Commutable Strategies and Institutional Dynamics in Agricultural Co-operatives: A Project Management Perspective on Crisis Resilience and Sustainability

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Abstract

Agricultural cooperatives (co-ops) are increasingly recognised for their capacity to enhance resilience in the face of crises such as climate change, economic disruptions, and pandemics. This study investigates how governance structures and adaptive project management strategies contribute to effective crisis management in co-ops. Initial findings reveal that regulatory compliance acts as both a constraint and an enabler, while economic volatility drives the need for costly technological investments. External stakeholder influence provides essential resources but imposes governance to align internal and external priorities. Social capital, manifesting as community trust and collaboration, supports crisis response but can be weakened under financial stress. Hybrid governance frameworks emerge as vital, balancing member engagement with professional oversight to maintain organisational stability. We propose the Crisis Resilience in Agricultural Co-operatives conceptual framework, which links external pressures, internal dynamics, and resource availability to resilience outcomes. This research highlights the importance of strategic governance, adaptive project management, and effective social networks in fostering co-op resilience and provides guidance for policymakers and practitioners.

Keywords: Agricultural cooperatives, crisis management, resilience, social capital, governance mechanisms, institutional theory, adaptive management, project management, digital technology adoption, sustainability.

1. Introduction

Agriculture constitutes a critical foundation for the livelihoods of over half of the global population, particularly within rural areas where it engenders essential outcomes for food security, economic stability, and environmental sustainability (Dong et al., 2021a, 2021b; Lowder et al., 2021). However, the sector is increasingly confronted with a procession of challenges, including climate change, economic volatility, and pandemics (Barber et al., 2021; Sonjit et al., 2021a), each of which engenders significant threats to agricultural productivity and resilience. In this vein, these adversities underscore the imperative for adaptive and responsible management practices that can effectively navigate and mitigate such constraints (Gkogkidis & Dacre, 2020b, 2021; Yan et al., 2021). The discourse surrounding the nature of global agricultural markets further delineates the magnitude of these challenges, compelling crisis response strategies that are both effective and contextually agile (Adger, 2006; Baxter et al., 2023; Dong et al., 2022; Eggleton et al., 2021).

Agricultural cooperatives (co-ops) emerge as a paradigmatic instantiation of resilience in the sector. These member-driven organisations leverage social capital, encompassing trust, networks, and community engagement, to adapt and sustain operations amidst crises (de Brito, 2018; Putnam, 2000). For instance, co-ops employ strategic partnerships and governance frameworks that underpin the complex modalities of effective crisis response (Sonjit et al., 2021b, 2021c). Furthermore, the incorporation of emerging digital technologies is proposed as a mechanism to enhance adaptability, though the asynchronous nature of technological adoption across different contexts remains a persistent impediment (Antonopoulou & Dacre, 2021; Brookes et al., 2020; Ciruela-Lorenzo et al., 2020; Dacre, AlJaloudi, et al., 2024; Dacre et al., 2014).

Conversely, whilst co-ops present a promising model, extant research does not sufficiently determine how varying institutional contexts and project management strategies may influence their efficacy in crisis scenarios (Nohrstedt et al., 2018). Thus, in this study we aim to contextualise and evaluate this gap through the lens of institutional theory, specifically examining how governance mechanisms and temporary organising structures afford enhanced crisis management capabilities. In order to extrapolate meaningful insights, we aim to delineate the influence of governance and structure on co-ops' capacity to manage crises.

2. Literature Review

Agricultural co-ops represent distinctive organisational constructs specifically designed to empower smallholder farmers. Through collective resource management, these entities engender improved market access and extend bargaining power within complex supply chains (Al-Mhdawi et al., 2024; Dacre, Yan, Dong, et al., 2024; Dacre, Yan, Frei, et al., 2024; Fischer & Qaim, 2012). These co-ops foster economic resilience by equitably distributing risks (Al-Mhdawi, O'Connor, et al., 2023; Mohamed et al., 2024) and rewards among members, promoting long-term viability and sustainable livelihoods (Altman, 2015; Candemir et al., 2021). However, the sustainability and effectiveness of these co-ops are increasingly tested by crises such as climate change (Tite et al., 2021a, 2021b), economic volatility (Gkogkidis & Dacre, 2023), and global health emergencies, compelling agile and adaptive responses (Al-Mhdawi, Dacre, et al., 2023; Baxter et al., 2023; Boin et al., 2020; Dacre et al., 2019; Dong et al., 2024).

Central to the ability of co-ops to navigate such crises is their governance (Dacre, Eggleton, Gkogkidis, et al., 2021). Effective governance requires a sophisticated balance between democratic member engagement and professional management to address the complexities of global markets (Bijman et al., 2014). Hybrid governance frameworks have emerged as a means to reconcile cooperative ideals with market-driven strategies, maintaining competitiveness while safeguarding core social missions (Doherty et al., 2014). However, global economic integration continues to pose a threat (Manh et al., 2024), potentially eroding the paradigmatic values that underpin cooperative ideals (Ajates, 2020a, 2020b). The role of social capital, constituted by trust, shared norms, and collaboration, remains central, as it facilitates peer-to-peer learning and innovation. Nonetheless, cultural and historical contexts often delineate the extent of members' willingness to collaborate (Lubell et al., 2014; Riley et al., 2018).

Building on the role of governance and social capital, co-ops also demonstrate a commitment to environmental sustainability, achieved through resource pooling for ecological practices such as efficient water management and organic farming (Huybrechts & Mertens, 2014). However, the juxtaposition of economic and environmental priorities can engender tensions, as members may face a dialectical choice between pursuing short-term financial returns and committing to ecological stewardship, prompting calls for comprehensive performance

frameworks that integrate these competing objectives (Marcis et al., 2019; Wittman et al., 2017). For instance, the emergence of Multi-Stakeholder Cooperatives (MSCs) proposes a holistic approach, integrating various actors and fostering resilience within food systems. However, managing diverse teams (Dacre, 2024a) and interests requires sophisticated governance and conflict resolution mechanisms (Ajates Gonzalez, 2017; Ajates, 2020b).

The increasing frequency and severity of crises highlight the impetus of adaptive and agile organisational strategies. The notion of temporary organising (Eggleton et al., 2023; Zhang et al., 2023), characterised by short-term and flexible structures (Gong et al., 2022), has been advanced as a critical approach for crisis management. This heuristic modality enables the reconfiguration of resources and facilitates rapid decision-making (Valdez-Rojas et al., 2022). For co-ops operating in crisis-prone regions, such adaptability is imperative, as it supports real-time responses to disruptions in supply chains, stakeholder coordination, and resource allocation (Ebbin, 2009; Micheli et al., 2024). Extant literature illustrates that co-ops can leverage diversification, innovation (Dacre, 2024b), and collaborative networks to mitigate and manage risk effectively (Alant & Bakare, 2021; Finkbeiner, 2015).

The effectiveness of these adaptive strategies is heavily influenced by institutional and social factors (Dacre et al., 2015). The availability of active institutional support and the presence of social networks are critical in facilitating resource mobilisation and the efficient execution of adaptive measures (El Fartassi et al., 2023). Strategic partnerships with governmental and private sector actors afford co-ops essential financial and technical resources, thereby enhancing their crisis response capacities (Gannon et al., 2020). Governance mechanisms that integrate both contractual and relational elements are paramount in fostering member commitment while maintaining flexibility (Weng et al., 2023). Winch (2014) project organising framework, which categorises governance into domains of delivery, structuring, and oversight, further highlights the balance between control and adaptability (Dacre, Eggleton, Cantone, et al., 2021) essential for effective crisis management.

Agricultural projects that address environmental degradation and economic instability increasingly employ methodological frameworks to enhance risk

assessment (Al-Mhdawi, Qazi, et al., 2023) and decision-making processes (Brent & Mulder, 2005; Chang & Liang, 2023). For instance, South Africa's LandCare programme illustrates the efficacy of adaptive project criteria that take into account regional variability in resources and needs (Mulder & Brent, 2006). Decision-support systems (DSS), employing multicriteria analysis, have also proven instrumental in optimising agricultural practices while mitigating environmental impacts (Manos et al., 2010).

In this landscape of evolving agricultural practices, technological innovations play a pivotal role. Artificial Intelligence (AI) (Dacre & Kockum, 2022; Dacre et al., 2020), machine learning (Hsu et al., 2021a; Hsu et al., 2021b), blockchain, and smart farming systems enhance predictive analytics, optimise resource deployment, and enhance supply chain transparency (Ciruela-Lorenzo et al., 2020; Dacre & Kockum, 2022; Kockum & Dacre, 2021). The Internet of Things (IoT) enables synchronous environmental monitoring, while blockchain technologies ensure data security and transparency, thus bolstering stakeholder trust (Wolfert et al., 2017). Furthermore, ICT-based platforms have evolved to facilitate participatory learning and agroecological practices, as illustrated by urban agriculture initiatives across Western Europe (Kendall & Dearden, 2017; Sanyé-Mengual et al., 2019).

Finally, the institutional and policy landscape also significantly influences the efficacy of agricultural projects. Policy-driven initiatives, such as China's Six Point Action Plan, underscore the transformative potential of strategic investments in rural infrastructure and governance, with an emphasis on civil society engagement (Zou et al., 2020). Thus, the sustainability of these projects hinges on effective governance, community engagement, and adaptability to local contexts (Eggleton et al., 2021; Jacobs et al., 2016). Agricultural co-ops, embedded within a nexus of regulatory and societal norms, must navigate external pressures while striving to balance these influences with adaptive project management strategies, a dynamic that warrants further attention (Dacre et al., 2018; Gkogkidis & Dacre, 2020a).

3. Methodology

We have adopted a multiple-case study design to explore how agricultural co-operatives respond to crises, aiming to derive insights that are closely tied to real-

world phenomena (Eisenhardt, 1989; Yin, 2009). Our choice of methodology stemmed from the necessity of studying deeply embedded organisational behaviours where our control over events is minimal (Easton, 2010; Reynolds & Dacre, 2019; Sayer, 1992). We therefore centred our analysis on agricultural co-ops in China, which encounter adaptive challenges necessitating integrated governance and project management responses. The iterative nature of our case study design also allows us to refine our understanding as we gather more data and insights (Feagin et al., 2016; Yin, 2009).

3.1 Empirical Context

Our study focuses on Specialised Farmers Co-operatives in Mainland China, a sector that has seen rapid expansion driven by supportive policies over the past two decades (Liang et al., 2023; Liu et al., 2019; Xiangping et al., 2012). For instance, the number of agricultural co-ops grew from 35,100 in 2007 to over 2.1 million by 2018, involving over 100 million farmers (Su & Cook, 2020; Yuan, 2019). As such, we have selected four representative co-ops from the pork farming sector in central China, known for both its agricultural significance and its susceptibility to crises like livestock diseases and market instability (Liu et al., 2024). These co-ops have substantial experience in managing crises, which makes them ideal for evaluating adaptive project management strategies.

3.2 Data Collection

So far, we have completed a limited number of semi-structured interviews, allowing us to garner initial insights into the strategies and governance mechanisms used in crisis contexts. This sample provides an initial understanding of crisis management strategies, consistent with established recommendations for capturing complex organisational dynamics (Douthwaite et al., 2003; Yin, 2009). The initial interviews have already yielded valuable reflections on crisis response, helping us to shape the subsequent data collection phases (Charmaz, 2006; Peräkylä & Ruusuvuori, 2008). In addition to interviews, we are gathering supplementary data, such as internal documents and field observations, to enrich our understanding of each case (Brent & Mulder, 2005; Decrop, 1999). This mixed-method approach will enhance the reliability of our research and provide a more detailed picture of crisis management practices (Kendall & Dearden, 2017). The integration of these data sources will therefore enable us to portray the complexity of co-op operations and the interplay between project management and

institutional contexts (Dacre et al., 2022; Greenwood et al., 2011; Pontin & Dacre, 2024; Scott, 2013).

3.3 Data Analysis

As part of our data analysis process, we will employ a multi-stage coding approach, guided by the constant comparative method (Charmaz, 2006; Glaser, 1965). We have begun with open coding to segment the data into meaningful units, generating first-order codes related to regulatory, market, and stakeholder pressures, as well as internal dynamics (Corbin & Strauss, 1990; Miles & Huberman, 1994). This initial phase, based on our completed interviews, has already highlighted themes such as regulatory constraints, market challenges, and the role of social capital in adaptive strategies (Lubell et al., 2014; Putnam, 2000). As we proceed, we will employ axial coding to identify relationships between these first-order codes, organising them into second-order themes (Gioia et al., 2013; Strauss & Corbin, 1998). We aim to draw on institutional theory to categorise these themes (DiMaggio & Powell, 1983; Scott, 2013). This phase will allow us to link our observations with broader theoretical constructs, exploring how co-ops manage external demands and internal governance (Greenwood et al., 2011; Weng et al., 2023). In the final stage, we will engage in selective coding to synthesise these themes into aggregate dimensions (Corbin & Strauss, 2015; Gioia et al., 2013). Our goal is to construct a cohesive narrative that maps how co-ops employ governance and project strategies to mitigate crises (Bourdieu, 2011; Creswell & Poth, 2016).

4. Results

Our initial findings suggest that agricultural co-operatives face a range of complex pressures that can influence their crisis response strategies. Regulative pressures, including compliance with the 2007 national law for Specialised Farmer Co-operatives (SFC) and environmental regulations, are commonly mentioned by participants. These legal requirements may act as both constraints and opportunities. For instance, one interviewee noted that meeting regulatory standards has the potential to secure subsidies and policy support, although it also introduces administrative challenges.

Market-based pressures and economic volatility also appear to be significant factors. Interviewees described how competition and disease outbreaks have

largely disrupted supply chains and altered market expectations, prompting co-ops to implement adaptive measures. One co-op's collaboration with a major supply chain actor suggests that adopting advanced digital technologies, such as real-time monitoring, may help manage market fluctuations, though these innovations require substantial investment.

External stakeholder influence, particularly from governmental and private sector partners, can also play a crucial role in shaping crisis responses. Some interviewees indicated that these partnerships provide essential financial and technical support, while others mentioned challenges in aligning external demands with internal capacities. One manager highlighted how collaboration with local research institutes has enabled better resource mobilisation and adaptive project management, suggesting a strategic advantage in crisis situations.

Cultural-cognitive influences, such as shared community values and the cooperative ethos, also seem to foster trust and collaboration among members. According to several participants, a strong sense of community enhanced crisis response and member engagement. However, this cohesiveness was not universal. Individual member identity and perceptions of ownership also impacted engagement, with some members prioritising personal interests over collective welfare. One participant described difficulties in maintaining unity, especially when financial pressures intensified, indicating that the sense of shared purpose can be fragile under stress.

Governance mechanisms also varied across the co-ops and seemed to influence crisis management effectiveness. Interviewees from co-ops with robust hybrid governance frameworks reported fewer disputes and more efficient crisis responses. These co-ops used formal agreements and contractual obligations to maintain member accountability. In contrast, weaker governance structures can lead to recurring issues, such as unresolved disputes over member responsibilities. One manager explained that the strain and costs associated with resolving these conflicts had a significant impact on performance, suggesting a need for stronger governance.

Member training and education initiatives were mentioned as having the potential to enhance crisis resilience. Co-ops that invest in comprehensive training programmes may see improved adherence to professional standards and better project outcomes. However, gaps in training were linked to inconsistent practices and a lack of preparedness in some cases. One participant indicated that insufficient training contributed to inefficiencies during crises, which suggests the importance of continuous professional development.

Finally, adaptive project management strategies were frequently cited as essential. Participants emphasised the need for flexibility and real-time decision-making to respond effectively to crises, such as disease outbreaks and extreme weather events. Successful co-ops appear to have the capacity to mobilise resources quickly and adjust project timelines. Nonetheless, the success of these strategies often hinges on the availability of financial and social capital. Community engagement and strong social networks may play a vital role in sustaining long-term resilience, according to several interviewees.

5. Discussion

5.1 Institutional and Regulative Pressures

The complex pressures that agricultural co-operatives encounter underscore the critical interplay between institutional constraints and adaptive organisational strategies. Our findings reveal that regulative pressures, such as national laws and environmental policies, are deeply embedded in co-op operations. While regulatory frameworks are well-established as shaping organisational behaviour (Scott, 2013), our data illustrate that compliance can serve as an ambivalent factor, enabling resilience through access to subsidies and policy support for some co-ops, however imposing significant administrative burdens for others. This highlights the impact of institutional mandates, where the capacity to navigate regulatory complexities can either strengthen or undermine organisational adaptability (Beckmann & Padmanabhan, 2009; Hagedorn, 2008). Such challenges have also been noted in other contexts, where regulatory compliance imposes disproportionate burdens on smaller entities (Mair & Marti, 2009; North, 1990).

5.2 Economic Volatility and Resource Limitations

Our insights further indicate that economic volatility, driven by factors like disease outbreaks and market competition, not only disrupts supply chains but

compels co-ops to invest in costly technological innovations. This persistent tension between immediate economic imperatives and resource limitations illustrates the ongoing struggle to balance short-term adaptability with long-term sustainability (Fischer & Qaim, 2012). The adoption of advanced technologies, such as blockchain and IoT, as potential mitigators of market disruption, remains an open strategy, requiring substantial investment (Wolfert et al., 2017).

5.3 External Stakeholder Influence

External stakeholder influence emerges as a crucial yet uncertain factor. Partnerships with governmental and private sector entities offer vital financial and technical resources but also introduce layers of complexity that must be carefully managed. The literature underscores the potential of strategic alliances to enhance crisis management (Gannon et al., 2020; Jaumier et al., 2017). However, our findings suggest that the efficacy of these partnerships' hinges on a co-op's ability to harmonise external expectations with internal governance structures. This resonates with previous studies that emphasise the risks of misaligned partnerships, which can exacerbate internal resource strain and governance challenges (Berkes, 2007; Turner, 2009).

5.4 Cultural-Cognitive Influences and Social Capital

Cultural-cognitive influences, such as shared values and cooperative ethos, are highlighted as key enablers of effective crisis response (Putnam, 2000; Riley et al., 2018). Our findings suggest that a sense of community can enhance member engagement and adaptability during crises. However, this cohesiveness proves vulnerable under financial strain, lending support to arguments that economic pressures can destabilise collective goals and weaken organisational solidarity. The concept of embeddedness in social networks (Aldrich & Meyer, 2015; Granovetter, 1985) further underscores how community ties can either support or limit co-op flexibility, depending on the strength and history of these relationships.

5.5 Adaptive Project Management Strategies

Finally, adaptive project management strategies emerge as essential for navigating crises. Our findings affirm that successful co-ops employ flexibility and real-time decision-making to mobilise resources effectively and adjust project timelines (Micheli et al., 2024; Valdez-Rojas et al., 2022). However, the success of these

strategies is often contingent upon access to both financial and social capital. This dependency stresses the indispensable role of community engagement and the strength of social networks in fostering long-term resilience, as highlighted in prior research (Brent & Mulder, 2005; Tzounis et al., 2017). In this vein, the literature further supports that adaptive strategies must be underpinned by continuous monitoring and feedback mechanisms to remain effective in volatile environments (Kendall & Dearden, 2017; Manos et al., 2010).

5.6 Crisis Resilience in Agricultural Co-operatives

Although our data collection is still in progress, we have developed an initial conceptual framework to provide a structured understanding of the factors influencing crisis resilience in agricultural co-operatives (Figure 1). This framework serves as a preliminary synthesis of our findings and integrates theoretical insights to guide future research.

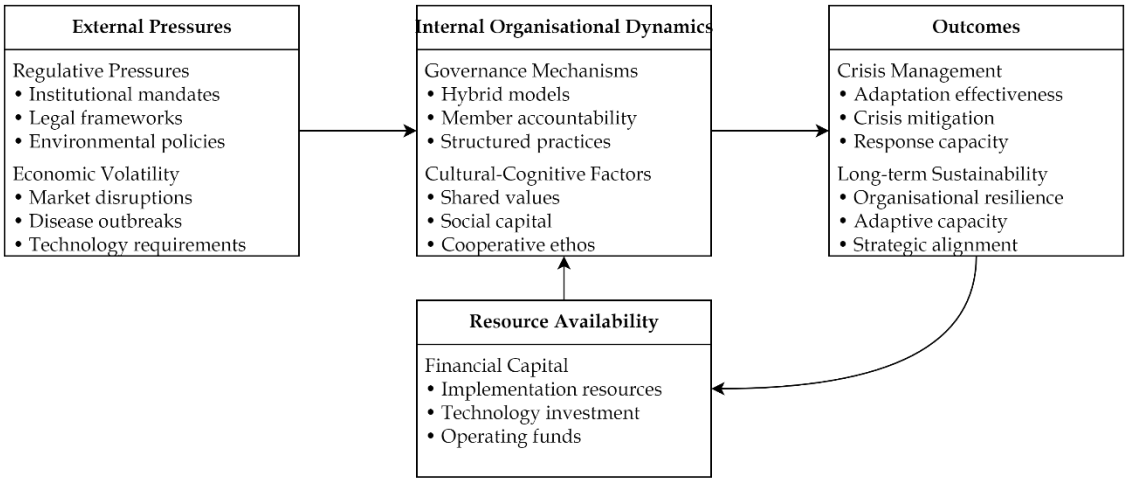

Figure 1: Crisis Resilience in Agricultural Co-operatives

The *Crisis Resilience in Agricultural Co-operatives* conceptual model delineates the dynamic interplay among External Pressures, Internal Organisational Dynamics, Resource Availability, and the resultant Outcomes. This model provides a structured understanding of how these components interrelate and collectively shape the adaptive capacities of co-operatives, particularly given the constraints of our empirical data.

The relationships between these components are characterised by influences, enablers, and shaping mechanisms. For instance, External Pressures, comprising regulatory demands, economic volatility, and evolving stakeholder expectations, *influence* the internal strategies and operational flexibility of co-ops. These

pressures compel co-operatives to adapt proactively, while simultaneously navigating resource limitations and maintaining operational efficiency. This external impetus shapes the need for strategic governance and adaptive responses, as co-ops strive to balance compliance with sustainability and economic imperatives (Hagedorn, 2008; Scott, 2013).

Internal Organisational Dynamics serve as a pivotal axis of the framework, encapsulating governance mechanisms and cultural-cognitive influences. Governance structures *enable* or constrain effective crisis response, depending on how well they balance democratic participation with professional management (Bijman & Iliopoulos, 2014; Doherty et al., 2014). Cultural-cognitive factors, such as shared values and social capital, *shape* the cohesion and collective action of members, fostering trust and collaboration, but also revealing vulnerabilities under financial stress (Putnam, 2000).

Resource Availability, underpinning adaptive capacities, delineates the constraints and opportunities co-operatives face when deploying strategic responses. This aspect is *shaped* by both external and internal factors and is essential for implementing adaptive project management strategies, such as real-time decision-making and resource reallocation.

Outcomes, such as crisis management effectiveness, organisational resilience, and long-term sustainability, are *enabled* by the successful integration of these elements. However, the model also includes a critical feedback loop from Outcomes back to Resource Availability. This loop highlights the dynamic and iterative nature of these processes, suggesting that successful crisis responses can feed into future resource mobilisation and strategic planning. For example, positive outcomes, such as increased resilience and effective crisis mitigation, can lead to enhanced social and financial capital, thereby *enabling* better resource mobilisation and strategic alignment for future challenges (Manos et al., 2010).

Additionally, it is important to note that these relationships are influenced by context-specific factors, such as the scale of the co-op, regional economic conditions, and the nature of stakeholder networks. The model underscores that resilience is not a static attribute but an ongoing process that requires continuous adaptation.

6. Conclusion

In this study we set out to understand how agricultural co-operatives navigate external pressures and internal dynamics to achieve crisis resilience. Our analysis focused on the roles of governance structures, regulatory influences, social capital, and resource availability. Our findings suggest that regulatory frameworks can both enable and constrain co-ops, depending on their capacity to manage compliance demands. Economic disruptions compel the adoption of valuable but necessary technologies, while external partnerships provide critical yet complex support that should be carefully managed. Social cohesion and shared values emerged as key factors in effective crisis response, although financial strain can undermine these bonds. Governance mechanisms that balance member engagement with professional oversight were shown to be vital for resilient operations.

Our initial contributions include the development of a conceptual framework that connects institutional and organisational factors to crisis management outcomes, enriching the theoretical understanding of co-op adaptability. Practically, we highlight the need for well-structured governance, strategic resource management, and the cultivation of strong community ties to bolster crisis resilience.

Since our research positioned as an ongoing study and therefore presents limited data from, it may not capture the full spectrum of co-op experiences. Additionally, our focus on Mainland China may affect the broader applicability of our findings. Therefore, future research should include a larger and more varied sample and consider longitudinal studies to track co-op evolution over time. Expanding this research to other regions and employing quantitative methods could further validate and refine our conceptual model. However, we believe this study provides an initial understanding of the adaptive strategies necessary for agricultural co-ops to thrive in an increasingly volatile context, offering both theoretical insights and actionable guidance for practice and policymakers.

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