

Systematic Review of Cooperative Contributions to Global Food Security

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Abstract: This study presents a systematic review of empirical literature examining how cooperatives contribute to food security across six interrelated dimensions: availability, access, utilization, stability, sustainability, and agency. Drawing on 39 peer-reviewed studies published between 2004 and 2025, the review synthesizes findings from diverse geographical contexts to identify key mechanisms, impacts, and gaps in current knowledge. Evidence shows that cooperatives enhance food access and availability by facilitating collective marketing, improving input provision, and expanding financial services. Some studies also highlight positive effects on dietary quality and sustainability through nutrition education, resource-sharing, and climate-adaptive practices. Cooperatives further promote agency by fostering participatory governance and enabling marginalized groups, particularly women, to influence food system outcomes. However, the literature remains uneven in its geographic focus and lacks consistent theoretical grounding. The review also underscores the need for deeper exploration of underexamined dimensions such as utilization and agency and calls for greater integration of cooperatives into food policy and development planning. By mapping cooperative impacts across multiple dimensions, this review contributes to a broader understanding of cooperatives' role in fostering inclusive, resilient, and sustainable food systems.

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Introduction

Food insecurity remains one of the most persistent global challenges despite decades of interventions, policy reforms, and institutional efforts. The urgency of achieving Sustainable Development Goal 2 or "Zero Hunger" by 2030 is underscored by recent figures showing that over 700 million people are undernourished, and more than 2.8 billion experience moderate or severe food insecurity globally (Food and Agriculture Organization (FAO) et al., 2024). Progress has been uneven across regions, with stagnation in Asia, worsening trends in Africa, and persistent inequalities in food access even in high-income countries.

Addressing food insecurity requires more than increasing food supply or upgrading market infrastructure. It also entails fostering inclusive institutions that empower marginalized populations to access resources, exercise agency, and participate in decision-making. Cooperatives, as member-based organizations built on democratic governance, are increasingly recognized as key actors in this regard (International Labor Organization (ILO), 2022). Operating across diverse sectors of food systems, cooperatives offer economic and social services such as access to markets, credit, agricultural inputs, and training, among others (Kalogiannidis et al., 2024; Olumeh & Mithöfer, 2024).

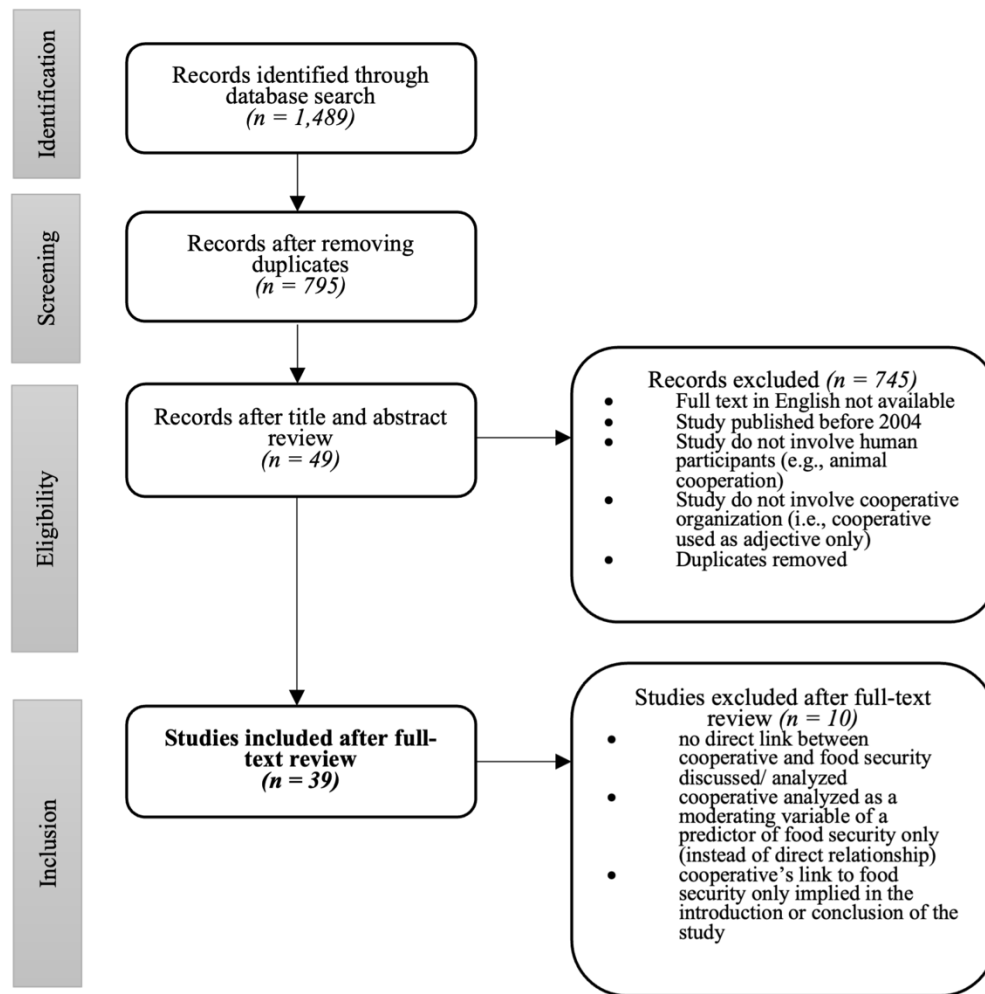
The literature consistently suggests that cooperatives can play transformative roles in addressing food insecurity (Manlosa et al., 2023). However, empirical research on this topic remains limited and fragmented. While many studies highlight the socioeconomic benefits of cooperatives, few directly examine their impact on specific food security dimensions or outcomes. For instance, several works explore intermediary outcomes, such as crop diversification (e.g., Adesiyan & Kehinde, 2024), market access (e.g., Jebessa et al., 2024 and Mukaila, 2024), and technology adoption (e.g., Jena & Tanti, 2023), which are predictors of food security. Yet, these studies often stop short of directly linking cooperatives to food security indicators, treating such variables merely as moderating factors.

This study seeks to fill these gaps by conducting a systematic review of existing literature that investigated the contributions of cooperatives to food security. By synthesizing the findings from these studies, this paper aims to (1) identify the theoretical foundations underpinning the relationship between cooperatives and food security, (2) map the roles and contributions of cooperatives across the food security dimensions; and (3) identify knowledge gaps and implications for theory, policy, and future research.

Data and Methods

This systematic review followed the Preferred Reporting Items for Systematic reviews and Meta-Analyses (PRISMA) (2015) framework to identify and synthesise empirical evidence on the role of cooperatives in food security. The review was guided by the question: *What roles and contributions do cooperatives make in enhancing food security across various contexts?* A structured search strategy was applied using Boolean logic to combine “cooperative” with terms like “food security,” “nutrition security,” and “food sovereignty.” Searches were conducted in Web of Science, Scopus, and EBSCOhost for English-language peer-reviewed journal articles, book chapters, and books published between 2004 and March 2025. Grey literature like unpublished theses, project reports, and other non-peer-reviewed papers were excluded to ensure consistent academic quality of the studies. A two-stage screening process was undertaken based on titles, abstracts, and full texts, following predefined inclusion/exclusion criteria. Figure 1 illustrates the process flow, including the number of records retrieved and excluded at each stage.

Figure 1. Result of the Systematic Review Process Using PRISMA



Only studies with explicit and substantive analysis of the cooperative–food security relationship were retained. Studies were excluded if they (1) focused on non-human subjects, (2) did not study cooperatives and only used “cooperative” descriptively, (3) failed to provide substantive analysis of the direct cooperative–food security link, or (4) examined the relationship of cooperatives with a variable that was only implied to be associated with food security but did not explicitly define such variable as a food security indicator.

A total of 39 studies were included in the systematic review after the screening process. Data were extracted using a structured matrix covering country, methodology, cooperative type, food security dimensions addressed, and key findings. Although formal quality appraisal was not conducted, peer-reviewed status and methodological transparency were considered in assessing reliability. A narrative synthesis was conducted, thematically organizing the studies according to the six dimensions of food security (availability, access, utilization, stability, sustainability, and agency) to identify patterns, gaps, and theoretical and policy insights.

Results and Discussion

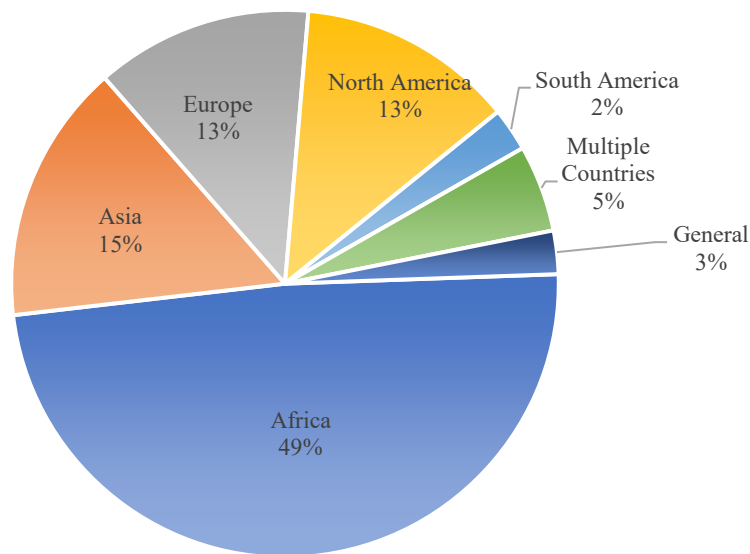
This study offers a comprehensive and holistic understanding of the contributions of cooperatives to improving food security by synthesizing the findings from the 39 studies included in the systematic review. In this section, an overview of the reviewed studies, the food security definitions, the related theories and concepts, the roles and influences evidenced in the studies are discussed.

General Characteristics of the Reviewed Studies

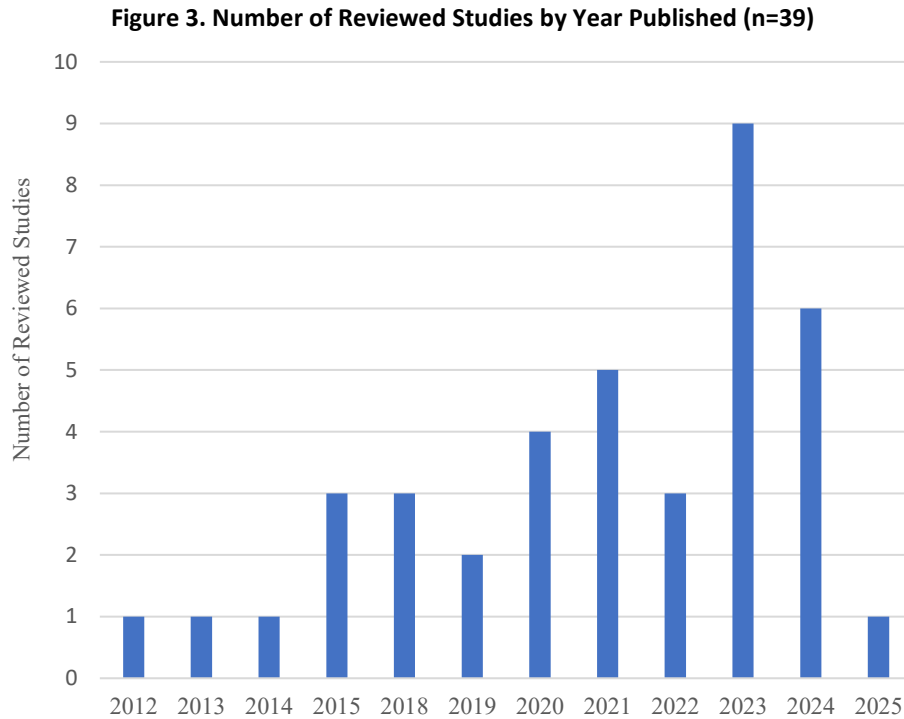
Most of the studies are peer-reviewed journal articles (90%) while the rest are book chapters (10%). In terms of regional distribution, the majority of the papers focused on Africa (49%), with Ethiopia alone accounting for 37% of the reviewed African studies (Figure 2). Other geographic regions represented include Asia, Europe, North America, and South America. The majority of the studies are country-specific with multi-country studies comprising only 5%.

The studies present a relatively balanced mix of statistically driven and contextually grounded investigations. Quantitative studies account for 44%, followed by qualitative studies (41%), with only a few using mixed methods (10%) or being conceptual papers (5%). Although the review covers the period from 2004 to 2025, the earliest included study was published in 2012 (Figure 3). Scholarly attention has gradually increased, peaking in 2023. Nonetheless, the limited and fragmented body of literature highlights the need for more empirical research across varied contexts.

Figure 2. Geographic Scope of the Reviewed Studies (n=39)



Note: *Africa* – Ethiopia (7), Nigeria (4), Ghana (1), Malawi (2), Rwanda & Kenya (1), Burkina Faso (1), Ivory Coast & Senegal (1), South Africa (1), and Zambia (1); *Asia* – India (2), Indonesia (2), China (1), and Malaysia (1); *Europe* – Belgium (1), Greece (1), Italy (1), Romania (1), and Spain (1); *North America* – Nicaragua (3), Cuba (1), and United States (1); *South America* – Brazil (1); *Multiple countries* – Ethiopia, Philippines, Indonesia (1), and Spain, Portugal, Cambodia, Vietnam, Bangladesh (1)



Food Security as Defined in the Cooperative Literature

The concept of food security has evolved over time, but most of the studies continue to draw on the widely accepted definition by the Food and Agriculture Organization (FAO), which states that “Food security exists when all people at all times have physical, social and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences and can thus live an active and healthy life” (FAO, 1996 , p.1). FAO (2009) later elaborated this definition by identifying four core dimensions: availability, access, utilization, and stability. These pillars remain central in the literature but recent scholarship has expanded the framework to include sustainability and agency—dimensions that highlight ecological responsibility and the ability of individuals and communities to influence food systems. Despite their relevance, these additional dimensions are explicitly addressed in only a few studies (e.g., Ajates, 2023; Brogan et al., 2023).

Alongside these conceptual developments, an increasing number of studies also emphasize nutrition-focused food security descriptions. Rather than focusing solely on food quantity, these perspectives highlight the importance of dietary quality, cultural appropriateness, and health outcomes. For instance, Kolog et al. (2023) cited the Ghanaian Ministry of Food and Agriculture’s definition, which emphasizes access to nutritious, hygienically packaged, and acceptable food throughout the year. Similarly, Shumeta and D’Haese (2018) argued that food security encompasses not only physical availability but also economic access to nutritionally adequate foods. Swaminathan (2013) also proposed that the food security dimensions must be supported by nutrition-sensitive agriculture and social protection systems. This nutrition-oriented perspective was further reinforced in the recent studies of Hartatik et al. (2023) and Liao et al. (2024), which link cooperative membership to improved dietary diversity, food preparation knowledge, and health-related behaviors at the household level.

Beyond these operational definitions, several authors have highlighted the socio-political underpinnings of food insecurity. Bernaschi and Crisci (2018), for instance, emphasized the importance of entitlements and institutional conditions (i.e., access to land, credit, and labor) in shaping food access. Boone and Taylor (2016) and Liao et al. (2024), on the other hand, drew attention to the concept of food sovereignty or the communities’ rights to define their own food systems and governance structures. These studies argued that through participatory governance and local knowledge, cooperatives are well positioned to advance food sovereignty and challenge inequitable food regimes.

Some scholars have also stressed the importance of examining food security at the household level. Hartatik et al. (2023) and Aweke et al. (2022) contended that food and nutrition security must be assessed not only through national production and distribution metrics but also through the lived realities of vulnerable households. In Guyalo & Ifa (2023) and Aweke et al. (2022), household-level definitions emphasized a family's ability to produce or access adequate food, as well as the resources needed to secure nutritious diets.

It is also noteworthy that while some studies provide explicit definitions of food security, this study found that most of the papers approach food security as a multifaceted outcome, focusing more on defining its dimensions and measurement, missing a detailed conceptual framing.

Theoretical Foundations for Examining the Cooperative–Food Security Nexus

The literature draws on a diverse range of theories to explain how cooperative models can address food insecurity through collective, inclusive, and sustainable mechanisms. At the core of these discussions is the notion of cooperatives as people-centered, value-driven enterprises, defined by the International Cooperative Alliance (ICA, n.d.) as organizations owned and controlled by members to meet their shared economic, social, and cultural needs. Complementing this, the International Labor Organization (ILO, 2022) situates cooperatives within the broader social and solidarity economy, recognizing their role in delivering social and environmental outcomes beyond profit. These institutional principles of voluntary cooperation, mutual aid, democratic governance, and prioritizing people over capital frame the foundational values through which cooperatives contribute to food security.

From the reviewed studies, six explicitly identify theories to explain the mechanisms through which cooperatives operate to improve food security. These theories highlight how cooperatives optimize resource allocation, reduce transaction costs, foster collaboration, and build institutional and social resilience. Specifically, Ku and Kan, 2020 used social economy and social work theory to describe how cooperatives operate within rural development frameworks. They argued that cooperatives serve as mechanisms for integrating individuals into socio-economic systems through egalitarian and bottom-up approaches. Cooperatives, in this view, form networks of rewards and sanctions that support mutual profitability and community well-being, addressing structural inequalities and local food system challenges.

Another foundational theory is the theory of collective action, originally articulated by Olson (1965) and further developed by Ostrom (2007). This theory explains why and how individuals cooperate to achieve shared goals, even in the presence of self-interest. In the cooperative context, collective action facilitates resource pooling, reduces transaction costs, and enhances operational efficiency, leading to improved household incomes and food security (Olumeh & Mithöfer, 2024; Kalogiannidis et al., 2024). Olumeh and Mithöfer (2024), for example, demonstrated how collective bargaining in cooperatives improves market access and stabilizes incomes, which are key components in addressing food access.

Institutional theory, as referenced in Manlosa et al. (2023), provides further insight by framing cooperatives within formal and informal rules that govern social interactions. According to this framework, institutions, whether cognitive, normative, or regulative, influence access to and control over food resources. Manlosa et al. (2023) demonstrated how gender norms and land use regulations, shaped by institutional structures, directly affect food security outcomes. The application of institutional theory in this context reveals how power dynamics and structural constraints intersect with cooperative activities.

In addressing collective behavior and shared resources, game theory also appears as a valuable lens. Liao et al. (2024) applied game-theoretic models to illustrate how cooperatives function as collective insurance regimes, enabling communities to manage public goods like nitrogen pollution and food availability. This study highlighted how cooperation can emerge even among actors with divergent interests, providing a conceptual foundation for understanding collaborative food security governance.

Social network theory and social capital theory offer complementary perspectives. Liu et al. (2019) defined social networks as structures through which trust, information, and resources flow, all of which are vital to cooperative success. Kalogiannidis et al. (2024) argued that strong social ties within cooperatives enhance innovation, knowledge

sharing, and community resilience, and consequently support food system sustainability. Similarly, drawing from Bourdieu (1986), Brogan et al. (2023) showed how social capital embedded in cooperatives promotes adaptability and diversifies resource access.

Other theories referenced in the literature are consumer behavior theory, cited by Brogan et al. (2023) to demonstrate how cooperatives influence consumer perceptions and food preferences through cultural engagement and social norms, ultimately contributing to improved food utilization and nutrition; and transaction cost economics (Coase, 1937), which according to Kalogiannidis et al. (2024), provided a powerful explanation of how cooperatives function as institutional responses to market inefficiencies. The authors argued that cooperatives reduce the costs of accessing inputs, marketing produce, and coordinating transactions, thereby addressing systemic barriers in food supply chains. Through integrated activities and economies of scale, cooperatives can correct market failures and improve food availability and affordability.

Cooperative Contributions Across Food Security Dimensions

The six dimensions of food security: availability, access, utilization, stability, agency, and sustainability, offer a comprehensive framework for understanding the complexities of food systems. Cooperatives, as member-driven socio-economic organizations, are widely recognized for their potential to reduce food insecurity by improving access to agricultural inputs, financial services, markets, and information. They also function as platforms for collective action, resource-sharing, and participatory governance, empowering communities to address structural inequalities in food systems. This section synthesizes evidence from the 39 reviewed studies, highlighting cooperative impacts across each food security dimension.

Cooperatives' role in increasing food availability

Food availability refers to the physical presence of adequate food, made possible through robust agricultural production, reliable input systems, and efficient market mechanisms (Barrett, 2010; FAO, 2008). Across the reviewed literature, cooperatives contribute to this dimension by helping smallholders overcome production constraints through improved access to inputs, production support, technology adoption, and stronger collective bargaining. Although the specific mechanisms vary across country contexts, the evidence from seven studies consistently shows that cooperatives function as enabling institutions that enhance farm productivity and contribute to more stable and resilient local food supply chains.

In the Romanian context, Dumitru et al. (2022) found that smallholders have increasingly turned to cooperatives in response to systemic challenges posed by large-scale agribusinesses. These cooperatives help consolidate fragmented farm resources, allowing small producers to access inputs and markets more effectively, thereby improving overall productivity and regional food availability. Schultz (2012) likewise demonstrated how cooperatives enabled farmers to continue food production amid the food crisis following the collapse of the Soviet Union. By providing access to idle state lands, cooperatives supported the Cuban government's decentralized food production strategy and national food security goals. In the same vein, Swaminathan (2013) showcased how India's dairy cooperative model allowed smallholders to overcome scale-related disadvantages through decentralized production paired with centralized processing and marketing, thereby expanding national food supply.

In Indonesia, Village Unit Cooperatives (*Koperasi Unit Desa*) have been instrumental in providing fertilizer, credit, and marketing services. Hartatik et al. (2023) observed that cooperative membership reduces farmers' dependence on exploitative lending practices and enables more stable production outcomes, ultimately strengthening local food systems. Sedana (2020) similarly illustrated how Subak cooperatives improve production efficiency through collective input management, including shared access to fertilizers and certified seeds, subsequently improving food availability in local communities.

Additional studies highlight that cooperatives promote technology access and improved production practices. Kalogiannidis et al. (2024) and Sedana (2020) showed that cooperatives facilitate adoption of modern farming technologies by ensuring access to high-quality seeds, fertilizers, and training. These efforts reduce production costs and enhance overall efficiency. In Ethiopia, Shumeta and D'Haese (2018) found that cooperative members benefit from increased crop yields through access to affordable inputs and improved agricultural techniques. Their study

further showed that cooperative participation supports more consistent food production and improved food security outcomes compared to non-members.

Moreover, cooperatives support productivity gains through collective bargaining. By negotiating better terms with suppliers and buyers, cooperatives strengthen the economic position of smallholder producers. Kalogiannidis et al. (2024) found that such bargaining power increased farm incomes in Greece and contributed to better household food security. Higher income allows farmers to reinvest in production and sustain food supply consistency and availability.

Cooperatives' role in improving food access

Food access refers to the ability of individuals and households to obtain sufficient food through economic, physical, or social means (FAO, 2008). The studies show that cooperatives improve food access through several interconnected mechanisms, including increased household income, reduced transaction costs, expanded market participation, improved dietary diversity, and enhanced access to affordable credit. Eighteen studies document that cooperative membership is associated with stronger food security outcomes, such as lower Household Food Insecurity Access Scale (HFIAS) scores, higher dietary diversity, and greater purchasing power, highlighting the significant contribution of cooperatives to this dimension of food security.

In Ethiopia, Guyalo and Ifa (2023) found that cooperative members had significantly lower scores in the Household Food Balance Model and the HFIAS, as well as higher calorie intake than non-members. These results align with Mncube et al. (2023), who reported that cooperative-member households in South Africa experienced better food access, indicated by lower HFIAS scores. In Zambia, Ng'ombe et al. (2025) showed that dairy farmer cooperatives enhanced household food security by reducing transaction costs and increasing service access, as reflected in improved Food Insecurity Experience Scale scores.

In Malawi, Olumeh and Mithöfer (2024) found that cooperative-organized baobab collectors exhibited higher dietary diversity and more stable food consumption due to improved market access and quality control. Similar evidence from Ethiopia by Aweke et al. (2022) and Derso et al. (2021) demonstrated that cooperative participation enhanced dietary diversity and food consumption frequency, with access to agricultural inputs and better marketing support serving as key drivers.

Additional studies highlight that bundled services within cooperatives improve household food access. Zeweld et al. (2015) linked cooperative membership to higher food expenditure, noting that services such as credit, agricultural inputs, and basic business infrastructure help households meet food needs more reliably. Using the Freedom from Hunger scale, Kassy et al. (2021) documented similar findings in Nigeria. In India, Swaminathan (2013) emphasized that dairy cooperatives enhance income and food access, particularly for women and marginalized households, by providing stable income opportunities and improving nutrition at household level.

Cooperatives' role in supporting food access is also seen in urban contexts, with DePasquale et al. (2018) documenting how worker and consumer cooperatives in New York provided stable employment and reduced food costs. Examples such as Park Slope Food Coop and the South Bronx Food Coop show how consumer cooperatives expand food access for underserved communities by offering affordable, below-market food prices.

Market access through cooperative structures. A significant portion of the literature highlights cooperatives' role in strengthening market access for smallholder agricultural producers. Improved market access enhances income and economic resilience, thereby expanding households' ability to purchase food. Cooperatives facilitate efficient, localized supply chains that reduce transportation costs, mitigate postharvest losses, and improve food safety while lowering transaction costs (Ajates, 2023; Dumitru et al., 2022). Through coordinated marketing, cooperatives strengthen producers' bargaining power, reduce reliance on intermediaries, and stabilize prices. Such collective engagement supports a transition from subsistence-oriented to more commercially viable production systems (García-Lorenzo et al., 2021).

In coastal and fishing communities, cooperative and community-based fisheries organizations have supported both food supply and economic development. García-Lorenzo et al. (2021) documented cases across Europe and Asia

showing that these organizations sustain local food availability while improving livelihoods through coordinated marketing and sustainable resource use. Similarly, Manlosa et al. (2023) showed that multipurpose cooperatives in Ethiopia help create more equitable market conditions by reducing power imbalances between producers and dominant buyers, offering essential services such as price information, aggregation, and collective sales. Gebru et al. (2019) emphasized that multipurpose and savings-and-credit cooperatives foster social capital, enabling smallholders to participate more effectively in high-value vegetable markets, and improve both income and food security outcomes.

Romanian cooperatives further illustrate how integrated models, which combine production, processing, and marketing, help smallholders navigate markets traditionally dominated by large agribusiness firms (Dumitru et al., 2022). In Brazil, Dantas (2020) found that agricultural cooperatives empower family farmers by providing new channels for direct sales and enabling more equitable market participation. Cooperatives also frequently serve as intermediaries between farmers and government agencies, NGOs, and other development stakeholders, reinforcing their role in facilitating market integration (Bacon et al., 2014).

Access to credit and other financial support. The literature also underscores the importance of cooperatives in improving access to credit for both agricultural and non-agricultural households. Cooperatives provide low-interest loans and financial services that help households invest in productive activities, meet consumption needs, and reduce vulnerability to food insecurity. In Nigeria, Oke et al. (2023) found that farmers who accessed cooperative-provided loans were more food-secure than those without such support. These households reported higher incomes and greater capacity to secure adequate food, as measured by the USDA Food Security Survey Module.

In Nicaragua, Bacon et al. (2014) showed that cooperative members experienced less seasonal food insecurity than those dependent on informal lenders. Cooperative interest rates (15%–18%) were substantially lower than those of informal lenders, which exceeded 35%, highlighting cooperatives' role as protective financial institutions during periods of agricultural or economic uncertainty. Ng'ombe et al. (2025) similarly emphasized that cooperatives facilitated access to credit and subsidized inputs in Zambia, improving purchasing power and market access.

Cooperatives' role in improving food access also extends to urban, non-farming populations. DePasquale et al. (2018) demonstrated that worker cooperatives in the United States contributed to food security by increasing members' purchasing power through fair wages and reliable employment. They also facilitated collective investment schemes and affordable food outlets, supporting wealth accumulation among low-income workers and enhancing overall food security.

Cooperatives' role in enhancing food utilization

Food utilization refers to how effectively individuals and households use the food available to them to meet dietary and nutritional needs, including considerations of food safety, nutrient content, and preparation practices (FAO, 2006). This review finds that food utilization is the least directly examined dimension of food security, with only five studies addressing it explicitly. However, these studies, along with others using dietary diversity as a proxy, show that cooperatives can influence nutritional outcomes through indirect pathways. These include improvements in dietary diversity, increased access to nutritious foods, community-based nutrition education, and cooperative-led efforts that promote food justice. Together, the evidence suggests that cooperative participation can meaningfully shape the quality and nutritional value of household diets.

Several studies, including Aweke et al. (2022), Derso et al. (2021), Ng'ombe et al. (2025), and Olumeh and Mithöfer (2024), used tools such as the Household Dietary Diversity Score (HDDS) and the Food Consumption Score (FCS) to assess dietary quality and consumption variety. These indicators reflect the range of food groups consumed and the nutritional adequacy of diets (FAO, 2013). Across these studies, cooperative membership is associated with more diverse and frequent food consumption, implying that cooperatives may positively influence dietary choices and overall nutritional well-being.

The literature also highlights the role of cooperatives in supporting nutrition education. Brogan et al. (2023) documented how East African artisan cooperatives provide targeted programs for women aimed at improving

knowledge of balanced diets and appropriate nutrition practices. These educational initiatives enable members to make more informed food choices, contributing to better household-level nutritional outcomes.

Scholars further argue that food justice is integral to nutrition. DePasquale et al. (2018) examined urban consumer cooperatives and demonstrated how these organizations enhance food utilization by improving affordability and access to nutritious foods, particularly in underserved neighborhoods. Similarly, Chandra (2021) examined the Amma Unavagam (Amma Canteens), which is a subsidized food program initiated to combat urban food insecurity and rising food inflation in Tamil Nadu, India. Operated by women's self-help groups and governed through cooperative management practices such as democratic participation and shared responsibilities, the canteens provide hygienic and nutritious meals at extremely low cost. By offering healthier food alternatives at reduced prices, these organizations play a dual role in improving both the economic and nutritional conditions of their members.

Cooperatives' role in fostering agency

Agency is the capacity of individuals and communities to make informed, autonomous choices about their food systems and actively engage in shaping food-related policies (HLPE, 2022). As evidenced in nine of the reviewed studies, cooperatives play a critical role in strengthening this dimension by promoting democratic participation, enabling collective decision-making, fostering social inclusion, and empowering marginalized groups. Through shared governance structures and solidarity-based practices, cooperatives create platforms that allow members to articulate their needs, engage in local food-system strategies, and influence policy and resource allocation.

Building social solidarity and inclusion. Social solidarity refers to individuals from diverse social and economic backgrounds working together to build inclusive and sustainable food systems (Fourat et al., 2020). Cooperatives facilitate this through mutual support, shared decision-making, and collaboration toward common goals such as food security and community resilience.

Bacon (2015) demonstrated how the Promoter of Cooperative Development in the Segovias (PRODECOOP), a farmers' cooperative in Nicaragua, fostered solidarity through practices such as seed sharing, input exchange, and environmental conservation. Ajates (2023) similarly found that cooperative collaboration helps households align their food production practices with cultural preferences and dietary needs. Schultz (2012) highlighted the Cuban experience, noting that state-supported cooperatives strengthened food sovereignty by advancing farmer autonomy and participatory governance.

Social networks embedded in cooperatives enhance both resilience and agency. Brogan et al. (2023) and Dantas (2020) emphasized that cooperatives serve as hubs for cohesion and knowledge exchange, enabling members to access resources, build mobility, and improve food outcomes. Mustafa et al. (2020) further showed that when cooperatives collaborate with government agencies, NGOs, and private actors, they help integrate broader development initiatives, bridging institutional gaps and expanding the reach of food security interventions.

Empowering women and marginalized groups. Women's participation in cooperatives is strongly associated with improved food and nutrition outcomes due to increased autonomy over food-related decisions. Brogan et al. (2023) observed that artisan cooperatives in East Africa offer spaces for peer learning, resource sharing, and awareness-building around sustainable diets. These opportunities support women in making informed food choices that benefit both themselves and their households. Chandra (2021) showed that participation in cooperative-led food provisioning programs such as Amma Unavagam, enhance women's agency by offering livelihood opportunities and involving them directly in food distribution and service decision-making. These dynamics highlight cooperatives' broader role in advancing gender equity in food systems.

Beyond gender, cooperatives also promote the inclusion of other vulnerable groups. The Barikamà cooperative in Italy provides an example of how cooperative structures create economic and social opportunities for migrants and previously excluded populations (Bernaschi & Crisci, 2018). Through participation in cooperative governance and community activities, members gain access to livelihoods, build networks, and strengthen local democratic processes, contributing to both food security and social integration.

Cooperatives' role in strengthening stability and sustainability

Stability and sustainability are interrelated dimensions of food security. Stability concerns the consistency of food access over time despite shocks, while sustainability emphasizes environmentally responsible practices that safeguard food systems for future generations (FAO, 2006; HLPE, 2020). In the reviewed literature, cooperatives consistently emerge as key actors that help communities adapt to climatic, market, and socio-economic disruptions. Through collective governance, shared resources, and coordinated action, cooperatives promote sustainable production, strengthen resilience, and support long-term food system stability. The following subsections outline how cooperatives advance these goals through sustainable farming, collaborative partnerships, and localized resource governance, as demonstrated in 11 reviewed studies.

Promoting sustainable practices and technology adoption. Encouraging the adoption of sustainable farming practices is central to building long-term food stability, and cooperatives play an important role in expanding these practices among members. In Cuba, Schultz (2012) showed how state-supported cooperatives were instrumental in rebuilding a self-reliant food system after periods of food insecurity. Through the promotion of agroecological approaches favoring local inputs, soil conservation, and ecological diversity, cooperatives helped reduce dependence on input-intensive models and address environmental degradation.

Diversification of production is another mechanism emphasized across the studies. Ajates (2023) and Boone and Taylor (2016) demonstrated how cooperatives support diversified farming and homegardening systems that reduce vulnerability to pests, seasonal shortages, and crop failures while improving nutrition and income. Nicaragua's ADECOOP cooperative, for example, promotes biodiversity-rich homegardens that serve as buffers during agricultural shocks (Boone & Taylor, 2016). Similarly, Taye et al. (2024) found that livelihood diversification through cooperatives increases household resilience to market volatility and climate-related disturbances.

Cooperatives also facilitate the uptake of sustainable technologies. In Brazil, Kalogiannidis et al. (2024) documented how cooperatives integrate modern, efficiency-enhancing technologies to support both productivity and ecological sustainability. Kone and Uzmay (2024) likewise observed that cooperatives in Burkina Faso accelerated technology adoption that improved food availability, access, and overall system stability. All these studies illustrate how cooperatives contribute to building climate-adaptive and environmentally sound food systems.

Facilitating collaboration for resilient food systems. Beyond farm-level practices, cooperatives function as platforms for broader collaboration aimed at tackling systemic food stability and sustainability challenges. Bacon et al. (2014) highlighted a multistakeholder initiative involving the Community Agroecology Network (CAN) and the Nicaraguan cooperative PRODECOOP, which brought together cooperatives, NGOs, and farmers to improve market access, secure fair pricing, and distribute climate-resilient seeds. This demonstrates how cooperative-led networks can strengthen resilience and equity across the supply chain.

Further evidence from China illustrates the collaborative potential of cooperatives. Ku and Kan (2020), through participatory action research in Pingzhai, showed how cooperatives supported inclusive food production and consumption systems, strengthened social cohesion, and increased household incomes. These community-level collaborations enhanced the collective capacity to pursue sustainable agriculture and respond to food system vulnerabilities.

Strengthening community governance for managing resources and climate risks. Cooperatives also strengthen localized governance systems that manage shared resources and mitigate climate risks. Bacon (2015) underscored how cooperatives coordinate member participation to oversee forests, water, and land while ensuring equitable access and conservation, helping maintain the ecological foundations necessary for sustained food production.

In Ethiopia, Zeweld et al. (2015) found that cooperatives supported land rehabilitation and drought-resilient practices that addressed soil degradation and water scarcity, resulting in improved agricultural productivity and food access. Cooperatives further act as buffers during climatic shocks. Liao et al. (2024) highlighted cooperative food banks (CFBs) as governance systems that reduce vulnerability during extreme weather by facilitating cooperative food storage, equitable distribution, and reduced nitrogen pollution. These initiatives enhance both environmental sustainability and community-level food security.

Cooperatives' role in providing information access across food security dimensions

The reviewed literature shows that cooperatives contribute to food security not only through direct improvements in availability, access, utilization, agency, and stability, but also through a cross-cutting function of facilitating access to information. Information access emerges as an essential enabler across all food security pillars, particularly in contexts where smallholders and low-income households face constraints in acquiring technical, market, or nutrition-related knowledge. Positioned as community-based learning platforms, cooperatives provide members with technical, entrepreneurial, and nutritional information that strengthens both immediate food access and long-term resilience.

Several studies (i.e., Chivundu-Ngulube & Li, 2019; DePasquale et al., 2018; Ibrahim et al., 2023; Kalogiannidis et al., 2024) consistently describe cooperatives as information hubs that promote learning, collaboration, and improved practices. As organizations guided by the cooperative principle of “concern for community,” they offer education and training that enhance members’ capacity to navigate markets, adopt technologies, and make informed livelihood and consumption decisions. For example, DePasquale et al. (2018) showed that worker and consumer cooperatives help build market awareness and entrepreneurial skills that strengthen economic access to food. In Malawi, agricultural cooperatives improve members’ production and business competencies, contributing to better yields and more stable local food systems (Chivundu-Ngulube & Li, 2019).

Information sharing also underpins improvements in household dietary outcomes. In Nigeria, Ojo et al. (2022) and Ibrahim et al. (2023) found that cooperative members benefit from continuous knowledge exchange on sustainable agricultural technologies, which enhances productivity, food diversity, and overall food security. Similarly, Brogan et al. (2023) illustrated how artisan cooperatives in East Africa deliver nutrition education for women, enabling informed dietary choices that improve household nutritional well-being.

The role of cooperatives in information dissemination also intersects with livelihood diversification and climate resilience. Taye et al. (2024) highlighted how knowledge-sharing within cooperatives supports diversified livelihood strategies that strengthen economic access and stability. Evidence from Greece (Kalogiannidis et al., 2024) indicated that cooperatives enhance members’ understanding of food security and sustainability challenges, while studies from Indonesia (Sedana, 2020) demonstrated how cooperatives facilitate the adoption of sustainable technologies through structured training and peer learning.

Non-Positive Effects of Cooperatives on Food Security

While most of the reviewed studies affirm the positive contributions of cooperatives to food security, a few highlight conditions under which cooperative membership may not yield the expected benefits or may even exacerbate food insecurity. For example, Kolog et al. (2023) found that in Ghana, some cooperative members experienced worse food security outcomes than non-members. The authors attributed this to poor adherence to cooperative values, governance lapses, and inadequate delivery of member services. Such negative outcomes underscore the importance of governance and member accountability. DePasquale et al. (2018) noted that without effective democratic participation and transparent operations, cooperatives may fail to function as intended. Weak leadership, mismanagement, and lack of active member engagement can severely hinder their impact.

Further evidence is provided by Kpadé et al. (2023), who compared active and inactive cooperatives in Côte d’Ivoire and Senegal. Their findings reveal that poorly functioning cooperatives are associated with higher food insecurity, while well-managed, participatory cooperatives are more successful in improving members’ access to food and related resources. These findings reinforce the notion that cooperatives must be supported by strong institutional frameworks, internal cohesion, and accountability mechanisms to deliver on their food security potential.

Theoretical and Policy Implications

Theoretical Implications

This study highlights significant theoretical insights into the role of cooperatives in addressing food security. Albeit limited, the reviewed studies demonstrate that theoretical frameworks are essential for unpacking the complex pathways through which cooperatives contribute to food security. The findings reinforce the relevance of

institutional theory, which frames cooperatives as organizations shaped by both formal rules and informal norms. They affirm that well-functioning cooperatives can reduce barriers such as lack of credit, poor market access, and regulatory constraints, thus supporting food security outcomes. Conversely, poorly governed cooperatives may exacerbate food insecurity, as shown in studies from Ghana and West Africa (e.g., Kolog et al., 2023; Kpadé et al., 2023). These insights underscore North's (1990) and Ostrom's (2005) assertions that institutional quality critically shapes organizational performance.

The study also affirms collective action theory by showing how cooperatives enable members to pool resources, coordinate production, and collectively manage risks. These collective action practices align with Ostrom's (2007) principles for effective collaboration. Additionally, findings support social capital theory's (Bourdieu, 1986), emphasis on how trust-based networks generate tangible benefits. Cooperatives were consistently shown to foster social cohesion and peer learning, particularly among women and marginalized groups, thereby increasing dietary diversity, knowledge on nutrition, and food-related agency. These results suggest that food security outcomes are not solely determined by economic inputs, but also by relational dynamics cultivated through cooperative participation.

At the same time, this review identifies some theoretical perspectives that seem to be overlooked across the literature. Cooperatives' roles in fostering democratic participation and social inclusion, as documented in studies by Brogan et al. (2023), Schultz (2012), and Chandra (2021), point to the value of integrating agency and justice-based frameworks, including food sovereignty, participatory governance, and gender empowerment, into future theoretical development. For instance, future studies may prioritize examining how women's participation affects cooperative governance, performance, and food security outcomes. Similarly, investigating how cooperatives engage with marginalized groups, including migrants, indigenous populations, and landless farmers, can provide valuable insights into fostering socially just and inclusive food systems. These perspectives can help advance theories that more accurately reflect the diversity of cooperative experiences and their equity-oriented impacts.

Policy Implications

This review highlights several policy insights to better harness the contributions of cooperatives to food security. Findings from the reviewed studies underscore that cooperatives are most effective when operating within supportive institutional environments, particularly those that address constraints related to access to credit, input markets, and infrastructure. To this end, policies that promote enabling environments tailored to the structural realities of cooperatives are essential. These may include targeted financial incentives, legal recognition, and investment in capacity-building initiatives that strengthen cooperative governance, value chain integration, and sustainable agricultural practices.

Several studies also demonstrated that cooperatives serve as key platforms for disseminating technical, nutritional, and market-related information (e.g., Ibrahim et al., 2023; Brogan et al., 2023). Building on this, policy support should prioritize the integration of cooperatives into agricultural extension services, digital knowledge platforms, and food system education programs. Special attention must be given to expanding access in underserved rural areas, where cooperatives often serve as the sole conduit for information and services.

With the literature (e.g., Chandra, 2021; Swaminathan, 2013) demonstrating how cooperatives facilitate collective agency and social inclusion to enhance food security, policies must go beyond economic support and explicitly foster participatory and inclusive governance within cooperative frameworks. Initiatives that enhance women's leadership, protect the rights of marginalised members, and encourage co-ownership models can reinforce food-related agency and equity. Embedding these equity principles in national food security plans can increase the legitimacy and sustainability of food system interventions.

Moreover, the review affirms that resilient cooperatives are closely linked with sound internal governance and management capacity. Training programs focused on strategic planning, financial literacy, and democratic decision-making should therefore be institutionalized to support long-term cooperative viability and alignment with development goals. Lastly, cooperatives are well positioned to address systemic food insecurity by linking social protection, livelihood support, and community-based food distribution. Policies that empower cooperatives to

participate in local procurement schemes, food assistance programs, and school feeding initiatives can reinforce their role as trusted, community-embedded actors that promote affordable and nutritious food access.

Limitations and Future Research Agenda

This review acknowledges several limitations that present opportunities for further inquiry into the role of cooperatives in enhancing food security. A primary limitation concerns the scope of literature, which excluded gray literature (i.e., theses, project reports, and other unpublished sources), which may offer more context-specific and practice-oriented insights. Thus, future systematic reviews would benefit from incorporating a broader range of sources to capture local experiences, community-level interventions, and policy-relevant evaluations that may not be reflected in peer-reviewed literature.

Another limitation pertains to the review's thematic focus. While the analysis synthesizes the contributions of cooperatives to food security, it does not systematically engage with the challenges, policy implications, or recommendations identified in individual studies. Further research could explore how specific policy environments shape cooperative performance and identify reform strategies that align cooperative operations with national food security objectives. Comparative assessments of policy frameworks across countries may also uncover structural enablers and constraints that influence cooperative effectiveness.

The methodological diversity of the reviewed studies also remains underexplored. This review does not examine in depth the analytical approaches or the specific food security indicators employed across the literature. While a comprehensive methodological assessment was beyond the scope of this review, its importance for evaluating study quality and comparability is recognized. Future research should therefore address this gap directly by synthesizing the range of methodologies and measurement tools used across cooperative-food security studies, identifying best practices for impact assessment, improving scale consistency, and enhancing cross-study comparability. Such work would significantly strengthen the evidence base and enable more robust evaluations of cooperative initiatives in food security contexts.

Future research should also consider integrating theoretical frameworks more explicitly into empirical studies. Although several of the reviewed articles reference conceptual models, the application of theory to explain the mechanisms linking cooperatives to different dimensions of food security remains limited. A more theory-informed approach could deepen explanatory insights and guide policy development. In particular, underexplored dimensions such as food agency and utilization warrant closer examination. Studies that investigate how cooperatives influence food sovereignty, food justice, and the nutritional quality of diets could offer a more holistic understanding of their role in food systems. Additionally, while many studies assess agricultural productivity, few explicitly connect these outcomes to food security indicators. Future work should more directly examine how increases in production translate into improved availability and stability of food access.

Moreover, the prevailing household-level focus in existing studies limits understanding of the macro-level impacts of cooperatives. There is a need for research that investigates their contributions to national food policies, regional food systems, and broader structural challenges such as supply chain disruptions and systemic inequities. The emphasis on agricultural cooperatives also signals a significant gap in the literature on other cooperative forms like consumer and marketing cooperatives, particularly within urban contexts. Broadening the analytical scope to include these models can enhance understanding of their contributions to food security in diverse environments.

Finally, the geographical concentration of the current literature presents another limitation. Research remains disproportionately focused on Africa, while studies from Asia, despite high levels of food insecurity in the region, are relatively sparse. Comparative and multi-country studies could generate more generalizable findings and support the design of context-sensitive interventions that reflect regional variations in cooperative practice and food system challenges.

Conclusion

This systematic review synthesized evidence from 39 peer-reviewed studies to examine how cooperatives contribute to food security across six dimensions: availability, access, utilization, stability, sustainability, and agency. The study

findings demonstrate that cooperatives consistently function as enabling institutions that strengthen food system outcomes through collective action, resource pooling, and democratic governance.

Across the food availability dimension, cooperatives reduce production constraints by improving access to inputs, technologies, and bargaining power, enabling smallholders to sustain and expand agricultural output. In terms of food access, the studies show strong and consistent evidence that cooperatives enhance household income, market participation, and access to credit, while also lowering food costs in both rural and urban settings. Although fewer studies directly address food utilization, the available evidence indicates meaningful contributions through improved dietary diversity, nutrition education, and equitable access to healthy foods.

Cooperatives also support long-term stability and sustainability by promoting agroecological practices, facilitating technology adoption, and strengthening community-based responses to climate and market shocks. In agency context, cooperatives expand opportunities for participation and empower women, migrants, and marginalized groups through collective decision-making and inclusive governance. Additionally, information access emerges as a foundational and cross-cutting mechanism that enhances capabilities, supports informed decision-making, and reinforces gains across all pillars of food security.

Synthesizing these findings reveals that cooperatives operate not as isolated service providers but as multidimensional institutions whose roles intersect economic, social, and environmental domains. This underscores the need for future research to adopt more integrative frameworks that capture these interdependencies rather than treating each food security dimension as analytically separate. Moreover, the methodological gaps identified, particularly the limited assessment of analytical approaches, food security indicators, and utilization pathways, highlight the importance of strengthening methodological rigor in cooperative-food security research.

From a policy perspective, the findings suggest that enabling environments that support cooperative formation, strengthen governance capacities, and expand access to finance, technology, and information can magnify cooperative impacts on food security. Future efforts should also prioritize marginalized populations, promote gender-responsive cooperative development, and integrate cooperatives into broader food system and climate resilience strategies.

Overall, the evidence affirms that cooperatives hold significant potential to advance inclusive, equitable, and resilient food systems. Realizing this potential will require theoretically grounded research, methodologically robust evaluations, and policies that recognize cooperatives as strategic partners in national and local food security agendas.

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Note: References marked with asterisk () are the studies included in the systematic review*

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