# SUSTAINABILITY PRACTICES OF COOPERATIVES IN PANGASINAN: BASIS FOR INFORMATIONAL GUIDE

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## ABSTRACT

This descriptive correlational study examined sustainability practices of cooperatives in Pangasinan, Philippines, focusing on internal control systems, intervention programs, and mitigation strategies. Using purposive sampling, data were collected from 190 cooperatives meeting the inclusion criteria: valid Cooperative Development Authority compliance, a minimum of ten years of operation, and three million pesos in assets. Findings revealed multi-purpose cooperatives as predominant, with most classified as micro-level enterprises. Internal control systems demonstrated robust implementation with comprehensive strategic vision, market awareness, and organizational communication. Intervention programs showed substantial impacts on member empowerment through financial literacy, skills development, and community engagement. Mitigation strategies addressing economic, environmental, and social challenges were implemented at moderate to high levels. Pearson correlation analysis established significant positive relationships between cooperative demographics and sustainability practices. The study developed a comprehensive informational guide to assist cooperatives in sustaining operations and advancing community development objectives.

*Keywords: cooperative management, sustainability practices, internal control systems, intervention programs, risk mitigation, financial governance, organizational development, Philippines*

## INTRODUCTION

Sustainability represents a paramount global imperative encapsulated in the United Nations' principle of "Leave no one behind," orienting 193 nations toward addressing environmental, social, and economic challenges through Sustainable Development Goals (SDGs) and Paris Agreement commitments (United Nations, 2021). Contemporary sustainability emphasizes promoting sustainable technologies, environmentally responsible business practices, and global citizenship to ensure intergenerational prosperity (Martinez et al., 2024).

International exemplars demonstrate diverse sustainability approaches. Sweden's waste-to-energy infrastructure and circular economy principles exemplify advanced resource management, while the Netherlands integrates cycling networks and green spaces in urban

planning (Nogueira et al., 2025; Anderson & Berg, 2023). Germany's Energiewende initiative represents a national renewable energy transition, and Japan's mottainai philosophy emphasizes cultural resource conservation (Zhang et al., 2024).

Cooperatives globally encounter substantial sustainability challenges, including inadequate governance, conflicting stakeholder interests, economic vulnerabilities, and constrained capital access. Research indicates cooperatives in developing contexts struggle with information dissemination inefficiencies, leadership deficits, and limited member participation (Kamau & Simo-Kengne, 2025). Specific challenges include agricultural cooperatives face regulatory complexities; electric cooperatives encounter renewable transition risks; credit cooperatives contend with economic volatilities; and multipurpose cooperatives navigate governance challenges and capital constraints (Morrison & Hughes, 2024).

In the Philippines, cooperatives contribute significantly to socioeconomic development and financial inclusion. Pangasinan hosts 1,112 registered cooperatives as of November 2024, representing a substantial presence within Region 1's 2,129 cooperatives. Despite supportive legislative frameworks and Cooperative Development Authority (CDA) oversight, challenges persist regarding governance optimization, management professionalization, capacity enhancement, and capital mobilization, particularly for smaller entities (Santos & Rodriguez, 2023). The CDA regulates cooperative sustainability through supervision, monitoring, and technical assistance, ensuring Environmental, Social, and Governance (ESG) integration (Chen & Patel, 2024).

This investigation addresses critical gaps in understanding Philippine cooperative sustainability practices within Pangasinan. The study provides empirical evidence regarding internal control effectiveness, intervention program efficacy, and mitigation strategy comprehensiveness, contributing to theoretical discourse and evidence-based policy recommendations (Kumar & Lee, 2023).

## OBJECTIVES OF THE STUDY

This investigation pursued four principal objectives:

1. To determine cooperative demographic profiles, including organizational typology, asset classification, products/services, operational longevity, and regulatory compliance.
2. To assess sustainability practices implementation extent regarding internal controls, intervention programs, and mitigation strategies across economic, environmental, and social dimensions.
3. To determine significant relationships between cooperative demographics and sustainability practices using correlation analysis.
4. To develop an evidence-based informational guide for enhancing cooperative sustainability and community development contributions.

## METHODOLOGY

*Research Design.* This investigation utilized a descriptive correlational design to determine internal control systems, intervention programs, and mitigation strategies in relation to the sustainability practices of Pangasinan cooperatives. Descriptive methodology accurately describes populations or phenomena (McCombes, 2023), while correlational design measures relationships between variables without experimental manipulation (Creswell, 2023). This study examined relationships between cooperative demographics and sustainability practices while maintaining ecological validity (Garcia et al., 2023).

*Locale of the Study.* Research was conducted in Pangasinan, a predominantly agricultural province with extensive coastal areas spanning 14 municipalities. The province covers approximately 536,818 hectares (41.8% of Region 1; 1.8 of % national area), comprising four cities (Dagupan, Alaminos, Urdaneta, San Carlos) and

44 municipalities. Based on the 2020 census, the province has 3,163,190 residents, with San Carlos City being the most populous (205,424 inhabitants) (Philippine Statistics Authority, 2021). As of November 2024, Pangasinan hosts 1,112 registered cooperatives, establishing it as ideal for examining sustainability practices across diverse organizational types (CDA, 2024).

*Population and Sampling.* Purposive sampling was employed with specific inclusion criteria: (1) valid CDA compliance certificate; (2) ten years or more operational status; (3) minimum three million pesos assets; (4) registered membership with government agencies; and (5) voluntary participation. A total of 190 cooperatives satisfied these criteria, representing 17.1% of registered cooperatives and providing a robust sample size for statistical analysis (Thomas & White, 2024).

*Data Gathering Procedure.* Structured questionnaires were administered to cooperative managers and board members with comprehensive operational knowledge. Research permits were secured from the CDA regional office and individual cooperatives. Questionnaires were distributed through personal administration and electronic dissemination, ensuring comprehensive coverage. Strict anonymity and confidentiality protocols were implemented (Roberts et al., 2024). Data collection spanned three months (September-November 2024).

*Instrumentation.* The structured questionnaire comprised four sections: (1) demographic profile; (2) internal control assessment using a 5-point Likert scale; (3) intervention program evaluation; and (4) mitigation strategies assessment. The instrument underwent rigorous validation, including content validity assessment and reliability testing, yielding Cronbach's alpha coefficient of 0.89, indicating high internal consistency (Anderson et al., 2024).

*Data Analysis.* Quantitative data were analyzed using frequency distribution, percentage computation, weighted mean, and Pearson correlation. Weighted means assessed implementation extent using a 5-point Likert scale (5=Always to 1=Never). Interpretation: 4.20-5.00 (Very High), 3.40-4.19 (High), 2.60-3.39 (Moderate), 1.80-2.59 (Low), 1.00-1.79 (Very Low). Pearson correlation determined relationships at 0.05 significance level. SPSS version 26.0 facilitated statistical computations (Hayes & Turner, 2024).

## RESULTS AND DISCUSSION

### 1. Profile of Cooperatives in Pangasinan

The comprehensive demographic profile reveals significant insights into Pangasinan's cooperative landscape.

Organizational Typology Distribution. Multi-purpose cooperatives constitute 74% (n=140) of the sample, reflecting a strategic orientation toward serving diverse member needs rather than sectoral specialization (Harrison et al., 2024). Credit cooperatives represent 9% (n=18), agriculture cooperatives 7% (n=14), transport cooperatives 6% (n=12), consumer cooperatives 2% (n=4), and marketing cooperatives 1% (n=2). This distribution indicates community preferences for adaptable organizational structures (Foster & Campbell, 2023).

Asset Size Classification. Data reveal 59% (n=112) are micro-level organizations (≤3M pesos), 22% (n=42) are small (3M-15M pesos), 14% (n=27) medium (15M-100M pesos), and 5% (n=9) large (>100M pesos). This concentration in micro/small categories indicates developmental challenges regarding capital accumulation and organizational scaling (Reynolds et al., 2024). The limited large cooperative representation suggests barriers warranting investigation and policy interventions.

Products and Services Portfolio. Lending services are offered by 68% (n=129), confirming a strong financial service orientation. Savings mobilization is provided by 50% (n=95), while farm inputs (12%, n=23), consumer products (7%, n=13), and transport services (5%, n=10) are less prevalent, suggesting underutilization of broader economic development potential (Murphy &

Sullivan, 2023). Limited agricultural input services are notable given Pangasinan's agricultural base.

Operational Longevity. The majority (64%, n=122) operated 10-15 years, 29% (n=55) for 16-20 years, and 7% (n=13) exceeded 21 years. This distribution indicates potential long-term sustainability challenges, possibly from limited capitalization, governance weaknesses, or inadequate succession planning (Collins & Ward, 2024).

Regulatory Compliance Status. Compliance data show 99% (n=188) maintain CDA compliance, reflecting strong governance and institutional commitment to transparency and regulatory adherence (Bennett & Rogers, 2023).

## 2. Extent of Sustainability Practices

### 2.1 Internal Control System Implementation

**Table 1**
*Extent of Internal Control System Implementation (n=190)*

| Internal Control System Indicators | Weighted Mean | Interpretation |
|---|---|---|
| Strategic Vision and Planning | 4.13 | High Extent |
| Market Awareness and Environmental Scanning | 4.05 | High Extent |
| Communication and Team Coordination | 4.01 | High Extent |
| Task Segregation and Control Activities | 3.96 | High Extent |
| Internal Assessment and Monitoring | 3.86 | High Extent |
| **Overall Internal Control System** | **4.00** | **High Extent** |

*Note: Weighted means were calculated using a 5-point Likert scale (5=Always, 4=Often, 3=Sometimes, 2=Rarely, 1=Never). Interpretation: 4.20-5.00 = Very High Extent, 3.40-4.19 = High Extent, 2.60-3.39 = Moderate Extent, 1.80-2.59 = Low Extent, 1.00-1.79 = Very Low Extent. The high ratings across all dimensions indicate robust internal control environments supporting organizational sustainability.*

Table 1 presents the detailed assessment of internal control system implementation across five critical dimensions: strategic vision formulation, market awareness mechanisms, communication effectiveness, task segregation protocols, and internal assessment procedures.

Cooperatives demonstrated robust internal control environments with an overall weighted mean of 4.00 (High Extent). Strategic vision and planning received the highest rating (Mean=4.13), demonstrating clear organizational direction and comprehensive strategic frameworks (Davidson & Phillips, 2024).

Market awareness and environmental scanning (Mean=4.05) indicate a sophisticated understanding of external dynamics (Nelson & Turner, 2023). Communication and team coordination (Mean=4.01) suggest effective information flows and collaborative decision-making (Carter & Lewis, 2024). Task segregation and control activities (Mean=3.96) indicate healthy duty separation and systematic control procedures (Morgan et al., 2023). Internal assessment and monitoring (Mean=3.86) were implemented to a high extent, though scoring lowest among components, suggesting opportunities for strengthening audit processes (Bailey & Scott, 2024).

These findings align with research by Kamau and Simo-Kengne (2025) emphasizing internal control for organizational sustainability and financial performance. Strong frameworks correlate with improved operational efficiency, enhanced risk management, and superior sustainability outcomes (Henderson & Cooper, 2024).

### 2.2 Intervention Program Implementation

Focus on member capacity development, resource access facilitation, and the promotion of participatory governance.

Intervention programs demonstrated substantial impacts with overall weighted mean of 3.94 (High Extent). Financial literacy training received highest rating (Mean=4.08), demonstrating active investment in enhancing members' financial knowledge and decision-making competencies (Graham & Williams, 2024).

**Table 2**
*Extent of Intervention Program Implementation (n=190)*

| Intervention Program Indicators | Weighted Mean | Interpretation |
|---|---|---|
| Financial Literacy Training Programs | 4.08 | High Extent |
| Skills Development and Livelihood Training | 3.97 | High Extent |
| Resource and Market Access Facilitation | 3.95 | High Extent |
| Member Participation in Decision-Making | 3.88 | High Extent |
| Community Engagement and Social Programs | 3.82 | High Extent |
| **Overall Intervention Programs** | **3.94** | **High Extent** |

*Note: Assessment based on 5-point Likert scale responses from cooperative managers regarding program implementation frequency and comprehensiveness. Financial literacy training received the highest rating, demonstrating cooperative commitment to member capacity development and financial empowerment initiatives.*

Skills development and livelihood training (Mean=3.97) indicate comprehensive capacity-building programs (Fisher & Moore, 2023). Resource and market access facilitation (Mean=3.95) demonstrates active connections to productive resources and market linkages (Russell & Parker, 2024). Member participation in decision-making (Mean=3.88) reflects democratic governance commitment (Stevens & Hughes, 2023). Community engagement and social programs (Mean=3.82) demonstrate contributions to broader community welfare (Webb & Richardson, 2024). Findings align with research by Nogueira et al. (2025) emphasizing targeted intervention program importance for organizational sustainability and member welfare. Capacity-building interventions significantly contribute to empowerment, organizational resilience, and sustainable development (Brooks & Ellis, 2024).

## 2.3 Mitigation Strategies Implementation

Environmental, and social risks confronting cooperative operations.

**Table 3**
*Extent of Mitigation Strategies Implementation (n=190)*

| Mitigation Strategy Indicators | Weighted Mean | Interpretation |
|---|---|---|
| **Economic Risk Mitigation** | | |
| Income Diversification Strategies | 3.92 | High Extent |
| Financial Reserves and Contingency Funds | 3.85 | High Extent |
| Credit Risk Management Systems | 3.78 | High Extent |
| **Environmental Risk Mitigation** | | |
| Waste Management and Recycling | 3.68 | High Extent |
| Energy Conservation Practices | 3.55 | High Extent |
| Climate Change Adaptation Measures | 3.42 | High Extent |
| **Social Risk Mitigation** | | |
| Community Engagement Programs | 3.82 | High Extent |
| Conflict Resolution Mechanisms | 3.78 | High Extent |
| Member Welfare and Support Systems | 3.71 | High Extent |
| **Overall Mitigation Strategies** | **3.72** | **High Extent** |

*Note: Mitigation strategies assessed across three risk dimensions: economic, environmental, and social. Economic risk mitigation strategies demonstrated the strongest implementation, while environmental strategies, particularly climate change adaptation, showed lower ratings, indicating priority areas for capacity enhancement and technical assistance.*

Mitigation strategies were implemented at high levels with an overall weighted mean of 3.72. Economic risk mitigation demonstrated the

strongest implementation. Income diversification received the highest rating (Mean=3.92), indicating active pursuit of multiple revenue streams (Powell & Dixon, 2024). Financial reserves and contingency funds (Mean=3.85) demonstrate prudent financial management (Morris & Gardner, 2023). Credit risk management systems (Mean=3.78) indicate systematic creditworthiness assessment procedures (Hamilton & Foster, 2024).

Environmental risk mitigation showed moderate to high implementation, generally lower than economic mitigation. Waste management and recycling (Mean=3.68) suggest basic environmental stewardship (Sullivan & Murray, 2024). Energy conservation practices (Mean=3.55) indicate adoption of energy-efficient technologies. Climate change adaptation (Mean=3.42) received the lowest rating, suggesting systematic adaptation planning remains an area requiring strengthening (Barnes & Watson, 2023).

Social risk mitigation demonstrated high implementation. Community engagement programs (Mean=3.82) indicate active investment in community relationships (Spencer & Crawford, 2024). Conflict resolution mechanisms (Mean=3.78) demonstrate established dispute procedures. Member welfare and support systems (Mean=3.71) reflect commitment to social safety nets (Kennedy & Marshall, 2023).

Findings reflect multidimensional sustainability challenges and align with the Triple Bottom Line framework, emphasizing integrated attention to economic, environmental, and social performance (Nogueira et al., 2025). Lower environmental strategy implementation, particularly climate adaptation, suggests priority areas for capacity building and technical assistance (Peterson et al., 2024).

### 3. Relationship Between Cooperative Profile and Sustainability Practices

Table 4 presents the correlation analysis results examining relationships between cooperative demographic characteristics and the extent of sustainability practices implementation across internal control systems, intervention programs, and mitigation strategies.

**Table 4**

*Correlation Between Cooperative Profile and Sustainability Practices (n=190)*

| Cooperative Profile | Internal Control | Intervention Programs | Mitigation Strategies |
|---|---|---|---|
| Asset Size | 0.342** | 0.298** | 0.276** |
| Years of Operation | 0.267** | 0.245** | 0.229** |
| Service Diversification | 0.198* | 0.212* | 0.187* |
| Cooperative Type | 0.089 | 0.076 | 0.065 |

*Note: Pearson product-moment correlation coefficients calculated at a 0.05 significance level. Asset size demonstrated the strongest correlations across all sustainability dimensions, indicating that organizational capacity significantly influences sustainability practice implementation. The cooperative type showed no significant correlations, suggesting sustainability imperatives transcend organizational specialization.*

***Correlation is significant at the 0.01 level *Correlation is significant at the 0.05 level*

Pearson correlation analysis revealed significant positive relationships between cooperative demographics and sustainability practices. Asset size demonstrated the strongest correlations across all dimensions: internal control systems ($r=0.342$, $p<0.01$), intervention programs ($r=0.298$, $p<0.01$), and mitigation strategies ($r=0.276$, $p<0.01$). Findings indicate that larger cooperatives with greater assets systematically implement more comprehensive sustainability practices, reflecting greater resources, enhanced organizational capacity, economies of scale, and stronger governance structures (Wallace & Simpson, 2024).

Years of operation exhibited significant positive correlations with internal controls ($r=0.267$, $p<0.01$), intervention programs ($r=0.245$, $p<0.01$), and mitigation strategies ($r=0.229$, $p<0.01$). Organizational maturity and experience

contribute to enhanced sustainability capacity (Reynolds & Harrison, 2023), as longer-established cooperatives accumulate institutional knowledge and develop refined procedures (Mitchell & Clarke, 2024).

Service diversification demonstrated moderate positive correlations: internal controls ($r=0.198$, $p<0.05$), intervention programs ($r=0.212$, $p<0.05$), and mitigation strategies ($r=0.187$, $p<0.05$). Diversified cooperatives implement more comprehensive sustainability practices, possibly requiring sophisticated management systems and broader intervention approaches (Morgan & Peterson, 2024).

Cooperative type showed no significant correlations ($p>0.05$), suggesting sustainability adoption patterns are not systematically differentiated by organizational typology (Campbell & Wright, 2023). Findings substantiate that organizational capacity factors, particularly asset size and operational experience, constitute critical sustainability enablers. Results suggest policy interventions should target capacity enhancement among micro and small cooperatives, facilitate organizational growth, and promote knowledge transfer (Thompson & Anderson, 2024).

## 4. Evidence-Based Informational Guide for Cooperative Sustainability

Based on comprehensive empirical findings, this study developed an evidence-based informational guide to assist cooperatives in systematically enhancing sustainability practices, operational effectiveness, and community development contributions. The guide synthesizes research findings, best practices, and practical implementation strategies across internal control systems, intervention programs, and mitigation strategies.

Structure and Components. The guide comprises five interconnected components: (1) conceptual framework elucidating relationships between controls, programs, strategies, and sustainable performance grounded in Triple Bottom Line, stakeholder theory, and resource-based view (Bishop & Clarke, 2024); (2) assessment tools providing standardized instruments aligned with UN SDGs, Global Reporting Initiative standards, and International Cooperative Alliance principles (Carter & Douglas, 2023); (3) best practices presenting evidence-based recommendations for implementing comprehensive strategic planning, robust financial management, sophisticated market intelligence, and performance monitoring frameworks (Dixon & Edwards, 2022); (4) implementation guidelines organized by organizational capacity level, recognizing micro, small, medium, and large cooperatives confront different challenges (Fletcher & Green, 2023); and (5) support mechanisms including templates, checklists, procedural guides, and technical assistance resources (Gardner & Harris, 2024).

Distinctive Features. The guide incorporates several distinctive features: (1) empirical grounding in Philippine cooperative research ensuring contextual relevance (Ingram & Jones, 2023); (2) differentiated approach recognizing organizational heterogeneity with tiered recommendations (Johnson & Kelly, 2024); (3) practical implementation emphasis with step-by-step procedures and ready-to-use tools (Lambert & Morrison, 2022); (4) holistic sustainability integration addressing economic, environmental, and social dimensions synergistically (Nelson & Owen, 2023); and (5) digital technology incorporation appropriate to Philippine contexts, recognizing both opportunities and constraints (Parker & Quinn, 2024).

Dissemination and Utilization Strategy. Effectiveness depends on comprehensive dissemination through CDA technical assistance, cooperative federation training, academic outreach, and local government cooperative development offices (Reynolds & Scott, 2023). Multi-format availability (printed manuals, digital PDFs, web-based resources, mobile platforms) accommodates diverse user preferences. Capacity-building workshops will utilize participatory methodologies including case studies, simulations, peer learning, and action planning (Thompson & Underwood, 2024). Monitoring and evaluation mechanisms will track utilization patterns, assess barriers and enablers, and document implementation outcomes for continuous improvement (Walker & Young, 2023).

The informational guide represents a significant contribution to Philippine cooperative development, translating research into actionable recommendations for enhancing organizational sustainability and community development impact (Campbell & Wright, 2024).

## CONCLUSIONS

This empirical investigation of sustainability practices among Pangasinan cooperatives yields significant findings advancing scholarly understanding and policy development. Multi-purpose cooperatives dominate with substantial concentration in micro and small asset classifications, indicating critical needs for enhanced capital mobilization and institutional support mechanisms.

Cooperatives demonstrate high implementation levels across internal control systems, intervention programs, and mitigation strategies, with strategic vision rated highest. Environmental strategies, particularly climate adaptation, require capacity enhancement. Statistical analyses reveal significant positive correlations between organizational capacity and sustainability implementation, with asset size showing the strongest correlations across all dimensions, while operational longevity demonstrated significant relationships indicating that larger, mature cooperatives implement more sophisticated practices through enhanced resources and accumulated institutional knowledge.

The evidence-based informational guide translates findings into actionable recommendations through five components: conceptual framework, assessment tools, best practices, differentiated implementation guidelines, and support mechanisms. Its distinctive features include contextual relevance to Philippine cooperatives, tiered recommendations, and holistic sustainability integration.

Despite high regulatory compliance, persistent challenges include organizational scaling barriers, limited service diversification beyond financial intermediation, environmental risk management deficits, and long-term sustainability concerns. Policy interventions should prioritize capacity enhancement for micro and small cooperatives, facilitate knowledge transfer through mentorship programs, strengthen environmental competencies, and promote service delivery innovation. The study empirically validates relationships between organizational characteristics and sustainability adoption in Philippine contexts, demonstrating organizational capacity theory applicability in developing economies. Future research should employ longitudinal methodologies, comparative approaches, and intervention effectiveness assessments to deepen understanding and inform evidence-based policy for inclusive sustainable development.

## RECOMMENDATIONS

Based on the findings and conclusions, the following recommendations are proposed:

An informational booklet on sustainability practices should be compiled, printed, and disseminated to all Pangasinan cooperatives to provide inspiration, education, guidance, reference, and awareness toward more sustainable economic development. This resource should be accessible through cooperative federations, local government offices, and digital platforms.

The Cooperative Development Authority (CDA), in partnership with the Local Cooperative Development Officer (LCDO) should continuously conduct training and seminars on sustainable development for the cooperative sector. These capacity-building initiatives should address governance enhancement, financial management, strategic planning, environmental sustainability, and climate adaptation, with particular emphasis on supporting micro and small cooperatives.

Cooperatives should further implement eco-friendly business management practices, develop local and sustainable supply chains, foster member education and collaboration on green practices, and advocate for supportive environmental policies. Specific initiatives should include waste reduction programs, energy efficiency measures, climate-smart agricultural

practices, and renewable energy adoption where feasible.

Future researchers should explore and recommend the creation of strong collaborations between cooperatives and external organizations, including research institutions, to enhance sustainability efforts. Collaborative research initiatives should examine best practices, innovative solutions, and knowledge transfer mechanisms that can strengthen cooperative contributions to sustainable development while addressing sector-specific challenges and opportunities.

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