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Economic and social rights are fundamental, justiciable and enforceable, <<https://www.hrlc.org.au/case-summaries/economic-and-social-rights-are-fundamental-justiciable-and-enforceable/>> accessed on 24th August 2025.

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AGRICULTURE MARKETING COOPERATIVES ROLES IN ENHANCING FOOD SECURITY RESILIENT IN AFRICA, EVIDENCE FROM TANZANIA PRACTICE

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ABSTRACT: Agricultural cooperatives play a crucial role in ensuring food security, particularly for smallholder farmers in developing countries. The global growing population leads to food security challenges; cooperatives have a niche intervention to overcome food security challenges. The paper answer five questions which are; what are the basic strategies used by agricultural cooperatives in improving food security? How can agricultural cooperative engage in crop diversification? What is the role of agricultural marketing cooperatives in improving household nutrition? What are the available strategic challenges faced by agricultural marketing cooperatives on their efforts to bring food security. The paper was based on community empowerment theory; where cooperative societies play a crucial role in achieving food security by empowering small producers. The paper adopts a Systematic Literature Review (SLR) to critically explore the agricultural marketing cooperatives roles in enhancing food security to build inference. The discussion found that, cooperative can be and had been used to bring food security by extending production, education of food production and the adoption of climate smart agriculture. Also, cooperatives were found t the good model in advancing nutrition to smallholder farmers based on different programs. However, cooperative was faced with challenges on innovation, technological adoption and education on scientific farming. The paper concludes that, with education and awareness campaign on food production capacity increase, the factor food security resilient can be feasible. It is recommended that, cooperative movement need to be the ambassadors on developing education package relation to advancing food security using agriculture marketing models.

Keywords: Agricultural marketing cooperatives; Food security; Smallholder farmers

INTRODUCTION

Co-operatives are a key player in ensuring food security by supporting smallholder farmers, improving agricultural productivity, and enhancing food distribution systems (Tesha, 2010). The Agricultural Marketing Cooperative Societies (AMCOS) is a member-owned and operated organization that enables farmers, especially smallholders, to collectively market their agricultural products, access input supplies, and improve their bargaining power in local and regional markets (Abate, 2018). Beyond economic functions, these cooperatives often serve as platforms for delivering nutrition-sensitive agriculture, health education, and community development services, especially when supported by Non-Government Organizations (NGOs) and development partners (Sanka, *et al.*, 2024). In Europe the agricultural cooperatives are organizations owned and operated by groups of farmers to collectively manage production, processing, marketing, and distribution of agricultural goods (FAO, 2025). Cooperatives are crucial players in the food system, especially in ensuring food security defined by the Food and Agriculture Organization (FAO) as ensuring that all people have physical, social, and economic access to sufficient, safe, and nutritious food (HKI, 2018). For instance, in France, cooperatives have been instrumental in preserving regional food heritage and supporting farmers against unfair pricing practices imposed by large distribution networks (Mapunda, 2021). In Spain, studies have shown that cooperative membership significantly reduces opportunistic behaviours in supply chains, thereby enhancing compliance with sustainability requirements (Kiungai, 2023). Such practices contribute to long-term environmental stewardship and food system resilience. In Norway, agricultural cooperatives like TINE and Nortura not only process and market agricultural products but also support local economies by providing jobs and investing in community development (Mapunda, 2021). Cooperatives often implement strict quality control measures, ensuring that food products meet safety standards. This is crucial for maintaining consumer trust and meeting regulatory requirements (Shiferaw, *et al.*, 2011). For example, in southern Italy, cooperatives have been key in sustaining wheat diversity and productivity, thereby ensuring the availability of high-quality staple foods (Laurence, *et al.*, 2022). In North America, co-operatives contribute to food security by supporting local farmers and producers, promoting healthy eating habits, and ensuring food accessibility in underserved communities (Machimu, 2023). Co-operatives in the United States focus on reducing food waste through efficient distribution systems and sustainable farming practices (Rwekaza and Anania, 2018). Additionally, co-operatives work towards providing access to nutritious food options for all members of society (Sanka, *et al.*, 2024). Co-operatives in the USA and Canada are known for their innovation and adaptability, particularly in sectors such as agriculture and food processing (FAO, 2025). Many agricultural co-operatives in North America have strong networks and infrastructure, which can help improve efficiency and distribution of food products (Lovo and Veronesi, 2019). Further, co-operatives often have access to advanced technologies and resources, which can enhance food security initiatives. However, some co-operatives in the USA and Canada may struggle with limited government support or regulation, which can hinder their ability to address food security challenges. Also, issues of consolidation and corporate influence in the agriculture sector can impact the ability of co-operatives to compete and maintain food security (FAO, 2025). In Latin America co-operatives play a crucial role in ensuring food security by supporting small-scale farmers,

promoting fair trade practices, and providing access to affordable and nutritious food options (Yusuph, *et al* 2025). Co-operatives work towards social and economic empowerment of marginalized communities through sustainable agriculture practices, food sovereignty initiatives, and community-based food programs. According to Hawkes, et al., (2012). Co-operatives are often deeply rooted in local communities and are known for their social impact and empowerment of small-scale farmers and producers. Many co-operatives have strong relationships with government agencies, NGOs, and international organizations, which can provide support for food security initiatives. Though, some co-operatives have successfully implemented sustainable agriculture practices that promote food security and environmental conservation. However, co-operatives face challenges with political instability, corruption, and social inequality, which can impact their ability to effectively address food security issues (Agrosoko, 2024). In Asia, India in particular, cooperatives focus on improving food quality, promoting sustainable farming practices, and providing access to affordable food options for all members of society (Lovo and Veronesi, 2019). Additionally, co-operatives work towards reducing food waste through efficient supply chain management and local food processing units Ndossi et al., (2021). India has a long history of successful agricultural co-operatives, such as Amul, which have played a significant role in improving food security and rural development. Many Indian co-operatives have strong government support and policies, which can provide financial assistance and market access for small-scale farmers. Also, cooperatives have enabled the wide distribution of micronutrients such as iodized salt in India through partnerships with GAIN, proving their effectiveness in reaching remote populations with essential nutrition interventions (GAIN, 2013). In Bangladesh, there is a utilization through Nutrition Education under CARE's *Nutrition at the Centre* project partnered with women-led cooperatives to provide training on child feeding, hygiene, and nutrition. This improved how food was used and prepared, enhancing dietary quality and child nutrition (CARE, 2017). In sub-Saharan Africa, Food security is crucial for African development due to its impact on economic growth, poverty reduction, and overall well-being. Ensuring access to sufficient, safe, and nutritious food for all Africans is essential for sustained development and improved living standards. Food security in Africa is crucial for achieving Agenda 2063, the African Union's vision for a prosperous and sustainable continent. A resilient food system is central to achieving many of Agenda 2063's 20 goals, and is directly linked to Sustainable Development Goal 2, which aims to end hunger by 2030. Food security is also a key component of Aspiration 1 of Agenda 2063, which envisions a prosperous Africa based on inclusive growth (Yusuph, *et al* 2025). Agricultural cooperatives have long been viewed as key institutions in addressing rural poverty, improving food security, and enabling rural development. Chambo (2009) emphasizes that these cooperatives are not just economic entities, but they are social enterprises formed to respond to the pressing needs of smallholder farmers, who make up over 70% of sub-Saharan Africa's agricultural workforce. Cooperatives embody collective self-help and mutual aid, allowing rural communities to pool resources, share risks, and increase productivity. Food availability in sub-Saharan Africa is often constrained by low productivity, unreliable rainfall, and poor access to inputs (Yusuph, *et al* 2025). Cooperatives help mitigate this by: Supplying quality seeds, fertilizers, and tools at affordable prices, organizing bulk purchases, and negotiating lower costs with suppliers, and coordinating the use of machinery and equipment, especially in areas lacking infrastructure whereby accessibility depends on both economic and physical factors. (USAID, 2016; CARE, 2017). Cooperatives improve the distribution system through

facilitating collective transportation and storage of produce, lowering logistical costs. Offering better bargaining power in markets through group sales. Providing microloans or revolving funds to members, ensuring continuous cash flow for food purchases and household needs. According to Chambo (2009) stabilizing income and improving access to markets, cooperatives reduce the seasonal hunger that affects many rural communities in sub-Saharan Africa. In Ethiopia, some cooperatives have established nutrition outreach programs for mothers and children to fight against malnutrition as a key aspect of food security (Tesha, 2010). Also, agricultural cooperatives supported by Techno Serve helped farmers increase yields and sell surplus produce through improved storage and aggregation centres. This enhanced both availability and market access, improving food security at the community level (Shiferaw, *et al.*, 2011; Technoserve, 2016). In Malawi, Gelli *et al.* (2015) documented how cooperative-supported food banks enabled rural families to access food during lean seasons, thus ensuring stability in food availability and reducing seasonal hunger (Makundi, and Thomas, 2024). Health and Micronutrient Support: GAIN's iodized salt project in India distributed essential micronutrients via cooperatives, contributing to nutritional adequacy and preventing iodine deficiency, a key part of food utilization (GAIN, 2013). In East African Countries, Co-operatives play a significant role in ensuring food security by supporting small-scale farmers, promoting sustainable agriculture practices, and enhancing food distribution systems (Mapunda, 2021). Co-operatives focus on improving food access in remote rural areas, supporting women farmers, and promoting food sovereignty initiatives. Additionally, co-operatives work towards reducing food waste through efficient storage and distribution systems (Karki, 2011). Countries, such as Kenya and Uganda, have a strong presence in the agricultural sector and have a proven track record of improving food security and livelihoods for smallholder farmers (Nosratabadi, *et al.*, 2020). Many co-operatives have strong partnerships with international organizations and development agencies, which can provide technical assistance and funding for food security projects. The Agricultural Marketing Cooperative Societies (AMCOS), NGO-supported projects have shown that cooperatives can play an expanded role in advancing food security for the community that need these projects (Birol, 2015). For instance, in Uganda, Harvest Plus worked with cooperatives to distribute and market biofortified crops such as iron-rich beans, improving nutrition outcomes for farming households (Birol *et al.*, 2015). In Tanzania co-operatives often have a deep understanding of local contexts and cultures, which can help inform their strategies for addressing food security needs by supporting small farmers, promoting sustainable agriculture practices, and enhancing proper food distribution systems (Rwekaza and Anania, 2021). Co-operatives focus on improving food access in underserved communities, supporting women farmers, and promoting food sovereignty initiatives (Rwekaza and Said, 2022). Additionally, co-operatives in work towards reducing food waste through efficient supply chain management and local food processing units (Mutungi and Affognon, 2024). With has a diverse range of co-operatives in sectors such as agriculture, finance, and consumer goods, which play a vital role in improving food security and livelihoods for rural communities (Mramba and Msuya, 2024). Tanzanian co-operatives have strong government support and policies that prioritize food security and poverty reduction, which can provide a conducive environment for co-operative development (Mbunda, 2016). Co-operatives often have a strong sense of community and cooperation, which can help build resilience and solidarity in the face of food security challenges. Co-operatives face challenges with limited access to capital, markets, and technical assistance, which can hinder their ability

to innovate and scale up food security initiatives (Low, et al., 2007). Issues of corruption, mismanagement, and governance can impact the effectiveness of co-operatives in achieving food security goals and maintaining trust with members and stakeholders. Thus, agricultural marketing cooperatives are progressively recognized not just as economic entities, but as multi-functional organisations that support livelihoods, food security, and household nutrition, particularly when linked with health services (Mbunda, 2016). Food security exists when all people, at all times, have physical, social, and economic access to sufficient, safe, and nutritious food that meets their dietary needs and food preferences for an active and healthy life (FAO, 2001). Based on that fact, it includes four key pillars such as availability which is having enough food produced; access that is being able to afford and obtain it; utilization that is making proper use of food for nutrition; lastly, stability that is having consistent access over time. However, cooperatives in some extent had not obtained these components in its strategic objective implementation on addressing food security issues (Makundi & Thomas, 2024). This paper is based on address four issues which were the roles of agricultural marketing cooperative in enhancing food security; the basic strategies used by agricultural cooperatives in improving food security; the agriculture marketing cooperatives and crop diversification for food security; and the strategic challenges faced by agricultural marketing cooperative on their efforts to bring food security (Gelli, et al., 2015). Food security justification centres on the fundamental human right to have access to adequate, safe, and nutritious food at all times. It's not just about having enough food, but also ensuring that it's accessible, affordable, and meets the specific nutritional needs of individuals and communities. Food security is crucial for public health, economic stability, and social well-being (Tesha, 2010). Cooperatives are entangled due to its role in improving access to food, increasing local production, and strengthening rural economies by pooling resources and labour which enabled farmers to produce more and access better markets, thus enhancing food security. Food security through cooperative business venture can be solved, based on cooperative incentives based on different established strategic options. These was based on five strategic objectives questions which are; what are the basic strategies used by agricultural cooperatives in improving food security? How can agricultural cooperative engage in crop diversification? What is the role of agricultural marketing cooperatives in improving household nutrition? What are the available strategic challenges faced by agricultural marketing cooperatives on their efforts to bring food security? These provides inferences on how cooperative can venture into food security matters. This paper was based on food security theories which is community empowerment theory (Rappaport, 1981, 1984); where cooperative societies play a crucial role in achieving food security by empowering small producers, enabling access to resources, and promoting sustainable agricultural practices. Food security, in theory, is about ensuring that all people have access to adequate, safe, and nutritious food. Cooperatives contribute to food security by facilitating access to credit, training, information, and markets. Empowerment is a construct that links individual strengths and competencies, natural helping systems, and proactive behaviours to social strategy and social alteration (Rappaport, 1981, 1984). Empowerment theory, research, and intervention link individual well-being with the larger social and political environment. Hypothetically, the construct attaches mental health to mutual help and the struggle to generate a receptive community (Rappaport, 1987). It compels us to think in relations of wellness versus illness, competence versus deficits, and strength against weaknesses. Similarly, empowerment research attentions on identifying competences instead of

cataloguing risk factors and exploring conservational influences of social difficulties as an alternative of blaming victims. Empowerment-oriented interventions enhance wellness while they also aim to ameliorate problems, provide opportunities for participants to develop knowledge and skills, and engage professionals as collaborators instead of authoritative experts. Cooperatives provide a platform for smallholder farmers to pool their resources, including labor, assets, and knowledge, to overcome market barriers and limitations. Cooperatives offer access to essential resources like credit, technology, training, and storage facilities, which are often difficult for individual smallholders to obtain. Community empowerment theory posits that individuals and groups in a community can gain greater control over their lives and the conditions that affect them by developing the knowledge, skills, and resources to make informed choices and take collective action. This theory emphasizes the importance of community participation, leadership, and capacity building to promote health, well-being, and social change. This paper is in line with food security and the Sustainable Development Goals (SDGs) which are closely intertwined, with SDG 2, "Zero Hunger," explicitly focusing on ending hunger, achieving food security, improving nutrition, and promoting sustainable agriculture. Achieving food security is crucial for overall human well-being and is also directly related to the eradication of poverty (SDG 1). Additionally, issues like food waste (SDG 12) and inequality (SDG 10) can impact food security. Also, this paper is in line with the Tanzania's Draft National Development Vision 2050 emphasizes food security as a key pillar of its socio-economic transformation, prioritizing agriculture and its role in ensuring food security. This vision aims to modernize the agricultural sector, drive economic growth, and reduce poverty. The government has also set a target of achieving "a highly competitive, diversified and sustainable agricultural sector" by 2025, focusing on food security, rural livelihoods, and economic growth. Further the paper is in line with where food security is a core aspiration within "The Africa We Want," the long-term vision outlined in the African Union Agenda 2063 with its vision emphasizes the need for resilient and sustainable agri-food systems to ensure that all Africans have access to nutritious food. Achieving food security is seen as crucial for overall development, peace, and stability on the continent.

RESEARCH METHODOLOGY

This study adopts a Systematic Literature Review (SLR) to critically explore the agricultural marketing cooperatives roles in enhancing food security. The SLR approach is designed to generate a comprehensive, transparent, and reproducible synthesis of extant scholarly evidence. This research design ensures rigor in capturing the issues of food security in their breadth and depth of current academic discourse. Food security and agricultural cooperative understanding can facilitate the development of well-informed insights into the cooperative frameworks underpinning food security transitions as a global focus. The literature search was conducted across major academic databases including JSTOR, Scopus, Web of Science, ScienceDirect, and Google Scholar to identify peer-reviewed journal articles, books, policy reports, and conference proceedings published primarily between 2000 and 2024. However, other old citation was adopted based on its significance in exploring the phenomena. The search strategy employed Boolean operators and keywords such as "agriculture marketing cooperatives," "food security," "cooperative engagement in food security," "cooperative copying strategy in food security," "global food security paradigm," "cooperative projects in food security," "understanding cooperatives role in food security," and "food security business model innovation." Additionally, grey literature and working papers from leading

institutions such as the international food security reports, International Co-operative Alliance (ICA), and the FAO reports were reviewed to capture emerging trends and policy relevant insights. The inclusion criteria for the review were as follows, Publications that explicitly examine the intersection of food security programs and cooperative organizational structures. Studies addressing food security mechanisms, food security cooperative governance, and community ownership within food security systems were reviewed. Research that explores innovative financing mechanisms, including strategies, innovation, promotion and challenges on cooperative engagement in food security matters, and cooperative equity models, contributions focused on business model innovation, particularly those consistent with sustainability principles, food security practices, and the circular economy were further reviewed. Key theoretical contributions were drawn from seminal works on food security where literature explores the concept, its drivers, and associated challenges. The reviewed examines how cooperatives were drivers of food availability, access, utilization, and stability are interconnected, and how various factors like poverty, income distribution, and global events influence food security based on cooperative models. The review also investigates different methods for measuring and addressing food insecurity, including social capital and policy interventions that had been used by cooperative institutions. This study follows the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) protocol, and the methodological guidelines outlined by Tranfield *et al.* (2003) for systematic reviews in social sciences. The review process consisted of three main stages Identification and Transmission a total of 307 documents were initially retrieved, followed by the elimination of duplicates and inappropriate titles, Eligibility and Data Extraction, 73 full-text articles were reviewed, with key variables such as cooperative typologies, value propositions, and financing structures. Thematic Synthesis selected studies were categorized into core themes such as value-added innovation, financial democratization, governance models, and community empowerment in renewable energy systems. Based on ensuring of quality and credibility, only peer reviewed sources and high-quality institutional reports were included in the final synthesis. Each document was appraised for methodological soundness, conceptual contribution, and relevance to the research objective specifically, the role of cooperatives in delivering food security across economic, environmental, and social dimensions cooperative investment in food security. In synthesizing the reviewed literature, this study aims to identify conceptual frameworks and practical models relevant to food security and cooperatives, highlight research gaps and areas requiring further empirical investigation, analyse the ways in which food security systems featured in the cooperative practices reshaping cooperative-led policies on food security investment. The focus was to assess how cooperatives contribute to the broader discourse on sustainable food security business models.

FINDINGS AND DISCUSSION

Roles of agricultural marketing cooperative in enhancing food security: Agricultural marketing cooperatives play a crucial role in enhancing food security by empowering smallholder farmers, improving access to markets, and facilitating collective action to improve livelihoods. They enable farmers to overcome challenges in accessing inputs, storage, and transportation, ultimately boosting food production and availability. There are several roles that was identified through literature. Cooperatives help smallholder farmers access local, national, and international markets by aggregating produce, improving bargaining power, and reducing transaction costs. In regions like Kilimanjaro and Mbeya,

cooperatives such as the Kilimanjaro Native Cooperative Union (KNCU) have helped coffee farmer's secure better prices through direct market access and certification schemes (example Fair Trade). This has led to more stable incomes and improved food access at the household level. Literature indicates that (Tesha, 2010; Sank *et al.*, 2024; Mramba and Msuya, 2024) marketing cooperatives invest in infrastructure such as storage facilities, processing units, and transport logistics that reduce post-harvest losses. In the Southern Agricultural Growth Corridor of Tanzania (SAGCOT), cooperatives have received support to build warehouses and introduce better post-harvest handling practices. This has helped maintain food supplies throughout the year, enhancing community resilience during lean seasons. According to Ndossi, *et al.*, (2021) identified that, investing in processing and packaging, cooperatives increase the value of agricultural products, leading to higher incomes and improved nutrition. The UWAWAKUDA rice cooperative in Mbarali district has adopted milling and branding processes. The value addition has led to higher market prices and incentivized production, contributing to local food availability and diversity (Mutungi & Affognon, 2024). With regard to Mutungi & Affognon, (2024) cooperatives offer members access to improved seeds, fertilizers, extension services, and credit facilities that they could not obtain individually. In Tanzania; Singida and Manyara, in particular, sunflower cooperatives distribute certified seeds and provide input loans, which have significantly improved yields. This directly enhances food security by increasing household food stocks and income. Cooperatives strengthen social networks and collective action, enabling communities to better manage risks such as climate shocks or market volatility. During the COVID-19 pandemic, Tanzanian cooperatives in region like Arusha coordinated distribution of food and farming supplies to members, showing how collective organization helps buffer shocks and maintain food security (Amankwah and Gourlay, 2020). Inclusive cooperatives empower women and youth, key actors in agricultural production and food system resilience. Based on argument raised by Amankwah and Gourlay, (2020) women-focused cooperatives in Dodoma and youth-driven initiatives in Mwanza have shown that when marginalized groups are empowered through cooperatives, productivity and food security improve due to increased labour participation and innovation.

Basic strategies used by agricultural cooperatives in improving food security: Agricultural cooperatives are member-owned organizations that empower farmers through collective action (Chambo, 2009). They play a vital role in enhancing food security by increasing productivity, improving access to inputs and markets, building resilience, and supporting livelihoods. Based on literature, it was identified some strategies that can be used by cooperatives in improving food security. According to Tesha, (2010) cooperatives enhance food production by improving access to critical agricultural inputs such as seeds, fertilizers, machinery, and pesticides. They also facilitate knowledge sharing and capacity building through extension services and training on modern farming techniques. Collective purchasing reduces the cost of inputs, while extension services improve farming practices, resulting in higher and more stable yields. Example, In Ethiopia, cooperative unions helped farmers adopt new wheat varieties, leading to improved productivity (Chukwu, 2014) Agricultural cooperatives improve farmers' access to markets by organizing the bulk sale of produce, which increases bargaining power and reduces transaction costs. They also facilitate contracts with processors, retailers, or export (Wanyama,2014). Market access ensures that farmers can sell surplus produce at fair prices, reducing food waste and increasing income. Value Addition Some cooperatives process crops (e.g., maize milling, dairy pasteurization),

which adds value and extends shelf life (Ndossi *et al.*, 2021). Cooperatives often operate as rural financial intermediaries. They offer savings and credit facilities, allowing members to invest in inputs, technologies, or infrastructure (like irrigation). Credit empowers smallholders to finance seasonal agricultural needs without relying on exploitative moneylenders. Microinsurance and Savings, some cooperatives offer crop insurance and savings schemes, which build resilience to shocks (Abate, 2018). According to FAO, (2012) many cooperatives promote sustainable practices like conservation tillage, agroforestry, crop rotation, organic farming, and rainwater harvesting. These enhance long-term food security by making agriculture more resilient to climate change. Resilient agricultural systems can continue to produce food even under unpredictable weather conditions (Yusuph, 2025). Capacity Building Cooperatives may conduct workshops on climate-smart agriculture and facilitate access to drought-resistant seed varieties. Some cooperatives encourage the cultivation of nutritious and indigenous crops (e.g., legumes, vegetables) for home consumption and promote household kitchen gardens and school feeding program (Ndossi, 2021). This strategy improves dietary diversity and reduces household dependency on purchased food. Nutrition Education Cooperatives may organize workshops on diet and food preparation for better health outcomes (Francesconi and Ruben, 2012). Agricultural cooperatives act as a collective voice to influence agricultural policies, land tenure security, infrastructure development, subsidies, and trade regulations that benefit smallholder farmers. Policy advocacy helps shape a favourable environment for small-scale agriculture and rural livelihoods. Examples: Lobbying for rural roads, electricity, irrigation schemes, and warehouse receipt systems (Bijman and Wollni, 2008). Agrosoko, (2024) argued that, by organizing farmers into groups, cooperatives foster social cohesion, trust, and collective responsibility, which enhances cooperation in agricultural tasks and food sharing during shortages. Strong community ties contribute to resilience and informal food safety nets. Concerning Women and Youth Inclusion, some cooperatives deliberately empower marginalized groups, hence improving household food security (Wanyama, 2014). Modern cooperatives are adopting digital platforms to share weather forecasts, market prices, pest alerts, and farming tips through SMS, radio, or apps. Access to timely information helps farmers make better decisions, reduce risks, and increase efficiency. FAO (2012)

Agriculture marketing cooperatives and crop diversification for food security: Agricultural cooperatives in Tanzania play a pivotal role in promoting crop diversification among smallholder farmers. By leveraging collective resources, knowledge sharing, and market access, these cooperatives can facilitate the transition from monoculture to diversified cropping systems. Below are strategies that Tanzanian agricultural cooperatives can adopt to engage in crop diversification, supported by relevant literature. Cooperatives can provide their members with essential agricultural inputs such as seeds, fertilizers, and pesticides, as well as access to extension services. This support enables farmers to experiment with and adopt new crop varieties. For instance, the Usinde Agricultural Cooperative Society in Tabora Region has been instrumental in supplying inputs and offering extension services, thereby enhancing farmers' capacity to diversify their crops (Kiungai, 2023). One of the significant barriers to crop diversification is the lack of reliable markets for alternative crops. Cooperatives can mitigate this by collectively marketing members' produce, negotiating better prices, and establishing links with buyers. Agricultural Marketing Cooperative Societies (AMCOS) in Tanzania have been restructured to improve their efficiency in marketing diversified crops, thus encouraging farmers to diversify their production (Anania

& Rwekaza, 2016). Diversifying crops often requires additional investment, which may be beyond the reach of individual smallholder farmers. Cooperatives can offer financial services, including savings and credit facilities, to support members in investing in new crops. Access to credit through cooperatives has been shown to enable farmers to adopt diversified cropping systems, leading to improved livelihoods (Anania & Rwekaza, 2016). Crop diversification is a strategy to enhance resilience against climate variability and pests. Traditional practices in Tanzania, such as intercropping and integrating drought-tolerant crops like sorghum and cassava, have been effective in increasing food availability and dietary diversity among smallholders facing extreme weather events (Lovo & Veronesi, 2019). Cooperatives can promote these practices among their members to build climate-resilient farming systems. Education and training are crucial for farmers to understand the benefits and methods of crop diversification. Cooperatives can organize workshops and training sessions to disseminate knowledge about diversified farming practices. In Tanzania, cooperative education has been fundamental in empowering farmers to participate effectively in their cooperative societies and adopt diversified agricultural practices (Machimu, 2023). Adding value to agricultural produce through processing can make diversified crops more profitable. Cooperatives can invest in processing facilities for crops like coffee, enabling members to produce higher-value products and access new markets. Such investments not only increase income but also incentivize farmers to diversify their crop production (Rwekaza, 2023). Agricultural cooperatives can organize peer learning platforms where experienced farmers share success stories and challenges related to crop diversification. This approach builds trust and accelerates the adoption of diversified crops. In a study conducted in Kilimanjaro Region, farmers reported that peer exchange visits organized by cooperatives contributed significantly to the adoption of new crops such as horticultural vegetables and fruits (Machimu, 2023). Cooperatives can form partnerships with local agricultural research institutes and NGOs to introduce climate-smart and high-value crops. These collaborations bring innovations and localized crop varieties suitable for diversification. A study in Mbeya and Iringa showed that AMCOS collaborated with agricultural researchers to pilot sunflower and sesame farming, which diversified incomes in maize-dominated areas (Anania & Rwekaza, 2016). Cooperatives can also promote neglected or underutilized traditional crops like millet, Bambara nuts, and local beans that are climate-resilient and nutritionally rich. Research by Kiungai (2023) highlighted those farmers involved in Usinde Agricultural Cooperative were encouraged to grow indigenous legumes alongside maize, increasing household food security

Strategic challenges faced by agricultural marketing cooperative on their efforts to bring food security. The main challenge faced AMCOS in Tanzania is that many cooperatives operate in rural areas with poor infrastructure, including inadequate roads, storage facilities, and market access. This limits their ability to distribute food efficiently and reduces farmers' incentives to produce marketable surpluses. These challenges concur with that of Techno Serve which found that in Ethiopia and Mozambique, lack of aggregation centres and transport links hindered cooperatives from accessing profitable markets (Techno Serve, 2016). This ultimately affects food availability and income. The Tanzania post-harvest losses account for 30-40% of food waste making storage and processing critical (FAO, 2025). Cooperatives should build communal silos and warehouses to protect grains from pests and moisture. The investments were expected to be done on cold storage units for perishables like tomatoes and milk can prevent spoilage and extend marketability. According to Chukwu (2014) this can be done by partnerships with agro-processing firms can help cooperatives

access better preservation technologies like vacuum sealing and canning. The Tanzania government support for cooperatives is often weak or inconsistent. Some policies do not recognize cooperatives as key actors in food and nutrition security strategies, limiting their access to subsidies, training, or extension services. In Senegal, USAID's *Feed the Future* project noted that weak alignment between agriculture and health ministries slowed the integration of nutrition services into cooperative platforms (USAID, 2016). Without strong policy backing, cooperatives struggle to scale nutrition-sensitive activities. Cooperatives often lack access to affordable credit and financial services, preventing investment in productive inputs like seeds, irrigation, and storage. CARE's project in Bangladesh highlighted that many women's groups required external facilitation to access microloans; without it, production of nutrient-rich crops was limited (CARE, 2017). This challenge affects both food production and the stability of household food access. While cooperatives are effective at marketing, many lack the technical skills to deliver nutrition or health services. In Cambodia, Helen Keller International had to invest heavily in training cooperative members to screen for malnutrition and refer families to health clinics (HKI, 2018). Without external NGO support, such integrated approaches are difficult to sustain. In many contexts, women who are critical for nutrition outcomes are underrepresented in cooperative leadership and decision-making. Projects like HKI's Homestead Gardening in Nepal showed that targeting women directly was essential to improve household diets, but many traditional cooperatives lacked the structure to support gender equity (Talukder *et al.*, 2010). This gender imbalance limits the potential nutrition impact of cooperative programs. Cooperatives may face challenges managing consistent supply due to climate variability, pests, or fluctuating input prices, making it hard to meet market demand reliably. In Uganda, Harvest Plus experienced interruptions in biofortified crop distribution through cooperatives during drought years, affecting both food availability and nutrition efforts (Birol *et al.*, 2015). While NGOs have helped cooperatives grow, many such projects are donor-driven and time-bound. For instance, the GAIN salt iodization project in India relied on external funding to support processing and distribution. Once the project phased out, sustaining operations proved difficult (GAIN, 2013). This dependency undermines long-term impact and food security system resilience. Many cooperatives do not have systems to track nutrition or health outcomes, making it hard to measure their contribution to food security. In the THRIVE Zambia project by World Vision, significant effort was needed to build monitoring systems to track changes in Wash Sanitation and Hygiene (WASH) and dietary diversity (World Vision, 2018). Without such systems, strategic planning and policy engagement are constrained.

CONCLUSION AND RECOMMENDATIONS

Conclusion: This study has demonstrated that agricultural marketing cooperatives play a crucial and multifaceted role in strengthening food security resilience across Tanzania. By facilitating access to agricultural inputs, credit services, reliable markets, and extension services, these cooperatives empower smallholder farmers to increase productivity, reduce post-harvest losses, and improve household incomes. The evidence gathered from Tanzanian practices confirms that cooperatives act not only as economic institutions but also as vital social safety nets that promote community cohesion, resource sharing, and adaptive capacity in times of shocks such as climate change and market disruptions. Despite their positive contributions, the performance of agricultural cooperatives is often hindered by challenges including weak governance, limited financial resources, inadequate infrastructure, and policy

gaps. Addressing these constraints through supportive policies, capacity-building programs, and investment in cooperative development will significantly enhance their effectiveness and sustainability. In conclusion, agricultural marketing cooperatives remain indispensable tools for achieving food security resilience in Tanzania and across Africa. Strengthening their capacity and ensuring an enabling environment will contribute greatly to the broader goals of rural development, poverty reduction, and sustainable agricultural transformation.

Recommendations: Cooperatives must prioritize modernizing farming techniques to boost yields sustainably. Climate-smart agriculture (CSA) should be promoted, including drought-resistant crops like sorghum and millet, which thrive in harsh conditions. Precision farming tools, such as soil moisture sensors and satellite-guided planting, can optimize resource use. Cooperatives should facilitate farmer training programs on best agronomic practices, including intercropping and organic fertilization. Additionally, small-scale irrigation schemes, such as solar-powered drip systems, can reduce reliance on erratic rainfall. By pooling resources, cooperatives can invest in machinery like tractors and planters, making farming more efficient for smallholders. Farmers often lose profits to middlemen and price fluctuations, which cooperatives can mitigate. Collective bargaining enables smallholders to sell in bulk to supermarkets, exporters, or government programs at better rates. Digital platforms, like mobile apps linking farmers to buyers, can reduce dependency on exploitative traders. Cooperatives should also establish branded products to attract premium markets. Contract farming agreements with agribusinesses guarantee fixed prices, reducing income uncertainty. Limited capital restricts farmers' ability to invest in inputs or technology. Cooperatives can create internal savings and loan groups, allowing members to borrow at low interest. Warehouse receipt financing lets farmers use stored crops as collateral for loans. Partnerships with microfinance institutions can expand credit access for purchasing seeds or equipment. Weather-indexed insurance protects against droughts or floods, ensuring farmers don't lose everything. Governments and NGOs should be lobbied to subsidize insurance premiums and provide emergency funds for crop failures. Knowledge gaps hinder productivity, so cooperatives must invest in continuous training. Demo farms can showcase modern techniques like hydroponics or integrated pest management. Mobile-based advisory services deliver real-time weather alerts and pest control tips via SMS. Financial literacy programs teach farmers how to manage profits, save, and invest. Youth-focused agribusiness training can attract younger generations to farming. Women, who form the backbone of agriculture, need tailored programs on leadership and access to resources. Cooperatives lack influence unless they unite to lobby governments. They should push for tax exemptions on farm inputs and lower tariffs on machinery imports. Land reform advocacy is crucial to secure tenure for smallholder farmers. Partnering with research institutions can facilitate access to high-yield seed varieties. Public-private partnerships (PPPs) can fund infrastructure like rural roads and electricity. Cooperatives should also join national and regional agricultural forums to shape food security policies. Climate change threatens food production, requiring eco-friendly farming methods. Agroforestry, integrating trees with crops, improves soil health and biodiversity. Organic composting reduces reliance on chemical fertilizers, cutting costs and pollution. Solar-powered irrigation minimizes fossil fuel dependence while conserving water. Crop diversification (e.g., rotating legumes with cereals) enhances soil fertility and reduces pest outbreaks. Cooperatives should also promote conservation agriculture, such as no-till farming, to prevent erosion.

KNOWLEDGE CONTRIBUTION AND FUTURE RESEARCH

Proceedings of the 8th CUK Annual Scientific Conference, 2025, on Co-operatives Build a Better World: Re-energizing the Collective Power of Co-operatives in Africa.

Knowledge contribution: The policy makers, academicians, researchers and project development dealing with food security using cooperatives will recognise that; the agricultural marketing cooperatives play a crucial role in enhancing food security and resilience by providing smallholder farmers with access to markets, information, and technologies, ultimately boosting their income and production capacity. They empower members, foster sustainable rural employment, and build resilience to food security, economic and environmental shock.

Future research: Agricultural marketing cooperatives (AMCOS) play a vital role in enhancing food security resilience in Africa, particularly for smallholder farmers. Future research should focus on understanding how AMCOS can be strengthened to better address challenges like climate change, market volatility, and access to resources, ultimately contributing to more sustainable and resilient food systems.

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