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ARTICLE HISTORY

Received 20 February 2024

Accepted 24 January 2026

CAN SOCIAL INNOVATION STRENGTHEN RURAL BANK INDONESIA'S ORGANIZATIONAL CULTURE IN IMPROVING FINANCIAL SUSTAINABILITY?

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KEYWORDS:

financial sustainability, organizational culture, social innovation, collaboration, rural banks, Indonesia

JEL CLASSIFICATION:

G21, O35, M14

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ABSTRACT

Rural banks in Indonesia are under increasing pressure to sustain their financial performance as competition intensifies from commercial banks, cooperatives, and rapidly expanding financial technology (fintech) firms. These competitive dynamics not only affect profitability but also constrain rural banks' ability to continue supporting micro, small, and medium enterprises (MSMEs), which play a crucial role in local economic development. Although prior research on banking sustainability has largely focused on financial indicators, limited attention has been given to the combined role of intangible internal resources and collaborative strategies in supporting long-term financial sustainability. Grounded in the Resource-Based View (RBV) and social innovation theory, this study seeks to examine the influence of organizational culture as an intangible resource on financial sustainability and to assess the moderating role of social innovation in strengthening this relationship. Using a quantitative research design, data were collected from 131 rural banks in Bali, Indonesia, and analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM). The findings indicate that organizational culture has a significant positive effect on financial sustainability. Moreover, social innovation reinforces this relationship by enhancing the effectiveness of organizational culture in achieving sustainable financial outcomes. These results suggest that rural banks can improve their financial sustainability by integrating strong internal cultural foundations with externally oriented social innovation practices, particularly through collaboration and strategic partnerships. This study contributes to the extension of the Resource-Based View by demonstrating that social innovation serves as a complementary strategic resource that amplifies the value of organizational culture in fostering financial sustainability. The findings provide practical insights for policymakers and banking practitioners in formulating sustainability-oriented strategies for resource-constrained financial institutions.

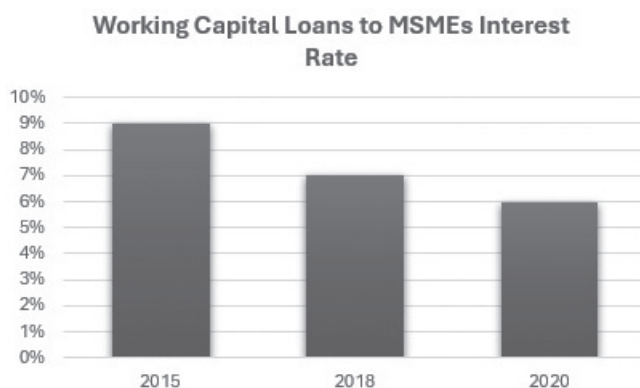
1. INTRODUCTION

Rural banks in Indonesia are facing growing difficulties in maintaining financial sustainability amid intensified competition from commercial banks, cooperatives, and rapidly expanding financial technology (fintech) providers. This competitive pressure not only constrains their financial performance but also weakens their ability to sustain supporting micro, small, and medium enterprises (MSMEs), which play a critical role in fostering local economic growth (Kustina et al., 2025a). Despite their strategic importance, maintaining financial sustainability has become increasingly challenging for rural banks as the financial sector undergoes rapid transformation. The expansion of commercial banking services, the growth of cooperatives, and the emergence of fintech-based financial platforms have intensified competition and placed significant pressure on the traditional operating models of rural banks.

While previous studies have extensively examined financial sustainability in the banking sector, most research has focused on traditional financial indicators such as profitability, capital adequacy, and regulatory compliance resilience (Mia et al., 2022; Quartey et al., 2019). Limited attention has been given to the strategic role of intangible assets, particularly organizational culture, in fostering financial sustainability. Furthermore, the potential of social innovation as a moderating factor that enhances financial sustainability remains underexplored. While some scholars (Pathiranage et al., 2020; A. A. Rahman et al., 2023) have investigated the direct impact of organizational culture on financial performance, they fail to address how social innovation can act as a dynamic enabler in strengthening this relationship. This study addresses this gap by integrating the Resource-Based View (RBV) and social innovation theory to examine how rural banks can strategically leverage internal capabilities while harnessing external collaborative networks to enhance financial sustainability.

In Indonesia, one type of microfinance institution (MFI) is the rural bank, known as Bank Perkreditan Rakyat (BPR). There are several key differences between rural banks and commercial banks. Firstly, rural banks require significantly less capital compared to commercial banks. Secondly, they aim to serve the credit needs of individuals who are often underserved by commercial banks, such as farmers, fishermen, small business owners, workers, retirees, and others (Wasiaturrahma et al., 2020). Specifically, Bank Perkreditan Rakyat (BPR). Various financial organizations—including commercial banks, rural banks, cooperatives, and non-formal financial institutions—have provided funding to support the growth of MSMEs in Indonesia (Kustina et al., 2024). Among these institutions, rural banks play a significant role, with over 1,600 banks operating across all provinces in Indonesia (Mia et al., 2022).

However, rural banks today face multiple challenges, including competition from commercial banks, cooperatives, and other financial institutions, as well as from fintech companies that offer online loans. The Indonesian government's policy of distributing working capital loans to MSMEs through commercial banks further intensifies competition, making it difficult for rural banks to compete in lending (Amanda, 2023). The following Figure 1 presents data on changes in the interest rates for Working Capital Loans to MSMEs in Indonesia from 2015 to 2020 (OJK, 2023).

Figure 1. Changes in the Working Capital Loans to MSMEs' interest rate

Source: OJK (2023). processed by the authors

Based on Figure 1, the interest rate for Working Capital Loans to MSMEs declined from 9 percent in 2015 to 7 percent in 2018 (Suyanto, 2020), and has remained at 6 percent since 2020. In addition, the government introduced a 3 percent interest subsidy for six months, from July 1 to December 31, 2021. These reduced lending rates have incentivized many rural bank customers to shift to commercial banks offering subsidized loans, thereby weakening the competitive position and financial sustainability of rural banks (Awaluddin, 2021; Wibisono, 2017).

The Working Capital Loans to MSMEs program offers subsidized loans that compete with rural banks (Anwar et al., 2021). To survive the growing competition from commercial banks and the rise of fintech, rural banks must accelerate their adaptation (Amanda, 2023; Quartey et al., 2019). Financial sustainability is a measurable parameter that monitors a rural bank's ability to generate enough income to cover operational costs (Ha, 2020).

To maintain financial sustainability amid challenges, rural banks must develop robust business strategies. Competition comes not only from traditional banking institutions but also from non-banking entities like fintech companies that offer technology-driven financial services (Githaiga, 2022). Facing this competition is particularly difficult for rural banks with limited resources (Quartey et al., 2019; Yudiaatmaja et al., 2022). Consequently, rural banks must leverage existing resources to create competitive advantages, one of which is organizational culture, an intangible asset. Organizational culture is linked to sustainability (Dyck et al., 2019), and can enhance business sustainability (M. M. Rahman et al., 2023). However, it can also hinder sustainability if it becomes too rigid to adapt to change (Linnenluecke & Griffiths, 2010).

Sustainability refers to an institution's ability to achieve financial viability by generating sufficient income to meet its expenses (Quartey et al., 2019). Financial sustainability, in particular, denotes financial self-sufficiency, but companies must

also consider social and environmental sustainability (Tehulu, 2022). Cultivating an organizational culture that aligns with a company's goals can enhance both performance and sustainability (Pathiranage et al., 2020). Organizational culture significantly impacts financial sustainability by strengthening an institution's resilience and performance.

Amid growing business competition, rural banks must develop effective strategies to sustain their operations (Cabaron, 2023; Yudiaatmaja et al., 2022). The banking sector, a key part of the broader service sector, offers significant growth potential. Evaluating the strategic factors that drive sustainable performance is essential for improving the sustainability of the economy. Strategies should focus on leveraging available resources to create new competitive advantages (Aboramadan et al., 2020). In the banking sector, large banks tend to focus on internal resources, while smaller banks, with limited internal resources, must use them to develop competitive strategies (Orr, 2019).

The key strengths of rural banks lie in their deep connection to local communities, personalized customer service, and ability to offer tailored financial products that meet the specific needs of rural populations (Anwar et al., 2021). Rural banks play a crucial role in fostering local economic development in Bali by providing accessible credit to small businesses, farmers, and individuals who may be underserved by larger financial institutions. Their proximity to clients allows them to better understand local market conditions, enhancing their ability to assess risks and make informed lending decisions (Yudiaatmaja et al., 2022). These strengths position rural banks as essential drivers of financial inclusion and sustainable development in rural areas

The strengths of rural banks are rooted not only in their financial services but also in their deep connection to local communities, particularly in Bali. The local wisdom of the Balinese people, especially the concept of *Menyama Braya* (brotherhood and community solidarity), is a fundamental value. Rural banks in Bali reflect this cultural wisdom by fostering close, trust-based relationships with their customers, emphasizing mutual support and collective growth (Sadiartha Gede, 2018). They leverage unique organizational cultures and traditional values (*awig-awig*) to build trust and confidence among local villagers. This cultural integration helps them compete effectively with modern banking institutions (Sadiartha Gede, 2018). The role of community discipline and shared values (*Menyama Braya*) in these banks fosters a strong sense of trust and cooperation, which is crucial for their operations and sustainability.

Social innovation is one of the strategies rural banks can adopt despite their limited resources. Innovate with strategies in the form of new approaches in the form of strategic partnerships or collaborations with other organizations and other financial institutions (Nanwani, 2024), as partnerships can reduce development time and costs (Lozano et al., 2021). One form of social innovation is partnership (de Souza João-Roland & Granados, 2023; Tortia et al., 2020). Rural banks can effectively implement partnerships and collaborations as social innovation strategies (Beckmann et al., 2023;

Micelli et al., 2023). However, not all rural banks have adequate resources to innovate. Their limited resources make it difficult for them to implement innovations and compete with commercial banks and other financial institutions (Yudiatmaja et al., 2022).

Another challenge rural banks face is the differing organizational cultures in each bank, which may sometimes hinder their ability to compete in the financial sector. Rural banks with rigid organizational cultures may struggle to implement strategies that enhance their competitiveness (Bakhadirov et al., 2022). Organizations often overlook the potential of organizational culture to create critical advantages (Dyck et al., 2019; Linnenluecke & Griffiths, 2010). Organizational culture has a direct impact on financial sustainability (Pikus et al., 2018).

Rural banks have yet to fully embrace innovation despite their limited resources, even though, according to the Resource-Based View (RBV) theory (Amanda, 2023; Barney, 1991) innovation can be achieved by leveraging intangible resources. Social innovation is one such strategy (Llorca-Ponce et al., 2021; Putra et al., 2021). Rural banks do not realize that social innovation through collaboration and partnerships with competitors can lead to significant advantages in achieving sustainability (Fobbe, 2020).

Although previous research has established a positive relationship between organizational culture and financial performance (Pathirana et al., 2020; Rahman et al., 2023), these studies have largely overlooked how social innovation can act as a dynamic enabler in strengthening this relationship. The role of social innovation in banking institutions remains underexplored, particularly in the context of resource-constrained rural banks competing with commercial banks and fintech companies. By investigating how social innovation moderates the link between organizational culture and financial sustainability, this study provides new theoretical and empirical insights that extend the applicability of RBV and social innovation theories in the microfinance sector. Limited empirical evidence exists on the moderating role of social innovation in this relationship. Previous studies on rural banks' financial sustainability have primarily focused on capital adequacy and profitability metrics (Quartey et al., 2019; Mia et al., 2022), overlooking the strategic role of intangible assets such as organizational culture and collaborative innovation. This study addresses this research gap by integrating the Resource-Based View (RBV) theory with social innovation theory to examine their combined impact on rural banks' financial sustainability. Despite growing awareness of the importance of financial sustainability, a disconnect remains between theoretical understanding and practical implementation. Therefore, this research aims to provide insights into how rural banks can effectively utilize their limited resources to develop competitive and sustainable strategies through innovation and collaboration.

Rural banks play a vital role in financial inclusion, especially in financing micro and small businesses that are often out of reach for commercial banks. However, the financial sustainability of rural banks is increasingly threatened by competition from

fintech and low-interest working capital lending policies from the government. Some previous research (Affum, 2022; Singh & Malik, 2019) has shown that many rural banks are experiencing a decline in market share due to banking technology innovations that they do not adopt optimally. This research aims to answer these challenges by exploring how social innovation can strengthen organizational culture and improve financial sustainability. As such, the study not only contributes to the literature on micro banking but also offers solutions for policymakers and banking practitioners. This research analyzes efforts to utilize intangible resources, specifically organizational culture, to create a competitive advantage by fostering a culture of innovation. These innovations, primarily social innovations, can be developed through collaboration and strategic partnerships. A pro-innovation organizational culture encourages the generation of new ideas, best practices, and inter-organizational cooperation, enabling rural banks to strengthen their market position despite resource constraints.

Amid intense competition from commercial banks, cooperatives, and the rapid rise of financial technology (fintech) companies, rural banks face significant challenges in sustaining their financial performance. The Indonesian government's financing policies further heighten this competition, making it imperative for rural banks to develop innovative strategies beyond financial adjustments alone. This study aims to: (1) examine how rural banks can leverage organizational culture as an intangible asset to achieve financial sustainability; (2) analyze the role of social innovation in strengthening financial sustainability; and (3) investigate how collaboration through social innovation moderates the relationship between organizational culture and financial sustainability.

This research is particularly significant because, despite the growing awareness of financial sustainability in rural banks, a critical gap remains in understanding how intangible assets, specifically organizational culture, interact with social innovation to create long-term competitive advantages. Given the increasing competition from fintech and commercial banks, rural banks must adopt novel approaches to ensure their financial viability. By integrating the Resource-Based View (RBV) theory with social innovation theory, this study offers a fresh perspective on how rural banks can strategically optimize their internal capabilities while leveraging external partnerships. The findings are expected to provide valuable insights for policymakers and banking practitioners, guiding them in formulating strategies that enhance sustainability within an increasingly competitive financial ecosystem.

Existing literature on financial sustainability in rural banks predominantly focuses on financial performance and regulatory frameworks, with limited emphasis on the role of intangible assets such as organizational culture and social innovation (Mia et al., 2022; Quartey et al., 2019). While some studies highlight the importance of organizational culture in enhancing firm performance (Pathirana et al., 2020), few have explored its moderating effect on financial sustainability in the rural banking sector. Additionally, the potential of social innovation as a strategic enabler that enhances this relationship remains largely underexplored. This study addresses this

research gap by examining how social innovation interacts with organizational culture to enhance the financial sustainability of rural banks, particularly in the Indonesian context

2. LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

According to the Resource-Based View (RBV), organizations are able to secure long-term competitive advantages when they possess strategic resources that are valuable, scarce, difficult to imitate, and cannot be easily substituted (Barney, 1991). In the context of rural banks, organizational culture represents an intangible asset that can foster financial sustainability. However, RBV alone does not fully capture the dynamic nature of competition in the banking sector, particularly in the era of digital finance. To address this limitation, this study integrates RBV with social innovation theory, which posits that organizations can enhance their competitiveness through collaborative strategies, knowledge-sharing networks, and innovative financial products (García & Palma, 2023). By incorporating social innovation into the RBV framework, this study presents a novel theoretical perspective on how rural banks can sustain their operations in a rapidly evolving financial landscape. Businesses with assets that are also difficult for competitors to replicate are likely to experience more sustainable financial (Grant, 1991). Financial sustainability has become a central concern within the banking industry, as it reflects an institution's capacity to maintain stable operations, absorb financial shocks, and continue fulfilling its intermediation role over time (Sholikah & Miranti, 2020; Veronica et al., 2022; Vovchak et al., 2019). According to the RBV theory, certain critical assets or resources can give a company a lasting competitive advantage (Muharam, 2017). J Barney (1991) highlights the application of RBV in strategic planning to create a competitive advantage, ensuring long-term sustainability. Companies with valuable and rare assets can outperform their competitors, and when those assets are difficult to imitate, these companies achieve superior financial sustainability.

Bank sustainability is commonly conceptualized as a multidimensional construct encompassing financial, social, and environmental dimensions (Kustina et al., 2025b). While social and environmental sustainability reflect a bank's contribution to broader societal and ecological objectives, financial sustainability represents the fundamental capacity of banks to maintain long-term viability and operational continuity. Although this study acknowledges the multidimensional nature of sustainability, the empirical analysis deliberately focuses on financial sustainability, as it constitutes the foundational dimension that enables rural banks to sustain their social roles and community-oriented initiatives. Without adequate financial self-sufficiency, rural banks face limitations in supporting inclusive financial services and social innovation efforts.

In the banking sector, particularly among rural banks, tangible resources alone are often insufficient to secure sustainable competitive positions. Instead, intangible assets—such as organizational culture—emerge as critical internal resources that align with RBV principles and contribute to financial sustainability in environments characterized by regulatory pressure and increasing competition (Barney, 1991). In the context of rural banks, organizational culture can be one of these resources. However, in the face of digital disruption and increasingly competitive government policies, organizational culture alone may not be enough to ensure financial sustainability. Therefore, the RBV theory needs to be expanded with the concept of social innovation, which allows rural banks to leverage social networks and external collaborations to strengthen their competitive advantage.

It is important to distinguish social innovation from organizational innovation, as the two concepts are related but conceptually distinct. Organizational innovation primarily refers to internal changes in structures, processes, managerial practices, or technologies aimed at improving efficiency and performance within the organization. In contrast, social innovation emphasizes collaborative and externally oriented initiatives that address social needs while simultaneously creating shared value through partnerships, networks, and institutional cooperation. In the context of rural banks, social innovation extends beyond organizational boundaries by engaging external factors such as fintech firms, commercial banks, community institutions, and government agencies. This distinction clarifies the unique strategic role of social innovation within the RBV framework. This conceptual distinction strengthens the theoretical positioning of social innovation as an externally oriented strategic capability rather than an internal structural adjustment mechanism.

From a Resource-Based View (RBV) perspective, intangible resources such as organizational culture, trust, relational capital, and social capital are particularly critical for rural banks that operate under financial and technological constraints. Unlike large commercial banks, rural banks rely heavily on locally embedded knowledge, long-term customer relationships, and culturally rooted organizational practices to sustain competitive advantage. Prior studies in rural and community banking contexts emphasize that intangible assets play a decisive role in enhancing financial sustainability and institutional resilience (Quartey et al., 2019; Wijethilake et al., 2023). These findings reinforce the relevance of RBV in rural banking and provide a strong theoretical foundation for examining organizational culture and social innovation as strategic resources.

Organizational culture represents one of the most influential intangible assets within financial institutions, shaping internal behaviors, decision-making processes, and long-term strategic orientation (Azeem et al., 2021; Zhang et al., 2024). When culture promotes adaptability, collaboration, and shared values, it functions as a resource that is difficult for competitors to replicate, thereby supporting sustained financial performance in line with RBV assumptions (Barney, 1991; Newbert, 2007). Social innovation differs conceptually from organizational culture, as it emphasizes

externally oriented practices, including cross-sector collaboration, institutional partnerships, and the development of innovative solutions to social and economic challenges. In the context of rural banking, social innovation enables institutions to extend their resource base beyond internal capabilities by leveraging networks, partnerships, and community engagement (Veronica et al., 2022). It involves implementing an innovative organizational culture where companies focus on both economic benefits and broader social values (Valle et al., 2022).

Although prior research has established the importance of organizational culture in supporting financial sustainability within banking institutions, empirical evidence remains limited regarding how externally oriented social innovation strategies interact with internal cultural resources (Pathiranage et al., 2020; Rahman et al., 2023). Specifically, the moderating role of social innovation in strengthening the relationship between organizational culture and financial sustainability has received little scholarly attention, particularly in the context of rural banks. This gap highlights the need for an integrated perspective that combines internal organizational capabilities with externally oriented collaborative strategies. Accordingly, this study examines how social innovation, as a collaborative and relational strategy, enhances the effect of organizational culture on the financial sustainability of rural banks.

2.1. Organizational Culture and Financial Sustainability

From a strategic management perspective, organizational competitiveness is shaped by the ability to control and deploy internal resources that are valuable, rare, difficult to imitate, and non-substitutable. Within the Resource-Based View (RBV), such resources enable firms to achieve sustained advantages that support long-term financial outcomes rather than short-term performance gains (Barney, 1991; Grant, 1991). Organizational culture plays a crucial role in the success of management and corporate sustainability (Wijethilake et al., 2023). It integrates sustainability into the organization's vision, values, and practices, fosters innovation, and balances competing cultural values to address sustainability challenges effectively (M. M. Rahman et al., 2023). J.B Barney (1986) argues that organizational culture can provide a competitive advantage when it delivers economic value, is rare, and is difficult for competitors to imitate. A culture that embraces and facilitates change, incorporating it into the company's values and beliefs, can drive sustainability (Fietz & Günther, 2021).

Research by Liu et al. (2010) and Wijethilake, Upadhaya, and Lama (2023) explains that organizational culture affects sustainability. Organizational culture drives corporate sustainability practices, increasing financial success (Dyck et al., 2019; Kantabutra, 2021). Organizational culture, through norms, values, and systems, can shape employee attitudes toward sustainability (Linnenluecke & Griffiths, 2010). Employees who recognize the importance of sustainability are more likely to integrate sustainable practices into the organization's business operations. Flexibility

has become integral to doing business, and the mindset of business leaders has shifted from viewing sustainability as an “add-on” to considering it a fundamental aspect of operations. This shift reflects the recognition that organizational culture is key to advancing sustainability (Bertels et al., 2010). In this study, organizational culture is conceptualized using Denison’s four-dimensional framework: involvement, consistency, adaptability, and mission. While empirically modelled as a higher-order construct, the dimensional structure is theoretically acknowledged, recognizing that different cultural dimensions may contribute unevenly to financial sustainability.

When organizations recognize the need for sustainability, they must initiate organizational changes and approach sustainable development within their context. Previous research highlights the impact of organizational culture and sustainable growth rates on financial sustainability. Thus, organizational culture plays a pivotal role in promoting financial sustainability (Afriyie, 2015; Benn et al., 2014; Pathirana et al., 2020). Financial sustainability refers to an organization’s ability to generate revenue while maintaining steady production (Leon, 2001:22). Given these points, the relationship between organizational culture, sustainable growth rates, and financial sustainability provides the foundation for the development of this study’s first hypothesis as follows

H1: Organizational Culture has a positive effect on Financial Sustainability

2.2. The Role of Social Innovation Moderates the Influence of Organizational Culture on Financial Sustainability

The Resource-Based View (RBV) theory emphasizes that innovation can be achieved by utilizing intangible resources owned by a company (Amanda, 2023; Barney, 1991). Integrating social innovation into business strategies can reshape organizational dynamics, creating new opportunities for growth and sustainability (Gonçalves et al., 2022). One of these innovations is social innovation (Llorca-Ponce, Rius-Sorolla, and Ferreiro-Seoane, 2021; Putra et al., 2021). Social innovation can improve company performance (García & Palma, 2023). It has been shown that social innovation has a positive and significant relationship with the success of companies, demonstrating that maintaining an innovative organizational culture can contribute to economic continuity and financial sustainability (Zulazli et al., 2017).

A strong organizational culture, particularly one that values openness to innovation and collaboration, fosters an environment conducive to innovative social initiatives. In this context, social innovation can help organizations tackle financial challenges more creatively and inclusively, such as through cross-sector partnerships or more impactful corporate social responsibility programs. By leveraging social innovation, organizations not only strengthen their internal culture of innovation

but also expand their social contributions, supporting long-term financial growth. In light of the following statement, the study's hypothesis is:

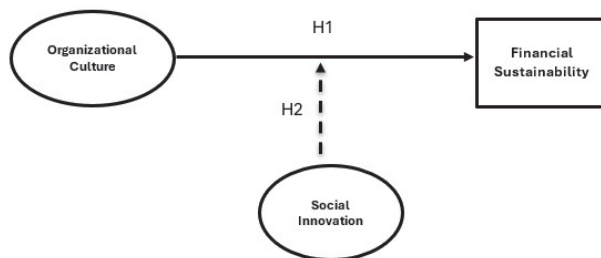
H2: Social innovation can strengthen the influence of organizational culture on Financial Sustainability

3. RESEARCH METHODOLOGY

3.1. Data collection and procedure

This study employs a quantitative research design within a positivist paradigm to analyze the causal relationships among the proposed constructs. Partial Least Squares Structural Equation Modeling (PLS-SEM) is applied to estimate the research model and test the hypothesized relationships. The research population includes all rural banks operating in Bali Province, Indonesia. Of the 132 registered rural banks, data were obtained from 131 institutions, resulting in a near-census sample. This approach ensures a high level of representativeness for the regional rural banking context. With a near-census sample of 131 rural banks, the sample size is deemed sufficient in accordance with contemporary PLS-SEM guidelines that emphasize statistical power and model complexity, rather than relying on the traditional ten-times rule.

Figure 2. Research framework



Source: authors

The constructs were measured using validated scales adapted from prior studies (Denison & Mishra, 1995; Moulaert et al., 2010), ensuring construct validity and reliability. Data analysis was conducted using SmartPLS software following a two-stage analytical procedure: (1) evaluation of the measurement model (reliability and validity) and (2) assessment of the structural model for hypothesis testing (Hair et al., 2017). Data were gathered through a structured questionnaire, with each construct measured using a seven-point semantic differential scale to capture respondents' perceptions with greater precision.

3.2. Measurement of research variables

All constructs in this study were measured using a seven-point semantic differential scale. The data were analyzed using variance-based Partial Least Squares Structural Equation Modeling (PLS-SEM) implemented in SmartPLS. The analysis employed the traditional PLS algorithm, which is appropriate for prediction-oriented research and models incorporating higher-order reflective constructs. This approach is consistent with current PLS-SEM guidelines and is suitable for the study's research objectives and sample characteristics.

To address potential Common Method Bias (CMB), full collinearity variance inflation factor (VIF) tests were conducted. The results show that all latent variable VIF values were below the recommended threshold of 3.3, indicating that common method bias is unlikely to bias the results (Hair et al., 2022; Kock, 2015). Financial Sustainability (FS) was operationalized using Operating Self-Sufficiency (OSS) and Financial Self-Sufficiency (FSS). Although financial sustainability is conceptually multidimensional, this study explicitly focuses on the financial self-sufficiency dimension, which is widely applied in the microfinance and rural banking literature. This operationalization is theoretically justified, as OSS and FSS represent the core indicators of a rural bank's ability to sustain operations independently without reliance on external financial support. In the context of rural and microfinance institutions, financial self-sufficiency constitutes the fundamental prerequisite for long-term survival and the continuous delivery of social and developmental functions. The high loading values of OSS and FSS reflect their strong conceptual proximity in capturing the financial self-sufficiency dimension of sustainability rather than measurement redundancy.

Organizational Culture (OC) was measured based on Denison's framework and modeled as a higher-order construct comprising four reflective dimensions: involvement, consistency, adaptability, and mission. This approach captures the overall strength of organizational culture rather than examining the isolated effects of individual dimensions. Social Innovation (SI) was measured using indicators that capture collaboration, institutional partnerships, capacity building, improvement of well-being, and sustainability orientation, reflecting the relational and developmental nature of social innovation in rural banking contexts. The detailed sources and indicators used to measure each construct are presented in Table 1.

Table 1. Indicator Measurement

Variable	Dimension & Indicator	Source
FS	Operating self-sufficiency (OSS)	Guntz (2011)
FS	Financial self-sufficiency (FSS)	Guntz (2011)
OC	Involvement – Empowerment (OC1)	Denison & Mishra (1995); Wahyuningsih et al. (2019)
OC	Involvement – Team orientation (OC2)	Denison & Mishra (1995); Wahyuningsih et al. (2019)
OC	Involvement – Capability development (OC3)	Denison & Mishra (1995); Wahyuningsih et al. (2019)
OC	Consistency – Coordination & integration (OC4)	Denison & Mishra (1995); Wahyuningsih et al. (2019)
OC	Consistency – Agreement (OC5)	Denison & Mishra (1995); Wahyuningsih et al. (2019)
OC	Consistency – Core values (OC6)	Denison & Mishra (1995); Wahyuningsih et al. (2019)
OC	Adaptability – Creating change (OC7)	Denison & Mishra (1995); Wahyuningsih et al. (2019)
OC	Adaptability – Customer focus (OC8)	Denison & Mishra (1995); Wahyuningsih et al. (2019)
OC	Adaptability – Organizational learning (OC9)	Denison & Mishra (1995); Wahyuningsih et al. (2019)
OC	Mission – Goals & objectives (OC10)	Denison & Mishra (1995); Wahyuningsih et al. (2019)
OC	Mission – Strategic direction (OC11)	Denison & Mishra (1995); Wahyuningsih et al. (2019)
OC	Mission – Vision (OC12)	Denison & Mishra (1995); Wahyuningsih et al. (2019)
Sc. I	Collaboration / Institutional partnerships (Sc.I1)	Moulaert et al. (2010); Sinclair et al. (2018); Sofia (2017)
Sc. I	Capacity building (Sc.I2)	Moulaert et al. (2010); Sinclair et al. (2018); Sofia (2017)
Sc. I	Improvement of well-being (Sc.I3)	Moulaert et al. (2010); Sinclair et al. (2018); Sofia (2017)
Sc. I	Sustainability orientation (Sc.I4)	Moulaert et al. (2010); Sinclair et al. (2018); Sofia (2017)

Source: Authors' compilation based on Guntz (2011); Denison and Mishra (1995); Wahyuningsih et al. (2019); Moulaert et al. (2010); Sinclair et al. (2018); Sofia (2017).

4. RESULTS

4.1. Measurement Model Evaluation Results

PLS-SEM analysis was conducted using SmartPLS software to test the proposed hypotheses. Partial Least Squares Structural Equation Modeling (PLS-SEM) is appropriate for this study due to its predictive orientation, its ability to estimate complex models involving moderating relationships, and its suitability for near-census samples (Hair et al., 2017; Moechdi et al., 2016; Venturini et al., 2023). Following established PLS-SEM procedures, the analysis was performed in two stages. In the first stage, the measurement model was evaluated to assess the reliability and validity of the constructs, including indicator reliability, internal consistency reliability, convergent validity, and discriminant validity. In the second stage, the structural model was assessed to examine the hypothesized relationships among constructs through path coefficient estimation and significance testing. Detailed results for each stage are presented in the subsequent sections.

Table 2. Convergent Validity and Discriminant Validity

Construct	Dimension	Item	Factor Loading	Composite Reliability	Cronbach's Alpha	AVE
FS	–	FSS	0.993	0.987	0.987	0.987
FS	–	OSS	0.993	0.987	0.987	0.987
OC	Adaptability	OC1	0.782	0.959	0.956	0.672
OC	Adaptability	OC2	0.821	0.959	0.956	0.672
OC	Adaptability	OC3	0.828	0.959	0.956	0.672
OC	Adaptability	OC4	0.801	0.959	0.956	0.672
OC	Consistency	OC5	0.859	0.959	0.956	0.672
OC	Consistency	OC6	0.862	0.959	0.956	0.672
OC	Involvement	OC7	0.823	0.959	0.956	0.672
OC	Involvement	OC8	0.829	0.959	0.956	0.672
OC	Involvement	OC9	0.826	0.959	0.956	0.672
OC	Involvement	OC10	0.841	0.959	0.956	0.672
OC	Mission	OC11	0.769	0.959	0.956	0.672
OC	Mission	OC12	0.798	0.959	0.956	0.672
Sc. I	–	Sc.I1	0.904	0.906	0.902	0.772
Sc. I	–	Sc.I2	0.889	0.906	0.902	0.772
Sc. I	–	Sc.I3	0.879	0.906	0.902	0.772
Sc. I	–	Sc.I4	0.845	0.906	0.902	0.772

Source: Authors' calculation using SmartPLS 4.

Based on the outer loading validity test in Table 2, it is known that all outer loading values are > 0.7 , which means that they have met the validity requirements based on the outer loading value.

The recommended Average Variance Extracted (AVE) value should be above 0.5 (dos Santos & Cirillo, 2023), and all AVE values are confirmed to be greater than 0.5, fulfilling the validity requirements based on AVE. Furthermore, reliability testing was conducted using the Composite Reliability (CR) value, with a recommended threshold of above 0.7 (Kalkbrenner, 2023). All CR values are also above 0.7, demonstrating compliance with the reliability requirements. Additionally, reliability was assessed using Cronbach's Alpha (CA) value. The validity of the discriminant was evaluated using the Fornell-Larcker approach, and Table 3 presents the results of the discriminant validity testing.

Table 3. Discriminant Validity Testing: Fornell & Larcker

Construct	Financial Sustainability	Organizational Culture	Social Innovation
Financial Sustainability	0.993	–	–
Organizational Culture	0.527	0.820	–
Social Innovation	0.417	0.722	0.880

Source: Authors' calculation using SmartPLS 4.

Discriminant validity testing involves comparing the square root of a latent variable's Average Variance Extracted (AVE) with the correlation values between that latent variable and other latent variables (Afthanorhan et al., 2021). The square root AVE for each latent variable is greater than the correlation values with other latent variables, indicating that all requirements for discriminant validity have been met.

Table 4. Heterotrait-Monotrait Ratio (HTMT)

	Heterotrait-monotrait ratio (HTMT)
Organizational Culture <-> Financial Sustainability	0.533
Social Innovation <-> Financial Sustainability	0.440
Social Innovation <-> Organizational Culture	0.778

Source: Result of data processing (2024)

Based on the discriminant validity test presented in Table 4, using the Heterotrait-Monotrait Ratio (HTMT) approach, all values are below 0.9 (Afthanorhan et al., 2021). This indicates that the requirements for discriminant validity, according to the HTMT approach, have been met.

4.2. Results of Structural Model Evaluation

The coefficient of determination (R^2) is employed to evaluate the extent to which external constructs impact the influence of endogenous constructs. The study's coefficient of judgment is displayed in Table 5.

Table 5. Coefficient Determination (R-Square)

	R-square	R-square adjusted
Financial Sustainability	0.461	0.448

Source: Authors' calculation using SmartPLS 4.

The data is presented in Table 5. financial sustainability exhibited an R^2 of 0.461, indicating moderate explanatory power. This result suggests that 46.1% of the variability in financial sustainability can be explained by the exogenous variables included in the model (Chin, 1998). The remaining variability is attributed to other factors not accounted for in the research model.

4.3. Model Fit Assessment (PLS-SEM)

Model fit was evaluated using approximate and discrepancy-based fit indices commonly applied in PLS-SEM. The Standardized Root Mean Square Residual (SRMR) value is 0.060, which is below the recommended threshold of 0.08 (Hair et al., 2017; Hu & Bentler, 1999), indicating acceptable model fit. In line with current PLS-SEM guidelines, SRMR is emphasized as the primary fit index for assessing model adequacy.

In addition, bootstrap-based discrepancy measures (d_{ULS} and d_G) were examined to further assess model fit. The bootstrap results indicate that the estimated values of d_{ULS} and d_G are within acceptable ranges, providing additional support for the adequacy of the proposed model. Although the Normed Fit Index (NFI) is reported for completeness, it is interpreted cautiously and not used as a decisive criterion, as NFI does not penalize model complexity in composite-based structural equation modeling. Overall, the results indicate that the structural model demonstrates a satisfactory fit for hypothesis testing.

Table 6. Model Fit Assessment Results

	Saturated model	Estimated model
SRMR	0.053	0.060
d_{ULS}	0.474	0.616
d_G	0.373	0.396
Chi-square	279.420	305.901
NFI	0.878	0.866

Source: Authors' calculation using SmartPLS 4.

4.4. Hypothesis Significance Test

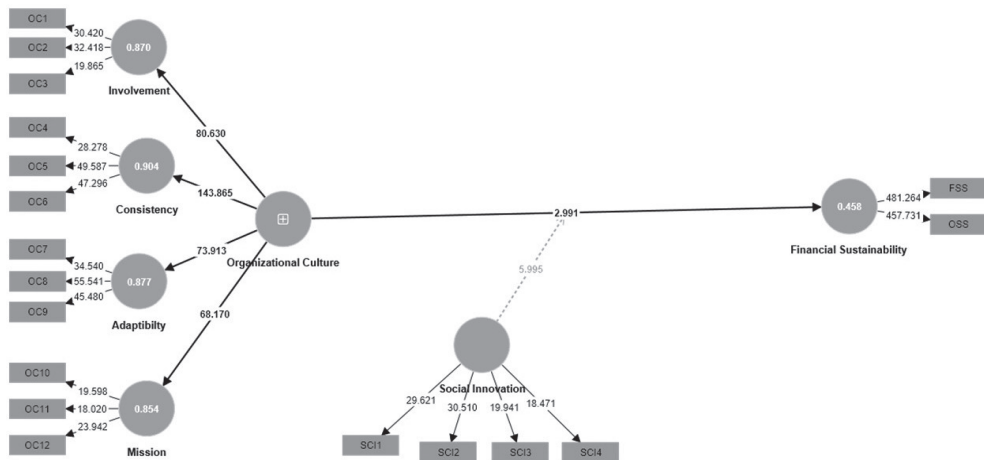
This study explains the structural model using bootstrapping techniques applied to 131 responses from respondents. This method provides a robust estimation of the model's relationships and helps assess the statistical significance of the proposed hypotheses. The analysis results of the relationships between variables are presented in Figure 3 and Table 7.

Table 7. Coefficient Path Test and Significance of Direct Influence

Structural Path	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T-Statistic	P-Value
Organizational Culture to Financial Sustainability	0.377	0.392	0.128	2.947	0.003
Social Innovation × Organizational Culture to Financial Sustainability	0.428	0.431	0.074	5.751	< 0.001

Source: Authors' calculation using SmartPLS 4.

Figure 3. Structural Model



Source: Authors' calculation using SmartPLS 4

4.4.1. The Influence of Organizational Culture on *Financial Sustainability*

The results of the data analysis indicate that the path coefficient value for the influence of organizational culture on financial sustainability is 0.377, with a significance level (p-value) of 0.003. Since the p-value is less than the alpha value (α) of 0.05, these results demonstrate that organizational culture has a positive effect on financial sustainability. Therefore, it can be concluded that the first hypothesis of the study is accepted.

4.4.2. The Moderating Effect of Social Innovation on the Influence of Organizational Culture on Financial Sustainability

The data analysis reveals that organizational culture has a significant positive effect on financial sustainability, with social innovation playing a significant moderating role. The interaction effect between organizational culture and social innovation shows a path coefficient of 0.428 with a p-value of 0.000, indicating a strong and statistically significant moderating effect. Accordingly, Hypothesis 2 is accepted.

These results indicate that social innovation strengthens the influence of organizational culture on financial sustainability. Rather than functioning as an independent determinant, social innovation enhances the effectiveness of organizational culture in improving financial sustainability by amplifying its impact through collaborative and relational mechanisms. Thus, social innovation operates as a strengthening moderator variable that intensifies the relationship between organizational culture and financial sustainability.

5. DISCUSSION

The empirical results indicate that organizational culture plays a pivotal role in supporting the financial sustainability of rural banks. A culture that emphasizes shared values, adaptability, and collective commitment enables rural banks to strengthen internal resilience and maintain stable financial performance despite external competitive pressures (Pathiranage et al., 2020; M. M. Rahman et al., 2023). Beyond the direct contribution of organizational culture, this study reveals that social innovation significantly strengthens the effectiveness of organizational culture in enhancing financial sustainability. Through collaborative initiatives, partnerships, and network-based strategies, rural banks are able to amplify the financial benefits derived from strong internal cultural foundations. The moderating role of social innovation becomes evident when rural banks integrate internal cultural strengths with externally oriented collaboration. Partnerships with fintech firms, commercial

banks, and other institutions enable rural banks to convert organizational values into practical financial strategies, thereby enhancing financial self-sufficiency.

Rural banks engaging in cross-sector collaborations and fintech partnerships exhibit greater financial resilience compared to those relying solely on internal cultural strengths. These findings reinforce the argument that a synergistic interaction between internal capabilities (organizational culture) and external collaborations (social innovation) is crucial for sustaining financial performance in the rural banking sector.

Rural banks with a strong culture emphasizing customer service, operational efficiency, and community engagement are better positioned to navigate market competition and regulatory challenges. This study confirms that organizational culture plays a significant role in strengthening institutional resilience, enhancing employee productivity, and improving customer loyalty, all of which are essential for long-term financial sustainability. Moreover, the incorporation of social innovation enhances the agility of rural banks by reinforcing the positive effects of organizational culture, allowing rural banks to adapt to evolving financial landscapes and digital transformations more effectively. Future research should explore how different types of social innovation, such as digital financial solutions, cooperative business models, or regulatory collaborations, further enhance the sustainability of rural banks in emerging economies.

Additionally, this study reveals that social innovation significantly moderates the impact of organizational culture on financial sustainability. External partnerships and community-driven initiatives can enhance the benefits of a well-established corporate culture. Rural banks that actively engage in cross-sector collaborations can leverage their existing resources more effectively, leading to improved financial performance and long-term sustainability. For example, some rural banks in Bali have successfully partnered with commercial banks to distribute Working Capital Loans to MSMEs, benefiting from government-backed credit schemes while maintaining their role in local financing. These partnerships are mutually beneficial, enabling rural banks to continue serving their traditional customer base while gaining financial support from larger institutions.

The study further highlights the significance of local wisdom and cultural values in shaping the strategic direction of rural banks. Within the Balinese context, the local wisdom of *Menyama Braya* reinforces trust-based relationships between rural banks and their communities. When combined with social innovation initiatives, this cultural value strengthens customer loyalty and supports long-term financial sustainability. This cultural strength, when combined with innovative collaborations, enhances financial sustainability and supports long-term growth prospects. By integrating local values with modern financial strategies, rural banks can strengthen their resilience and adaptability in an evolving financial landscape.

The findings align with previous research, which suggests that an open organizational culture facilitates change and embeds sustainability into corporate

values. To achieve and maintain financial sustainability, rural banks must develop their organizational culture to align with both internal needs and the dynamic business environment (Cabaron, 2023; Erwin et al., 2018). Prior studies also indicate that organizational culture significantly influences financial sustainability and sustainable growth rates (Benn et al., 2014; Dyck et al., 2019; Tipu, 2022; Wijethilake et al., 2023). However, organizational culture alone is not sufficient to drive financial sustainability. Social innovation plays a crucial moderating role in complementing and strengthening the effects of culture on financial sustainability (Costa & Castro, 2021; Riaño-Castillo et al., 2021). From a Resource-Based View perspective, the findings suggest that organizational culture represents a valuable intangible resource, but its impact on financial sustainability is maximized when complemented by social innovation. This interaction highlights the importance of combining internal capabilities with external relational resources to achieve sustained financial performance (Benn et al., 2014; Wijethilake et al., 2023). However, this study further refines existing theories by demonstrating that social innovation plays a crucial moderating role, amplifying the impact of organizational culture on financial sustainability. Unlike earlier studies that primarily conceptualize social innovation as a standalone driver of performance (Zulu-Chisanga et al., 2021), this study empirically demonstrates its role as a moderating mechanism that enhances the influence of organizational culture on financial sustainability.

Rural banks must continue to innovate by leveraging new collaborations and partnerships with external parties, including competitors, to create competitive advantages and sustain long-term financial health (The European Commission, 2013). Social innovation involves developing and implementing new ideas, including products, services, and business models, that address social needs while fostering new institutional relationships. Collaboration is essential for optimizing financial and human resources, accessing broader markets and knowledge, enhancing creativity, and reducing the time needed to achieve strategic objectives (Lozano et al., 2021). Research has demonstrated that collaboration has a positive and significant impact on a company's financial performance, ultimately influencing its financial sustainability (Wafula et al., 2016; Zulu-Chisanga et al., 2021). Consequently, rural banks, particularly those with limited financial and technological resources, must prioritize social innovation through partnership-based strategies that reinforce organizational culture.

These collaborations should align with the organizational culture of rural banks. Partnering with other rural banks, commercial banks, and financial institutions in Indonesia can expand operational capabilities and service offerings (Orr, 2019; Yudiaatmaja et al., 2022). Some rural banks have already begun adopting credit network innovations through peer-to-peer lending partnerships with fintech companies, reflecting the current trend toward banking digitalization in Indonesia. This model allows rural banks to finance customers from fintech platforms, where funds from rural banks are disbursed to fintech borrowers, secured by an invoice from the debtor

with a short-term repayment period of 2-3 months. The fintech companies involved are registered and licensed by the Indonesian Financial Services Authority (OJK). This credit innovation through fintech presents significant opportunities for rural banks, potentially increasing total loan disbursement by around 10% (Yudiasra, 2023)

Beyond fintech collaborations, rural banks can also partner with competing commercial banks in distributing Working Capital Loans to MSMEs. Through a “Working Capital Loans to MSMEs linkage”, rural bank customers can access government-subsidized funds, with profits from credit distribution shared between commercial banks and rural banks (Wiguna, 2017). By engaging in various forms of social innovation—including collaboration with fintech firms and commercial banks- rural banks can create new competitive advantages and enhance financial sustainability.

For rural banks to remain competitive in the financial sector, their organizational culture must encourage strategic initiatives that drive innovation and sustainability. Organizational culture, defined by its norms, values, and systems, plays a pivotal role in shaping employee attitudes toward financial sustainability (Linnenluecke & Griffiths, 2010). Employees must recognize the importance of sustainability and develop a mindset that integrates it into daily business operations. The findings of this study align with previous research, which has established that organizational culture and sustainable growth rates directly impact financial sustainability (Afriyie, 2015; Benn et al., 2014).

This study addresses critical gaps in the existing literature, which has previously suggested that rural banks face difficulties in innovating due to limited resources (Brian, 2018; Quartey et al., 2019; Widyastuti et al., 2023). However, this research demonstrates that by utilizing social capital and workforce capabilities, rural banks can successfully innovate through collaboration-based social innovation. While traditionally viewed as competitors, commercial banks, fintech companies, and other financial institutions are now emerging as strategic allies in improving the financial sustainability of rural banks. By embracing a culture of innovation and cooperation, rural banks can strengthen their financial performance and enhance their role in providing financial services to underserved communities.

6. CONCLUSION

This study highlights the critical role of organizational culture and social innovation in supporting the financial sustainability of rural banks. The results indicate that organizational culture contributes to financial sustainability, and its influence becomes more substantial when reinforced by social innovation initiatives, including cross-sector collaboration, fintech partnerships, and cooperation with commercial banks.

The strengthening effect of social innovation on financial sustainability operates through its interaction with specific dimensions of organizational culture. Collaborative initiatives with fintech firms and commercial banks enhance adaptability and mission clarity by enabling rural banks to respond more effectively to technological change and market competition. At the same time, community-based programs and partnership-oriented strategies reinforce involvement and consistency by strengthening shared values, employee commitment, and trust-based relationships. Through these mechanisms, social innovation amplifies the contribution of organizational culture to sustainable financial performance.

Rural banks may enhance their competitive position by strategically leveraging intangible assets through the development of adaptive and innovation-oriented organizational cultures. The incorporation of local cultural values, such as *Menyama Braya*, further strengthens trust-based relationships with customers and stakeholders, thereby supporting long-term financial sustainability. Moreover, collaboration with fintech firms and larger financial institutions provides rural banks with opportunities to extend service coverage and improve operational capacity, particularly in contexts where financial and technological resources are limited.

Rural banks should prioritize strengthening their organizational culture by embedding innovation, adaptability, and community engagement into their strategic frameworks. By fostering a culture that embraces change, these banks can enhance their ability to navigate financial challenges and remain competitive. Additionally, forming partnerships with fintech companies, commercial banks, and other financial institutions presents an opportunity to expand financial sustainability and improve service delivery. These collaborations can provide access to advanced technological infrastructure and broaden the range of services available to customers.

Furthermore, investing in digital financial solutions is essential to keeping pace with technological advancements and addressing the evolving needs of rural customers. Digital transformation enables rural banks to enhance operational efficiency, reduce costs, and improve customer engagement. From a policy perspective, regulatory frameworks should be designed to facilitate collaboration between rural banks and external financial actors. Supportive regulations can create institutional conditions that foster sustainable growth while enabling rural banks to continue serving local communities effectively.

This study contributes to the Resource-Based View (RBV) by demonstrating that social innovation operates as a complementary external resource that amplifies the effect of organizational culture on financial sustainability within rural banking institutions. It also extends existing knowledge by emphasizing the role of collaborative networks in improving the financial resilience of rural banks.

By positioning social innovation as an interaction-based external resource within the RBV framework, this study advances the understanding of how internally embedded cultural assets and externally embedded relational capabilities jointly shape financial sustainability in resource-constrained banking institutions.

While the findings offer valuable insights for strengthening rural bank sustainability, caution is required when applying these results beyond the Balinese context. Local cultural values such as *Menyama Braya* are deeply embedded in Bali's social structure and may not be directly transferable to other regions. Differences in regulatory environments, institutional arrangements, and socio-cultural conditions across regions should therefore be carefully considered when adapting these findings to rural banks outside Bali.

7. LIMITATIONS AND SUGGESTIONS FOR FURTHER STUDIES

This study focuses on rural banks in Bali, which may limit the applicability of the findings to other regions in Indonesia or different financial institutions. While Bali offers a distinct cultural and economic setting, rural banks in other countries may encounter varying challenges shaped by regional policies, economic frameworks, and customer behaviors. In addition, this study focuses exclusively on the financial dimension of sustainability, operationalized through financial self-sufficiency indicators. Social and environmental dimensions of sustainability were not examined. Future research should broaden the study's scope to include rural banks in diverse regions or conduct comparative analyses between rural and commercial banks, as well as incorporate social and environmental sustainability indicators, to develop a more comprehensive understanding of rural bank sustainability across different financial systems.

Additionally, this study primarily examines the influence of organizational culture and social innovation on financial sustainability, without considering other potential moderating or mediating factors. Future research could explore the impact of technological advancements, regulatory frameworks, or leadership styles in enhancing these relationships. Furthermore, longitudinal studies could be conducted to evaluate how shifts in organizational culture and social innovation strategies influence financial sustainability over time, offering deeper insights into long-term trends.

Lastly, this study employs a quantitative methodology, which, although effective in identifying relationships between variables, may not fully capture the nuanced perspectives and experiences of stakeholders within rural banks. Future research could incorporate a mixed-methods approach, combining qualitative data from interviews or case studies with quantitative findings. This approach would provide a more holistic perspective on how rural banks address financial challenges, adapt to innovations, and maintain financial sustainability in an evolving economic landscape.

DISCLOSURE STATEMENT

The authors declare that there are no conflicts of interest regarding the publication of this paper. No financial support or personal relationships have influenced the research reported in this study.

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