulting from *government failure theory* and *market or contract theory*, where traditional economics has led to inequitable resource distribution that increased social inequality and inaccessibility of goods and services in rural areas (Thomas, 2004). The market for cooperatives remains skewed due to the external pressure of PMEs, the informal market of rural areas, and the conflicting regulatory environment. However, assessing the strengths and weaknesses of cooperatives, they are efficient alternatives for prudent and sustainable use of local resources when managed strategically.

2.7 Review of Theoretical Literature

The Social Economy Theory

The social economy is made up of diverse enterprises that include cooperatives, social enterprises, social entrepreneurship, and social and solidarity economy. Social economy theory has been applied in FCs to promote social capital and enhance sustainable rural development. Through FC economic democracy, it attained where member access to markets and market power that contribute to their financial well-being. Social economy networks are structural components in income and poverty analysis (Dufhues & Buchenrieder, 2006). Tuna et al. (2021) found that cooperatives face low social capital and trust challenges. Still, they are critical in the provision of information to their members and are critical for driving holistic economic development. Evidence from the European rural development review indicates that the social economy directly impacts sustainable rural development and an appropriate business dimension for competitiveness and economic development (Igual et al., 2008). Surprisingly, studies found

that rural areas have weak social networks because of heavy reliance on government support, which creates inefficiencies and low chances of attracting investment capital. With this remote access to services, regional poverty has been experienced by the depopulation of these areas through rural-urban migration (Yu et al., 2022). In attempts to increase access to services and reduce transaction costs, social capital has been a critical component expressively associated with developing social networks in a diverse regional context (Fitzpatrick et al., 2023). Due to various constraints of attaining individual social capital for people living in rural areas—less educated, old, and vulnerable— this has led to the formation of cooperatives. Developing cooperative economy organizations for specialized fields can further transform the economic basis in rural areas.

Social Capital Theory

The Social Capital Theory (SCT) explores relationship networks formed by societal norms, trustworthiness, and the impact of interchange among members of civil society. SCT is critical in understanding the development and functioning of FCs. The theory has been used to study a range of rural problems such as crime rate, health, unemployment, and poverty, where these indicators have been linked with low social capital. FCs are linked with the solution to these rural problems; their sustainability and resilience are also linked to high social capital (Lang & Roessl, 2011; Richards & Reed, 2015). However, the researchers emphasized the role of weak ties and structural holes and their impacts in establishing social networks (Tuunanen et al., 2011). Strong social capital must be present for effective cooperative entrepreneurship and enhanced economic performance in rural areas (Ciriec-espana, 2019; Studies, 2004). The theory helps underscore the importance of risk allocation in cooperative management and the need for legal and financial support to revive collective action (Studies & 2004, 2004).

The study is on the broader social economy, backed up by social economy theory and social capital theory. For deeper analysis and understanding of the research problem, social capital theory embeds a pertinent framework critical in understanding farmer cooperatives' impacts on rural development, poverty alleviation, and technology adoption among smallholder farmers. The theory offers a framework for developing social networks and relationships that improve trust, cooperation, and information sharing among smallholder farmers, allowing collective action to be important in addressing challenges and pursuing common goals. Agricultural organization can be attained through voluntary smallholder farmer organizations aided by

cooperatives. They can leverage collective action strengths of earning bargaining power, access to the market, and a better platform for advocating for supportive policies that inspire sustainable rural development. The theory will help to find how social dynamics within farmer cooperatives contribute to the economic and social well-being of smallholder farmers in Kenya.

Operationalization of Theories

SET emphasizes the importance of collective action through social entrepreneurship, social enterprises, and cooperatives in attaining SRD. The study will operationalize this theory by examining the influence of FCs on enhancing market access, value chain development, and community empowerment using a quantitative approach of field survey data. The theory underpins that through FCs, economic democracy can be attained through enhanced farmer participation and collective action, creating market power and enhancing the economic well-being of the rural poor.

SCT emphasizes forming relationships based on societal norms, trust, and frequency of reciprocity. The theory underpins that sustainable development is embedded in well-functioning FCs. In exploring challenges and opportunities, the theory will help in understanding the facilitative function of social capital in ensuring trust, cooperation, and information sharing are interdependent when addressing common challenges and goals, especially SRD, which requires a holistic approach. Survey data will provide insights into trust and cooperative dynamics that influence cooperative performance and rural development outcomes.

2.8 Review of Empirical Literature

The extensive research on farmer cooperatives in Kenya has tried to promote the collectivization of farmers for effective development. Rees & Overseas Development Institute (London (2000), on field research to understand the complexity and diversity of agricultural knowledge and information systems, found that smallholder farmers had challenges accessing technical details due to limited interactions with extension services and variation of commodities in various districts. The research recommended a participatory learning approach with diversity and a medium of increasing networking for agricultural development. Okoth Makongoso et al. (2015), using descriptive study design, found governance and management of finances had positive impacts on the growth of collective entrepreneurship for better development outcomes, linking this to member inclusivity and perfect information sharing. Meador et al. (2016) used the propensity score matching method to explore farmer groups as functional catalysts of innovation

adoption in a rural development perspective where results were positive because of enhanced information flows. Using descriptive research, Ochieng et al. (2013) found that agricultural cooperatives significantly reduced unemployment. Moreover, Nyoro analyzed agricultural cooperatives' success, failure, and demand, finding out that cooperatives were responsible for developing countries' social and economic welfare if they embraced market-integrated solutions. However, in a rapidly dynamic environment of reduced relevance in rural areas, there is a gap in understanding the specific roles that farm cooperatives should play in addressing sustainable development. Also, there is a gap in understanding what influences farmer participation in farmers' cooperatives despite their perceived benefits. Finally, it will address specific opportunities and challenges for sustainable rural development.

CHAPTER 3: METHODOLOGY

3.4 Conceptual Framework of the Farmer Cooperatives Function in SRD

Sustainable rural development (SRD) involves efficient planning of local resources to generate income without impacting the availability of natural resources for future generations. Developing countries require approaches guiding the process of competitive production for the economic and social development of rural areas. Successful rural development is impacted by social-economic and institutional factors hindering the achievement of sustainable development goals such as zero hunger, poverty, and environmental protection of local areas. Some of the limiting factors to SRD include environmental degradation and waste management, which is a result of a combination of factors ranging from population growth, education level, and technology limitations.

Barriers that hinder small-scale farmers from participating in SRD practices include access to information, inputs, and services, and efficient production technology. Institutional and socioeconomic factors exacerbate these barriers, making small-scale farming infeasible. This leads to income loss, food security vulnerability, and environmental destruction. The absence of production technology and information leads to production inefficiency that results in pre-and post-harvest losses. Also, limited access to market information minimizes small-scale farmer returns due to extortion by brokers or intermediaries. Poor farm management practices lead to environmental degradation, and the overarching goal of sustainability is lost. Other factors such as environment conservation measures, gender equality, the land tenure system, and poverty alleviation are critical for effective SRD. However, these factors require a holistic approach that can allow small-scale farmers to uniformly access information, adopt common practices, and democratically contribute to the development of rural areas.

Farmer cooperatives mediate these factors to aid in improved and effective production measures that influence SRD. They enhance small-scale farmers' participation in SRD through enhanced collective action, improved resource efficiency, market access, and sustainable adoption of rural innovation strategies (RITs). Through cooperation, small-scale farmers can access production and packaging technologies through economies of scale, increasing bargaining power for better prices, and adopting common environmental conservation measures.

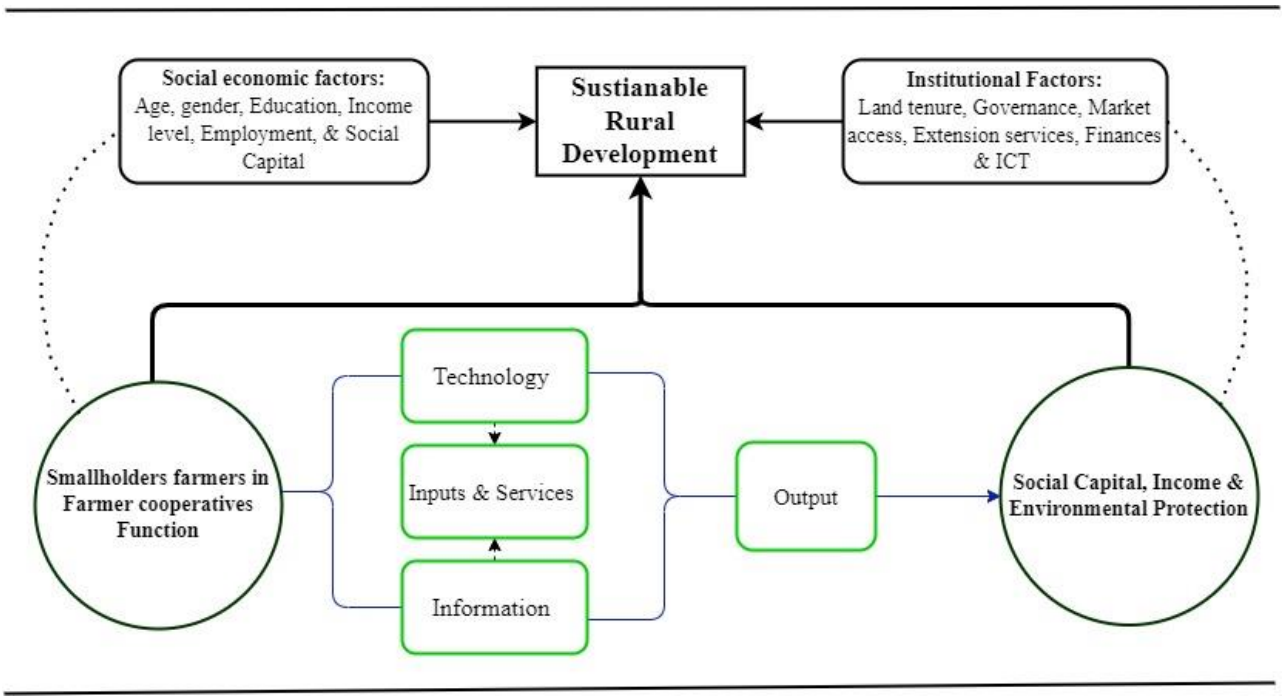

Figure 1: Conceptual Framework

Source: Author

Moreover, because of the peculiarity of agricultural production, risk mitigation is done best in FCs where market uncertainties such as price fluctuation, climate change, and governance problems are needed for improved growth and economic reliability. Also, FCs help small-scale farmers build capacity and technology transfer for effective entrepreneurial development aided by enhanced social capital. Challenges of land tenure and gender inequality, which are problems in many rural areas in Kenya, can be mitigated by the collective power provided by farmer cooperatives.

Therefore, the role of Farmer cooperatives in impacting small-scale farmers' participation in sustainable rural development is significant. They provide comprehensive knowledge on effective factor combinations of inputs, technology, and information for optimal returns while ensuring the production process is guided by environmentally friendly measures. The SRD process is holistic and embraces the foundational concept of incorporating social, economic, and environmental dimensions that can only be marshaled through small-scale farmers' organizations guided by Farmer cooperatives.

3.5 Binary Probit Model

To estimate the participation of smallholder cooperative members and non-members in sustainable rural development, the study adopted a binary probit regression model. The model was the most suitable for establishing the relationship of the dichotomous variables collected for analysis in the study. The model could also allow separate and independent analysis of non-normally distributed variables determining the role of farmer cooperatives in SRD. Let $\mathbf{Y_i}$ denote the participation of the *i*-th smallholder farmer in sustainable rural development practices, where $\mathbf{Y_i}$ =1 if the farmer participates and Y_i=0 otherwise.

The binary probit regression model can be represented as:

$$Yi = F(Xi\beta) + \varepsilon i$$

$$Yi = \int_{\mathbf{0\ if\ otherwise}}^{\mathbf{1\ if\ participated}}$$

The linear combination shows participation and non-participation in sustainable rural development.

If $\Phi\ (Xi\beta + \varepsilon i) > 0.5$

If $\Phi\ (Xi\beta + \varepsilon i) \leq 0.5$

The model explaining the relationship can be presented as follows.

$$Y = \beta 0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_{5+} \beta_6 X_{n6+} \beta_7 X_{7+} \beta_8 X_8 + \beta_9 X_9 + \varepsilon$$

The coefficients β represent the marginal effects of the explanatory variables on the probability of participating in sustainable rural development.

The explanatory variables in (Xi) include:

β1=Age (continuous)

β2=Gender (binary: 1 for male, 0 for female)

β3=Education level (continuous)

β4=Household size (continuous)

β5=Membership in farmer cooperatives (binary: 1 for yes, 0 for no)

β6=Land ownership (binary: 1 for yes, 0 for no)

β7=Access to extension services (binary: 1 for yes, 0 for no)

β8=Access to credit (binary: 1 for yes, 0 for no)

β9=Training on sustainable rural development (binary: 1 for yes, 0 for no)

Where,

X_i =vector of explanatory variables for the ith observation

β = vector of coefficients to be estimated,

εi =error term assumed to follow a standard normal distribution,

Φ(.) = cumulative distribution function of the standard normal distribution.

3.3 Empirical model

Table 1. Description of variables influencing smallholder farmer participation in SRD

Variable	**Meaning**	**Measurement**	**Expectedsigns**
Age	Age of the Farmer	Continuous	+/-
Gender	Gender of the Farmer in the rural Farm	Nominal (1=Male, 0 Female)	+/-
Level of Education	Farmer highest level of formal education	Continuous	+/-
Household Size	Household Size	Continuous	+
Cop Membership	Membership in Farmer cooperatives	Dummy (1=yes, 0 No)	+/-
Access to Credit	Access to credit	Dummy (1=yes, 0 No)	+
Land Ownership	Land Ownership of cultivated plot	Dummy (1=yes, 0 No)	+
Extension	Access to Extension services	Continuous	+
Credit	Access to Credit	Dummy (1=yes, 0 No)	+
SRD	Training on Sustainable Rural Development	Dummy (1=yes, 0 No)	+

Source: Author

5.1 Research design.

The study adopted descriptive research designed to analyze quantitative data. Analysis was done by finding out means, percentages, and binary probit model, which was used to establish the adoption of the dichotomous variable of farmer participation or not to sustainable rural development practices as influenced by cooperative function factors. To improve understanding of SRD practices to farmers and allow effective analysis, the study coined sustainable rural development practices as sustainable farming practices since in Kenya SRD is synonymous as agricultural development. The study's target population was small-scale farmers living in Tharaka Nithi County. The data collected was quantitative data that was effectively used to analyze large groups of samples. This was effective data for offering statistical inference of the group since the whole data cannot be obtained because of time constraints. The data was collected from Tharaka Nithi County farmers using semi-structured questionnaires. Qualitative data was collected from peer-reviewed articles and other certified academic journals to aid in the analysis and provide appropriate case studies for effective backing of the statistical data collected by questionnaires.

Sampling

Multistage sampling methodology was used, and purposive sampling was applied to identify Tharaka Nithi as a study area where researcher come from, hence prior knowledge to existing research constraints. The upper zone of Tharaka Nithi county Maara and Chuka involved snowballing sampling techniques get at least 30 cooperatives members for conducting and effective T-tests. This was to get cooperative farmers in the Maara and Chuka constituencies because of the strong cooperative presence in those regions with time and cost factor being a constraint. The data collected was to guide the research on understanding the impacts of farmers' cooperatives in the regions and compare them with non-cooperative members. The third stage was random sampling, where questionnaires would be administered to members or non-cooperative members to attain the targeted sample size of approximately 384 farmers as calculated using Cochran formula. Because of the spatial distance in Tharaka constituencies and the size of the constituency is bigger than Maraa and Chuka combined, the researcher decided to collect more samples from the constituency. This was important because the constituency is the least concerned about cooperative membership, and this was to guide the study in understanding the reason for not embracing collective action. This stage involved collecting data from farmers in cooperatives and others not to identify the differences was to get insights on influence of

membership or non-membership in enhancing adoption of sustainable practices.

Data collection

The data collection took three weeks, starting March 1, 2024, to March 20, 2024. Because of the long spatial distribution of the targeted sample size, enumerators were selected to help in the data collection exercise since the researcher was abroad for studies. The selection and remuneration of the enumerator was on a voluntary basis since the research was not funded with token appreciation of data charges, transport, and daily expenditure on food. The enumerators were continuing agricultural extensionists who had completed their university degrees and were waiting for graduation. Using the Google Meet platform, enumerators were trained in the first week of March. The training was to understand the scope of the questionnaires, confidentiality rules, observation skills, and possible challenges they might encounter, offering solutions where possible. The enumerators were required to collect data from the farmers in rural areas of Tharaka Nithi County, which is central Kenya. They faced transportation challenges, harsh climatic conditions, and some resisting farmers who were worried because of land tenure problems existing in Kenya. The targeted sample size at 93.5% success rate was attained record time for analysis and further statistical inference.

Data capture and analysis

The data was captured in a Google document questionnaire since the enumerator uses an online questionnaire but collected data physically for additional observations and validating data. The Google document electronically posted the data online, where it was saved and downloaded as an Excel spreadsheet for further analysis. Also, in the field, enumerators were required to write additional hand notes for qualitative analysis and off-questionnaire issues that may arise from the farmers. The data was then uploaded to the SPSS for descriptive analysis and inferential analysis posted in visual graphs and tables to guide the interpretation of results.

Table 1 Field Survey Sampling Distribution

Constituency	Sample size
Tharaka	144
Chuka	110
Maara	105

5.2 Study area.

The study area is Tharaka Nithi County, which is located at the periphery of central Kenya, as shown on the map below. The area is characterized by mixed ecological zones of high potential agricultural land and rich volcanic fertile soils in the highlands of Mt. Kenya in the Maara and Chuka sub-counties and semi-arid parts of the Tharaka sub-county. The county has its administrative headquarters in Kathwana Town. Its coordinates are ° 16' 0" South, 37° 42' 0" East, with an average altitude of around 1,500m. Agriculture dominates the county's socioeconomic development plan, which is based on a small scale where subsistence farming is predominant. The main economic activity is expected to feed approximately 365,330, according to KNBS 2019. The county's settlement is dense in the highlands, and the Tharaka sub-county is sparsely populated, hence the high potential for agricultural production. The county has a total of 88 213 households spread out over a 2,609 sq km area. This research targets farmers residing in Tharaka Nithi County, both cooperative and non-cooperative members. The study will determine farmer cooperatives' role in driving sustainable rural development. The selection of Tharaka Nithi is strategic because of its unique location, where the three sub-counties have differential climatic conditions and different crops, and upper regions are aligned to the cooperative movement. At the same time, the Tharaka sub-county hardly participates in cooperative movement because of the nature of the crops they cultivate. The study aims at providing respondents with information on the marginal role of cooperative membership or non-membership to the participation sustainable farming practices critical in informing sustainable rural development.

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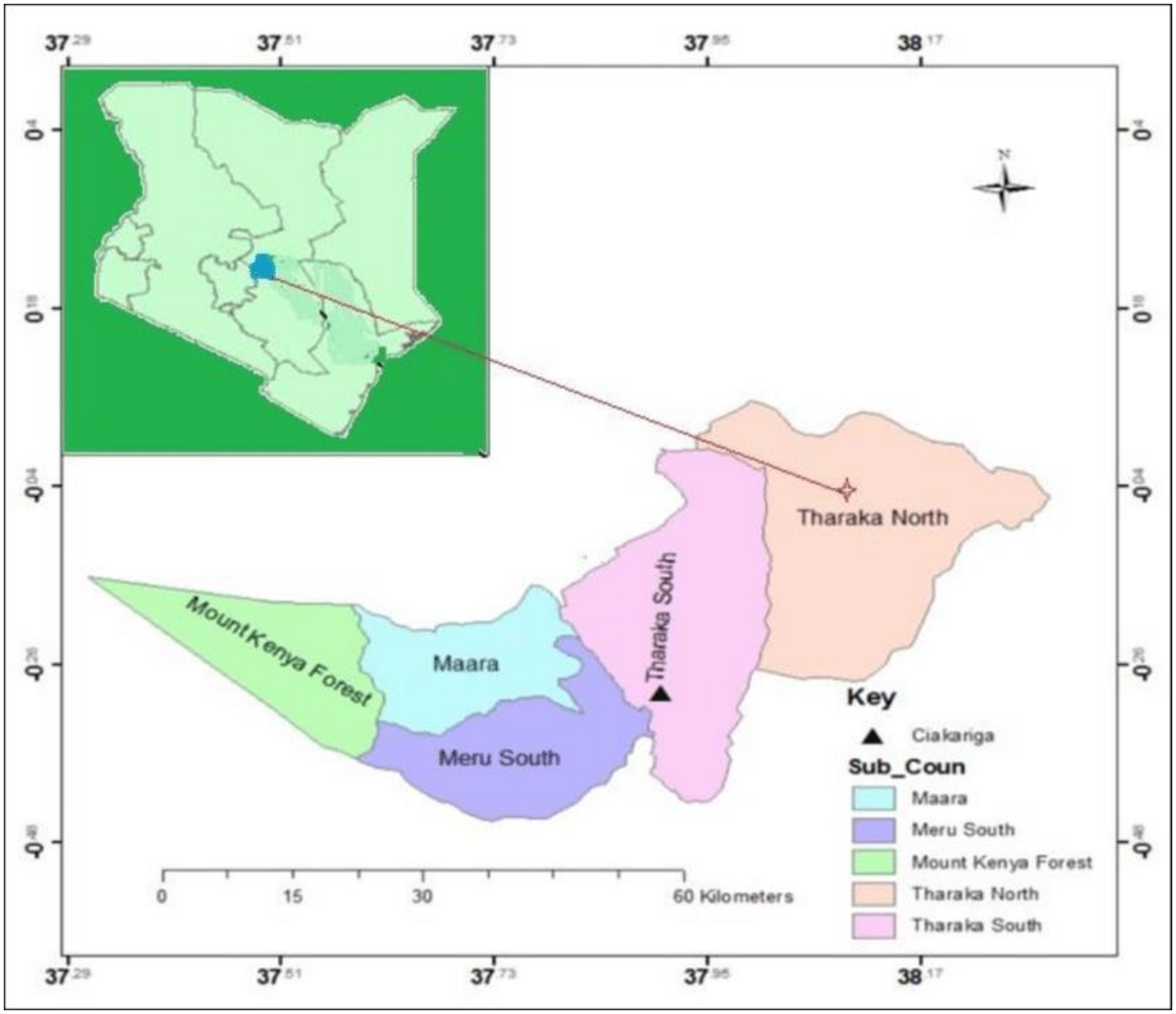


Figure 2 Map of Tharaka Nithi County

Source: Ogolla et al., 2019

5.3 Infographic of study area livelihoods

Assessment of demographics from past literature of the study as provided in the infographic (figure 5) shows that approximately 38% of the rural population are in absolute poverty. Where at least 77% of the population reside in rural areas with only 38% of the rural population making feasible income from agriculture. On land tenure issues 62% of the population have tittle deeds where majority of these farmers are hardly women due to social cultural issues. Access to renewable energy is limited with food security threat where 40% percent of the population are at advanced risk. Youth literacy is very high however outmigration remains a problem because of limited job opportunities.

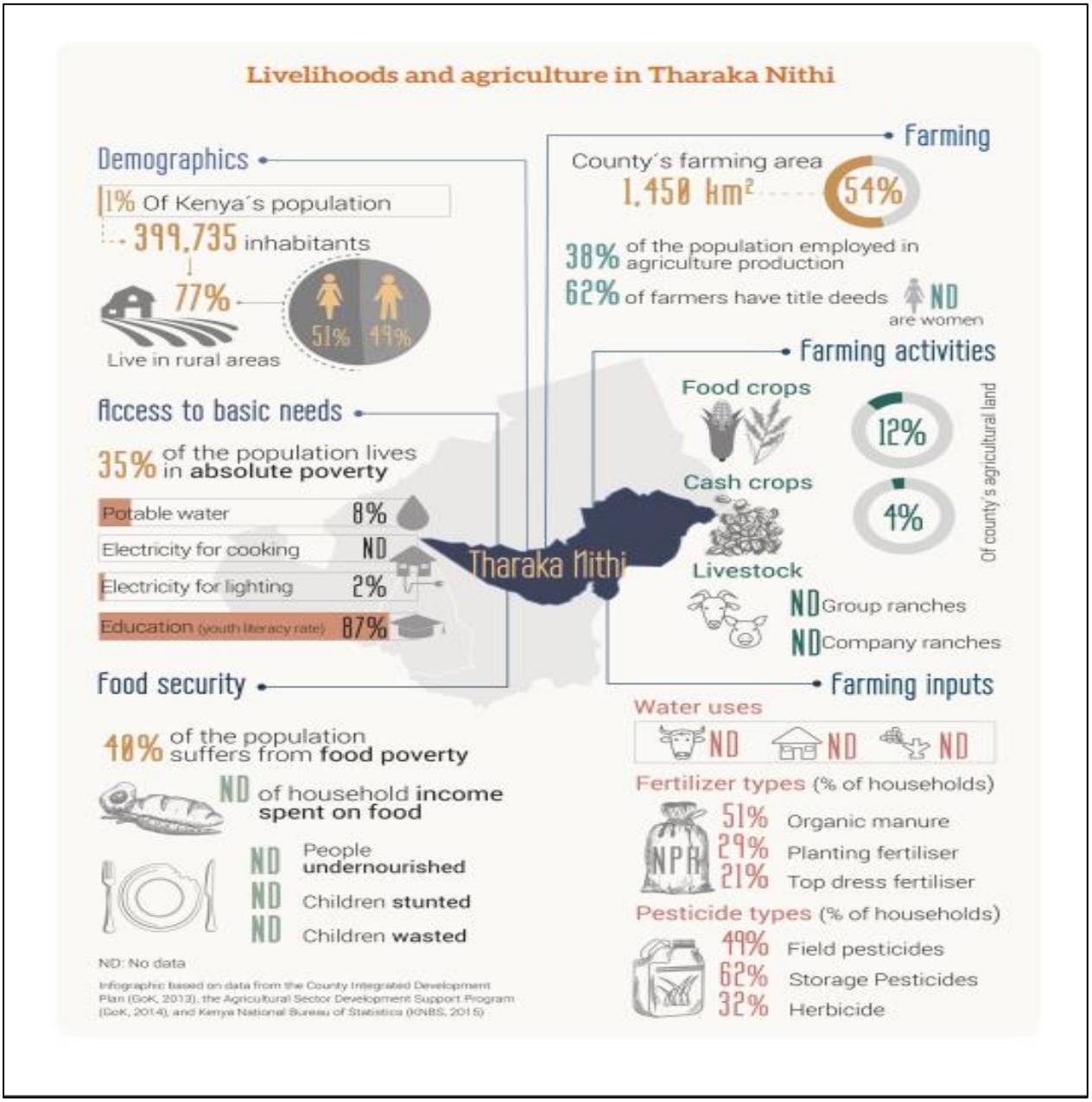


Figure 3: Livelihoods and agriculture in Tharaka Nithi County

Source: https://cgspace.cgiar.org/server

CHAPTER 4: RESULTS AND DISCUSSION

4.1 Socioeconomic Profiles of Respondents

Table 2 Social-demographic and economic characteristics of rural farmers in Tharaka Nithi County

Variable	n= 359	mean	min	max	St. dev
Age of the farmer in years		44.25	28	65	11.33
				Percentage of respondents %	
Education Level	Primary			22.1	
	Tertiary			59.9	
	University			17.9	
Household Size	Below 4			16.8	
	4 to 6			70.7	
	Above 6			12.6	
Gender of the farmer	Male			36.8	
	Female			63.2	
Cooperative membership	Yes			28.0	
	No			72.0	
Employment Status	Government			26.5	
	Farming			73.5	
Access to Credit	Yes			14.2	
	No			85.8	

Source: Own computation

The average age of farmers in Tharaka Nithi, as established by the study, was 44.25 years. Survey data shows that most farmers had completed secondary school education, representing 59.8% of the population. The primary school level was 22.1%, and it was notable that these farmers had the highest level of farming experience. Women dominated rural agriculture according to data collected, representing approximately (63.2%) while male respondents were (36.8%). (5) members per household represented the average size of the household. In matters of farmer cooperative membership, approximately (72%) of the members had not registered for any

farmer cooperative to aid in agriculture organization. At least 85.8% of the rural farmers had no access to credit to aid in input or entrepreneurship activities. Regarding formal employment or salaried people, a minority (26.5%) have secure employment while (73.5%) of the farmers were dependent on farm income.

4.2 Analysis of Social Demographics Characteristics Small Scale farmers in Tharaka Nithi

Average Age of Farmers:

The research data collected shows that the average age of farmers in Tharaka Nithi County is approximately 43 years. This is consistent with the findings of (Oyugi et al., 2015), who found the age to be approximately 43.9 years which concluders that the population of the farmers is aging. The statistical inference shows that rural farmers are mature, which could directly impact the adoption of sustainable farming practices due to the dynamic nature of farming technologies. It also indicates that the generation transition from the elderly tucks to young tucks is a challenge and informs the slowed agriculture growth rate associated with rural-urban migration, which might impact the new technology absorption rate.

Gender Distribution:

The gender factor in rural agriculture was depicted by the results where women were dominant, with (62.1%) of the population. This shows the critical role women's empowerment can play in rural agriculture development. The findings indicate that the challenges women go through including unfavourable land tenure policies and other significant challenges like exclusion from mainstream finance opportunities, should be addressed to spur sustainable rural development.

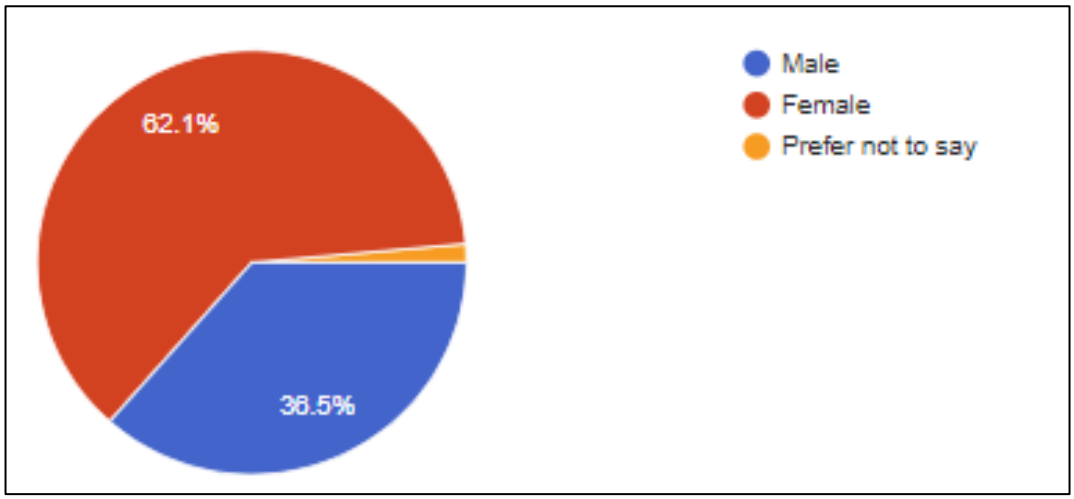


Figure 4: Pie Chart showing gender of the respondent.

Gender-specific empowerment programs would lead to the realization of sustainable rural revitalization.

Household Size:

The average household size was (5) members per homestead. This depicts a double-edged sword, one meaning that there is more family labor to be deployed in agriculture for rapid development and capital reinvestment. However, the large number could also imply strained resource access among the rural poor because of dependency hence household pressure leading to a vicious cycle of poverty.

Educational Background and Experience

The education level of most of the farmers in Tharaka Nithi is limited to pre-compulsory levels of schooling. The curriculum is a basic primary school (22.1%) while Tertiary and or secondary school (59.8%). The limited specialization of education impacts the adoption of RITs. Low education attainment is also a testament to brain drain from rural areas due to the outmigration of educated people. The high cases of agriculture abandonment are a problem for the development of rural areas.

4.3 Economic Status and Employment of residents in Tharaka Nithi county

Dependency on Farm Income:

According to the field survey done by the study, the findings are that the majority of the rural resident depend on agriculture for their livelihoods. A significant majority (73.5%) of small-scale farmers had no alternative source of income other than agriculture, with formal employment having a minority (26.5%) who depended on off-farm income either in government or non-governmental organizations. This shows the significance of improving rural agriculture as a means of scaling sustainable development of the population in the county due to its overreliance on livelihoods.

Access to Credit:

Evidence from statistics found in the survey indicates that (85.8%) of rural farmers in Tharaka Nithi County have no access to credit. This is critical as credit impacts the ability to invest in inputs, breeding technologies, and high entrepreneurial ventures that can allow quality and quantity produced in the county. The staggering statistics underscore the significance of farmers' cooperatives in improving sustainable rural livelihoods. With limited access to credit, the realization of investing in sustainable farming practices for the farmers remains infeasible due to

farmers' capacity practices.

4.4 Farmer Cooperative Membership

In the open-field randomized survey, the study found that approximately (72%) of small-scale farmers remain unregistered in formal farmer cooperatives. This indicates that farming in Tharaka Nithi county remains constrained because of limited collective action aided by poor organization of the rural farmers. This suggests that there is limited market access, poor capacity building, and low bargaining powers, hence low prices that lower the morale of the farmers, leading to limited entrepreneurial knowledge in farming.

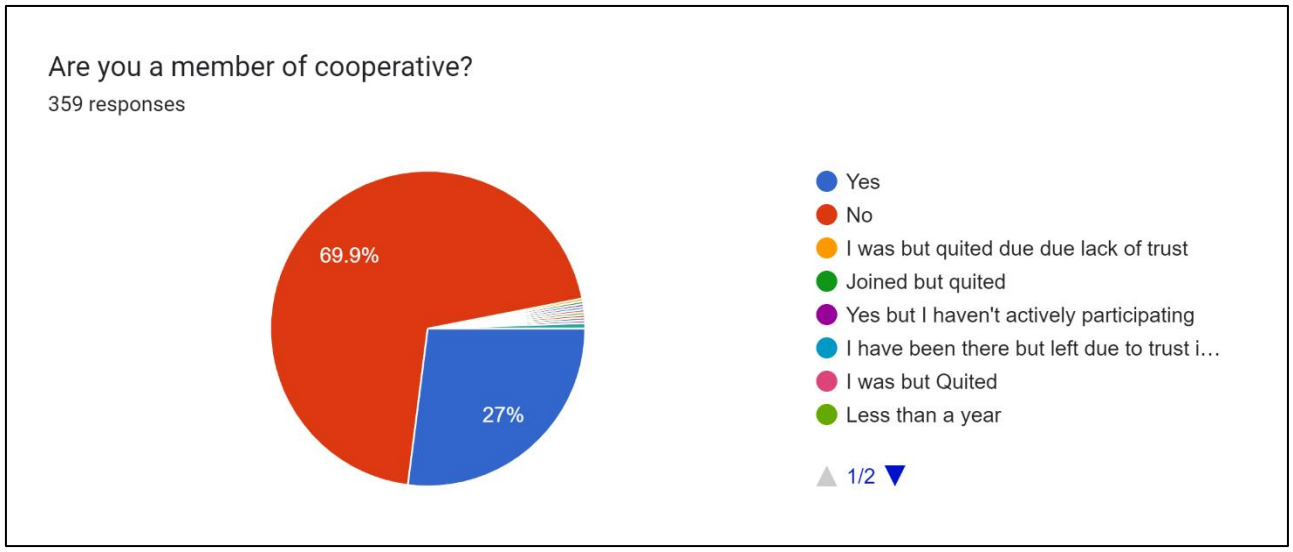


Figure 5 Cooperative membership.

4.5 Analysis of factors influencing smallholder farmer participation in sustainable rural development.

The probit model assessed factors influencing small-scale farmers to participate in sustainable rural development practices with model fitness of R^2 (0.5825) (0.5742) (0.6124) Table 3. The model predicted that cooperative membership, ownership of land, age of the farmers, extension services, and training on sustainable rural development practices were significant across all the models, showing their importance in influencing participation in sustainable farming practices. The cooperative membership variable depicted that being a non-member had negative marginal effects to participation in sustainable farming practices. The findings also confirmed that the

education level was significant in model III, with access to information at a significance level of 5%. The household size and respondents' gender were insignificant across the models. The results could be explained that neither being a male or a female would lead to sustainable practices if other dominant influence factors like education, credit access, farmer trainings, and cooperative membership are absent.

Table 3: Binary Probit Results for factors influencing participation in sustainable rural development.

Variable	Model I Inputs	Model II Technology	Model III Information
Intercept	-4.154	-3.980	-4.400
Age of Farmers	0.022*	0.024**	0.023***
Gender	0.200	0.350	0.145
Level of Education	0.038	0.017	0.071*
Household size	-0.670	0.080	-0.035
Cooperative Membership	-0.056***	-0.053***	-0.071***
Access to Credit	1.080**	1.140**	0.945*
Land Ownership	0.053***	0.024**	0.057***
Extension services	0.209***	0.217***	0.220***
Training on SRD	1.065***	0.480	1.130***
Note. * p < .05. ** p < .01. *** p < .00 1			
Chi Square	231.25	234.12	232.33
R^2	0.5825	0.5742	0.6124
Log-Likelihood	149.89	152.86	139.11
Sample size	359	359	359

Source: Own Computation

4.6 Challenges affecting cooperatives' effectiveness role in SRD.

According to a survey, the farmers identified areas to address to ensure the effective functioning of cooperatives. A significant number (68.2%) believed that farmer cooperatives in their region

should enhance transparency and democracy in the condonation of their activities. Ranked second to positively impact farmers' participation in FCs based on farmer perception was improving ease of membership and training, backed by approximately (58.7%) of the respondents who proposed it was vital. Also, approximately (50.3%) of the management of the available cooperatives was critical to improve their role in promoting their role in alleviating poverty among smallholder farmers. Policy and legislation also the farmers believed were very important, with a tally of (36.3%) this was to cushion them from potential risks and enhance their efficacy in operating functions of the cooperatives. The least is that the minority believed that cooperatives should not receive government funding as it would compromise the operations through external control and manipulation, limiting the freedom of members.

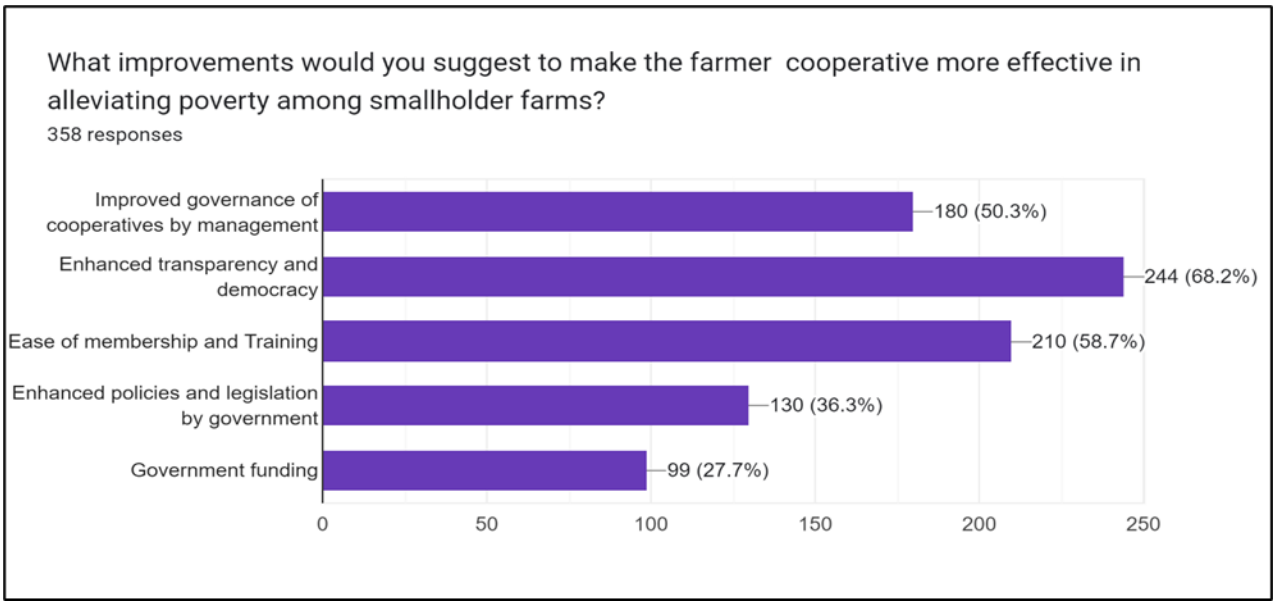


Figure 6: Challenges of Farmer Cooperatives in Tharaka Nithi County

4.7 Analysis of small-scale farmers' Perceptions on the Impact of farmers' cooperatives

Farmers' perception of comparative development differences based on the existence of FCs.

The statistics from the survey indicated that (85.4%) of the farmers believed that areas with formal farmer cooperatives were more developed than rural areas without farmer cooperatives. This is evidenced by observation that areas with dairy, coffee, and tea farmers who operate in formal cooperatives, are more developed compared to areas growing cereals like grain farming and keeping nomadic livestock where participant hardly participates in cooperatives.

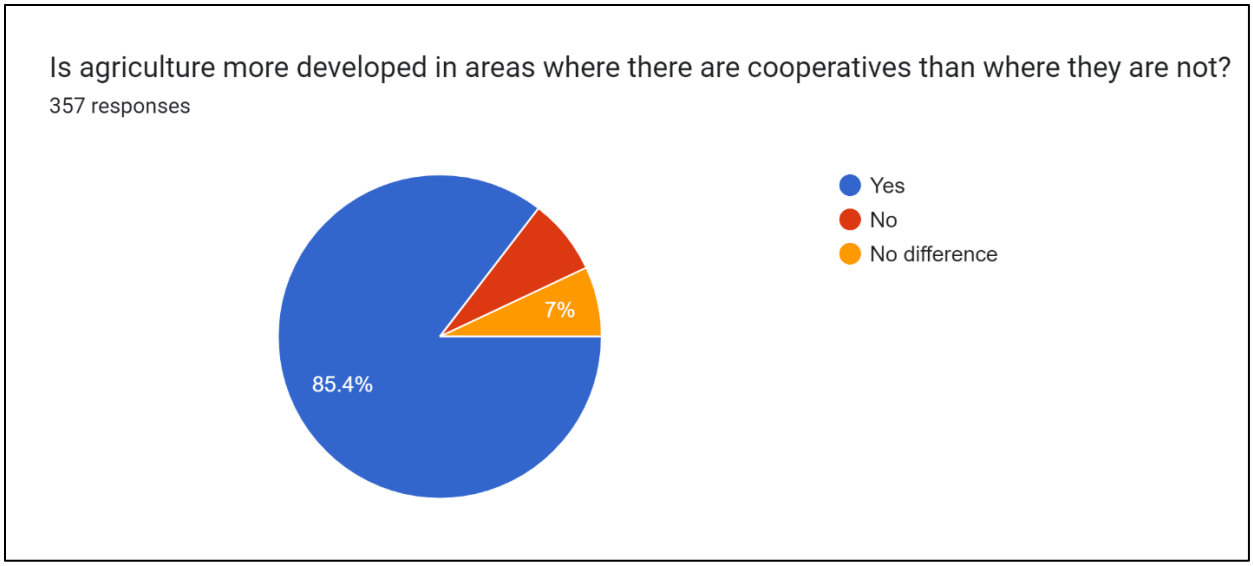


Figure 7: Comparative development associated with cooperative presence.

4.7.1 Farmer cooperatives and sustainable rural Development perception

Most respondents (77.2%) agreed that FCs are important drivers of sustainable rural development. This is a significant indicator that even non-cooperative members are convinced of the role of farmer cooperatives as a tool for sustainable rural development.

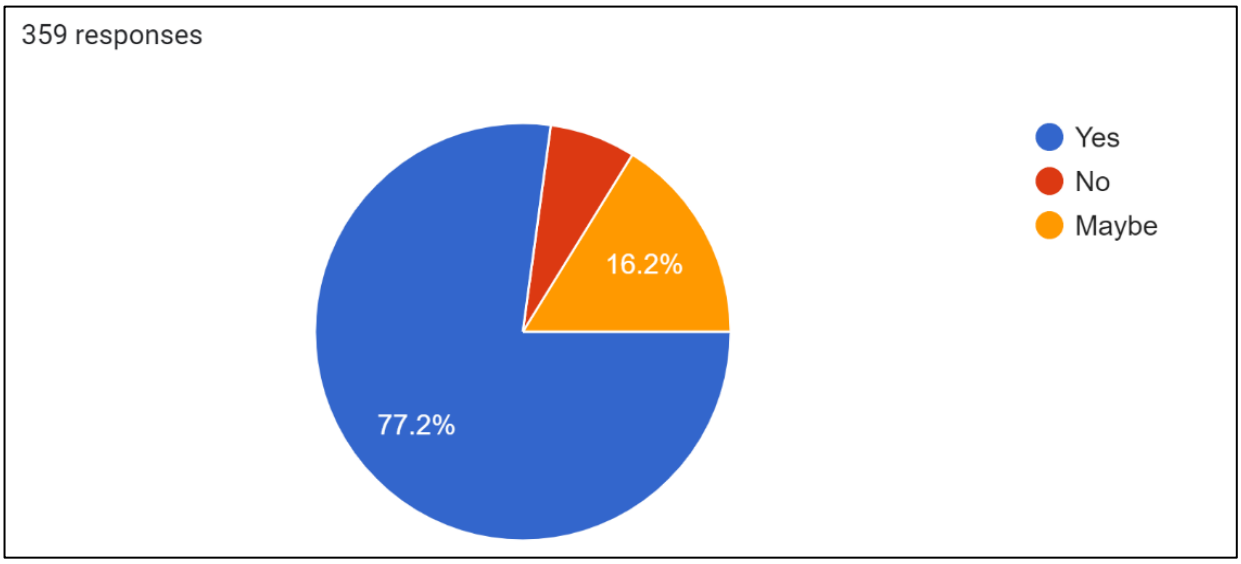


Figure 8 Perception of smallholder farmers on the role of FCs on SRD

Perception of farmers on role of cooperatives in household welfare

The survey also indicates that (47.2%) of the respondents agree that farmer cooperatives are responsible for solving household financial problems. Additionally, (33.9%) were neutral on whether cooperatives were responsible for improved household income. At least (7.6%) strongly agreed that farmer cooperatives would improve household income as informed by their membership in farmer cooperatives. The lower minority (7.3%) and (4. %) disagreed and strongly disagreed that farmers' cooperatives have no impact on enhancing livelihoods.

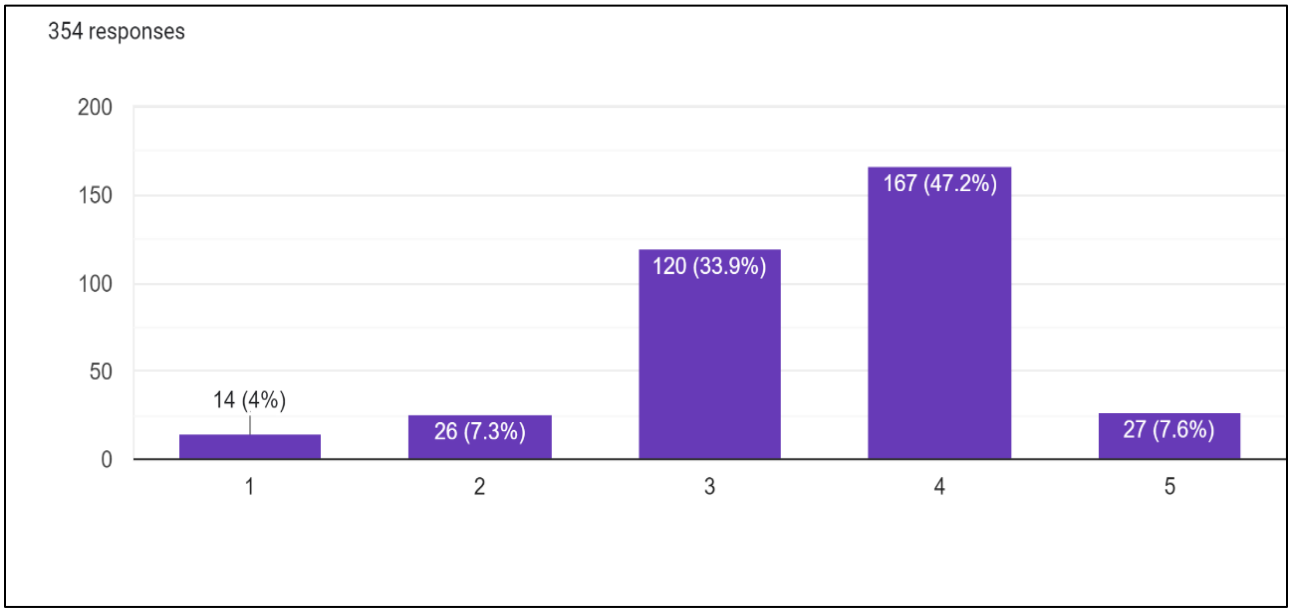


Figure 9: Perception of cooperative impact towards household welfare.

4.8 Summary of Key Objectives

Objective 1: Social demographics characteristics

The findings indicated 44.25 years as the average age of farmers, which can be referenced as experienced and diverse knowledge in farming practices. They also found that females were dominant small-scale farmers approximately (63%), indicating the peculiarity of rural agriculture in sub-Saharan Africa. This can be associated with males' conversion to other sectors of the economy, such as the construction and transport industries. The household size was five members, indicating the abundance of family labor as well as a strain on farming resources.

Education levels were low, with only a significant portion attained (22.1%), which would impact technology transfer. Additionally, most of the respondents solely depended on small-scale agriculture for their incomes and indicators of sectors' relevance to uplifting rural livelihoods.

Objective 2: Farmer cooperative's role in Market Access and Agricultural Development. Field survey indicated low subscription to cooperatives membership, with approximately (72%) of the small-scale farmers not enrolled in collective action farming. The finding backed this statistic that approximately (85.8%) of the survey's farmers indicated a constraint in accessing capitation to acquire agricultural inputs. On perceptions of farmers on the role of farmer cooperatives in mediating market access, a significant majority (89.9%) of the farmers agreed that farmer cooperatives are important in accessing the market. This can be attributed to its role in product bundling for small scale producers to allow sustainable supplies and avoid agents or brokers.

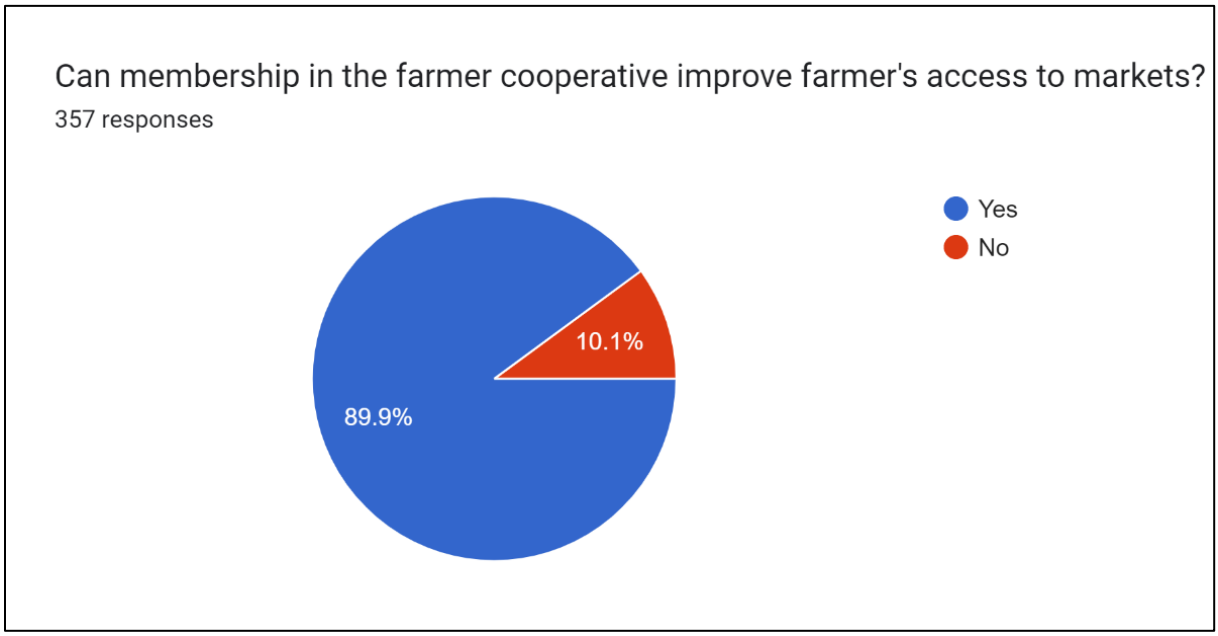


Figure 10: Perception of smallholder farmer cooperative Membership in market access

Objective 3: Factors influencing participation of smallholder farmers towards SRD. Smallholder farmers agreed that farmer cooperatives were responsible for community empowerment and enhanced capacity building. According to inferential statistics in probit model Table 2, farmer cooperatives were significant at all levels in enhancing the adoption of

sustainable farming practices, leading to successful rural development. This underscores the critical importance of farmer cooperatives in promoting development. Comparing the farmers' perceptions, the majority also agreed on areas where cooperatives were dominant, such as Maara and Chuka Sub-counties, which were more dominant than in Tharaka sub-counties, where there was a limited presence of agricultural cooperatives. Other factors that were significantly influencing smallholder farmers' adoption rate of RITs included access to credit, land ownership, extension services, and training on sustainable rural development practices. These factors are all encompassed in a cooperative function as it plays a mediating role in enabling access to land, especially to rural women, through the provision of group security, access to credit, and knowledge transfer among the members of the cooperatives leading to SRD.

Objective 4: Challenges and Opportunities of farmer cooperatives

The survey found many challenges that small-scale farmers encountered in their farming activities. These challenges ranged from market access, input access, credit access, land tenure challenges, and limited access to information due to the unavailability of extension services. These challenges that small-scale farmers encountered were exacerbated by limited trust in cooperative organizations, leading to less membership because cooperative organizations also had some challenges. The cooperative faced unprecedented levels of corruption, difficulties in member registration, undemocratic leadership, limited training, unclear regulatory framework, and less access to basic government services.

Despite the findings, the research opines that FCs present opportunities or diversification alternative to PMEs, meaning enhanced democracy, transparency, and building social trust. Despite the challenges, the small-scale farmers believed their cooperative organization would be a masterstroke towards sustainable development if the issues on cooperative function were addressed so that they could act as intermediaries of accessing inputs, technology, and information for sustainable rural development.

Overall Objective. Role of Farmer cooperatives to SRD

Evidence from previous studies has adduced FCs have positive impact to SRD. This study has established that non-membership has negative marginal effect to adoption of sustainable farming

practices. Analyzing cooperative non-membership independently we can conclude that for SRD, small scale farmers must embrace cooperative members to attain other factors that derail adoption of sustainable farming practices. Other explanatory variables like gender, ownership of land, access to credit, education, training, and extension services influences adoption of sustainable farming practices. The nexus between these explanatory variables and FCs, is that FCs are responsible for mediating these factors that can be attained independently and make the mutually inclusive. As shown in conceptual framework, farm cooperative function allows smallholder farmers to organize themselves in groups. When they are collectivized, they attain bargaining power to negotiate and make uniform decisions. They also mitigative the challenge of exclusion especially when accessing credits for inputs, they improve training outcomes and extension services are made efficient. FCs combine these factors and improve their marginal effect exponentially leading to a steadfast growth and development of rural areas. Even though the study found there is low cooperative membership, its impact on sustainable rural development has been established and their role is distinguished to availing technology and information crucial in enhancing technical efficiency of inputs transformation to outputs. The study informs that FCs should be used as tools of agricultural organization in rural areas to attain SRD.

CHAPTER 5: SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Summary Key Findings

The study was driven by agriculture's significant contribution to Kenya's GDP exploring Tharaka Nithi county to leverage the researcher's local expertise. Analyzing data from 359 farmers using mixed method approach that incorporated descriptive research and Binary Probit Regression model. Secondary data validated primary findings due to time constraints. Motivated by the prevalence of small-scale subsistence farming, the study aimed to understand challenges and cooperative potential for sustainable rural development. By exploring farmer perceptions, it assessed the relevance of cooperative organizations in fostering sustainable agricultural practices. The study found that women were predominant in rural areas. Agriculture was the main source of livelihoods. Fertility rate in rural Kenya was high as average household size was 5. The level of literacy was limited, and low social capital was low because of limited cooperative membership of (28%). The economic indicators represented by credit access was extremely limited to rural farmers. The study explored factors influencing small scale farmers' participation in sustainable farming practices. Cooperative membership was significant at all levels with a negative impact on non-membership. Training on SRD, extension services, land ownership, and education were significant with positive marginal effects. On farmers' perfections, small scale farmers believed that cooperatives had a role in improving household incomes and enhancing market access. On comparative analysis small scale farmers also informed that areas with formal cooperatives were more development that areas with any form of agriculture organization. Analyzing the challenges limited cooperative trust was observed, with corruption as the greatest barrier for cooperative movement. Among other challenges there was gender discrimination in leadership, lack of democracy in decision making, unregulated policy environment, and lack of government support. The study also found opportunities that from best practices globally, cooperatives were used to mobilize funds, training, holistic adoption of common set of practices by small scale farmers and enhancing the bargaining power. Cooperatives also presented a case that they can enhance economies of scale and bargaining power which would lead to market access and value addition. The social economic factors helped in establishing norms and way of life among the respondents such as land tenures challenges among women. The model helped in establishing the relationship between cooperative and sustainable rural development, and the opportunities and challenges helped to eye open famers to improve their contribution to GDP sustainably.

5.2 Conclusions

The study concludes that farmer cooperatives play a substantial role in enhancing farmer participation in sustainable development practices. It also finds that understanding social and economic factors are critical planning for development policies for sustainable rural development. The study found age, education, genders, and land ownership impend participation to sustainable practices. Results confirmed that without cooperative membership, the farmers are unable to harness resources such as inputs, credits and information, hence impacting development. Credit access was found to have the highest marginal effect on sustainable practices. The peculiarity of rural areas shows that's the level of development marginalization in Tharaka Nithi county can only be resolved by paradigm shift of rural poor farmer organizations through farmer cooperatives. The study also found present cooperatives lacks transparency and democracy as evidenced by corruption and farmer strikes experienced by farmers to reclaim their bonuses. The study areas experienced limited extension support from government, and low social capital.

5.3 Recommendations

The study recommends a multipronged approach involving multiple stakeholders to realize holistic development. There is a need to strengthen cooperative governance through enhanced transparency, accountability, and democratic participation of all small-scale farmers in rural areas regardless of social strata level. This will improve trust and enhance recognition of farmer cooperatives as key enablers of development, hence attracting small-scale farmers. The study recommended increasing capacity building through training on sustainable development practices and enhanced extension service to earn ripple effects of farmer cooperatives' performances. The mentorship programs and training should be tailored to meet the diverse needs of farmers, particularly young farmers, and women, who make up the majority. To revitalize the relevance of rural areas, there is a need for facilities to access critical resources. These encompass financial and infrastructural resources that will enable a seamless flow of technologies, inputs, and market opportunities that can raise returns and the well-being of the rural poor. The responsible entity for their specific interventions includes government agencies that will have an enabling regulatory framework through the Ministry of Trade, Cooperatives, and MSMEs. The government should also provide a coordination framework involving intergovernmental dialogues since agriculture is developed for county government and allows public participation of other relevant stakeholders. Other critical stakeholders, such as non-governmental organizations such as faith-based organizations with a high level of trust among farmers, should be used to share knowledge, training, and leadership skills. Cooperative leadership

should be renovated through the capacity building of leaders to understand the dynamics and needs of small-scale farmers as well as recognize sustainable interventions for effective rural development.

On the other side, FCs present diverse opportunities that would fast-track holistic development. From the survey's social and economic data, gender inequality was evidenced by the feminization of rural agriculture. Conventional farmer cooperatives would bring inclusivity, which would solve constraints such as gender inequality and financial access and solve land tenure challenges. Due to the diversity of education level attainment with the greatest percentile on low literacy level, FCs provide opportunities for Knowledge transfer through enhanced dissemination of information and training to improve the adoption of common SRD strategies. The dynamic nature of agriculture requires the adoption of technology and enhanced entrepreneurial innovations, and this new paradigm shift of farmers' collectivization would foster the change process. Also, the research found that collective action enhanced representation and policy advocacy due to their bargaining power, which is crucial to attracting grants, inputs, and infrastructural development. A greater number of small-scale farmers pulling together would ensure diversification and risk management in the era of climate change. Finally, as advanced by the social economy theory that people before profits, the FCs would advance environmentally friendly programs that would grow the community socially and financially and improve the resilience of the community.

5.4 Areas for further research

Future research areas include government commissioning research on the impact of governance reforms on member satisfaction, cooperative performance, and community development. Another area should explore the effectiveness of capacity-building programs in progress and how they impact the adoption of sustainable farming practices. Finally, interested researchers can find out the role of digital solutions in agriculture, including using available digital platforms to enhance information dissemination, market access, and resource management among small-scale farmers in Tharaka Nithi and Kenya.

5.5 Ethical considerations

Since the study involved collecting primary data through survey data from respondents. The foundational ethics of social research guided the research. Collecting data from the farmers was voluntary and with informed consent, with the respondents allowed to withdraw from the study at

any time; hence, this led to the study response rate of 94%. The respondents were guaranteed confidentiality and anonymity when the information collected was disseminated for research and academic purposes. The study guaranteed no harm to the respondents with enhanced sensitivity and no wrong responses, so they could respond to the best of their knowledge without anticipating conflict or interrogation for validity. The research committed that the output would recommend policies that would guide cooperative function in developing the community. The collected data remains in researchers' custody and is protected according to the country's existing data laws. Before commissioning the research, local authorities sought ethical approval for enhanced surveillance of ethical standards and guidelines for conducting social research.

REFERENCES

Abate, G. T., Francesconi, G. N., & Getnet, K. (2014). IMPACT OF AGRICULTURAL COOPERATIVES ON SMALLHOLDERS' TECHNICAL EFFICIENCY: EMPIRICAL EVIDENCE FROM ETHIOPIA. *Annals of Public and Cooperative Economics*, *85*(2), 257–286. https://doi.org/10.1111/APCE.12035

Abebaw, D., policy, M. H.-F., & 2013, undefined. (2013). The impact of cooperatives on agricultural technology adoption: Empirical evidence from Ethiopia. *Elsevier*. https://www.sciencedirect.com/science/article/pii/S0306919212001030

Ahado, S., Hejkrlík, J., Enkhtur, A., Tseren, T., & Ratinger, T. (2021). Does cooperative membership impact the yield and efficiency of smallholder farmers? Evidence from potato farmers in Mongolia. *China Agricultural Economic Review*, *13*(4), 736–755. https://doi.org/10.1108/CAER-01-2021-0013/FULL/HTML

Author, K., & Sindiga, I. (1984). Land and Population Problems in. In *Source: African Studies Review* (Vol. 27, Issue 1).

Bernard, T., policy, D. S.-F., & 2009, undefined. (2009). Reaching the rural poor through rural producer organizations? A study of agricultural marketing cooperatives in Ethiopia. *ElsevierT Bernard, DJ SpielmanFood Policy, 2009•Elsevier*. https://www.sciencedirect.com/science/article/pii/S030691920800064X

Bernard, T., Spielman, D., & Taffesse, A. S. (2010). *Cooperatives for staple crop marketing: evidence from Ethiopia*. https://books.google.com/books?hl=en&lr=&id=_vOMNQhT9NcC&oi=fnd&pg=PR1&dq=Cooperatives+for+Staple+Crop+Marketing:+Evidence+&ots=KwF13s8i7x&sig=GGBeKEi58D6rV7bjiEQ7pV04-Hw

Beyene, T., Mulugeta, W., & Merra, T. (2020). Technical efficiency and impact of improved farm inputs adoption on the yield of haricot bean producer in Hadiya zone, SNNP region, Ethiopia. *Cogent Economics & Finance*, *8*(1), 1833503. https://doi.org/10.1080/23322039.2020.1833503

Bretos, I., & Marcuello, C. (2017). REVISITING GLOBALIZATION CHALLENGES AND OPPORTUNITIES IN THE DEVELOPMENT OF COOPERATIVES. *Annals of Public and Cooperative Economics*, *88*(1), 47–73. https://doi.org/10.1111/apce.12145

Ciriec-espana, A. S.-, & 2019, undefined. (2019). Cooperatives and social capital: A theoretically-

grounded approach. *Datos.Divaladl.EsA SpognardiCiriec-Espana, 2019•datos.Divaladl.Es*. https://doi.org/10.7203/CIRIEC-E.97.12563

Dufhues, T., & Buchenrieder, G. (2006). *Social capital and rural development: literature review and current state of the art SUSTAINABLE AQUAPONICS FOR NUTRITIONAL AND FOOD SECURITY IN URBAN SUB-SAHARAN AFRICA (SANFU) View project Ecological Engineering: design of sustainable ecosystems by integrating human society with its natural environment for the benefit of both View project*. http://www.iamo.de

Fitzpatrick, E., Baycan, T., & Akgüngör, S. (2023). Social capital and rural development: an introduction to the special issue. In *Annals of Regional Science* (Vol. 70, Issue 3, pp. 603–609). Springer Science and Business Media Deutschland GmbH. https://doi.org/10.1007/s00168-023-01222-5

Freeman, K., Sciences, F. M.-J. of R. S., & 2017, undefined. (2017). ICT use by smallholder farmers in rural Mozambique: A case study of two villages in central Mozambique. *Egrove.Olemiss.EduK Freeman, F MubichiJournal of Rural Social Sciences, 2017•egrove.Olemiss.Edu*, *32*(2), 12–30. https://egrove.olemiss.edu/jrss/vol32/iss2/1/

Gebremichael, & 2014, undefined. (2014). The role of agricultural cooperatives in promoting food security and rural women's empowerment in Eastern Tigray Region, Ethiopia. *Academia.Edu*, *4*(11). https://www.academia.edu/download/66867825/13802.pdf

Getnet, K., cooperative, T. A.-A. of public and, & 2012, undefined. (2012). Agricultural cooperatives and rural livelihoods: Evidence from Ethiopia. *Wiley Online LibraryK Getnet, T AnulloAnnals of Public and Cooperative Economics, 2012•Wiley Online Library*, *83*(2), 181–198. https://doi.org/10.1111/j.1467-8292.2012.00460.x

Grashuis, J., & Ye, S. U. (2019). A REVIEW OF THE EMPIRICAL LITERATURE ON FARMER COOPERATIVES: PERFORMANCE, OWNERSHIP AND GOVERNANCE, FINANCE, AND MEMBER ATTITUDE. *Annals of Public and Cooperative Economics*, *90*(1), 77–102. https://doi.org/10.1111/APCE.12205

Guo, R. (2020). Research on the Transformation of Rural Governance Models under the Background of Rural Revitalization. *Open Journal of Business and Management*, *08*(03), 1274–1280. https://doi.org/10.4236/ojbm.2020.83082

Gutu Sakketa, T. (2023). Urbanization and rural development in sub-Saharan Africa: A review of pathways and impacts. In *Research in Globalization* (Vol. 6). Elsevier BV https://doi.org/10.1016/j.resglo.2023.100133

Hedlund, G. W., & Knapp, J. G. (1962). *THE SCOPE OF FARMER COOPERATIVES, THE SCOPE OF FARMER COOPERATIVES-PRESENT AND FUTURE*. https://doi.org/https://doi.org/10.2307/1235849

Igual, J., CIRIEC-España, E. M.-, pública, revista de economía, & 2008, undefined. (2008). Social Economy and the cooperative movement in Europe: contributions to a new vision of agriculture and rural development in the Europe of the 27. *Redalyc.OrgJFJ Igual, EM MartíCIRIEC-España, Revista de Economía Pública, Social y Cooperativa, 2008•redalyc.Org*. https://www.redalyc.org/pdf/174/17412442006.pdf

Jayne, T., Security, M. M.-F., & 2012, undefined. (2012). Land constraints in Kenya's densely populated rural areas: implications for food policy and institutional reform. *SpringerTS Jayne, M MuyangaFood Security, 2012•Springer*, *4*(3), 399–421. https://doi.org/10.1007/s12571-012-0174-3

Jenifer Lodiaga, M. (2020). The Cooperative Movement in Kenya: Women Only Cooperatives Their Potential for Women's Empowerment and Enhancement of Gender-Just Peace. *American Journal of Biomedical Science & Research*, *7*(4), 357–366. https://doi.org/10.34297/ajbsr.2020.07.001177

Johnson, G. E., & Whitelaw, W. E. (1974). Urban-Rural Income Transfers in Kenya: An Estimated-Remittances Function. *Https://Doi.Org/10.1086/450731*, *22*(3), 473–479. https://doi.org/10.1086/450731

Kumar, V., Wankhede, K. G., & Gena, H. C. (2015). Livelihood of Farmers on a Sustainable Basis. *American Journal of Educational Research*, *3*(10), 1258–1266. https://doi.org/10.12691/education-3-10-8

L Xingping, & 2019, undefined. (2019). Exploring the approach to rural revitalization in the view of green development. *Iopscience.Iop.Org*. https://doi.org/10.1088/1755-1315/310/5/052074

Lang, R., & Roessl, D. (2011). The role of social capital in the development of community-based co-operatives. *Contributions to Management Science*, 353–370. https://doi.org/10.1007/978-3-7908-2615-9_20

Larson, D., Muraoka, R., Farms, K. O.-T. R. of S., & 2020, undefined. (2020). Rural development strategies and Africa's small farms. *Library.Oapen.OrgDF Larson, R Muraoka, K OtsukaThe Role of Smallholder Farms in Food and Nutrition Security, 2020•library.Oapen.Org*. https://library.oapen.org/bitstream/handle/20.500.12657/39585/2020_Book_TheRoleOfSmallholderFarmsInFoo.pdf?sequence=1#page=53

Lawi, *, Adesina, M. B., & Kassim, C. A. (2020). COOPERATIVE SOCIETIES AS A CONDUIT FOR ENHANCING AGRICULTURAL EXTENSION CAPABILITIES FOR IMPROVED CROP PRODUCTION. In *FUDMA Journal of Sciences (FJS* (Vol. 4, Issue 1).

Li, W., Zhang, Z., Zhou, Y., Li, W. ;, Zhang, Z. ;, Zhou, Y., & Battisti, F. (2021a). Policy strategies to revive rural land in peri-metropolitan towns: resource identification, capitalization, and financialization. *Mdpi.ComW Li, Z Zhang, Y ZhouLand, 2021•mdpi.Com*. https://doi.org/10.3390/land10020132

Li, W., Zhang, Z., Zhou, Y., Li, W. ;, Zhang, Z. ;, Zhou, Y., & Battisti, F. (2021b). Policy strategies to revive rural land in peri-metropolitan towns: resource identification, capitalization, and financialization. *Mdpi.ComW Li, Z Zhang, Y ZhouLand, 2021•mdpi.Com*. https://doi.org/10.3390/land10020132

Liang, Q., Ma, K., & Liu, W. (2023). The role of farmer cooperatives in promoting environmentally sustainable agricultural development in China: A review. *Annals of Public and Cooperative Economics*. https://doi.org/10.1111/apce.12444

Ma, W., & Abdulai, A. (2017). The economic impacts of agricultural cooperatives on smallholder farmers in rural China. *Agribusiness*, *33*(4), 537–551. https://doi.org/10.1002/agr.21522

Mbugua, K. D. (2009a). *Determinants of agriculture sector performance in Kenya*. http://erepository.uonbi.ac.ke/handle/11295/5140

Mbugua, K. D. (2009b). *Determinants of agriculture sector performance in Kenya*. http://erepository.uonbi.ac.ke/handle/11295/5140

Meador, J. E., O'Brien, D. J., Cook, M. L., Grothe, G., Werner, L. A., Diang'a, D., & Savoie, R. M. (2016). Building sustainable smallholder cooperatives in emerging market economies: Findings from a five-year project in Kenya. *Sustainability (Switzerland)*, *8*(7). https://doi.org/10.3390/su8070656

Mhembwe, S., & Dube, E. (2017). The role of cooperatives in sustaining the livelihoods of rural communities: The case of rural cooperatives in Shurugwi District, Zimbabwe. *Jamba: Journal of Disaster Risk Studies*, *9*(1). https://doi.org/10.4102/jamba.v9i1.341

Mukherjee, S., & Pyne, S. (2016). Cooperatives as Alternative Form of Organization for CSR Effectiveness: Insights from Rabindranath Tagore. *Global Business Review*, *17*(6), 1497–1509. https://doi.org/10.1177/0972150916660445

Muraya, B. W. (2017). *Determinants of Agricultural Productivity in Kenya*. http://erepository.uonbi.ac.ke/handle/11295/102347

Muyanga, M., & Jayne, T. S. (2014). Effects of rising rural population density on smallholder agriculture in Kenya. *Food Policy*, *48*, 98–113. https://doi.org/10.1016/j.foodpol.2014.03.001

Nyawo, P., Sustainability, O. O.-, & 2023, undefined. (2023). Perceived Effectiveness of Agricultural Cooperatives by Smallholder Farmers: Evidence from a Micro-Level Survey in North-Eastern South Africa. *Mdpi.ComPH Nyawo, OD OlorunfemiSustainability, 2023•mdpi.Com*. https://doi.org/10.3390/su151310354

Nyoro, J. K. (2019). *Agriculture and rural growth in Kenya*. http://ir-library.egerton.ac.ke/handle/123456789/2393

Ochieng, J., Owuor, G., of, B. B.-A. J., & 2012, undefined. (2012). Determinants of adoption of management interventions in indigenous chicken production in Kenya. *Ageconsearch.Umn.EduJ Ochieng, G Owuor, BO BebeAfrican Journal of Agricultural and Resource Economics, 2012•ageconsearch.Umn.Edu*, *7*(1). https://ageconsearch.umn.edu/record/156977/

Ochieng, M., Assistant Lecturer, G., Musangi, P., Assistant Lecturer, N., & Karagu, J. M. (2013). An Investigation of the Impact of Co-Operative Movement in Rural Development in Kenya. *International Journal of Business and Commerce*, *3*(2). www.ijbcnet.comwww.ijbcnet.com

Okoth Makongoso, M., Gichira, R., & Otieno Orwa, G. (2015). GOVERNANCE ON THE GROWTH OF COLLECTIVE ENTREPRENEURSHIP IN AGRICULTURE SECTOR IN KENYA. In *International Journal of Economics, Commerce and Management United Kingdom: Vol. III*. http://ijecm.co.uk/

Oluoch-Kosura, W., Ariga, E., Okeyo, A., & Waithaka, M. (1999). *Agricultural technology, economic viability and poverty alleviation in Kenya*. http://erepository.uonbi.ac.ke/handle/11295/14389

Ortiz-Miranda, D., Moreno-Pérez, O. M., & Moragues-Faus, A. M. (2010). Innovative strategies of agricultural cooperatives in the framework of the new rural development paradigms: The case of the region of Valencia (Spain). *Environment and Planning A*, *42*(3), 661–677. https://doi.org/10.1068/a42168

Ortmann, G. F., & King, R. P. (2007). Agricultural cooperatives II: Can they facilitate access to input and product markets for small-scale farmers in South Africa? *Agrekon*, *46*(2), 219–244. https://doi.org/10.1080/03031853.2007.9523769

Owuor, J. (2019). *Determinants of agricultural productivity in Kenya*. http://ir-library.egerton.ac.ke/handle/123456789/2368

Oyugi, M., Nandi, O., Amudavi, D., & Palapala, V. (2015). Influence of Gender on Farmers' Involvement in Bambara Production Activities in Western Kenya. *Asian Journal of Agricultural Extension, Economics & Sociology*, *4*(3), 231–246. https://doi.org/10.9734/ajaees/2015/13504

Petri¸sor, P., Shen, Y., Wang, J., Wang, L., Ye, X., Han, Y., Wang, R., & Chandio, A. A. (2022). How do cooperatives alleviate the poverty of farmers? Evidence from Rural China. *Mdpi.ComY Shen, J Wang, L Wang, B Wu, X Ye, Y Han, R Wang, AA ChandioLand, 2022•mdpi.Com*. https://doi.org/10.3390/land11101836

Pienaar, L., & Traub, L. N. (2015). *Understanding the smallholder farmer in South Africa: Towards a sustainable livelihoods classification*. https://ageconsearch.umn.edu/record/212633/

Rees, David., & Overseas Development Institute (London, E. (2000). *Agricultural knowledge and information systems in Kenya : implications for technology dissemination and development*. Overseas Development Institute.

Richards, A., & Reed, J. (2015). Social capital's role in the development of volunteer-led cooperatives. *Social Enterprise Journal*, *11*(1), 4–23. https://doi.org/10.1108/SEJ-09-2013-0037/FULL/HTML

Shiferaw, B., Obare, G., & Muricho, G. (2008). Rural market imperfections and the role of institutions in collective action to improve markets for the poor. *Natural Resources Forum*, *32*(1), 25–38. https://doi.org/10.1111/j.1477-8947.2008.00167.x

Sikwela, M., Fuyane, N., Sustain, A. M.-Int. J. Dev., & 2016, undefined. (2016). The role of cooperatives in empowering smallholder farmers to access markets: A case study of Eastern Cape and KwaZulu Natal cooperatives in South Africa. *Academia.EduMM Sikwela, N Fuyane, A MushunjeInt. J. Dev. Sustain, 2016•academia.Edu*, *5*(11), 536–552. https://www.academia.edu/download/57411876/Publication_1.pdf

Song, Y., Qi, G., Zhang, Y., & Vernooy, R. (2014). Farmer cooperatives in China: diverse pathways to sustainable rural development. *International Journal of Agricultural Sustainability*, *12*(2), 95–108. https://doi.org/10.1080/14735903.2013.858443

Studies, V. V.-J. of C., & 2004, undefined. (2004). Toward a social capital theory of cooperative organisation. *Papers.Ssrn.ComVL ValentinovJournal of Cooperative Studies, 2004•papers.Ssrn.Com*, *37*, 5–20. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=951928

Thomas, A. (2004). *The Rise of Social Cooperatives in Italy. VOLUNTAS: International Journal of*

Voluntary and Nonprofit Organizations. 15 (Vol. 15, Issue 3). https://doi.org/https://doi.org/10.1023/B:VOLU.0000046280.06580.d8

Tshuma, M. C. (2014). Understanding the small-scale agricultural sector as a precondition for promoting rural development in South Africa. *African Journal of Agricultural Research*, *9*(31), 2409–2418. https://doi.org/10.5897/ajar12.1631

Tuna, E., and, K. K.-J. of C. O., & 2021, undefined. (n.d.). Agricultural cooperatives as social capital hubs–A case in a post-socialist country. *Elsevier*. Retrieved April 4, 2024, from https://www.sciencedirect.com/science/article/pii/S2213297X21000069

Tuunanen, M., Windsperger, J., Cliquet, G., & Hendrikse, G. (2011). The role of social capital in the development of community-based co-operatives. *SpringerR Lang, D RoesslNew Developments in the Theory of Networks: Franchising, Alliances and, 2011•Springer*. https://link.springer.com/chapter/10.1007/978-3-7908-2615-9_20

Vanlauwe, B., Coyne, D., Gockowski, J., Hauser, S., Huising, J., Masso, C., Nziguheba, G., Schut, M., & Van Asten, P. (2014). Sustainable intensification and the African smallholder farmer. In *Current Opinion in Environmental Sustainability* (Vol. 8, pp. 15–22). Elsevier. https://doi.org/10.1016/j.cosust.2014.06.001

Veronica, P., Victor, M. G., Elena, M. M., & Jose-Maria, G. A. C. (2021). Drivers of joint cropland management strategies in agri-food cooperatives. *Journal of Rural Studies*, *84*, 162–173. https://doi.org/10.1016/j.jrurstud.2021.04.003

Wanyama, F. O. (2009). *COOPERATIVES FOR AFRICAN DEVELOPMENT: LESSONS FROM EXPERIENCE*.

Wildman, P., Moore, R., Baker, G., & Wadley, D. (1990). Push from the Bush: Revitalisation Strategies for smaller rural towns. *Urban Policy and Research*, *8*(2), 51–59. https://doi.org/10.1080/08111149008551428

Yu, Z., Zhang, H., Sun, P., & Guo, Y. (2022). The Pattern and Local Push Factors of Rural Depopulation in Less-Developed Areas: A Case Study in the Mountains of North Hebei Province, China. *International Journal of Environmental Research and Public Health*, *19*(10). https://doi.org/10.3390/ijerph19105909

ANNEXES

Annex 1: Survey Questionnaire

Demographic Information

1. **Age**
    - How old are you?
    - Below 25
    - 25-34
    - 35-44
    - 45-54
    - 55 and above
2. **Gender**
    - What is your gender?
    - Male
    - Female
    - Prefer not to say.
    - Other: _____
3. **Level of Education**
    - What is your highest level of education completed?
    - Primary education
    - Secondary education
    - Tertiary education
    - Postgraduate degree
4. **Household Size**
    - How many people are in your household?
    - Below 3
    - 2-5
    - 6 or more

Farming and Economic Factors

5. **Cooperative Membership**
    - Are you a member of a cooperative?
    - Yes

- No

6. **Market Information**
    - Do you have access to market information?
    - Yes
    - No
7. **Access to Credit**
    - Do you have access to credit?
    - Yes
    - No
8. **Land Ownership**
    - Do you own land?
    - Yes
    - No
9. **Extension Services**
    - Do you receive extension services?
    - Yes
    - No
10. **Training on SRD**
    - Have you received training on Sustainable Rural Development (SRD)?
    - Yes
    - No
11. **How familiar are you with Sustainable Rural Development (SRD) practices?**
    - 1 (Not familiar at all)
    - 2 (Slightly familiar)
    - 3 (Moderately familiar)
    - 4 (Very familiar)
    - 5 (Extremely familiar)

Future Perspectives on SRD

12. . How would you rate the cooperative's role in enhancing your bargaining power?
    - 1 (Not familiar at all)
    - 2 (Slightly familiar)

- 3 (Moderately familiar)
- 4 (Very familiar)
- 5 (Extremely familiar)

13. . How would you rate the cooperative's role in enhancing your bargaining power?

    - Extremely Agree =1
    - Disagree=2
    - Not sure=3
    - Agree=4
    - Completely Agree=5

14. How would you rate the overall impact of the cooperative on improving your household's financial situation?
    - 1 (Not familiar at all)
    - 2 (Slightly familiar)
    - 3 (Moderately familiar)
    - 4 (Very familiar)
    - 5 (Extremely familiar)

15. Do you feel that membership in the farmer cooperative can help alleviate poverty in your household?
    - Yes
    - No

16. Do you Agree with statement that farmer cooperatives are essential for sustainable rural development?
    - Yes
    - No

17. What improvements would you suggest making the farmer cooperative more effective in alleviating poverty among smallholder farms?
    - Improved governance of cooperatives by management
    - Enhanced transparency and democracy
    - Ease of Membership and Training

- Enhanced policy and government legislation
- Government funding

18. Would you recommend a joining smallholder farmer to join a farmer cooperative in your community?

    - Yes
    - No

Annex 2: List of Abbreviations

GDP- Gross Domestic Product

SRD- Sustainable Rural Development

FCs- Farmer Cooperatives

PMEs- Profit Maximizing Enterprises

SSA- Sub-Saharan Africa

CAK- Communication Authority of Kenya

USD- United States Dollar

RITs- Rural Innovation Technologies

TNC- Tharaka Nithi County

H_0 - Null Hypothesis

BETA- Bottom-Up Economic Transformation Agenda

Kshs – Kenya Shillings

ICA -The International Cooperative Alliance

CSR -Corporate Social Responsibility

SCT - The Social Capital Theory

KNBS -Kenya National Bureau of Statistics

Annex 3: List of Tables

Annex 4: List of Figures

APPENDICES

Appendix 1: Declaration on Authenticity and public access on master's thesis

DECLARATION

on authenticity and public assess of master's thesis

Student's name: **Daniel Mainda Mwendwa**

Student's Neptun ID: **C7CUPE**

Title of the document: **Possibilities and role of social economy in Sustainable Rural Development: A Case Study of Farmer Cooperatives Tharaka Nithi County, Kenya**

Year of publication: **2024**

Department: **Rural and Regional Development**

I declare that the submitted **master's thesis** is my own, original individual creation. Any parts taken from another author's work are clearly marked and listed in the table of contents.

If the statements above are not true, I acknowledge that the Final examination board excludes me from participation in the final exam, and I am only allowed to take final exam if I submit another final essay/thesis/master's thesis/portfolio.

Viewing and printing my submitted work in a PDF format is permitted. However, the modification of my submitted work shall not be permitted.

I acknowledge that the rules on Intellectual Property Management of Hungarian University of Agriculture and Life Sciences shall apply to my work as an intellectual property.

I acknowledge that the electric version of my work is uploaded to the repository system of the Hungarian University of Agriculture and Life Sciences.

Place and date: **2024** year **04** month **25** day.

Student's signature

Appendix 2: Statement of Consultation

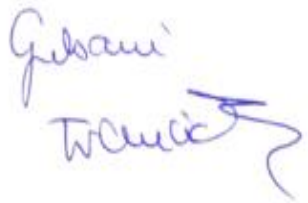
DECLARATION

Daniel Mainda Mwendwa (student Neptun code: C7CUPE) as a consultant, I declare that I have reviewed the final thesis. and that I have informed the student of the requirements, legal and ethical rules for the correct handling of literary sources.

I recommend / do not recommend[1] the final thesis to be defended in the final examination.

The thesis contains a state or official secret: yes no*[2]

Date: _____2024____ year _____04_____ month ___20____ day



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