

Initiatives and Challenges of Agricultural Cooperatives in Advancing the Sustainable Development Goals: Evidence from Region I, Philippines

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ABSTRACT

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Agricultural cooperatives are recognized as important institutional actors in advancing the United Nations Sustainable Development Goals (SDGs), particularly in rural and agrarian economies. This study examined the initiatives, services, and challenges of agricultural cooperatives in relation to SDG implementation in Region I of the Philippines. A mixed-methods research design was employed, combining structured surveys of officers from 30 medium and large agricultural cooperatives with selected semi-structured

interviews to contextualize the quantitative findings. Descriptive statistics and



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cross-tabulations were used to analyze cooperative profiles, services, SDG-aligned initiatives, and governance, environmental, and market-related challenges. Findings show that most cooperatives are medium-sized, long-established, and moderately capitalized organizations with lean staffing structures. Their services are primarily concentrated on credit provision, commodity distribution, and agricultural input facilitation, while higher-value activities such as processing, mechanization, and diversified production remain less common. Cooperatives demonstrate strong engagement in SDGs related to poverty reduction, food security, decent work, and partnerships through fair pricing, microfinance, training, and collaboration with government and private institutions. However, these contributions are constrained by governance limitations, financial constraints, climate-related risks, and market competition. Medium-sized cooperatives experience greater vulnerabilities in governance, environmental pressures, and market access, while larger cooperatives face more bureaucratic and administrative constraints. The study highlights the need for profile-sensitive interventions that strengthen governance systems, expand access to finance and markets, and support investment in climate-smart and value-adding technologies. Greater integration of environmental sustainability into cooperative operations is also necessary to enhance the contribution of agricultural cooperatives to inclusive and sustainable rural development and to the achievement of the SDGs.

INTRODUCTION

Cooperatives play an important role in advancing sustainable development by linking economic activity with social inclusion, democratic governance, and community-oriented goals. In agriculture, cooperatives enable smallholder farmers to pool resources, gain access to inputs and markets, and strengthen their bargaining position, thereby supporting productivity, income stability, and food security (Birchall, 2004; Food and Agriculture Organization of the United Nations). Beyond these economic functions, agricultural cooperatives are increasingly viewed as key institutional actors in achieving the United Nations Sustainable Development Goals (SDGs), particularly those related to poverty reduction, zero hunger, decent work, and sustainable production systems (Food and Agriculture Organization of the United Nations; International Labour Organization, 2025; Ishak et al., 2025).

Over the past decade, research on agricultural cooperatives has moved beyond a narrow focus on financial performance toward broader concerns about sustainability, governance, and value-chain integration (Attolba-Aquino & Castañeda, 2025; Kalogiannidis et al., 2024). Studies from different regions

show that cooperative membership can strengthen compliance with sustainability standards, reduce opportunistic behavior in supply chains, and support collective action for environmental and social goals (Castilla-Polo et al., 2024; Sánchez-Navarro et al., 2024). Even so, while economic outcomes are relatively well documented, the environmental and social dimensions of cooperative performance remain less systematically examined, particularly in developing country settings.

Studies across Southeast Asia further demonstrate the important role of cooperatives in advancing sustainable agriculture and rural development. In countries such as Indonesia, Vietnam, and Thailand, agricultural cooperatives have contributed to improving farmer incomes, strengthening market integration, and promoting collective approaches to sustainable farming practices (Association of Southeast Asian Nations (ASEAN), 2022; Nguyen & Vo, 2022; Sujarwo & Anwarudin, 2023). ASEAN-based studies also emphasize that cooperatives serve as mechanisms for social inclusion, local empowerment, and climate adaptation in rural communities (Food and Agriculture Organization of the United Nations, 2025). However, these studies likewise reveal continuing challenges related to governance capacity, technological adoption, environmental sustainability, and market competitiveness, particularly among medium-sized and resource-constrained cooperatives (Nguyen & Vo, 2022; Sujarwo & Anwarudin, 2023). Despite the growing regional literature, empirical studies examining the relationship between agricultural cooperatives and SDG implementation in the Philippine context remain limited.

In the Philippines, agriculture continues to employ a large share of the workforce and remains central to rural livelihoods. Within this context, cooperatives are widely regarded as important instruments for inclusive and sustainable development. Through collective action, they facilitate access to credit, agricultural inputs, training, and markets, thereby supporting both economic growth and food security (Food and Agriculture Organization of the United Nations; Kalogiannidis et al., 2024). Despite this recognition, there is still limited empirical evidence on how agricultural cooperatives translate the SDG framework into concrete practices, especially across economic, social, and environmental dimensions. Much of the existing literature continues to emphasize financial performance and organizational survival, with less attention given to governance quality, social inclusion, and environmental sustainability (International Labour Organization; Sánchez-Navarro et al., 2024).

Governance and institutional capacity are widely seen as critical in shaping the ability of cooperatives to contribute meaningfully to sustainable development. Weak governance arrangements, limited managerial capacity, and financial

constraints can restrict investment in climate-smart agriculture, infrastructure, and human capital, thereby undermining long-term sustainability outcomes (Bijman et al., 2016; Castilla-Polo et al., 2024; Wanyama et al., 2009). At the same time, cooperatives operate in increasingly competitive and uncertain markets, facing pressure from large agribusiness firms, fluctuating prices, and environmental risks linked to climate change and resource depletion (Food and Agriculture Organization of the United Nations). These conditions suggest that cooperative contributions to the SDGs are not uniform but are likely to vary according to organizational characteristics such as size, years of operation, membership base, and asset capacity.

Despite the recognized importance of cooperatives in promoting rural development, existing studies remain heavily concentrated on financial performance, organizational survival, and economic outcomes. Comparatively less attention has been given to how agricultural cooperatives integrate social and environmental sustainability practices into their operations in support of the Sustainable Development Goals. In the Philippine context, particularly in agriculturally significant regions, empirical evidence examining cooperative initiatives across economic, social, and environmental dimensions remains limited. Moreover, few studies compare how governance, environmental pressures, and market-related challenges vary according to cooperative size. Addressing these gaps is important for developing profile-sensitive policies and institutional interventions that can strengthen the role of agricultural cooperatives in advancing inclusive and sustainable rural development.

Accordingly, this study investigates the initiatives and practices of agricultural cooperatives in Region I of the Philippines in relation to the SDGs. Specifically, it aims to: (1) describe the organizational profile of selected cooperatives in terms of size, years of operation, membership, employees, and assets; (2) identify the major services they provide and the SDG-aligned initiatives they implement; (3) examine the key challenges they face in governance, climate change and resource management, and market access and competition; and (4) analyze how these challenges vary according to cooperative size. Through this approach, the study seeks to contribute empirical evidence to the literature on cooperatives and sustainable development and to inform policy and institutional interventions that can strengthen the role of cooperatives as agents of inclusive and sustainable rural development.

METHODOLOGY

This study adopted a mixed-methods research design to examine the initiatives, services, and challenges of agricultural cooperatives in relation to the Sustainable Development Goals (SDGs). A mixed-methods approach was chosen to integrate quantitative and qualitative evidence and to provide a more comprehensive understanding of cooperative operations, governance, and sustainability practices (Creswell & Plano Clark, 2018). The quantitative component focused on describing cooperative profiles, services, and SDG-aligned initiatives, while the qualitative component was used to contextualize and enrich the interpretation of the survey results.

The study covered 30 medium and large agricultural cooperatives in Region I of the Philippines. These cooperatives were selected purposively based on two considerations. First, medium and large cooperatives were prioritized because they generally have wider membership bases, larger asset portfolios, and greater organizational capacity, making them more influential actors in local and regional development. Second, agricultural and multipurpose cooperatives were included because their activities extend beyond production to financial, social, and community-oriented services, allowing a broader assessment of contributions to the economic, social, and environmental dimensions of the SDGs.

Purposive sampling was employed because medium and large agricultural cooperatives possess broader operational coverage, larger membership bases, and greater institutional capacity than smaller cooperatives, making them more suitable for examining SDG-related initiatives and organizational challenges. These cooperatives are also more likely to implement formal governance structures, sustainability-related programs, and partnership activities that can provide richer empirical insights into cooperative contributions to sustainable development.

Quantitative data were collected through a structured survey questionnaire administered to cooperative officers. The instrument gathered information on organizational characteristics, including size, years of operation, membership, number of employees, and assets, as well as the services offered, SDG-aligned initiatives, and challenges encountered in governance, climate change and resource management, and market access and competition. The questionnaire items were developed based on relevant literature on cooperatives and sustainable development and were reviewed for clarity and relevance prior to data collection.

To complement the survey, qualitative data were obtained through selected semi-structured interviews with cooperative leaders and members. These interviews focused on governance practices, the implementation of SDG-related

initiatives, and perceived constraints and opportunities. The qualitative inputs were used primarily to support and clarify the quantitative findings rather than as a separate basis for thematic analysis.

The study complied with established ethical research standards involving human participants. Participation of cooperative officers and members was voluntary, and informed consent was secured prior to data collection. Respondents were informed about the objectives of the study, the confidentiality of their responses, and their right to withdraw participation at any stage of the research process. Data gathered from surveys and interviews were used exclusively for academic purposes and were treated with strict confidentiality and anonymity. Ethical clearance for the conduct of the study was secured from the appropriate institutional ethics review body.

To strengthen methodological rigor, the survey instrument underwent content validation through expert review prior to data collection. Questionnaire items were assessed for clarity, relevance, and alignment with the objectives of the study. Internal consistency was likewise examined through pilot testing to ensure that survey items appropriately measured the intended constructs related to governance, sustainability practices, and organizational challenges.

Data analysis relied on descriptive statistics, including frequency counts and percentages, to summarize cooperative profiles, services, and SDG-aligned practices. Cross-tabulations were used to examine differences in governance, climate- and resource-related, and market challenges according to cooperative size. The results are presented in tabular form and supported by narrative interpretation in the Results section. By integrating quantitative and qualitative evidence, the study provides a balanced assessment of the role of agricultural cooperatives in advancing the SDGs in the study area.

RESULTS AND DISCUSSION

Organizational Profile of Agricultural Cooperatives

Table 1

Organizational Profile of Agricultural Cooperatives in Region I (n = 30)

Profile Variable	Category	Frequency	Percentage (%)
Category of Cooperative	Medium	22	73.33
	Large	8	26.67
Years of Operation	1–10 years	2	6.67
	11–20 years	6	20.00
	21–30 years	8	26.67
	31–40 years	11	36.67
	41 years and above	3	10.00
Number of Members	< 1,000	13	43.33
	1,001–2,000	5	16.67
	2,001–3,000	6	20.00
	3,001 and above	6	20.00
Number of Employees	< 10	11	36.67
	11–20	12	40.00
	21 and above	7	23.33
Assets (2023)	₱15M–₱50M	10	33.33
	₱50M–₱100M	12	40.00
	₱100M–₱150M	1	3.33
	₱150M–₱200M	2	6.67
	₱200M and above	5	16.67

Table 1 summarizes the organizational profile of the 30 agricultural cooperatives included in the study. Most of the cooperatives are classified as medium-sized (73.33%), while 26.67% fall under the large category. In terms of years of operation, the sector is largely composed of long-established organizations, with the highest proportion operating for 31–40 years (36.67%). Only a small fraction (6.67%) has been in operation for 1–10 years, indicating that relatively few new cooperatives have entered the sector in recent years. Similar findings have been observed in earlier cooperative studies, which suggest that long-

established cooperatives tend to demonstrate greater organizational resilience, accumulated governance experience, and stronger institutional legitimacy within rural communities (Bijman et al., 2016; Wanyama et al., 2009).

Membership size varies across organizations. About 43.33% of cooperatives have fewer than 1,000 members, while 40.00% report memberships exceeding 2,000, reflecting a mix of smaller and highly expanded organizations. Staffing levels remain generally lean, with 76.67% of cooperatives employing fewer than 20 workers. With respect to assets, the largest share of cooperatives falls within the ₱50M–₱100M range (40.00%), followed by those with ₱15M–₱50M (33.33%). A smaller group (16.67%) reports assets of ₱200M and above, indicating the presence of a financially robust subset within the sector. Overall, the profile suggests that agricultural cooperatives in the study area are predominantly medium-sized, long-established, and moderately capitalized organizations. This organizational profile is consistent with studies emphasizing that medium-sized cooperatives often possess sufficient operational capacity to support rural development initiatives while still facing resource and institutional constraints that may limit expansion into higher-value and sustainability-oriented activities (Attolba-Aquino & Castañeda, 2025; Paraschou et al., 2025).

Services Offered by Agricultural Cooperatives

Table 2

Services Offered by Agricultural Cooperatives in Region I

Service Category	Frequency	Percentage (%)
Credit provision	25	83.33
Commodity procurement and distribution	19	63.33
Agricultural input facilitation	15	50.00
Product processing and marketing	13	43.33
Storage and transport services	9	30.00
Access to farm machinery	8	26.67
Employment generation	8	26.67
Raw material processing	8	26.67
High-value crop production	8	26.67
Dairy production	4	13.33
Aquaculture	3	10.00
Support to agrarian reform beneficiaries	3	10.00

The services provided by the cooperatives are presented in Table 2. Credit provision is the most common service, reported by 83.33% of cooperatives, highlighting the central role of cooperatives in improving members’ access to finance. This is followed by commodity procurement and distribution (63.33%) and agricultural input facilitation (50.00%), indicating that cooperatives primarily concentrate on functions that directly support farm production and marketing. These findings support earlier studies emphasizing that agricultural cooperatives remain important mechanisms for improving rural access to credit, production inputs, and market opportunities, particularly among smallholder farmers and rural producers (Birchall, 2004; Food and Agriculture Organization of the United Nations).

Engagement in higher-value services is less widespread. Product processing and marketing are offered by 43.33% of cooperatives, while storage and transport services are reported by 30.00%. Access to farm machinery, employment generation, raw material processing, and high-value crop production are each provided by 26.67% of cooperatives. More specialized activities, including dairy production, aquaculture, and support for agrarian reform beneficiaries, are reported by only a small proportion of organizations. Taken together, these results suggest that while cooperatives play a strong role in financial intermediation and input provision, their participation in value-adding and diversification activities remains limited. Similar patterns have been observed in previous studies, which found that many agricultural cooperatives continue to operate primarily as service and marketing intermediaries due to constraints in capital, technology, infrastructure, and managerial capacity (Kalogiannidis et al., 2024; Paraschou et al., 2025). These limitations may restrict the ability of cooperatives to expand into more sustainable and innovation-driven agribusiness activities that generate higher economic returns and stronger long-term competitiveness (Attolba-Aquino & Castañeda, 2025).

Cooperative Initiatives Aligned with the Sustainable Development Goals

Table 3
Cooperative Initiatives Aligned with the Sustainable Development Goals (SDGs)

SDG	Initiative/Practice	Percentage (%)
SDG 1: No Poverty	Negotiating fair prices	86.66
	Providing microloans and credit access	83.33
SDG 2: Zero Hunger	Increasing productivity through inputs/ technology	46.66–70.00

	Food distribution, processing, waste reduction	33.00–40.00
SDG 3: Good Health & Well-being	Promoting supportive networks	43.33
	Ensuring safe working conditions	40.00
SDG 4: Quality Education	Training, demonstrations, study tours	56.66
	Agricultural training and capacity building	46.66
SDG 5: Gender Equality	Equal access to resources and leadership	46.66
	Women's economic empowerment initiatives	40.00
SDG 8: Decent Work & Economic Growth	Promoting fair trade and ethical labor	63.33
	Employment and entrepreneurship opportunities	40.00–50.00
SDG 9: Industry, Innovation & Infrastructure	Investment in cooperative infrastructure	50.00
	Adoption of innovative technologies	36.00–40.00
SDG 10: Reduced Inequalities	Equal access to land, credit, and technology	36.66
SDG 11: Sustainable Cities & Communities	Community gardening and green spaces	30.00
	Local food systems and urban agriculture	20.00–23.33
SDG 12: Responsible Consumption & Production	Promoting fair trade principles	63.33
	Reducing food waste	16.66–40.00
SDG 13: Climate Action	Sustainable farming practices	40.00
	Water conservation and protection	16.66–23.33
SDG 15: Life on Land	Organic farming for ecological balance	43.33
	Agroforestry and pest management	33.33
SDG 16: Peace, Justice & Strong Institutions	Inclusive decision-making	33.33
SDG 17: Partnerships for the Goals	Partnerships with NGOs, government, private sector	73.33
	Advocacy and government support	60.00

Table 3 presents the initiatives and practices implemented by cooperatives in relation to the SDGs. The strongest engagement is observed for SDG 1 (No Poverty), with 86.66% of cooperatives reporting efforts to negotiate fair prices and 83.33% providing microloans and credit access. Substantial involvement is

also evident for SDG 8 (Decent Work and Economic Growth) and SDG 12 (Responsible Consumption and Production), particularly through the promotion of fair trade and ethical labor practices (63.33%). These findings reinforce earlier studies emphasizing that cooperatives play a significant role in poverty alleviation, economic inclusion, and livelihood improvement through collective bargaining, financial access, and market support mechanisms (Birchall, 2004; International Labour Organization, 2015; Ishak et al., 2025).

For SDG 4 (Quality Education), more than half of the cooperatives report conducting training activities, demonstrations, and study tours (56.66%), while 46.66% engage in broader agricultural training and capacity-building initiatives. Actions related to SDG 5 (Gender Equality) are reported by 40.00% to 46.66% of cooperatives, indicating a moderate level of integration of gender-focused practices. Environmental goals, including SDG 13 (Climate Action) and SDG 15 (Life on Land), are addressed through sustainable farming practices, organic agriculture, and agroforestry by roughly one-third to two-fifths of cooperatives, suggesting that environmental engagement, while present, is less extensive than economic and social initiatives. Similar observations have been reported in sustainability-oriented cooperative studies, which found that social and environmental sustainability practices are often less systematically integrated into cooperative operations than economic initiatives (Castilla-Polo et al., 2024; Sánchez-Navarro et al., 2024).

Partnership-related activities under SDG 17 are among the most widely reported, with 73.33% of cooperatives indicating collaboration with government, non-government organizations, and private sector actors, and 60.00% engaging in advocacy and efforts to secure government support. Overall, the pattern shows that cooperative initiatives are most strongly concentrated in economic and partnership-oriented goals, while social and environmental dimensions exhibit more variable levels of implementation. This pattern aligns with previous research suggesting that cooperatives rely heavily on institutional partnerships and external support systems to strengthen governance capacity, improve resource access, and sustain development-oriented programs in rural communities (Bijman et al., 2016; Food and Agriculture Organization of the United Nations).

Governance Challenges by Cooperative Size

Table 4

Governance Challenges by Cooperative Size

Governance Challenge	Medium (n = 22)	Large (n = 8)
Weak governance structures	6	2
Conflict among members	5	2
Bureaucratic hurdles	3	7

Medium-sized cooperatives more frequently report weak governance structures (six cases) and conflicts among members (five cases) compared with large cooperatives (two cases each). In contrast, bureaucratic hurdles are more commonly reported by large cooperatives (seven cases) than by medium-sized ones (three cases). This pattern suggests that medium-sized cooperatives are more affected by internal governance and cohesion issues, whereas larger cooperatives face greater administrative and procedural constraints associated with their scale and organizational complexity. Similar findings have been noted in cooperative governance literature, which emphasizes that smaller and medium-sized cooperatives often experience limitations in managerial capacity, organizational coordination, and institutional governance systems, while larger cooperatives tend to encounter more formalized bureaucratic and administrative challenges as operations expand (Bijman et al., 2016; Wanyama et al., 2009). Studies further suggest that effective governance structures and participatory decision-making mechanisms are critical in sustaining cooperative performance, organizational trust, and long-term sustainability outcomes (Attolba-Aquino & Castañeda, 2025; International Labour Organization, 2019).

Climate Change and Resource Depletion Challenges by Cooperative Size

Table 5

Climate Change and Resource Depletion Challenges by Cooperative Size

Climate/Resource Challenge	Medium (n = 22)	Large (n = 8)
Climate change impacts	14	5
Resource depletion	10	4
Land pressure	8	4

Table 5 summarizes climate- and resource-related challenges by cooperative size. Medium-sized cooperatives report higher exposure to climate change impacts

(14 cases), resource depletion (10 cases), and land pressure (eight cases) than large cooperatives, which report five, four, and four cases, respectively. These results indicate that medium-sized cooperatives are more vulnerable to environmental and resource-related pressures, potentially reflecting more limited financial and technical capacity to invest in adaptation and mitigation measures. Similar studies have shown that agricultural cooperatives with constrained institutional and financial resources are generally less capable of adopting climate-smart technologies, sustainable farming systems, and environmental risk management strategies (Food and Agriculture Organization of the United Nations; Paraschou et al., 2025). Existing literature likewise emphasizes that climate change, land degradation, and declining natural resources continue to pose major threats to agricultural productivity and long-term cooperative sustainability, particularly in rural and agrarian economies that remain highly dependent on natural resource-based livelihoods (Kalogiannidis et al., 2024; Ishak et al., 2025).

Market Access and Competition Challenges by Cooperative Size

Table 6
Market Access and Competition Challenges by Cooperative Size

Market Challenge	Medium (n = 22)	Large (n = 8)
Limited market reach	10	2
Competition with agribusiness	12	5
Price fluctuations	8	3

Medium-sized cooperatives more frequently report limited market reach (10 cases), competition with agribusiness firms (12 cases), and price fluctuations (eight cases) compared with large cooperatives, which report two, five, and three cases, respectively. This pattern suggests that larger cooperatives benefit from greater market reach and stronger bargaining power, while medium-sized cooperatives face more pronounced constraints in accessing markets and coping with competitive pressures and price volatility.

The results of this study highlight both the strengths and the constraints of agricultural cooperatives in contributing to the Sustainable Development Goals (SDGs). The predominance of medium-sized, long-established cooperatives with moderate asset bases and lean staffing structures points to a sector characterized by institutional continuity but limited organizational scale. This profile is consistent with earlier research showing that cooperative longevity supports resilience and accumulated governance experience, while constraints in financial and human

resources can limit operational efficiency and innovation (Bijman et al., 2016; Food and Agriculture Organization of the United Nations; Wanyama et al., 2009).

The strong focus on credit provision and commodity distribution underscores the central role of cooperatives in improving members' access to finance and markets. These functions remain the primary channels through which cooperatives support smallholder farmers, enhance productivity, and stabilize incomes (Birchall, 2009; Food and Agriculture Organization of the United Nations). At the same time, the relatively limited engagement in higher-value activities such as processing, mechanization, and diversified production suggests that many cooperatives continue to operate mainly as service and intermediation organizations rather than as fully integrated agribusiness entities. Similar patterns have been reported in other settings, where limited capital, technology, and managerial capacity constrain movement into more value-adding segments of the agricultural value chain (Kalogiannidis et al., 2024; Paraschou et al., 2025).

In terms of SDG alignment, cooperative initiatives are most strongly concentrated in economic and partnership-oriented goals, particularly SDG 1 (No Poverty), SDG 8 (Decent Work and Economic Growth), and SDG 17 (Partnerships for the Goals). The widespread emphasis on fair pricing, credit access, and partnership formation reflects the traditional strengths of cooperatives in promoting economic inclusion and collective action (International Labour Organization, 2019). Moderate engagement in education and gender-related initiatives suggests that cooperatives are contributing to social development objectives, although these efforts are not yet uniformly embedded across organizations. By contrast, environmental goals related to climate action and ecosystem protection show comparatively lower levels of implementation, indicating that ecological sustainability is still secondary to economic and social priorities for many cooperatives. This imbalance is consistent with earlier findings that non-financial dimensions of sustainability are often less systematically integrated into cooperative strategies and reporting (Castilla-Polo et al., 2024; Sánchez-Navarro et al., 2024).

The findings are generally consistent with studies conducted in other ASEAN countries, where agricultural sectors have likewise been found to contribute strongly to poverty reduction, agricultural productivity, and market access while facing persistent governance and environmental challenges (Association of Southeast Asian Nations [ASEAN], 2022; Food and Agriculture Organization of the United Nations, 2025). Research from Indonesia and Vietnam, for example, highlights that cooperatives play a significant role in supporting rural livelihoods and strengthening food security but often encounter limitations in financial

resources, climate adaptation, and technological innovation (Nguyen & Vo, 2022; Sujarwo & Anwarudin, 2023). Similar patterns observed in the present study suggest that agricultural cooperatives across Southeast Asia continue to prioritize economic sustainability while gradually integrating broader environmental and social objectives into their operations.

The analysis of challenges by cooperative size provides further insight into the differentiated constraints faced by organizations. Medium-sized cooperatives report greater difficulties related to governance, environmental pressures, and market access, suggesting higher vulnerability associated with more limited financial, technical, and institutional capacity. These findings align with evidence that small and mid-sized cooperatives are often more exposed to climate risks and market volatility, while also facing internal coordination and governance challenges (Food and Agriculture Organization of the United Nations; Paraschou et al., 2025). Larger cooperatives, on the other hand, appear to benefit from stronger market positions and greater resilience but encounter more pronounced bureaucratic and administrative constraints, reflecting the complexities that accompany organizational growth and scale (Bijman et al., 2016).

Taken together, these findings point to the importance of profile-sensitive policy and institutional support. Strengthening governance systems, expanding access to affordable finance, and supporting investment in value-adding and climate-smart technologies are particularly critical for medium-sized cooperatives. At the same time, efforts to streamline administrative procedures and enhance organizational flexibility may help larger cooperatives sustain performance while maintaining accountability and transparency. More broadly, the results suggest that while agricultural cooperatives already make substantial contributions to the economic and social dimensions of the SDGs, greater and more systematic integration of environmental sustainability into cooperative strategies and operations is needed to achieve a more balanced and comprehensive approach to sustainable development.

The findings of the study should be interpreted in light of several methodological limitations. First, the study focused only on medium and large agricultural cooperatives in Region I, which may limit the generalizability of the findings to smaller cooperatives or cooperatives in other regions of the Philippines. Second, the reliance on self-reported survey responses may introduce response bias, particularly in reporting SDG-aligned practices and organizational challenges. Third, while qualitative interviews were used to support interpretation, the study primarily relied on descriptive quantitative analysis and did not employ advanced inferential statistical techniques. While the descriptive mixed-methods design provided a broad overview of cooperative practices and

challenges, the study did not employ inferential statistical techniques that could further examine causal relationships among organizational variables. Future studies may expand the geographic scope, include cooperatives of varying sizes, and apply longitudinal or comparative approaches to provide a deeper assessment of cooperative sustainability practices and SDG contributions.

CONCLUSIONS

Agricultural cooperatives in Region I of the Philippines remain important institutional actors in advancing inclusive and sustainable rural development. Most cooperatives are medium-sized and long-established organizations that primarily provide credit services, commodity distribution, and agricultural input facilitation to support farm productivity and member livelihoods. Their strongest contributions to the Sustainable Development Goals are concentrated in poverty reduction, food security, decent work, and partnership-building activities.

Despite these contributions, cooperatives continue to face governance, environmental, and market-related constraints. Medium-sized cooperatives are particularly vulnerable to governance limitations, climate-related pressures, and restricted market access, while larger cooperatives encounter more complex bureaucratic and administrative challenges. Environmental sustainability initiatives are present but remain less systematically integrated than economic and social programs.

The findings highlight the need for profile-sensitive interventions that strengthen governance systems, improve access to finance and wider markets, and support investment in value-adding and climate-smart technologies. Policies and capacity-building programs that encourage stronger environmental sustainability practices, innovation, and institutional partnerships may further enhance the role of agricultural cooperatives in achieving the Sustainable Development Goals.

TRANSLATIONAL RESEARCH

The findings of the study may be utilized in the development of local cooperative policies, training programs, and capacity-building initiatives for agricultural cooperatives. The identified governance, market, and environmental challenges may serve as basis for designing policy interventions and support programs for cooperative development agencies and local government units. Likewise, the results may be translated into instructional and training materials for cooperative leaders and members, particularly on governance strengthening, sustainable agricultural practices, climate-smart technologies, and SDG

integration. Partnerships with government agencies, academic institutions, and non-government organizations may further enhance the practical application and policy adoption of the study findings.

Author Contributions

All authors collaboratively conceptualized and designed the study, formulating the objectives, research framework, and survey instrument. Data collection, which included administering structured questionnaires and conducting selected semi-structured interviews with cooperative officers and members, was primarily led by the principal author. Quantitative analyses were performed using descriptive statistics and cross-tabulations, and qualitative insights were incorporated to deepen the interpretation of findings. The authors jointly interpreted the results, discussed implications, and developed conclusions and recommendations. The manuscript was co-prepared, reviewed, finalized, and approved for publication.

Solomon B. Tablang Conceptualization, Writing—Original Draft, Methodology, Investigation, Formal Analysis; Josefina B. Bitonio Writing—Review & Editing, Supervision; Ralph Rendell P. Toledo Writing—Review & Editing.

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Ethical Approval

The University Ethics Committee approved the conduct of the study

Competing Interest

The authors declare no conflicts of interest.

Data availability

Data will be made available by the corresponding author on request.

Declaration of Artificial Intelligence Use

Artificial intelligence (AI) tools in this study were used exclusively for language editing, organizing ideas, and enhancing clarity in selected sections of the manuscript. All aspects of the study, conceptualization, research design, data collection, statistical analysis, interpretation of results, and formulation of conclusions, were conducted entirely by the authors. AI assistance neither generated original data nor performed analytical procedures or influenced the substantive findings. Full responsibility for the content, accuracy, and integrity of the manuscript rests with the authors. The use of AI was strictly limited to editorial support and does not substitute for scholarly judgment, methodological

rigor, or ethical responsibility.

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