

From resilience to sustainability: exploring key stakeholders in agribusiness

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Received 27 October 2023
Revised 1 February 2024
20 October 2024
Accepted 9 March 2025

Abstract

Purpose – This study aims to investigate agribusiness organizations' resilience in Mato Grosso do Sul, Brazil, and its implications for sustainability.

Design/methodology/approach – Using the Benchmark Resilience Tool model, a multi-case study examined three organizations representing different agribusiness supply chain stakeholders: a rural firm, a farmer's union and an agriculture cooperative. Each organization successfully navigated recent crises.

Findings – Organizations exhibit varying resilience levels. The rural firm prioritizes financial management but lacks governance, necessitating enhancements in governance, risk diversification and resilience training for sustainability. The farmer's union, with robust governance, can bolster resilience and sustainability via innovation and external partnerships. The cooperative, although proactive, should target resource resilience and knowledge sharing to enhance sustainability.

Research limitations/implications – This study focused exclusively on Mato Grosso do Sul agribusiness organizations. Further research could explore other regions and industries to provide a more comprehensive understanding of the relationship between resilience and sustainability. The small sample size is also a limitation.

Practical implications – The research identified six strategies through which organizations can enhance sustainability through resilience mechanisms. By integrating the proposed strategies, organizations can navigate the modern business environment while aligning with long-term sustainability goals.

Social implications – The lessons learned from this study underscore the pivotal role of resilience in advancing sustainability goals, promoting responsible practices and contributing positively to social facets of organizations.

Originality/value – This study contributes to the synergy between organizational resilience and sustainability. It underscores resilience's pivotal role in achieving sustainability objectives, promoting responsible practices and positively impacting organizations' environmental, social and economic aspects.

Keywords Organizational resilience, Sustainability, Agribusiness

Paper type Research paper

1. Introduction

Organizational resilience and firm sustainability are two fundamental constructs that share intricate theoretical relationships and are pivotal in shaping the modern business landscape



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RAUSP Management Journal
Vol. 60 No. 1, 2025
pp. 41-57
Emerald Publishing Limited
2531-0488
DOI 10.1108/RAUSP-10-2023-0218

(Ciasullo, Chiarini, & Palumbo, 2023; Corrales-Estrada, Gómez-Santos, Bernal-Torres, & Rodríguez-López, 2021; Miceli, Hagen, Riccardi, Sotti, & Settembre-Blundo, 2021; Ortiz-de-Mandojana & Bansal, 2016; Rai, Rai, & Singh, 2021; Souza, Alves, Macini, Cezarino, & Liboni, 2017; Tuazon, Wolfgramm, & Whyte, 2021). These concepts are deeply interwoven, offering multifaceted insights into how organizations navigate the complexities of today's dynamic environment.

Organizational resilience embodies an organization's ability to endure and prosper in the face of disruptive challenges (Carmeli & Markman, 2011; Fowler, Kling, & Larson, 2007; Spillan & Hough, 2003). Conversely, firm sustainability encompasses the overarching objective of attaining sustained profitability while diligently attending to environmental, social and governance (ESG) considerations (Avery & Bergsteiner, 2011; Genovese, Acquaye, Figueroa, & Koh, 2017; Monteiro, Miranda, Rodrigues, & Saes, 2021). Our research endeavors to unravel the interplay between resilience and sustainability within the context of Brazilian agribusiness organizations, which play a critical role in Brazil's economy and global food security.

The agribusiness sector in Brazil stands out as an economic cornerstone, celebrated for its competitiveness and efficiency. Beyond its contributions to the nation's export prowess, it plays an important role in inflation control, employment generation and, critically, food production for nations worldwide. This dual domestic and global importance makes the sector's resilience and sustainability particularly strategic. According to estimates by the Center for Advanced Studies in Applied Economics (CEPEA) and the Brazilian Confederation of Agriculture and Livestock (CNA), the sector accounted for a substantial 24.8% of Brazil's economy in 2022, with projections suggesting a continued significant impact. Regarding export volumes, there was an increase of 14.7% in 2023 compared to the previous year.

Given this economic eminence and global relevance, our research posits a key question:

Q1. To what extent do agribusiness organizations manifest resilience, and how can this resilience be harnessed to heighten sustainability?

To achieve this, we evaluate the resilience levels of three agribusiness organizations in Mato Grosso do Sul, each of which successfully navigated recent crises. These organizations represent distinct stakeholders in the agribusiness supply chain: a rural firm, a representative body for rural producers and an agricultural cooperative. We qualitatively assessed organizational resilience using the Benchmark Resilience Tool (BRT) model (Lee, Vargo, & Seville, 2013). Subsequently, we articulated bespoke strategies, each attuned to the resilience profile of the respective organization, thereby illuminating a pathway toward amplifying sustainability through the prism of resilience. Therefore, this research provides insights that transcend the conventional boundaries of resilience and sustainability, offering an integrated view of how these forces can converge to shape more sustainable supply chains.

2. Background

In the post-COVID-19 era, the term "resilience" has gained prominence across diverse contexts, assuming distinct meanings within each. This study, in particular, focuses on resilience within an organizational context. The literature highlights two distinct perspectives on organizational resilience (Lengnick-Hall, Beck, & Lengnick-Hall, 2011). Some scholars align organizational resilience with the principles of resilience in physics, portraying organizations as entities capable of withstanding unexpected and turbulent scenarios, avoiding regressive and dysfunctional behaviors and ultimately resuming progress from where they left off before adversity (Bhamra, Dani, & Burnard, 2011; Burnard & Bhamra, 2011).

Conversely, another perspective argues that a resilient organization, besides recovering its operations, should possess the capacity to cultivate new skills (Lengnick-Hall & Beck, 2005; Vålikangas & Georges L. Romme, 2012). This broader view enables organizations to weather adversity and proactively seize new opportunities, emerging from crises even more robust and equipped with a diverse array of capabilities compared to their pre-adversity state (Lengnick-Hall et al., 2011). Seville et al. (2008, p. 18) substantiate this perspective, defining organizational resilience as “the ability to survive, and potentially thrive, in times of crisis.”

The coexistence of these perspectives underscores the ongoing debate regarding the equilibrium between planning and adaptation in the context of managing organizational resilience (Comfort, Sungu, Johnson, & Dunn, 2001; Valle, 1999). As Somers (2009) proposed, efforts should be directed toward developing planning methods to instill internal processes and organizational structures that cultivate latent resilience within organizations. This approach empowers organizations to exhibit adaptive behaviors when confronted with crises.

Despite the growing recognition of the importance of organizational resilience management, a significant gap persists in many organizations. This gap is closely tied to the inherent challenges of quantitatively measuring the outcomes and evolution of resilience-focused initiatives. To make matters worse, organizational resilience often becomes evident only in the aftermath of adversity. Therefore, there is a pressing need for measurement techniques tailored to assess *organizational latent resilience* – a concept emphasized by Somers (2009), signifying resilience that is currently neither observable nor readily discernible.

In this article, we will employ a specific tool, the BRT model, to measure resilience and explore its relationship with sustainability efforts. Before diving into the BRT model’s intricacies, we will explore why understanding resilience and sustainability is crucial for organizations.

2.1 Organizational resilience and sustainability

Organizational resilience and sustainability are intertwined concepts that play pivotal roles in shaping modern business practices. They share intricate theoretical connections across various dimensions, emphasizing the synergy between adaptability and long-term viability (Ciasullo et al., 2023) (see Figure 1).

First, organizational resilience serves as a proactive approach to mitigating risk. Resilient organizations inherently safeguard their sustainability by preparing for and effectively addressing potential challenges such as supply chain disruptions, regulatory changes or market volatility. This symbiotic relationship ensures an organization can maintain



Source(s): Figure by authors

Figure 1. Theoretical connections between organizational resilience and sustainability

sustainable operations even when facing adversity (Avery & Bergsteiner, 2011; Rai et al., 2021; Tuazon et al., 2021).

Resilient organizations also often foster an adaptation and innovation culture, which empowers them to respond swiftly and creatively to environmental and social challenges while aligning responses with broader sustainability objectives. Prioritizing innovation not only enhances an organization's capacity to overcome challenges but also positions it as a leader in sustainable practices and solutions (Miceli et al., 2021).

Moreover, both resilience and sustainability highlight the importance of organizational learning. Resilience emphasizes learning from crises and disruptions to enhance preparedness, while sustainability underscores the importance of continuous improvement in ESG performance. These shared interests in learning for progress underscore the related nature of the two concepts, driving organizations to continually adapt, innovate and improve, fostering not only resilience but also sustainability (Avery & Bergsteiner, 2011; Corrales-Estrada et al., 2021; Kantabutra & Ketprapakorn, 2021).

Finally, effective governance is fundamental to both resilience and sustainability. Resilience relies on strong governance structures for crisis decision-making and response coordination. Sustainability depends on ethical leadership to promote responsible practices considering the ESG aspects. These principles of good governance and ethical leadership serve as cornerstones in the relationship between resilience and sustainability (Ortiz-de-Mandojana & Bansal, 2016; Souza et al., 2017; Tuazon et al., 2021).

Since we have established the theoretical foundations underpinning the relationship between organizational resilience and sustainability, the next section will elucidate the empirical methods used to assess these principles in the context of agribusiness organizations.

3. Method

The data collection process in this study was carefully designed to yield a comprehensive understanding of organizational resilience within the selected organizations. A multiple case study approach was considered the most suitable method for conducting an in-depth, exhaustive examination of the chosen objects of study. This approach not only facilitates a nuanced understanding of the problem at hand but also identifies potential factors that either influence or are influenced by it. Many authors emphasize the importance of employing case studies in exploratory research (Creswell & Creswell, 2017; Gerring, 2006; Merriam & Tisdell, 2015; Yin, 1994), as such studies bring a sense of real-life to the examination, offering a holistic view of the problem and paving the way for further investigation. This aligns with the first goal of this research, which is to gain a comprehensive view of organizational resilience within the context of agribusiness in Mato Grosso do Sul.

The choice of this research method reflects the recognition that organizational resilience is a multifaceted and context-dependent phenomenon, demanding a nuanced and thorough investigation (Higashi, Morales de Queiroz Caleman, Kluwe de Aguiar, & Manning, 2020). The study focused on three distinct types of organizations within Mato Grosso do Sul's agribusiness sector: a rural firm, a representative organization of rural producers (farmer's union) and an agricultural cooperative. While this sampling approach falls under non-probabilistic sampling, it was carefully selected for convenience, considering the availability and willingness of key informants from these organizations to participate in the study.

The data collection process involved structured interviews with two key informants from each participating organization in May-June/22. These interviews served as a crucial means of gathering rich qualitative data, providing insights from individuals directly involved in the agribusiness operations of their respective organizations. Table 1 describes the case studies.

Table 1. Description of case studies

Cases	Characterization	Interviewees
Rural firm	Location: Antônio João, MS, Brazil Number of employees: 14 Years in operation: over 10 Annual employee turnover: 21–40% External advisory board: Not present Primary activity: Grain production (soybean and corn)	CEO Administrative and financial manager
Farmer’s union	Location: Campo Grande, MS, Brazil Number of employees: 37 Years in operation: over 30 Annual Employee Turnover: 21–40% External advisory board: Present Primary activity: Farmers union/ technical assistance	Superintendent Technical manager
Agriculture cooperative	Location: Maracaju, MS, Brazil Number of employees: 20 Number of members: 143 Years in operation: 19 Annual Employee Turnover: 21–40% External advisory board: Present Primary activity: Grain and beef	President Corporate secretary

Source(s): Table by authors

To address the potential abstractness of the concept of resilience, we used the BRT model, which provides a structured, measurable framework for assessing resilience. The BRT model, introduced by [Lee et al. \(2013\)](#), mitigates the subjectivity inherent to resilience by offering specific, quantifiable dimensions. It has been widely used across various sectors, including long-term care organizations ([Lane, Spaulding, Hege, & Sugg, 2022](#)), hotel management ([Unguren & Kacmaz, 2022](#)), health care ([Gonçalves, Sala, & Navarro, 2022](#)) and high-reliability organizations ([Limphaibool, Buranapin, Jariangprasert, & Chairasit, 2022](#)). This tool evaluates two critical factors – planning and adaptive capacity – through 13 indicators and 53 items, providing a comprehensive and systematic assessment of organizational resilience.

The structured nature of the BRT model ensures that the abstract concept of resilience is broken down into measurable components, allowing for a consistent and objective evaluation across the three cases. [Table 2](#) describes the factors and indicators used in the assessment.

4. Resilience assessment

4.1 Rural firm

This for-profit rural firm specializes in grain production, boasting a decade-long presence in Mato Grosso do Sul. Its journey began in the municipality of Sidrolândia, and it later shifted operations to Antônio João. The organization operates with an internal governance structure with a current staff of 13 members, including both full-time and part-time employees. Notably, it lacks external advisors on its board, which impacts its governance capabilities.

The organization’s unique geographical dependence exposes it to the potential trigger of relocation-related crises. This was evident in 2018 when a partnership dissolution mandated

Table 2. Organizational resilience: factors and indicators

Resilience factors	Indicators	Description
Planning	Proactive posture	Strategic and behavioral posture to respond to the first warning signs of change in the organization's internal and external environment before they become a crisis
	Recovery priorities	Organization-wide awareness of what its priorities would be after a crisis, as well as an understanding of the associated minimum operational requirements
	Planning strategies	Development and evaluation of plans and strategies to manage vulnerabilities in relation to the business environment and its interested parties (stakeholders)
	Participation in exercises	Team participation in simulations or scenarios designed to practice response arrangements and validate plans
	External resources	Understanding the relationships and resources the organization may need to access from other organizations during a crisis, as well as planning and management to ensure this access
Adaptive capacity	Situation monitoring and reporting	Employees are encouraged to be vigilant about the organization, its performance and potential problems. Employees are rewarded for sharing good and bad news about the organization, including early warning signs, and these are quickly reported to organizational leaders
	Internal resources	Management and mobilization of the organization's resources to ensure its ability to operate during periods of "business-as-usual" and provide the extra capacity needed during a crisis
	Staff engagement and involvement	Engagement and involvement from staff who understand the link between their work, the organization's resilience and its long-term success. Employees are empowered and use their skills to solve problems
	Minimization of silos	Minimizing social, cultural and behavioral barriers, which are most often manifested as communication barriers, creating disjointed, disconnected and harmful ways of working
	Information and knowledge	Critical information is stored in multiple formats and locations, and staff can access expert opinions when needed. Duties are shared, and employees are trained so that someone can always perform the primary duties
	Leadership	Strong crisis leadership to provide good management and decision-making in times of crisis, as well as ongoing assessment of strategies and work programs against organizational objectives
	Innovation and creativity	Employees are encouraged and rewarded for using their knowledge in innovative ways to solve new and existing problems, as well as for using innovative and creative approaches to developing solutions
	Decision making	Employees have the appropriate authority to make decisions related to their work, which is clearly delegated to enable a crisis response. Highly qualified employees are involved in, or capable of, making decisions where their specific knowledge adds significant value or where their involvement will help with implementation

Source(s): Adapted from [Lee et al. \(2013\)](#)

a move of 249 kilometers. The transition required meticulous planning over three years to facilitate the relocation of the entire workforce and adaptation to a new production system.

In the realm of “Adaptive Capacity,” as defined by the BRT model, a consensus emerges from the responses of both interviewees. The firm stands out with robust leadership and management that effectively navigate crises (i.e. the *leadership* dimension of the BRT model). However, a noticeable challenge lies in employee engagement during crises, highlighting the need for improved responsiveness within the workforce (*staff engagement and involvement*). In addition, there is room for enhanced industry monitoring to prepare for future crises proactively and derive valuable insights from past challenges (*situation monitoring and reporting*).

The organization excels in facilitating swift decision-making during crises, which is enhanced by a competent workforce with direct access to decision-makers (*decision-making*). Moreover, the firm actively fosters innovative thinking among its employees, recognizing and rewarding creative approaches that challenge conventional norms (*innovation and creativity*).

In terms of “Planning” and forging partnerships, the organization modestly utilizes *external resources*, even though it acknowledges their significance. However, constraints exist in providing diverse sources of critical information and securing specialized assistance when required (*information and knowledge*).

The organization demonstrates stability in two pivotal indicators: *recovering priorities* reflecting a profound understanding of its values and priorities, and *proactive posture*, indicating strategic readiness among its team and management. However, challenges arise in *planning strategies* and building stress test plans, primarily due to the organization’s focus on financial management and the inherent unpredictability of agricultural activities. In grain production, climate-dependent factors introduce substantial uncertainty, leading the organization’s director to lean toward financial preparedness as the most pragmatic approach for risk management.

4.2 Organization of rural producers

The second organization under study is a non-profit organization representing rural producers, commonly referred to as a farmer’s union. The organization is actively involved in organizing, executing and managing initiatives related to rural professional training, social promotion and special programs and projects for rural professionals and workers. They are also engaged in formal education offered in various formats, including in-person, semi-presential and distance education. In addition, they provide technical and managerial assistance in agriculture, livestock, forestry, aquaculture, extractive activities and agribusiness support activities, as highlighted by their Superintendent, one of the interviewees in this research.

The union stands out for its well-developed governance structure, refined over its 30 years of operation in the state of Mato Grosso do Sul. The organization boasts a tripartite Deliberative Council composed of external advisors representing the federal government and both rural labor and employer classes. Based on the interviews, it becomes evident that the organization excels in the *leadership* dimension, demonstrating adept crisis *decision-making*. The organization’s maturity, along with well-defined processes and vulnerabilities, has enabled the development of mechanisms to mitigate risks over the years. Furthermore, there is a strong indication of *staff engagement and involvement* within the organization, with employees showcasing a commitment to projects and problem-solving. The situation awareness also depicts a favorable scenario, with a *proactive posture, monitoring and frequent staff engagement* concerning organizational challenges.

However, the *decision-making* aspect reveals challenges in achieving rapid decisions by the most qualified individuals despite employees' direct access to decision-makers. On a positive note, the organization actively encourages innovative and creative problem-solving approaches, earning high marks in the *innovation and creativity* indicator.

Transparency emerges as a guiding element in organizational culture, forming the bedrock for establishing a robust internal and external network. Responses from both interviewees emphasize the organization's commitment to building solid relationships with individuals and other organizations that were helpful during crises (*external resources*).

Similarly, the *information and knowledge* indicator demonstrates abundant access to critical information and key personnel who can perform crucial roles when needed. These initiatives contribute to breaking down barriers, placing the organization in a favorable position regarding the *minimization of silos* indicator. As previously mentioned, the organization's mature and structured management ensures its ability to sustain operations through *internal resources*, even in times of crisis.

The union's management and staff profoundly understand priorities and the minimum resources required to achieve them, positively impacting the *recovering priorities* indicator. However, the organization faces challenges in swiftly changing its "business as usual," affecting its performance in the *proactive posture* indicator. This becomes evident in scenarios where implementing *planning strategies* can be compromised. For instance, both interviewees highlighted the impact of the COVID-19 pandemic, which limited the organization's in-person activities in 2020 and 2021. As a result, they had to adapt rules, procedures and their approach to suit their audience. While transitioning to distance education had been in the pipeline, it needed to be accelerated due to the prevailing circumstances. This scenario underscores the importance of introducing stress test plans into the organization's routine.

4.3 Agricultural cooperative

We analyzed an agriculture cooperative operating in the Maracaju municipality of Mato Grosso do Sul since 2004. Currently, it comprises 143 cooperative members organized into family groups, primarily engaged in purchasing agricultural inputs. The cooperative's board of directors consists of four roles: President, Vice-President, Finance Director and Corporate Secretary, all filled by cooperative members. In addition, the organization employs a team of 20 full-time staff members, with an annual staff turnover rate ranging between 21% and 40%.

In terms of the *leadership* indicator, both interviewees agreed that the cooperative's management leads by example and effectively handles crises. However, the interviewees noted a lack of recurrent evaluation concerning the proposed objectives.

Regarding *staff engagement and involvement*, there appears to be a knowledge gap among employees about how to act during a crisis despite a well-established culture of belonging within the organization. A significant discrepancy in responses was observed during the discussion of *situation monitoring and reporting*. One interviewee believes the team lacks vigilance about the organization's context and is unsure of its ability to communicate the problems observed to senior management. In contrast, the second interviewee concurs with the statement in the questionnaire, claiming there is proactive monitoring to provide early warnings of potential future problems.

Both interviewees provided similar responses regarding *decision-making*, indicating that the cooperative has a qualified team and well-established authority to ensure rapid decision-making when necessary. Responses also revealed modest levels of *innovation and creativity* within the cooperative.

Concerning *external resources*, the organization is committed to proactively nurturing effective partnerships with other organizations, individuals and the government. This recognition stems from the understanding that third-party actions can either lead to a crisis or assist in overcoming challenges. Similarly, the *minimization of silos* indicator was positively addressed, indicating the organization's efforts to minimize internal and external barriers.

However, the cooperative did not appear to explore the *information and knowledge* aspect well. There seems to be a lack of autonomy within the team if key individuals are absent. On the other hand, obtaining technical assistance when needed was not reported as an issue but rather as easily accessible.

The organization did not demonstrate complete confidence in its *internal resources*, with a noticeable absence of stockpiled resources for use during crises and some difficulty in obtaining them quickly. In contrast, regarding the indicator *proactive posture*, the cooperative demonstrated good strategic and behavioral readiness with the team expressing optimism in dealing with turbulence, as highlighted by the interviewees.

The organization exhibits a high level of awareness regarding the potential effects of a crisis on its performance. However, according to one interviewee, their actions to address such difficulties are not adequately planned and tested – a claim partially refuted by the second interviewee (*planning strategies*). It is worth noting that the current board of directors recently assumed management, which might explain the divergence in the reports, as many procedures are undergoing changes.

Table 3 presents a summary of the cases analyzed.

5. Enhancing sustainability through resilience: insights from empirical findings

In this section, we delve into the empirical findings from our assessments, exploring how resilience strategies can enhance sustainability efforts. Our aim is to provide practical insights by examining real-world examples. Figure 2 summarizes our findings, which we discuss in detail in the following sections.

5.1 Governance enhancement for sustainable decision-making

Our assessments using the BRT model provided valuable insights into the resilience profiles of the examined organizations. We found that the rural firm, despite its strong focus on financial management, lacked comprehensive risk management strategies, particularly in areas beyond finance. This finding underscores the need for organizations to go beyond traditional risk mitigation approaches and embrace a more holistic perspective, mainly incorporating ESG aspects.

To enhance sustainability, the firm can consider governance enhancement as a critical step. By establishing a formalized board structure or advisory board, the organization can tap into diverse perspectives and expertise. This not only strengthens decision-making processes but also aligns with sustainability goals. The presence of an engaged governance body can potentially enhance responsible and ethical decision-making, considering environmental and social impacts.

The significance of governance in sustainability is well-documented (Ortiz-de-Mandojana & Bansal, 2016). Effective governance structures are essential for driving responsible practices, ensuring transparency and fostering stakeholder trust. While the rural firm's focus on financial management is valuable, it should be complemented by robust governance mechanisms that extend their influence beyond financial matters. More generally, efforts across all organizations could be enhanced by incorporating a broader perspective that considers sustainability, especially in decision-making. Governance plays a key role.

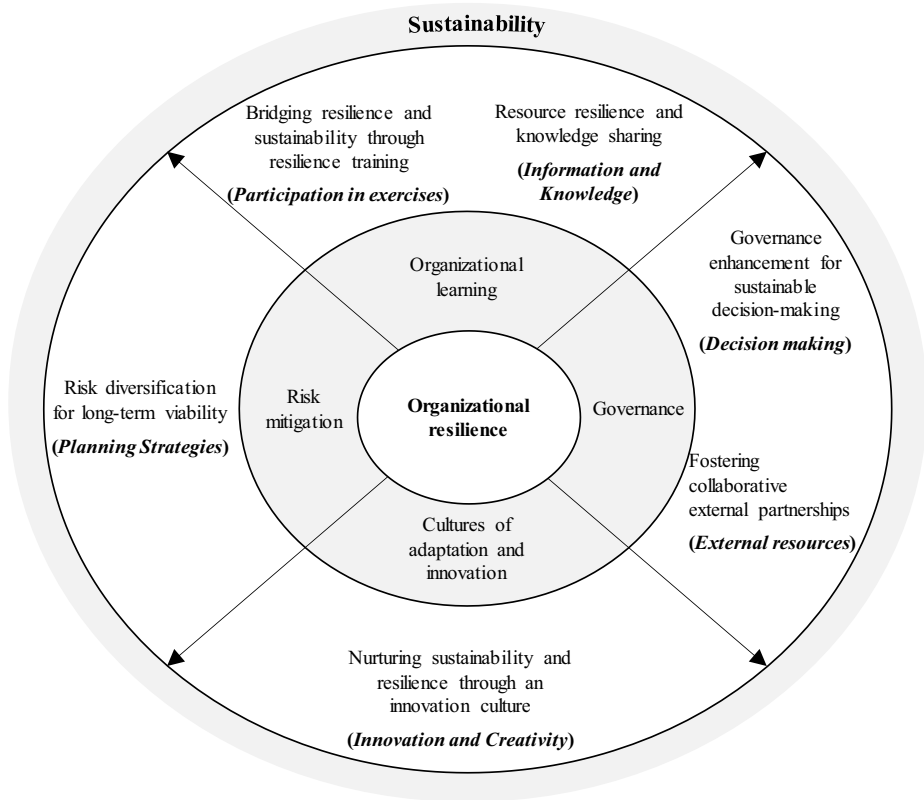
Table 3. Continued

Resilience factors	Indicators	Rural firm	Farmer's union	Agriculture cooperative
	Minimization of silos	0	+	+
	Information and knowledge	-	+++	-
	Leadership	+++	+++	++
	Innovation and creativity	+	+	+
	Decision-making	+	-	++

Resilience factors	Indicators	Rural firm	Farmer's union	Agriculture cooperative
	Minimization of silos	0	+	+
	Information and knowledge	-	+++	-
	Leadership	+++	+++	++
	Innovation and creativity	+	+	+
	Decision-making	+	-	++

Note(s): In this table, 0 denotes that the indicator does not play a significant role in the organization's resilience. The use of - signals the potential negative influence of the indicators, + reflects some efforts in this direction, ++ indicates a strong effort and +++ signifies a robust one

Source(s): Table by authors



Source(s): Figure by authors

Figure 2. Exploring the relationships between organizational resilience and sustainability

5.2 Risk diversification for long-term viability

Our assessments also revealed the importance of diversifying risk management strategies, a practice advocated by Avery & Bergsteiner (2011). While financial risk management is crucial, organizations should extend their risk mitigation efforts to include supply chain resilience, environmental impact mitigation and adaptation to market volatility. The rural firm's reliance on financial management, without broader risk diversification, leaves the organization vulnerable to non-financial disruptions.

Diversifying risk management strategies aligns with sustainability objectives by reducing vulnerabilities to environmental and market fluctuations. This approach promotes long-term viability and helps organizations maintain sustainable operations even in the face of adversity. In the context of agribusiness, where factors like climate change, regulatory shifts and market dynamics play significant roles, diversification becomes imperative for sustainability. Achieving a more comprehensive risk diversification underscores the need to invest in *planning strategies*. It is evident that, in this aspect, vulnerabilities are present across all companies.

5.3 Resilience training: bridging resilience and sustainability

Investing in resilience training (i.e. *participation in exercises*) emerges as a strategic move with implications for both resilience and sustainability. Our findings underscore that resilience training can significantly enhance an organization's ability to adapt unexpected challenges, contributing to its overall resilience. However, the connection between resilience training and sustainability lies in long-term implications.

Resilience training not only prepares employees to navigate crises but also reinforces the organization's commitment to responsible and ethical practices. Employees trained in resilience are more likely to understand the importance of sustainability and incorporate sustainable approaches into their daily activities. This alignment between resilience and sustainability creates a mutually reinforcing cycle, where resilience training contributes to sustainability, and sustainability practices enhance resilience (Rai et al., 2021). Surprisingly, based on the results, none of the organizations even mentioned this aspect. Implementing such an approach would strengthen efforts in favor of resilience and sustainability.

5.4 Innovation culture: nurturing sustainability and resilience

Turning our attention to the cooperative, the organization demonstrated strong governance and proactive leadership. Nevertheless, areas such as *innovation and creativity* presented opportunities for enhancing resilience and sustainability. Indeed, an innovation culture plays a pivotal role in fostering creative solutions during crises (Miceli et al., 2021).

However, the relationship between innovation culture, resilience and sustainability goes deeper. Innovation culture encourages employees to think outside the box, not only in times of crisis but also in addressing long-term sustainability challenges. Innovative solutions often align with sustainability goals, such as resource efficiency, environmental stewardship and societal well-being. Therefore, fostering an innovation culture enhances resilience and drives sustainability efforts.

5.5 External partnerships: a collaborative approach

Our findings also emphasized the importance of external partnerships for enhancing resilience and sustainability. The strong employee engagement culture within the farmer's union positions the organization favorably for collaboration. However, sustaining and strengthening effective partnerships with external organizations can further bolster resilience.

External partnerships provide critical support during challenging periods (Miceli et al., 2021). This collaborative approach aligns with sustainability objectives by facilitating joint efforts to address sustainability goals and promote responsible practices. By nurturing its external partnerships, the union not only enhances resilience through shared resources and expertise but also advances sustainability by collaborating on sustainability initiatives.

In a broad sense, sustainability initiatives encompass a set of actions (economic, social and environmental), policies and strategies focused on the long term. Examples include stimulating the adoption of agroforestry projects, promoting water conservation and irrigation efficiency and implementing integrated pest management and crop rotation. Training programs aligned with sustainable practices should involve farmers and workers. All these examples depend on *external resources*, such as partnerships with research institutions, government bodies and consultancies.

5.6 Resource resilience and knowledge sharing

The cooperative structure and proactive posture toward change offer valuable insights. However, our assessments reveal room for resource preparedness and knowledge utilization improvement.

To bolster sustainability, the organization might consider developing resource resilience tactics to ensure a more substantial reserve of internal resources that can be rapidly mobilized during crises. Besides enhancing resilience, this approach aligns with sustainability by reducing resource waste and enhancing operational efficiency. Resource efficiency is a key aspect of sustainability, addressing environmental and economic dimensions (Corrales-Estrada et al., 2021).

On the other hand, promoting a culture of knowledge sharing and cross-training among team members is a proactive measure to mitigate risks associated with key personnel dependencies. This approach strengthens organizational resilience and promotes sustainability by ensuring that essential knowledge is disseminated, enhancing the organization's capacity to adapt to evolving sustainability requirements (Kantabutra & Ketprapakom, 2021).

In sum, our findings highlight the intricate interplay between resilience and sustainability in agribusiness organizations. These insights emphasize the practical implications of aligning resilience-building strategies with long-term sustainability goals. By enhancing governance, diversifying risk management, investing in resilience training, fostering an innovation culture, nurturing external partnerships and promoting resource resilience and knowledge sharing, organizations can navigate the complexities of the business environment while contributing to sustainability.

6. Conclusion

This study explored the complex relationship between organizational resilience and firm sustainability within agribusiness organizations in Mato Grosso do Sul, Brazil. Using the BRT model, we assessed the resilience profiles of three distinct organizations: a rural firm, a farmer's union and an agriculture cooperative.

Our findings revealed specific characteristics, challenges and opportunities unique to each organization, illustrating the diverse dynamics of resilience and sustainability within the agribusiness sector. For the rural firm, a focus on financial management emerged as a primary risk mitigation strategy; however, deficiencies in corporate governance hindered comprehensive risk management. We proposed strategies for enhancing sustainability, including improvements in governance, risk diversification and resilience training.

The farmer's union demonstrated robust governance and proactive leadership but showed opportunities for improvement, particularly in fostering an innovation culture and maximizing external partnerships. Addressing these areas can significantly strengthen the organization's resilience and sustainability, aligning its goals with the evolving agricultural landscape.

The cooperative organization exhibited readiness for change and proactive behavior, yet resource resilience and knowledge-sharing improvements are necessary. Enhancing these aspects will bolster the organization's resilience and reinforce its commitment to sustainable operations.

Our empirical findings provide initial insights into the relationship between resilience and sustainability in agribusiness organizations. While resilience enables organizations to navigate uncertainties and challenges in a dynamic environment, it also contributes to sustainability by reducing vulnerabilities, enhancing adaptability and promoting responsible practices. In this sense, resilience serves as a vehicle for sustainability, fostering long-term viability, environmental stewardship, social responsibility and ethical conduct.

We acknowledge certain limitations of our study. The most significant constraint is the small sample size; three cases and six interviews may not fully capture the breadth needed to address the research question comprehensively. Furthermore, comparing organizations with different structures rather than similar cases presents a challenge. Nonetheless, given the

exploratory nature of this research, we were able to offer preliminary insights into the relationship between resilience and sustainability. While our findings suggest potential connections between these concepts, they remain tentative due to the sample size.

Rather than proposing a definitive model, our research outlines potential pathways through which resilience mechanisms could enhance sustainability in agribusiness organizations. These preliminary insights offer a starting point for future research, which should involve expanding the number of cases and including more comparable organizations to allow for a deeper exploration of these dynamics and the potential development of a more comprehensive model.

Future research could focus on (i) Exploring actions implemented by companies to enhance resilience with a specific focus on sustainability, as the BRT variables currently concentrate solely on organizational resilience; and (ii) Furthering the discourse on the role of producers' organizations (unions, federations, cooperatives, trade associations) as catalysts for increasing awareness regarding the significance of sustainability as a driving force for agricultural development, thereby fostering organizational resilience.

As agribusiness evolves, organizations must recognize the significance of the interplay between resilience and sustainability. Embracing both principles as essential strategic imperatives can position organizations to thrive, not merely survive, in an ever-changing landscape. This research serves as a steppingstone, offering insights and strategies to guide agribusiness organizations toward a future where resilience and sustainability are seamlessly integrated, and leading to adaptability, longevity and ethical excellence.

In the context of the broader business world, the lessons learned from this study apply beyond agribusiness. They underscore the pivotal role of resilience in advancing sustainability goals, promoting responsible practices and positively impacting organizations' environmental, social and economic dimensions. Thus, this research contributes to the growing discourse on the interplay between resilience and sustainability, fostering a holistic approach to contemporary business success.

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Associate editor: Flavio Hourneaux Junior