

Institutional Transformation of Cocoa Farmer Organizations in Indonesia: A Systematic Review toward Sustainable and Traceable Supply Chains

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ABSTRACT

This study examines the institutional transformation of cocoa farmer organizations in Indonesia and its implications for sustainable and traceable supply chains. The study contributes to the growing discussion on agricultural governance by synthesizing recent evidence on how farmer organizations can strengthen sustainability compliance and market competitiveness. A systematic literature review approach was employed using peer-reviewed journal articles, policy reports, and international development publications published between 2020 and 2026. The analysis focused on four key themes: organizational capacity, collective action, sustainability governance, and traceability systems. The findings indicate that cocoa farmer organizations play a critical role in facilitating information sharing, market access, certification processes, and traceability implementation. However, limited institutional capacity, weak coordination, and inadequate digital readiness remain significant challenges. Strengthening farmer organizations through institutional innovation, capacity building, and digital integration is essential for achieving sustainable and traceable cocoa supply chains in Indonesia

INTRODUCTION

Cocoa is one of the most important agricultural commodities in the global market and serves as a critical source of income for millions of smallholder farmers in tropical countries. Indonesia remains one of the world's major cocoa-producing countries, with production concentrated in Sulawesi, Sumatra, and several eastern Indonesian regions. The cocoa sector contributes significantly to rural livelihoods, employment creation, export earnings, and local economic development. Despite its strategic role, the Indonesian cocoa sector continues to face persistent challenges related to productivity, farmer welfare, market access, institutional capacity, and sustainability performance (FAO, 2024; ICCO, 2024).

Recent developments in global agricultural governance have transformed the way agricultural commodities are produced, traded, and monitored. International markets increasingly require evidence of sustainability, transparency, and responsible production practices throughout supply chains. These changes are driven by growing concerns regarding environmental degradation, deforestation, biodiversity loss, climate change, and social inequality associated with agricultural expansion. Consequently, sustainability standards and traceability systems have become essential components of contemporary commodity governance (Lambin et al., 2023; Garrett et al., 2023).

Within the cocoa sector, traceability has emerged as a strategic mechanism for ensuring transparency across supply chains. Traceability systems enable stakeholders to identify the origin of agricultural products, monitor production processes, verify compliance with sustainability standards, and provide reliable information to consumers and regulators. The increasing adoption of traceability systems has reshaped relationships among farmers, cooperatives, private companies, certification bodies, and government institutions. As a result, organizational capacity at the farmer level has become increasingly important for maintaining market access and competitiveness (Auld et al., 2021; Schilling-Vacaflor & Lenschow, 2023).

Farmer organizations play a critical role in supporting the development of sustainable agricultural supply chains. These organizations function as institutional platforms that facilitate collective action, knowledge sharing, market coordination, access to inputs, financial services, certification programs, and technology adoption. Previous studies have demonstrated that effective farmer organizations can improve bargaining power, strengthen social capital, reduce transaction costs, and enhance farmers' participation in value chains (Ostrom, 2015; Markelova et al., 2009). In the context of cocoa production, farmer organizations often serve as intermediaries connecting smallholders with government programs, non-governmental organizations, exporters, and multinational companies.

However, many cocoa farmer organizations in developing countries continue to face substantial institutional constraints. Limited managerial capacity, weak leadership, inadequate financial resources, low technological readiness, and fragmented organizational structures frequently undermine their effectiveness. These challenges become more significant as global markets demand increasingly sophisticated systems for sustainability monitoring and

traceability management. Without institutional transformation, many farmer organizations may struggle to support members in meeting evolving market requirements and maintaining access to premium markets (Donovan et al., 2017; FAO, 2023).

Institutional transformation refers to processes through which organizations adapt their structures, functions, governance mechanisms, and operational practices in response to changing internal and external conditions. In agricultural development, institutional transformation often involves strengthening organizational governance, improving accountability, enhancing coordination among stakeholders, adopting digital technologies, and developing new capacities for managing information and market relations. Such transformations are particularly important for smallholder-based agricultural systems where collective action remains essential for overcoming resource limitations and market barriers (North, 1990; Bijman et al., 2016).

In Indonesia, discussions concerning cocoa development have traditionally focused on productivity improvement, pest management, rehabilitation programs, and export competitiveness. Comparatively less attention has been given to the institutional readiness of farmer organizations as key actors within sustainable and traceable supply chains. Existing studies often examine technical or economic aspects of cocoa production while providing limited synthesis regarding organizational transformation and its implications for sustainability governance. This gap is significant because farmer organizations increasingly serve as the primary institutional mechanism through which sustainability initiatives are implemented at the local level (Neilson, 2019; Wessel & Quist-Wessel, 2015).

Given these developments, a comprehensive assessment of institutional transformation within cocoa farmer organizations is both timely and necessary. Understanding the opportunities, challenges, and emerging trends associated with organizational transformation can provide valuable insights for policymakers, development agencies, private sector actors, and farmer groups seeking to strengthen sustainable cocoa supply chains. Furthermore, such analysis contributes to broader discussions concerning agricultural governance, rural development, and the future of smallholder agriculture in an increasingly regulated global market.

Therefore, this study aims to systematically review the existing literature on the institutional transformation of cocoa farmer organizations in Indonesia and examine its contribution toward the development of sustainable and traceable supply chains. The study specifically explores major institutional challenges, identifies key drivers of organizational transformation, and highlights strategic pathways for strengthening the role of farmer organizations in promoting sustainability and traceability within Indonesia's cocoa sector.

LITERATURE REVIEW

Institutional Transformation

Institutional transformation refers to the process through which organizations adapt their structures, governance arrangements, operational mechanisms, and strategic functions in response to changing socioeconomic and political environments. Institutional theory emphasizes that organizations must continuously adjust to evolving external demands in order to maintain legitimacy, effectiveness, and long-term sustainability (North, 1990; Scott, 2014). In agricultural development, institutional transformation is particularly important because farmer organizations operate within dynamic environments characterized by market fluctuations, technological innovation, policy changes, and increasing sustainability requirements.

The concept of institutional transformation extends beyond organizational restructuring. It encompasses changes in leadership systems, decision-making processes, accountability mechanisms, knowledge management, and stakeholder engagement. Effective transformation enables organizations to improve their adaptive capacity, mobilize collective resources, and respond to emerging challenges more efficiently. In smallholder agriculture, institutional transformation often determines the ability of farmer organizations to facilitate innovation adoption, coordinate market participation, and strengthen member welfare (Bijman et al., 2016).

Recent studies indicate that agricultural organizations increasingly face pressures associated with sustainability governance and supply chain transparency. These pressures require organizations to develop new institutional capacities related to data management, environmental monitoring, certification compliance, and digital information systems. Consequently, institutional transformation has become a critical prerequisite for maintaining competitiveness within global agricultural markets (FAO, 2023; Lambin et al., 2023).

Within the Indonesian cocoa sector, institutional transformation is particularly relevant because many farmer organizations continue to operate with limited managerial capacity, weak administrative systems, and inadequate access to technological resources. As sustainability and traceability requirements become more prominent, strengthening institutional capacity is increasingly recognized as an essential strategy for improving the resilience and competitiveness of smallholder cocoa producers (Neilson, 2019).

Farmer Organizations and Collective Action

Farmer organizations represent one of the most important institutional mechanisms supporting agricultural development. These organizations include cooperatives, farmer groups, associations, and producer networks that facilitate collaboration among farmers to achieve common objectives. Collective action theory suggests that individuals can obtain greater benefits when they coordinate their efforts through organized institutions rather than acting independently (Ostrom, 2015).

In agricultural supply chains, farmer organizations perform multiple functions. They provide access to production inputs, facilitate technical training,

improve information exchange, coordinate marketing activities, strengthen bargaining power, and support access to financial services. Through collective action, smallholder farmers can overcome many structural constraints that would be difficult to address individually, including limited economies of scale, information asymmetry, and market exclusion (Markelova et al., 2009).

The effectiveness of farmer organizations is strongly influenced by social capital. Social capital refers to networks, trust, shared norms, and reciprocal relationships that facilitate cooperation among individuals and groups. Strong social capital enhances organizational cohesion, promotes knowledge sharing, and encourages active member participation. Previous studies have demonstrated that organizations characterized by high levels of trust and collective engagement tend to achieve better economic and social outcomes than those with weak internal relationships (Putnam, 1993; Pretty, 2003).

In the cocoa sector, farmer organizations play an increasingly important role in linking producers to national and international markets. They frequently serve as intermediaries between farmers and external actors, including government agencies, certification bodies, exporters, non-governmental organizations, and private companies. Through these relationships, farmer organizations facilitate the implementation of sustainability initiatives, quality improvement programs, and market-oriented interventions (Donovan et al., 2017).

Nevertheless, the performance of many farmer organizations remains constrained by institutional weaknesses. Common challenges include inadequate leadership, low member participation, limited financial resources, weak organizational governance, and insufficient managerial skills. These constraints can reduce organizational effectiveness and limit the ability of farmer groups to respond to changing market requirements. Addressing such weaknesses requires long-term investments in organizational development and capacity strengthening (FAO, 2024).

Sustainable and Traceable Supply Chains

The concept of sustainable supply chains has gained significant attention within agricultural development and global commodity governance. Sustainable supply chains seek to balance economic viability, environmental responsibility, and social equity throughout the production, processing, distribution, and consumption of agricultural products. Sustainability-oriented approaches emphasize responsible resource management, biodiversity conservation, climate resilience, and inclusive economic development (Elkington, 1997; Gereffi & Lee, 2016).

Agricultural supply chains are increasingly expected to demonstrate compliance with sustainability standards. Governments, international organizations, private companies, and consumers now demand greater transparency regarding production practices and environmental impacts. As a result, traceability systems have become an essential component of sustainable supply chain governance. Traceability refers to the ability to track products and

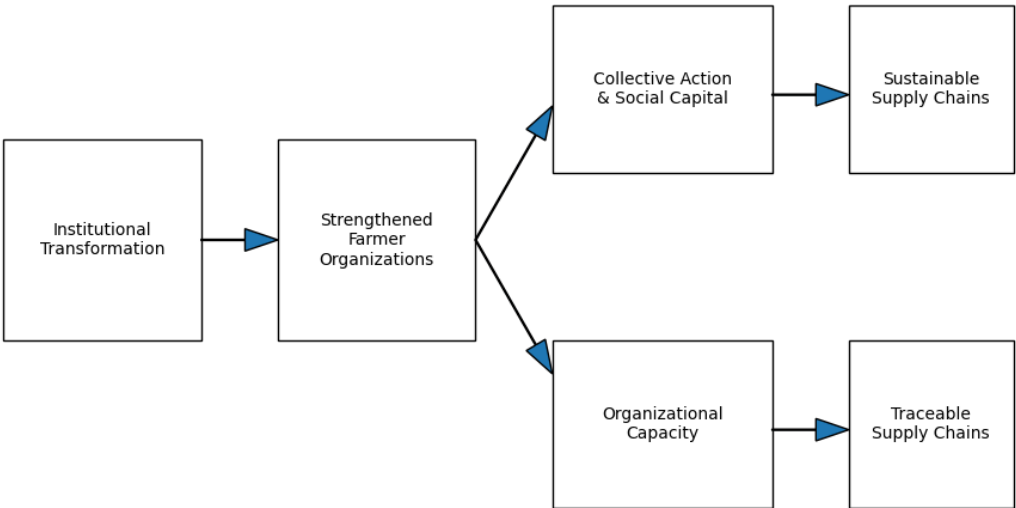
associated information throughout various stages of the supply chain, from production to final consumption (Auld et al., 2021).

Traceability systems provide multiple benefits. They enhance transparency, improve risk management, support quality assurance, facilitate certification processes, and strengthen consumer confidence. In addition, traceability contributes to environmental governance by enabling stakeholders to monitor land-use practices, identify sources of commodities, and verify compliance with sustainability commitments (Garrett et al., 2023).

For smallholder-based commodities such as cocoa, the implementation of traceability systems presents both opportunities and challenges. On the one hand, traceability can improve market access, strengthen competitiveness, and create opportunities for participation in premium markets. On the other hand, effective traceability requires reliable information systems, organizational coordination, technical knowledge, and institutional capacity. These requirements often exceed the capabilities of individual farmers, making collective institutions increasingly important (Schilling-Vacaflor & Lenschow, 2023).

Farmer organizations therefore occupy a strategic position within sustainable and traceable supply chains. They serve as institutional intermediaries capable of aggregating information, coordinating farmer participation, facilitating data collection, and supporting compliance with sustainability standards. The effectiveness of these functions depends largely on the capacity of organizations to undergo institutional transformation and adapt to emerging governance requirements. Consequently, strengthening farmer organizations has become a central strategy for promoting sustainable cocoa production and enhancing the long-term resilience of cocoa supply chains in Indonesia.

Figure 1. Conceptual Framework of Institutional Transformation and Sustainable Cocoa Supply Chains



The framework illustrates how institutional transformation strengthens cocoa farmer organizations through improved collective action, social capital,

and organizational capacity. These institutional improvements support the development of sustainable and traceable supply chains, ultimately enhancing the competitiveness and resilience of cocoa farmers in Indonesia.

METHODOLOGY

This study employed a Systematic Literature Review (SLR) approach to examine the institutional transformation of cocoa farmer organizations and its contribution to sustainable and traceable supply chains in Indonesia. The SLR method was selected because it enables a comprehensive, transparent, and systematic synthesis of existing knowledge while identifying major research trends, institutional challenges, and strategic opportunities discussed in previous studies (Snyder, 2019; Xiao & Watson, 2019).

The review process was conducted between May and June 2026. Relevant publications were identified through searches in major academic databases, including Scopus, Web of Science, ScienceDirect, SpringerLink, Wiley Online Library, and Taylor & Francis Online. Additional sources were obtained from reports published by international organizations, including the Food and Agriculture Organization (FAO), the International Cocoa Organization (ICCO), the World Bank, and other institutions concerned with agricultural sustainability, rural development, and commodity governance.

The literature search utilized combinations of several keywords, including "cocoa farmers," "farmer organizations," "cocoa cooperatives," "institutional transformation," "collective action," "social capital," "sustainable agriculture," "traceability," "supply chain governance," and "Indonesia." These keywords were applied individually and in combination to ensure broad coverage of relevant studies. The search focused on publications released between 2020 and 2026 to capture recent developments in cocoa governance, sustainability standards, farmer institutions, and traceability systems.

Several inclusion criteria were applied to ensure the quality and relevance of the reviewed literature. First, publications had to discuss cocoa farming, farmer organizations, agricultural institutions, sustainability governance, or traceability systems. Second, only peer-reviewed journal articles, scholarly book chapters, conference papers, and institutional reports were included. Third, publications had to provide empirical findings, theoretical discussions, or policy analyses relevant to organizational transformation and supply chain sustainability. Studies that lacked clear relevance to cocoa production, farmer organizations, or agricultural governance were excluded from the review.

The selection process followed a structured review procedure consisting of identification, screening, eligibility assessment, and inclusion stages. Titles, abstracts, and keywords were initially screened to determine relevance, followed by a full-text review of selected publications. Duplicate records and studies that did not meet the inclusion criteria were removed. This systematic procedure is widely recommended to improve transparency and methodological rigor in literature review studies (Page et al., 2021).

Data analysis was conducted using thematic analysis. This approach enables researchers to identify recurring themes, patterns, and relationships

across selected studies and has been widely applied in qualitative evidence synthesis (Braun & Clarke, 2022). The analysis followed three stages. First, relevant information was coded according to major concepts discussed in the literature. Second, similar codes were grouped into broader thematic categories. Third, the themes were interpreted to explain institutional transformation processes and their implications for sustainable and traceable cocoa supply chains.

Four principal themes emerged from the analysis: (1) the current condition of cocoa farmer organizations, (2) institutional constraints affecting organizational performance, (3) drivers of institutional transformation, and (4) the role of farmer organizations in promoting sustainable and traceable supply chains. These themes subsequently served as the analytical framework for organizing the results and discussion sections.

The systematic review approach adopted in this study provides a rigorous foundation for synthesizing evidence from diverse sources and generating policy-relevant insights concerning the future development of cocoa farmer organizations. Furthermore, the method facilitates the identification of knowledge gaps and strategic recommendations for strengthening sustainability and traceability within Indonesia's cocoa sector (Tranfield et al., 2003).

RESEARCH RESULT

Current Conditions of Cocoa Farmer Organizations in Indonesia

The literature indicates that cocoa farmer organizations constitute one of the most important institutional foundations supporting smallholder cocoa production in Indonesia. These organizations generally operate in the form of farmer groups, farmer associations, cooperatives, and community-based agricultural institutions that facilitate production activities, market participation, and access to development programs. Their existence is particularly significant because Indonesian cocoa production is predominantly managed by smallholder farmers who often face limitations in capital, technology, market information, and bargaining power (Neilson, 2019; FAO, 2024).

Several studies demonstrate that farmer organizations contribute positively to improving farmers' access to agricultural inputs, extension services, training opportunities, and marketing networks. Through collective mechanisms, farmer groups are able to reduce transaction costs and strengthen their negotiating position in relation to traders, exporters, and private companies. In addition, organizations frequently serve as channels through which government agencies and development institutions implement agricultural support programs and sustainability initiatives (Markelova et al., 2009; Donovan et al., 2017).

Despite these contributions, the institutional performance of many cocoa farmer organizations remains uneven across different regions. Some organizations have developed effective governance systems and maintain active engagement with external stakeholders, while others continue to function primarily as administrative entities with limited operational capacity. Differences in leadership quality, member participation, financial resources, and organizational experience significantly influence institutional effectiveness (Bijman et al., 2016).

The literature further reveals that organizational governance remains one of the most critical determinants of institutional performance. Organizations characterized by transparent decision-making processes, accountable leadership, and active member involvement generally demonstrate stronger organizational resilience and better development outcomes. Conversely, weak governance structures often contribute to low member participation, ineffective program implementation, and declining organizational sustainability (Scott, 2014).

Another important finding concerns the role of social capital in sustaining farmer organizations. Trust, reciprocity, and collective norms facilitate cooperation among members and strengthen organizational cohesion. High levels of social capital encourage information sharing, collective problem-solving, and coordinated action, all of which are essential for supporting agricultural development and market integration. Previous studies have consistently shown that farmer organizations with strong social capital tend to perform more effectively than organizations characterized by internal conflict and weak member commitment (Putnam, 1993; Pretty, 2003).

Recent literature also highlights the growing importance of farmer organizations within sustainability governance frameworks. As sustainability standards become increasingly prominent in global agricultural markets, farmer organizations are expected to facilitate compliance with environmental, social, and economic requirements. These responsibilities include supporting certification processes, disseminating sustainability-related information, maintaining production records, and coordinating farmer participation in sustainability programs (Lambin et al., 2023; Garrett et al., 2023).

In the Indonesian cocoa sector, these expectations have expanded further with the increasing emphasis on supply chain transparency and traceability. Farmer organizations are increasingly required to collect, manage, and communicate information regarding production practices, farm locations, farmer identities, and product flows. Such functions require institutional capacities that extend beyond traditional agricultural support services and demand more sophisticated organizational systems (Schilling-Vacaflor & Lenschow, 2023).

The literature suggests that while cocoa farmer organizations continue to play a vital role in supporting rural livelihoods and agricultural development, many remain inadequately prepared to address emerging sustainability and traceability requirements. This situation underscores the importance of institutional transformation as a strategic pathway for strengthening organizational effectiveness and enhancing the competitiveness of smallholder cocoa farmers within evolving global supply chains.

Institutional Constraints and Organizational Challenges

Although farmer organizations perform important economic and social functions, numerous studies identify persistent institutional constraints that limit their effectiveness. One of the most frequently reported challenges is limited organizational capacity. Many organizations continue to experience shortages of skilled personnel, inadequate administrative systems, and insufficient financial resources. These constraints often reduce their ability to implement development

programs, maintain organizational records, and provide consistent services to members (FAO, 2023).

Leadership capacity represents another major challenge. Effective organizations typically depend upon capable leaders who can mobilize members, coordinate activities, and establish partnerships with external stakeholders. However, several studies report that leadership succession, managerial competence, and organizational accountability remain problematic in many rural farmer organizations. Weak leadership frequently contributes to organizational stagnation and declining member participation (Bijman et al., 2016).

Financial sustainability also constitutes a significant concern. Many farmer organizations rely heavily on external support from government programs, donor agencies, or private companies. Dependence on external funding often creates institutional vulnerability because organizational activities may decline once external assistance ends. Developing sustainable financial mechanisms therefore remains a critical challenge for many cocoa farmer organizations (Donovan et al., 2017).

Another important constraint involves limited technological readiness. Digital technologies are increasingly important for agricultural information management, market communication, and traceability systems. Nevertheless, many farmer organizations continue to face difficulties related to digital infrastructure, technological skills, and access to information systems. These limitations may hinder their ability to participate effectively in emerging sustainability and traceability initiatives (FAO, 2024).

The literature also highlights challenges associated with coordination and stakeholder engagement. Sustainable supply chains require collaboration among farmers, cooperatives, government agencies, private companies, certification bodies, and civil society organizations. However, weak coordination mechanisms frequently reduce institutional effectiveness and limit opportunities for collective problem-solving. Strengthening multi-stakeholder collaboration therefore represents a key priority for future organizational development (Auld et al., 2021).

Overall, the evidence suggests that institutional constraints remain substantial barriers to organizational effectiveness within Indonesia's cocoa sector. Addressing these challenges requires strategic investments in governance reform, leadership development, financial sustainability, technological capacity, and stakeholder collaboration. These factors subsequently emerge as important drivers of institutional transformation, which are discussed in the following section.

DISCUSSION

The findings of this review demonstrate that the future competitiveness of Indonesia's cocoa sector is increasingly dependent on the capacity of farmer organizations to undergo institutional transformation. While farmer organizations have historically functioned as mechanisms for facilitating input distribution, extension services, and collective marketing, contemporary agricultural governance requires them to perform broader and more complex functions. These functions include sustainability coordination, information management, stakeholder engagement, and traceability implementation. Consequently, institutional transformation is no longer an optional organizational process but a strategic necessity for maintaining participation in evolving agricultural markets.

The findings support institutional theory, which argues that organizations must continuously adapt to changing external environments in order to remain effective and legitimate (North, 1990; Scott, 2014). The increasing importance of sustainability standards and supply chain transparency has generated new institutional pressures that directly affect cocoa farmer organizations. Organizations that fail to adapt risk becoming marginalized within increasingly regulated and information-intensive supply chains. Conversely, organizations that successfully strengthen governance systems, improve administrative capacity, and adopt new technologies are more likely to support farmer competitiveness and long-term resilience.

The review also highlights the central role of collective action in facilitating institutional transformation. Consistent with the work of Ostrom (2015), collective action enables smallholder farmers to overcome structural limitations associated with scale, information access, and market participation. Through farmer organizations, individual producers can aggregate resources, coordinate activities, and engage more effectively with external stakeholders. This collective capacity becomes particularly important in the context of sustainability and traceability requirements, which often exceed the capabilities of individual farmers acting independently.

Another significant finding concerns the importance of social capital as a foundation for organizational effectiveness. Trust, reciprocity, and shared norms strengthen organizational cohesion and encourage active member participation. Previous studies have shown that organizations characterized by strong social capital are generally more capable of mobilizing collective resources and adapting to changing conditions (Putnam, 1993; Pretty, 2003). The findings of this review reinforce these observations by demonstrating that social capital remains a critical factor influencing the success of institutional transformation within cocoa farmer organizations.

The analysis further suggests that organizational governance constitutes one of the most decisive factors shaping institutional performance. Transparent leadership, accountable decision-making, and effective member participation contribute to stronger organizational resilience and greater capacity for innovation. In contrast, weak governance structures frequently limit organizational effectiveness and reduce the ability of farmer groups to respond

to emerging market demands. These findings are consistent with previous research emphasizing the importance of governance quality in agricultural cooperatives and producer organizations (Bijman et al., 2016).

Technological readiness emerged as another important dimension of institutional transformation. The growing demand for sustainability monitoring and traceability requires farmer organizations to manage increasingly complex information systems. Digital tools can facilitate farm registration, production monitoring, data storage, and communication among supply chain actors. However, many farmer organizations continue to face limitations in digital literacy, technological infrastructure, and information management capacity. As a result, investments in digital capacity building are becoming increasingly important for strengthening organizational readiness and improving participation in sustainable supply chains.

The findings also indicate that institutional transformation should not be viewed solely as an internal organizational process. Effective transformation requires supportive interactions among multiple stakeholders, including government agencies, private companies, development organizations, research institutions, and civil society actors. Multi-stakeholder collaboration can provide technical assistance, financial resources, policy support, and market incentives that facilitate organizational development. Therefore, institutional transformation should be understood as a collaborative process embedded within broader governance networks rather than an isolated organizational effort.

From a policy perspective, the review suggests that strengthening cocoa farmer organizations should become a strategic priority within Indonesia's agricultural development agenda. Policy interventions should move beyond short-term production support and place greater emphasis on institutional capacity building. Programs focusing on leadership development, governance reform, financial sustainability, digital literacy, and organizational networking can contribute significantly to strengthening farmer organizations and enhancing their ability to support sustainable agricultural development.

The findings also have important implications for sustainability governance. Sustainable and traceable supply chains ultimately depend upon the capacity of local institutions to coordinate collective action and manage information effectively. Farmer organizations occupy a strategic position at the intersection between producers, markets, and regulatory systems. Strengthening these organizations can therefore contribute not only to improved farmer welfare but also to broader goals related to environmental sustainability, market transparency, and rural development.

Based on the synthesis of the reviewed literature, this study proposes that institutional transformation follows a sequential process. Strengthened governance systems enhance organizational capacity and collective action. Improved organizational capacity subsequently facilitates sustainability implementation, information management, and stakeholder coordination. These institutional improvements create favorable conditions for the development of sustainable and traceable supply chains, which ultimately contribute to farmer

resilience, market competitiveness, and long-term sectoral sustainability. This conceptual pathway provides a useful framework for understanding how institutional transformation can support the future development of Indonesia's cocoa sector.

CONCLUSIONS AND RECOMMENDATIONS

This study examined the institutional transformation of cocoa farmer organizations in Indonesia through a systematic review of recent literature. The findings indicate that farmer organizations play a strategic role in supporting agricultural development, strengthening collective action, facilitating market access, and promoting sustainability initiatives within the cocoa sector. However, many organizations continue to face significant challenges, including weak governance structures, limited managerial capacity, inadequate financial resources, insufficient technological readiness, and low levels of stakeholder coordination.

The review further demonstrates that institutional transformation is essential for enhancing the effectiveness of farmer organizations in responding to emerging sustainability and traceability requirements. Strengthening organizational governance, leadership capacity, social capital, and digital competencies can improve the ability of farmer organizations to support information management, sustainability compliance, and supply chain transparency. These institutional improvements are increasingly important as global agricultural markets place greater emphasis on accountability, sustainability, and traceability.

The findings also suggest that sustainable and traceable cocoa supply chains cannot be achieved solely through technical interventions at the farm level. Instead, effective institutional arrangements are required to coordinate collective action, facilitate knowledge sharing, and strengthen relationships among farmers, government agencies, private companies, and other stakeholders. Farmer organizations therefore represent a critical institutional bridge connecting smallholder producers with broader sustainability governance systems.

Based on these findings, several recommendations can be proposed. First, government agencies should prioritize long-term institutional capacity-building programs focusing on organizational governance, leadership development, and financial sustainability. Second, farmer organizations should strengthen internal management systems and expand the use of digital technologies to improve information management and organizational efficiency. Third, private sector actors and development partners should support collaborative initiatives that enhance traceability capacity and strengthen market integration among smallholder cocoa producers. Finally, multi-stakeholder partnerships should be expanded to facilitate knowledge exchange, technical assistance, and sustainable organizational development across cocoa-producing regions.

Overall, the future resilience and competitiveness of Indonesia's cocoa sector will depend not only on improvements in production and productivity but also on the ability of farmer organizations to transform into adaptive,

accountable, and innovation-oriented institutions capable of supporting sustainable and traceable supply chains.

ADVANCED RESEARCH

This study has several limitations that should be acknowledged. First, the analysis was based exclusively on secondary data derived from published literature, institutional reports, and academic sources, which may not fully capture the diversity of local experiences among cocoa farmer organizations across different regions of Indonesia. Second, the review focused primarily on institutional transformation, sustainability, and traceability issues within the cocoa sector, potentially overlooking broader socioeconomic and political factors that may influence organizational performance. Third, variations in research methods, geographical contexts, and analytical frameworks among the reviewed studies may affect the comparability of findings.

Future research should therefore incorporate empirical field-based investigations involving farmer organizations, cooperatives, government agencies, and private sector actors to validate and expand the findings presented in this review. Comparative studies across different cocoa-producing regions could provide deeper insights into the factors influencing organizational effectiveness and institutional adaptation. In addition, future studies may explore the role of digital technologies, governance innovation, and multi-stakeholder partnerships in strengthening sustainable and traceable cocoa supply chains. Such research would contribute to a more comprehensive understanding of how institutional transformation can enhance farmer resilience, competitiveness, and long-term sustainability within Indonesia's cocoa sector.

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