

■ FOOD SECURITY PROGRAM

The Influence of Cooperatives on Food Security

Insights from Global Evidence



Karen Q. Custodio

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"A cooperative food store in the United Kingdom, demonstrating the role of cooperatives in enhancing consumers' food access."

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"Rice farmers from Nueva Vizcaya, Philippines adopt a collective approach in harvesting."

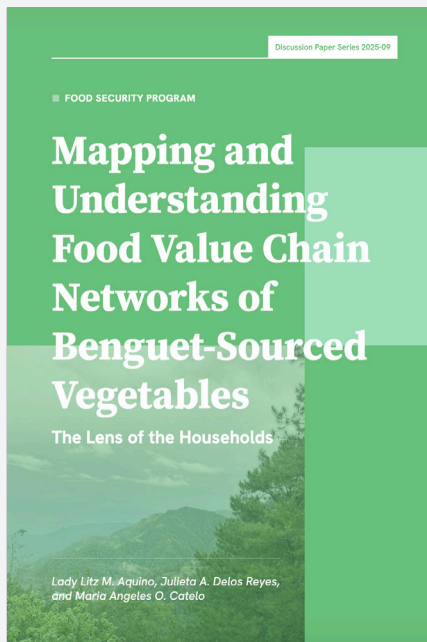
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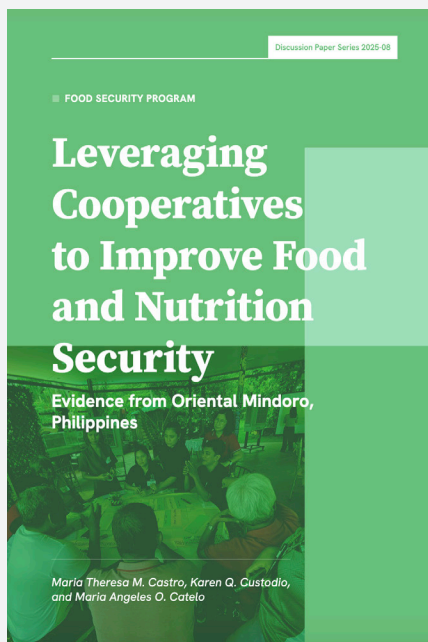
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THE INFLUENCE OF COOPERATIVES ON FOOD SECURITY

Insights from Global Evidence¹

Karen Q. Custodio²

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- 1 This discussion paper is part of the research, “Leveraging Cooperatives to Improve Food Security in Oriental Mindoro, Philippines” which is a component project of the UP CIDS-supported Program on Food and Nutrition Security.
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ABSTRACT

This paper examines the contributions of cooperatives to food security by systematically reviewing evidence from 36 studies published over the past decade. The analysis highlights cooperatives' roles across six dimensions of food security: availability, access, utilization, stability, sustainability, and agency. Findings reveal that cooperatives enhance access to resources, markets, and credit; promote sustainable agricultural practices; strengthen resilience to economic and climatic shocks; and foster social equity. However, critical gaps remain, including a disproportionate focus on household-level food security over macro level perspectives, limited attention to utilization and agency dimensions, and underexplored contributions of nonagricultural cooperatives. This review underscores the need for future research to address these gaps using robust theoretical frameworks and methodological approaches. Comparative and multi-country analyses are also recommended to identify scalable best practices and provide an extended understanding of the transformative potential of cooperatives in achieving sustainable and equitable food security.

Keywords: cooperatives, food security, food systems, systematic review

INTRODUCTION

Achieving Sustainable Development Goal (SDG) 2, Zero Hunger, by 2030 remains an urgent and complex global challenge. As of 2023, one in every eleven people worldwide experiences hunger, with at least 713 million individuals undernourished and approximately 2.8 billion facing moderate to severe food insecurity (FAO et al. 2024). While progress has been made, particularly toward SDG Target 2.1—ending hunger and ensuring universal access to safe, nutritious, and sufficient food all year round—significant regional disparities persist. For example, FAO (2024) data reveal notable progress in Latin America, stagnation in Asia, and a worsening prevalence of undernourishment in Africa. Even in developed nations, food insecurity disproportionately affects vulnerable and disadvantaged groups.

One key driver of food security inequalities is the inequitable access to essential resources, such as land, capital, income opportunities, markets, and institutional support. These inequalities hinder individuals and households from securing sustainable food systems (HLPE 2020 2023). Addressing these challenges demands a commitment to the principle of “leaving no one behind” (UNSDG 2023). From a human rights perspective, food security embodies the fundamental right of all individuals, regardless of background, to adequate food and freedom from hunger (OHCHR 2010). Moreover, food and nutrition security requires the capacity of individuals and communities to make decisions regarding the production, processing, and distribution of food, as well as their active engagement in shaping food system policies and governance (HLPE 2023).

Scholars argue that institutions are instrumental in addressing food security disparities and transforming unsustainable and inequitable food systems into more just and inclusive trajectories (Chappell 2018; HLPE 2023; Manlosa et al. 2023; Patel 2012). Among the different types of institutions in food systems are cooperatives, local associations, and community groups, which foster cooperation in communities and civil society (Manlosa et al. 2023). Cooperatives have been identified as crucial players due to their ability to foster collective action and enhance access to critical resources such as finance, inputs, markets, and information. Inclusive institutions like cooperatives can improve livelihoods, create decent jobs, and address systemic inequalities in food systems, making them pivotal to achieving food security (HLPE 2023; Kalogiannidis et al. 2024; Shumeta and D’Haese 2018).

Empirical studies have consistently highlighted the significant role cooperatives play in enhancing food security. However, despite this consensus, the existing related literature remains limited and fragmented. Findings from existing studies are promising, yet they remain incomplete, mixed, and inconclusive (Guyalo and Ifa 2023). This fragmented state of knowledge underscores the need for a comprehensive review to synthesize existing evidence, identify patterns, and provide a clearer understanding of cooperatives’ contributions to food security.

Against this backdrop, this study aimed to systematically review and synthesize scholarly evidence on the relationship between cooperatives and food security. Specifically, it sought to (1) identify the theories and concepts used to explain

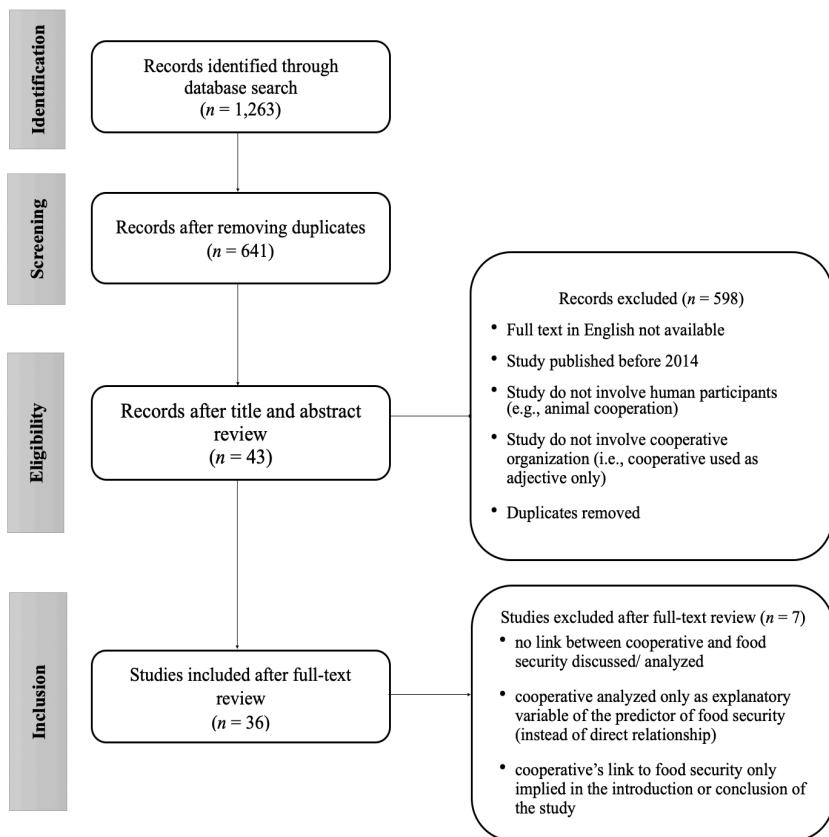
this relationship, (2) determine the specific dimensions of food security to which cooperatives contribute, and (3) highlight research opportunities and implications for theory and policy. By consolidating evidence across diverse contexts, this study offers a comprehensive analysis that will advance understanding in both the cooperative and food security fields.

With the 2030 Sustainable Development Agenda approaching its deadline, this study makes a timely and significant contribution by providing actionable insights into how cooperatives can maximize their potential as catalysts for food security. It also offers a foundation for future research and policy development aimed at addressing global hunger and food insecurity.

DATA AND METHODS

This study applied the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-analyses) approach to systematically review the literature on cooperatives' contributions to food security. A keyword search using terms like "cooperative," "food security," "nutrition security," and related concepts was conducted in titles and abstracts across Web of Science, Scopus, and EBSCOhost for English-language peer-reviewed works from 2014 to 2024. The systematic search was limited to journal articles, book and book chapters, and other peer-reviewed publications indexed in the three academic databases to ensure the relevance and quality of the papers. Unpublished works like theses and terminal reports were excluded.

Figure 1 presents the total records identified from the systematic search and the number of studies excluded after a two-stage screening and review done by the author in consultation and discussion with a second academic reviewer. Studies were excluded based on the following exclusion criteria: (1) did not involve human subjects/participants (e.g., animal cooperation); (2) did not involve cooperative organizations (and instead used cooperative as an adjective only); (3) did not analyze or discuss the influence of cooperative on food security in its key results or findings and/or only mentioned about the link between cooperative and food security in the introduction or conclusion part of the paper; and (4) cooperative was examined as an explanatory variable or moderator of outcome variables that were not explicitly defined as an indicator or of food security in the paper.



■ **Figure 1.** Result of the systematic review process using the PRISMA approach

Source: Author

After a thorough literature search, screening, and review, a total of 36 studies were included in the systematic review. Table 1 characterizes the distribution of papers under review by geographical scope, type of publication, type of study or research method used, and year of publication.

**TABLE 1. CHARACTERISTICS OF THE STUDIES INCLUDED IN THE
SYSTEMATIC REVIEW (N=36)**

CHARACTERISTIC	NO. OF STUDIES	CHARACTERISTIC	NO. OF STUDIES
Continent/Country		Type of Publication	
Africa	18	Journal article	32
Ethiopia	7	Book chapter	4
Malawi	2		
Rwanda & Kenya	1	Type of Study	
Burkina Faso	1	Qualitative	14
Ghana	1	Quantitative	16
Nigeria	4	Mixed Methods	4
Ivory Coast & Senegal	1	Conceptual	2
South Africa	1		
Asia	5	Year of Publication	
China	1	2014	1
India	1	2015	3
Indonesia	2	2018	3
Malaysia	1	2019	2
Europe	5	2020	4
Belgium	1	2021	5
Greece	1	2022	3
Italy	1	2023	9
Romania	1	2024	6
Spain	1		
North America	4		
Nicaragua	3		
United States	1		
South America	1		
Brazil	1		
Multiple Countries	2		
Ethiopia, Philippines, Indonesia	1		
Spain, Portugal, Cambodia, Vietnam, Bangladesh	1		
General	1		

Source: Author

CONTEXTUAL DEFINITIONS OF FOOD SECURITY

This section presents how food security has been defined and conceptualized in cooperative-related literature over the past decade, emphasizing the evolution of its understanding and the varying interpretations that have emerged in recent studies. Despite the expanding scope of the food security concept, the widely accepted definition by the Food and Agriculture Organization (FAO) remains the most frequently cited in the studies reviewed. According to FAO (1996, 1), “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.”

The FAO (2009) outlines four key pillars of food security: food availability, access, utilization, and stability. While these pillars remain foundational, recent literature has begun to incorporate additional dimensions, such as food sustainability and agency. However, only a few studies (e.g., Brogan et al. 2023; Ajates et al. 2023) have explicitly acknowledged these new dimensions in their discussions of food security. Moreover, an increasing focus on nutrition has been observed in recent research (e.g., Brogan et al. 2023; Hartatik et al. 2023; Kolog et al. 2023; Liao et al. 2024; Shumeta and D’Haese 2018). For instance, Kolog et al. (2023) adopted the Ghana Ministry of Food and Agriculture’s operational definition of food security, emphasizing the importance of nutritious food that is hygienically packaged, attractively presented, available year-round, and accessible at affordable prices. Similarly, Shumeta and D’Haese (2018) highlighted that achieving food security requires not only physical access to sufficient food but also economic access to preferred and nutritionally appropriate food from markets.

Furthermore, the definition of food security has evolved to encompass broader sociopolitical considerations. Bernaschi and Crisci (2018) argued that food security is not merely about access to food but also involves entitlements, highlighting the institutional, political, and socioeconomic conditions that underlie food insecurity. These conditions are influenced by access to labor, land, and productive resources. Boone and Taylor (2016) extended this view by connecting food security to the concept of food sovereignty, which asserts the right of individuals and communities to govern their food systems and define how to achieve food self-sufficiency in culturally meaningful ways.

They critiqued the narrow view in the literature that equates food security with the availability of sufficient calories, neglecting the political aspects of food production and distribution. Food sovereignty, as emphasized by Liao et al. (2024), involves ensuring access to culturally appropriate, nutritious, and healthy food, and cooperatives play a pivotal role in bridging food security and sovereignty. By facilitating collective action, resource sharing, and local governance, cooperatives empower communities to enhance their food security and sovereignty.

Additionally, recent studies have emphasized the importance of household-level food security. Hartatik et al. 2023 argued that food and nutrition security should be viewed not only in terms of macrolevel food production, distribution, and provision but also through the microlevel lens of household access to food and the nutritional status of family members, particularly children and pregnant women from disadvantaged households. In line with this, Aweke et al. (2022) adopted Ecker and Breisinger's (2012) definition of household food security, which focuses on a household's capacity to produce or purchase sufficient, high-quality food to meet family requirements, as well as the necessary resources and services to achieve food security. Similarly, Guyalo and Ifa (2023) defined household food security as a household's ability "to produce adequate food and have sufficient resources to acquire food."

It is important to note that some studies in the literature no longer explicitly define food security but instead focus directly on outcomes, indicators, and measures related to food security. This shift reflects a broader trend in the literature toward operationalizing food security in ways that capture its complex, multifaceted nature, often through empirical analysis and the use of specific indicators.

THEORETICAL PERSPECTIVES LINKING COOPERATIVES AND FOOD SECURITY

This section presents the theoretical foundations and guiding principles that elucidate the role of cooperatives in improving food security, as discussed in the studies included in the systematic review. The concept and principles of cooperatives and the theoretical frameworks identified through this research shed light on the mechanisms through which cooperatives enhance efficiency,

reduce transaction costs, and promote collaboration and how cooperatives build networks, foster trust, and optimize resource allocation to meet member and community needs—all of which are posited to enhance food security.

1. Cooperative Definition and Principles

The International Cooperative Alliance (ICA, n.d.) defines cooperatives as “people-centred enterprises owned, controlled, and run by and for their members to realize their common economic, social, and cultural needs and aspirations.” These value-driven entities promote fairness, equality, and social justice, fostering collaboration to create sustainable enterprises. The International Labour Organization (ILO 2022) further categorizes cooperatives as part of the social and solidarity economy (SSE), engaging in economic, social, and environmental activities. These activities aim to serve collective interests, including food security, through voluntary cooperation, mutual aid, democratic governance, and prioritizing people over capital in surplus allocation.

Cooperatives embody the democratic principles of the social economy and adopt a social work approach to address rural community needs (Ku and Kan 2023). The social economy integrates individuals with their socioeconomic and cultural environments in an egalitarian framework, tackling structural inequalities through bottom-up strategies. Rural cooperatives, as noted by Ku and Kan (2023), create community networks of rewards and sanctions, ensuring collective interests and mutual profitability.

2. Theoretical Foundations

Existing research draws on various theories to explain how cooperatives offer opportunities for enhancing food security in different settings. From the literature reviewed, five studies explicitly identified and explained the theories on which they drew their arguments regarding the link between cooperatives and food security. These theories are briefly explained below.

Collective Action Theory. The theory of collective action offers a framework for understanding the motivations behind individual cooperation (Olson 1965; Ostrom 2007). It is predicated on the premise that a group of individuals sharing common interests engage voluntarily to advocate for those interests

in pursuit of shared objectives (Olumeh and Mithöfer 2024; Ostrom 2007). In cooperatives, collective action reduces transaction costs and enhances efficiency, leading to improved incomes and food security (Olumeh and Mithöfer 2024; Kalogiannidis et al. 2024).

Institutional Theory. Institutional theory explores the rules and frameworks shaping human interactions and their influence on food systems (Manlosa et al. 2023). Institutions, defined as cognitive, normative, and regulative structures, affect resource access and allocation. The cognitive aspect pertains to established thought patterns that influence individuals' worldviews and behaviors. Regulative measures include conservation areas that restrict resource utilization, while normative aspects encompass cultural gender norms that prescribe roles and access to resources, thereby influencing food security (Manlosa et al. 2023).

Game Theory. Game theory provides insights into cooperative dynamics in managing public goods and ensuring food security (Liao et al. 2024; Tilman et al. 2019). It explains the interactions among agents and the environment and the role of institutions in shaping these interactions. It also offers insights into how groups with conflicting interests can cooperate towards achieving a common goal such as addressing nitrogen pollution and food insecurity (Liao et al. 2024).

Social Network and Social Capital Theories. Social network theory analyzes relationships between entities, emphasizing the importance of social capital and trust in collaboration (Liu et al. 2017). Strong social networks foster resource sharing, innovation dissemination, and knowledge exchange, critical to addressing food insecurity (Kalogiannidis et al. 2024). Relatedly, social capital theory (Bourdieu 1986) posits that relationships generate economic benefits, enabling individuals to access diverse resources and opportunities. Brogan et al. (2023) argue that relationships within cooperatives enhance adaptability, promote diversity in capital, and extend beyond financial resources.

Consumer Behavior Theory. Consumer behavior theory explains how product awareness and behavioral intentions are influenced by subjective norms, perceived control, and attitudes (Coşkun and Yetkin Özbük 2020). Brogan et al. (2023) highlight the interplay between culture, society, and personal

preferences in consumer food choices, underscoring the role of attitudes in food-related decisions.

Transaction Cost Economics. Coase's (1937) theory of transaction cost economics asserts that inefficiencies in resource allocation underlie market failures. Through integration, cooperatives can mitigate these failures by optimizing resource use and reducing transaction costs (Pereira 2014; Kalogiannidis et al. 2024). This reinforces their role as mechanisms to correct market inefficiencies and foster food security.

COOPERATIVES AS CATALYSTS OF IMPROVED FOOD SECURITY

The six pillars of food security, namely availability, access, utilization, stability, agency, and sustainability, form a comprehensive framework for the analysis of the role of cooperatives in food security. Cooperatives, as collective organizations, are key to improving food security by enhancing access to resources, technologies, markets, and financial aid, and fostering social networks and governance to address systemic inequalities in food systems.

In this study, patterns through which cooperatives impact food security dimensions, including their role in information access are identified. It also explores instances where cooperatives demonstrated a nonpositive influence on food security.

1. Food Availability

Food availability depends on agricultural productivity, access to inputs, and efficient markets (Barrett 2010; FAO 2008). Cooperatives are pivotal in addressing smallholder farmers' challenges, boosting productivity, and stabilizing food supplies through resource pooling, input access, and collective bargaining. Studies globally emphasize the transformative role of cooperatives in improving food availability.

In Romania, smallholder farms have faced significant challenges due to the dominance of large-scale agricultural enterprises, resulting in limited access to essential agricultural inputs, advanced technologies, and market opportunities (Dumitru et al. 2022). These constraints have led to inefficiencies

and economic hardships for smallholder farmers. To address these challenges, Dumitru et al. (2022) noted that smallholders have responded by forming cooperatives, enabling farmers to collectively overcome structural barriers, enhance production capacities, and improve their competitive position in the agricultural market. By consolidating resources, cooperatives foster a more balanced agricultural environment, thereby contributing to greater food availability in the region. Similarly, in Indonesia, village unit cooperatives have improved farmers' access to fertilizers, credit, and fair markets, reducing reliance on exploitative lenders, and thereby enabling them to stabilize production and strengthen local food systems (Hartatik et al. 2023).

Further studies highlight cooperatives' role in providing access to inputs and modern technologies, boosting agricultural productivity and food security. Kalogiannidis et al. (2024) and Sedana (2020) emphasised that cooperatives serve as crucial instruments for improving agricultural production by ensuring that farmers have access to essential inputs and technologies. Similarly, in Ethiopia, cooperatives have helped bridge the resource gap for smallholder farmers by promoting the adoption of modern agricultural technologies, which, when coupled with training on efficient farming techniques, increase productivity while reducing input costs. This enables farmers to maintain consistent production levels (Shumeta et al. 2018).

Cooperatives also contribute to higher agricultural yields by facilitating the timely delivery of seeds, fertilizers, and other inputs. Shumeta and D'Haese (2018) demonstrated that cooperative members achieved higher levels of food crop production compared to their nonmember counterparts, not only due to the adoption of improved technologies but also because of better access to affordable, high-quality inputs such as seeds and fertilizers. Similarly, a case study by Sedana (2020) in Indonesia showed that the collective approach of the Subak Cooperative enabled farmers to manage agricultural inputs, including fertilizers and certified seeds, resulting in increased production efficiency and cost savings.

Furthermore, the literature underscores cooperatives' role in boosting farmers' productivity through collective bargaining. This process, where agricultural producers negotiate with buyers and suppliers, secures better prices, working conditions, and benefits (Kalogiannidis et al. 2024). It strengthens smallholder farmers' negotiating power, enabling a unified stance

against larger corporations. Kalogiannidis et al. (2024) found that collective bargaining and improved market access significantly enhanced food security for farming households in Greece. The resulting economic benefits allow farmers to reinvest in production, boosting productivity and ensuring better-quality, fairly priced food for communities.

2. Food Access

Accessibility refers to the ability of individuals and households to obtain sufficient food, whether through economic, physical, or social means (FAO 2008). Cooperatives contribute to this dimension by improving market access, reducing transaction costs, and providing financial support to members, among others. Most of the empirical studies reviewed in this study underscore the food access dimension of food security, confirming the positive influence of cooperative membership on household food security as measured by indicators or scales that mainly focus on food access and dietary diversity.

The study by Guyalo and Ifa (2023) is a key empirical investigation into the impact of cooperative membership on household food security. This research utilized two primary food security scales focused on food access—the Household Food Balance Model (HFBM) and the Household Food Insecurity Access Scale (HFIAS)—to examine whether membership in agricultural cooperatives results in significant differences in food security levels between cooperative members and non-members in the Oromia region of Ethiopia. The findings revealed that cooperative members exhibited lower HFIAS scores and higher daily calorie consumption compared to nonmembers, indicating better food security outcomes. These results align with those of Mncube et al. (2023), who found that agricultural households in South Africa with access to cooperatives enjoyed better food access, as evidenced by lower HFIAS scores.

In a more recent study, Olumeh and Mithöfer (2024) explored the food security status of baobab collectors in Malawi, using the Food Consumption Score (FCS) and Household Dietary Diversity Score (HDDS) as indicators of food access and diet quality. The study found that membership in cooperatives had a positive effect on food security, as cooperatives provided vital support through improved marketing opportunities, better pricing, and quality assurance, ultimately enhancing baobab revenue. This supports the findings of earlier studies by Derso et al. (2021) and Aweke et al. (2022), which demonstrated a

positive and significant impact of cooperative membership on food security in Ethiopia, as measured by household dietary diversity and food consumption frequency, respectively. Aweke et al. (2022) particularly explained that households who were cooperative members were in a better food security situation than those households who were non-members because the former had better access to agricultural inputs (i.e., fertilizer and seed), capacity building, and marketing services that helped improved their household assets.

Further reinforcing the above findings, research by Zeweld et al. (2015) and Kassy et al. (2021) also confirmed the positive relationship between cooperative membership and household food security. Zeweld et al. (2015) found that membership in cooperatives was associated with higher food expenditure per adult equivalent, indicating better food security. The study highlighted various cooperative benefits, such as financial assistance (loans and grants), job creation, provision of agricultural inputs, and business services (e.g., grinding mills), which contributed to improved food security. Similarly, Kassy et al. (2021) demonstrated that cooperative membership in Nigeria had a significant positive impact on food security, as measured by the Freedom from Hunger scale, primarily due to the economic benefits provided by loans.

From an urban perspective, the benefits of cooperative membership extend beyond agricultural contexts. Depasquale et al. (2018) highlighted that individuals working in cooperatives experience improved job security, higher wages, and enhanced opportunities for skill development, all of which increase their economic access to food. Consumer food cooperatives, such as the Park Slope Food Co-op in New York City and the South Bronx Food Co-op, play a crucial role in ensuring access to affordable and healthy food options for underserved urban communities by reducing costs and minimizing markups, making food prices more affordable compared to conventional grocery stores.

Improved Market Access

Under the food access dimension, a growing body of literature highlights cooperatives' role in improving market access for agricultural producers, enhancing their income and capacity to purchase food. Cooperatives and other SSE organizations are increasingly recognized as effective allies for farmers, fostering economic resilience and improving market access for agricultural producers and communities.

By facilitating the creation of shorter supply chains, cooperatives reduce transport transaction costs and postharvest losses, as well as ensure food safety (Ajates et al. 2023; Dumitru et al. 2022). Their collective marketing approach strengthens farmers' and fisherfolk's bargaining power in negotiations with buyers, enabling a shift from subsistence to commercial farming due to improved economic conditions (Garcia-Lorenzo et al. 2021). For example, cooperatives in Europe and Asia have ensured consistent food supplies for fishing communities while promoting local economic development through collective engagement (Garcia-Lorenzo et al. 2021).

Manlosa et al. (2023) further highlighted multipurpose cooperatives in Ethiopia that reduce market transaction costs, mitigate market risks, and prevent the concentration of benefits among a small number of private traders by providing essential market services. Similarly, Gebru et al. (2019) demonstrated how cooperatives—specifically multipurpose and savings and credit cooperatives—serve as social networking mechanisms, positively affecting food security outcomes. Their study in rural Ethiopia found that these cooperatives facilitated increased farmer participation in vegetable businesses, enhancing food security in local villages.

In Romania, cooperatives help small producers overcome challenges posed by larger agribusinesses, boosting economic viability and food security (Dumitru et al. 2022). In Brazil, Dantas et al. (2020) found that cooperatives connect family farmers to wider markets, enable direct and equitable trade transactions, and help farmers effectively navigate logistical challenges. Moreover, cooperatives coordinate collective action to manage market risks, linking farmers to markets, agencies, and development projects (Bacon et al. 2014).

Credit Access and Financial Assistance

There has been increased scholarly attention given to the role of cooperatives in improving credit access and providing financial assistance to agricultural and nonagricultural households alike to enable them to afford the production and purchase of food for their families. The provision of credit support, particularly in the form of low-interest loans by cooperatives, has been identified as an important strategy in alleviating food insecurity among farming households (Oke et al. 2023). In a recent empirical study, Oke et al.

(2023) examined the role of cooperatives in improving loan accessibility for farmers, finding that such financial support contributed to increased income levels and enhanced food security.

Specifically, household heads who successfully secured production loans from cooperatives were more likely to achieve a higher level of food security compared to those who were neither cooperative members nor beneficiaries of such loans. This outcome may be attributed to the improved access to financial resources, which enabled households to address both basic food needs and other essential household expenditures (Oke et al. 2023). Additionally, the study corroborated the notion that cooperative membership plays a significant role in enhancing the food security status of agricultural households in Nigeria, as measured by the United States Department of Agriculture (USDA) Food Security Survey Module.

In a related study, Bacon et al. (2014) explored the impact of cooperatives on food security in Nicaraguan coffee farming households, finding that seasonal hunger was less prevalent among those who had access to credit for production through cooperatives. These cooperatives offered loans at significantly lower interest rates (ranging from 15 to 18 percent annually) compared to alternative credit sources, such as local traders, who charged much higher interest rates (between 36 and 60 percent) (Bacon et al. 2014).

Moreover, the role of nonagricultural cooperatives in enhancing food security was highlighted by Depasquale et al. (2018) in their study of worker cooperatives in the United States. These cooperatives, although not directly related to agriculture, play a crucial role in promoting food security by providing affordable food options to members and facilitating the aggregation of investments. This collective approach fosters wealth accumulation for low-income workers, thereby contributing to their overall food security and economic well-being.

3. Food Utilization

Utilization refers to the effective use of food to meet nutritional and dietary needs, including considerations of food safety, quality, and preparation (FAO 2006). Based on the studies reviewed, the literature provides limited evidence on the role of cooperatives in improving the utilization dimension

of food security. Although not directly focusing on health and nutrition, the use of dietary diversity as a scale for measuring food security in some studies such as the works of Aweke et al. (2022), Derso et al. (2021), and Olumeh and Mithöfer (2024), reflects the quality, variety, and nutritional adequacy of food consumed or the households' ability to utilize food to meet their dietary and nutritional needs. As FAO (2013) explained, dietary diversity serves as a qualitative measure reflecting household food utilization, particularly access to a variety of foods and nutrient adequacy in individual diets. Findings from the said studies suggest that cooperative membership is strongly associated with improved dietary diversity and food consumption patterns.

In addition, Brogan et al. (2023) highlighted the contribution of cooperatives to food utilization by means of raising awareness about proper nutrition. Their study reported that artisan cooperatives in East Africa provide nutritional education programs targeting women. These programs empower members to make informed dietary choices, leading to improved household dietary quality. Depasquale et al. (2018) also showed how consumer food cooperatives promote food justice by offering affordable and healthy food options, addressing both nutritional and economic disparities.

In a similar vein, Chandra et al. (2021) analysed the Amma Unavagam (Amma Canteens) initiative in Tamil Nadu, India, a state-subsidized food programme designed to alleviate urban food insecurity and counteract escalating food prices. Operated by women's self-help groups and structured around cooperative management principles, including democratic participation and shared accountability, the canteens provide hygienic, nutritionally balanced meals at nominal cost. Through the provision of affordable and healthier food alternatives, the initiative advances both the economic resilience and dietary well-being of its beneficiaries.

4. Agency

Agency emphasizes individuals' and communities' ability to make autonomous decisions about their food systems and participate in shaping policies (HLPE 2020). Cooperatives empower their members by fostering social solidarity and inclusion and enhancing decision-making capacities. They also offer opportunities for social networking and collaborations, which also play a

central role in fostering agency. Evidence from previous research, as discussed below, shows how cooperatives improve food security by enhancing agency.

Fostering Solidarity and Inclusion

Solidarity, in this context, refers to the inclusion of socioeconomically and culturally diverse members within a community, ensuring equitable access to sustainable food systems (Fourat et al. 2020). By promoting collective action, cooperatives foster a sense of community that is essential for food security, which requires the active participation of local populations. Solidarity and social inclusion, which are core elements of cooperative principles, facilitate greater access to food resources and opportunities.

A case study by Bacon (2015) on PRODECOOP, a primary farmers' cooperative in Nicaragua, demonstrates how solidarity strengthens social ties, which in turn fosters collective action to address food insecurity. The study emphasizes that cooperatives facilitate the exchange of resources such as seeds and inputs, as well as engage in soil conservation efforts, which are typically beyond the capacity of individual farming households. This collaboration helps local communities better align food production with local consumption needs and cultural preferences (Ajates et al. 2023). Moreover, cooperatives represent farmers in food policy discussions, thereby amplifying their voices in policymaking processes and contributing to a more democratic and inclusive food system (Bacon 2015). This interplay between food security and food sovereignty is further enhanced by the solidarity and social inclusion promoted by local cooperatives.

Brogan et al. (2023) and Dantas et al. (2020) further highlighted how cooperatives serve as hubs for social networks and strengthen social cohesion and community solidarity, which are vital for improving food security, particularly agency. Membership in farmer and artisan cooperatives establishes networks, where farmers and artisans gain access to information, resources, and social mobility. In addition, Mustafa et al. (2021) also noted the importance of linking cooperatives to various stakeholders, such as government agencies, development organizations, and private actors, in order to address food and nutrition insecurity more effectively. Their study pointed out that the cooperative model offers a platform for such collaborations, which

can break down barriers between sectors and facilitate more integrated food security strategies.

Empowering Women and Disadvantaged Groups

Cooperatives have a particularly significant role in empowering women by enhancing their agency and control over food choices. Brogan et al. (2023) demonstrated that women in East Africa, through their participation in artisan cooperatives, gain access to social networks that provide vital resources and information on sustainable food practices. These networks not only improve women's economic status but also expand their ability to make informed food choices, which is crucial for food security. By gaining control over their dietary preferences, women can contribute to improved food utilization within their households, ensuring better nutrition and health outcomes. In a related study, Chandra et al. (2021) showed that participation in food provisioning initiatives such as the Amma Unavagam can enhance women's agency by creating livelihood opportunities and involving them in decision-making processes concerning food distribution and service delivery. Both studies demonstrate how empowerment through solidarity and collective action underscores the broader role of cooperatives in promoting gender equity within food systems.

Cooperatives also play a key role in integrating disadvantaged groups into local food systems. The Barikamà cooperative in Italy demonstrates how cooperatives can provide equal opportunities for migrants and marginalized populations through social participation and network-building (Bernaschi and Crisci 2018). This integration fosters a more inclusive, democratic, and sustainable food system that enhances food security. By creating networks of solidarity, cooperatives help to bridge social divides, ensuring that all community members, regardless of their socio-economic background, have access to food resources and opportunities.

5. Stability and Sustainability

Stability and sustainability are closely intertwined pillars of food security, both essential for ensuring consistent and long-term access to adequate nutrition. Stability emphasizes the importance of maintaining uninterrupted access to food over time, safeguarding against external shocks such as climate change, economic crises, natural disasters, and conflict that can disrupt food

availability, accessibility, and utilization (FAO 2006). Sustainability, on the other hand, focuses on the long-term viability of food systems, ensuring that food production and distribution do not deplete natural resources or harm the environment (HLPE 2020).

Food security is inherently linked to the stability and sustainability of agricultural systems, especially in the face of growing environmental challenges and climate change. As food systems worldwide are increasingly vulnerable to such pressures, the role of cooperatives in enhancing both the stability and sustainability of food security has become pivotal. Cooperatives are uniquely positioned to foster the adoption of sustainable agricultural practices and technologies, foster collaborative actions for sustainable food systems, and facilitate community-based governance for managing resources and risks, which help buffer communities from food insecurity, while also ensuring the long-term resilience of food systems.

Sustainable Agricultural Practices and Technology Adoption

The adoption of sustainable agricultural practices is a cornerstone for maintaining food security, particularly food stability. Cooperatives have proven to be instrumental in promoting such practices among their members, leading to improved food security outcomes. A key example of this is the promotion of production diversification within cooperatives. Diversification, particularly through the cultivation of a variety of food crops, reduces vulnerability to agricultural risks such as crop failures and pests, which in turn ensures food availability and stability. Ajates et al. (2023) and Boone and Taylor (2016) highlighted diversified home gardens as an example, providing fresh, nutritious food while boosting farm income and household economic stability. These home gardens not only provide fresh and nutritious food but also improve farm income, contributing to the economic stability of households.

Taye et al. (2024) emphasised the critical role of cooperatives in promoting livelihood diversification, which is essential for mitigating risks tied to agricultural production and improving household resilience. By facilitating a broader range of economic activities, cooperatives enhance the ability of rural households to adapt to shocks such as crop failures or market fluctuations. Boone and Taylor (2016) illustrated this with ADECOOP, a coffee cooperative in Nicaragua, where the promotion of biodiverse home gardens helps ensure

food security by minimizing production risks and enhancing access to diverse food sources. This approach aligns with the broader goal of food stability, wherein communities have reliable access to nutritious food throughout the year, even amid environmental uncertainties.

Recent studies further validate cooperatives' positive role in promoting sustainable practices and technologies. Kalogiannidis et al. (2024) discussed how the integration of modern agricultural technologies within cooperative frameworks in Brazil has significantly improved food security outcomes by enhancing agricultural productivity and sustainability. Similarly, Kone and Uzmay (2024) reported that cooperatives in Burkina Faso have played a key role in the adoption of sustainable agricultural technologies, which in turn improve food security by increasing household food availability, accessibility, and stability. These findings demonstrate the cross-cutting benefits of cooperatives in fostering both sustainable farming practices and food stability.

Collaborative Action for Sustainable Food Systems

In addition to promoting individual sustainable practices, cooperatives also facilitate collaboration among multiple stakeholders, which is essential for building resilient food systems. Multistakeholder initiatives exemplify the power of collaboration in enhancing food security. For example, Bacon et al. (2014) detailed the partnership between the Community Agroecology Network (CAN) and PRODECOOP in California. Through this partnership, collective action among smallholder cooperatives, nonprofit organizations, and farmers facilitated access to profitable markets, fair pricing, and the distribution of climate-resistant seed varieties. These initiatives not only ensure access to sustainable production inputs but also support the equitable distribution of food, demonstrating the potential of cooperative models in fostering sustainable and inclusive food systems.

Similarly, in rural China, Kun and Kan (2023) showcased how rural cooperatives in Pingzhai promote sustainable food production and consumption through participatory action research. These cooperatives helped empower local communities by improving household incomes and fostering social cohesion. The collaborative nature of these cooperatives enables communities to collectively address food insecurity, while also implementing sustainable agricultural practices that promote long-term food security.

Community-Based Governance for Managing Resources and Climate Risks

Beyond sustainable practices, cooperatives also contribute to food security by facilitating effective community-based governance, particularly in managing natural resources and mitigating climate-related risks. Sustainable governance of natural resources such as water, forests, and pastures is essential for ensuring the long-term stability of food production systems. Cooperatives play a central role in this governance by coordinating collective action and engaging members in the sustainable management of these common-pool resources. Bacon (2015) underscored the importance of local institutions, such as farmers' cooperatives, in managing these resources sustainably. Cooperatives help manage resources more effectively, ensuring that the needs of all community members are met without depleting these resources, which are vital for food production.

Zeweld et al. (2015) further explored how cooperatives contribute to environmental rehabilitation and the management of natural resources, thereby ensuring long-term food security in Ethiopia. Through collective action, cooperatives enable members to jointly address environmental challenges, such as soil degradation and water scarcity, which can have detrimental effects on agricultural productivity and food availability.

The role of cooperatives extends to managing climate risks, particularly the effects of climate change, which threaten food stability. Liao et al. (2024) highlighted how cooperative food banks (CFBs) can serve as governance mechanisms that mitigate the impact of extreme weather events and climate risks on food security. CFBs promote voluntary participation, cooperation, and equality among members, ensuring that food aid is distributed equitably during periods of food shortages caused by climate extremes. Additionally, CFBs incentivize members to reduce their environmental footprint, such as nitrogen pollution, through collective action. By managing both food distribution and environmental sustainability, cooperatives ensure that food security remains resilient to climate risks and shocks.

6. Access to Information and Its Cross-Cutting Impact on Food Security

Cooperatives play a crucial role in enhancing food security through the facilitation of knowledge exchange, impacting all six dimensions of food security: availability, access, utilization, stability, agency, and sustainability. Studies (e.g., Chivundu et al. 2019; Depasquale et al. 2018; Ibrahim et al. 2023; Kalogiannidis et al. 2024) consistently highlight how cooperatives facilitate access to information, positively influencing various aspects of food security.

One fundamental principle of cooperatives is their “concern for community,” positioning them as key actors in providing educational programs aimed at enhancing market and entrepreneurship knowledge. By equipping community members with business expertise, cooperatives empower individuals economically and contribute to food security through improved economic access to food (Depasquale et al. 2018). In Malawi, Chivundu et al. (2019) demonstrated that agricultural cooperatives play a significant role in promoting entrepreneurial knowledge and skills among members. As individuals develop an entrepreneurial mindset, they can increase food production and resource productivity, improving food availability, accessibility, and market systems, directly enhancing food security at household and community levels.

The influence of cooperatives on food security through knowledge exchange is also evident in studies from Nigeria. Ojo et al. (2022) and Ibrahim et al. (2023) found that cooperative membership positively impacts farm households’ food security status. For example, rice farmers’ cooperatives in Nigeria exchange vital information during meetings on new technologies and sustainable practices. This exchange improves farmers’ knowledge, enhancing food security by increasing agricultural productivity, diversifying food production, and improving dietary diversity among households (Ojo et al. 2022; Ibrahim et al. 2023).

In East Africa, cooperatives further contribute to food security by providing social networks that connect members to crucial information. For instance, artisan cooperatives in Rwanda and Kenya offer nutritional education programs particularly targeting women to raise awareness about healthy diets and food choices (Brogan et al. 2023). These programs not only enhance food utilization but also empower women by strengthening their agency and

decision-making capacity regarding food. Taye et al. (2024) highlighted that cooperatives also improve economic access to food by facilitating knowledge exchange and promoting livelihood diversification strategies, contributing to more stable and resilient food systems.

The role of cooperatives in providing agricultural information extends beyond Africa. Kalogiannidis et al. (2024) examined how knowledge exchange within Greek farmer cooperatives positively influences food security and sustainability. Similarly, Sedana (2020) demonstrated that Indonesian cooperatives disseminate agricultural information and sustainable practices, ensuring farmers adopt the latest techniques to improve production and food security.

In summary, cooperatives are integral to enhancing food security through their role in facilitating knowledge exchange. By providing farmers and communities with critical information, cooperatives enhance food availability, access, utilization, and stability. They also contribute to sustainability and agency, empowering individuals with the skills and knowledge to improve production, diversify livelihoods, and make informed food choices. As such, cooperatives address immediate food security needs while contributing to long-term resilience and well-being.

7. Nonpositive Effects of Cooperatives on Food Security

While the majority of studies indicate a positive relationship between cooperative membership and food security, notable exceptions reveal potential adverse impacts under certain conditions. Kolog et al. (2023) found that agricultural cooperative members in Ghana were more food insecure than nonmembers. This negative outcome stemmed from cooperatives failing to adhere to their foundational values, principles, and missions, particularly in delivering support services to their members. Poor governance, operational inefficiencies, and financial mismanagement can render cooperatives ineffective, highlighting the critical role of democratic ownership and participatory management in their success (Depasquale et al. 2018).

Similarly, Kpadé et al. (2023) demonstrated that members of inactive or poorly functioning cooperatives in Ivory Coast and Senegal experienced higher levels of food insecurity compared to non-members or members

of active cooperatives. Active cooperatives, characterized by democratic leadership, strong member participation, and effective service delivery, were more successful in addressing food insecurity. These findings underline the importance of managerial competence, member engagement, and operational consistency in ensuring cooperatives fulfill their intended purpose.

AGENDA FOR FUTURE RESEARCH

Building on the insights from the findings of this study, the following research directions are proposed to address the existing literature gaps and advance both the fields of cooperatives and food security:

1. More studies are needed on underexplored food security dimensions such as agency and utilization, which remain insufficiently addressed in the current literature. Research investigating how cooperatives influence concepts like food sovereignty, food justice, and dietary quality and nutrition could fill key gaps and provide a more holistic view of their contributions to food security.
2. Most existing research focuses on household-level food security outcomes, leaving the national-level contributions of cooperatives underexplored. Understanding how cooperatives influence food security at the macro level, such as shaping national food policies, contributing to regional food systems, or addressing systemic food supply challenges, represents a significant opportunity for future research.
3. Comparative and multicountry analyses are essential to broaden the scope of existing knowledge. Current research is disproportionately focused on Africa, with limited studies conducted in Asia and other developing regions. Comparative studies across countries can help identify best practices and inform context-specific interventions. Additionally, whereas agricultural cooperatives have received significant scholarly attention, food security contributions of other cooperative types such as marketing and consumer cooperatives, particularly in urban areas, are not well-documented. Future research should address these gaps to better understand the contributions of cooperatives to food security beyond the dimensions of availability, stability, and sustainability.

4. Greater emphasis should be placed on investigating gender and inclusion dynamics within cooperatives. Research on how women's participation affects cooperative performance and food security outcomes is particularly critical. Furthermore, understanding the role of cooperatives in integrating marginalized groups, such as migrants and indigenous populations, can provide valuable insights for fostering more equitable and inclusive food systems.

THEORETICAL AND POLICY IMPLICATIONS

This systematic review highlights significant theoretical insights into the role of cooperatives in addressing food security. The theoretical frameworks provide valuable foundations for understanding cooperatives' contributions to food security, yet they remain underutilized in fully explaining the complexity of cooperative impacts across all food security dimensions.

While many studies highlight the positive impacts of cooperatives, contrasting evidence (e.g., Kolog et al. 2023; Kpadé et al. 2023) points to the need for frameworks that account for cooperative inefficacies. Future research can draw from institutional theory (North 1990; Ostrom 2005) and resilience theory (Holling 1973; Walker et al. 2004) to help explore the conditions under which cooperatives succeed or fail, providing a deeper understanding of the organizational and contextual factors influencing their effectiveness. These theories may also offer the potential for further exploring how cooperative governance and collective risk management can shape food security outcomes under varying socio-political conditions. Moreover, as this review finds that utilization and agency remain underexplored dimensions in the literature, incorporating theories from behavioral economics and human capabilities frameworks could elucidate how cooperatives influence food utilization through dietary diversity and individual empowerment.

This study also identifies the following policy directions that can be considered to fully harness cooperatives' contributions to food security at the national level, particularly in the Philippine context:

1. Supportive environments tailored to the unique needs of cooperatives, particularly in regions with inequalities in resource access, could enhance their impact. This may include financial incentives, subsidies,

and capacity-building programs focused on governance, sustainable practices, and value chain integration.

2. Targeted legislative support and institutional interventions are instrumental in empowering cooperatives. Integrating cooperatives into national food security strategies and fostering active advocacy for such reforms by cooperative members themselves could help reduce reliance on external stakeholders and enhance cooperative autonomy.
3. Strengthening the operational and managerial capacities of cooperatives through targeted training in financial management, operational efficiency, and implementation strategies could contribute to their long-term sustainability. Providing cooperative leaders with the tools and knowledge to align their actions with cooperative principles may further enhance their effectiveness in supporting food security initiatives.
4. Policies that strengthen cooperatives' capacity as information hubs and platforms for knowledge sharing could further amplify the food security benefits of joining a cooperative. For instance, integrating digital tools and extension services into cooperative activities may enhance information dissemination, particularly in remote and underserved areas.
5. Fostering inclusivity within cooperatives may help address gaps in food access and equity. Efforts to support marginalized groups, including women and smallholder farmers, by enhancing their participation and decision-making within cooperative structures could result in more equitable food systems. Gender-sensitive approaches, in particular, could be beneficial in advancing these goals.
6. Collaboration between cooperatives, governments, nongovernment organizations, and private entities has the potential to open new markets, encourage the adoption of innovative technologies, and build resilience to economic and environmental shocks. Facilitating such partnerships can amplify cooperatives' contributions to food security.
7. Cooperatives play a role in addressing food injustice by empowering economically disadvantaged communities and improving access

to affordable, nutritious food options. Initiatives focused on wealth creation, inclusivity, and empowerment within cooperative frameworks could drive equitable transformation in food systems.

SUMMARY AND CONCLUSION

This discussion paper synthesized global evidence from 36 scholarly works to analyze the role of cooperatives in enhancing food security across its six dimensions: availability, access, utilization, stability, sustainability, and agency. The study underscores the potential of cooperatives as pivotal institutions capable of mitigating inequalities in food security and fostering transformative changes within food systems.

Key findings reveal that cooperatives play a significant role in enhancing all the pillars of food security by improving access to agricultural inputs, credit, and markets; promoting sustainable farming practices; and facilitating knowledge exchange. These functions contribute to increased agricultural productivity, diversified food production, and improved dietary diversity. Furthermore, cooperatives empower marginalized groups, including women, by strengthening their agency and fostering equitable participation in food systems. Through their collective action model, cooperatives reduce transaction costs, enhance bargaining power, and build resilience to economic and climatic shocks, thereby supporting the stability and sustainability of food systems.

This paper highlights the theoretical, policy, and research priorities identified in the literature through the systematic review. Addressing the research gaps, advancing theoretical frameworks, and fostering inclusive policies are essential steps to amplify the transformative potential of cooperatives in promoting food security. As the 2030 SDG deadline approaches, leveraging collective action through cooperatives is critical for accelerating progress toward achieving zero hunger at local, national, and global levels.

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