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Financial Information Rating System (Firms) As A Risk-Based Financial Allocation Model For Cooperative And MSME Financial Mitigation

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Abstract

Micro, Small and Medium Enterprises (MSMEs) have a strategic contribution to the national economy, but are still vulnerable to financial distress due to weak financial governance, limited financial planning, and low risk mitigation capacity. This study aims to develop and describe Financial Information Rating System (FIRMS) as Integrated Financial Rating and Early Warning System to support risk-based financial allocation and mitigation of MSME bankruptcy. The study uses a descriptive-development approach by integrating repayment indicators. capacity, cash flow quality, liquidity, financial planning, human resources quality, and financial governance into the risk rating system. Data were obtained through observation, interviews, documentation, and expert validation. The results of the study indicate that FIRMS is capable of producing objective financial ratings, identifying potential financial distress early and provide risk-based financing recommendations. FIRMS contributes to strengthening the financial resilience of MSMEs and supporting a more sustainable, inclusive, and adaptive financing system,

Keywords: Financial Information Rating System, Early Warning System, Financial Distress , MSMEs

INTRODUCTION

Micro, Small, and Medium Enterprises (MSMEs) are one of the main pillars of the national economy, contributing significantly to economic growth, job creation, and equitable social welfare. Data from the Ministry of Cooperatives and SMEs (2024) shows that MSMEs contribute more than 61.5% to the national Gross Domestic Product (GDP) and are the sector that absorbs the majority of Indonesia's productive workforce. However, this high contribution has not been accompanied by adequate strengthening of governance capacity and financial resilience. Altman et (2017) stated that business failure in the small and medium busi-

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ness sector is generally related to weak financial information systems and the lack of early detection mechanisms capable of identifying declining financial health before a crisis occurs.

From a financial management perspective, the quality of financial governance is a fundamental factor determining business sustainability. Lusardi and Mitchell (2014) explain that financial literacy plays a crucial role in improving the quality of financial decisions, while Huston (2010) emphasizes that the ability to understand financial information is the foundation of rational financial behavior. Furthermore, the mental accounting theory proposed by Thaler (1999) shows that business actors often group financial resources subjectively, potentially creating bias in decision-making and resource allocation. Recent research findings also indicate that although many MSMEs have relatively good business adaptability, weaknesses in performance accountability, performance measurement, and evidence -based decision-making decision making) is still a major obstacle in building long-term business resilience (Hristov & Chirico, 2019; Hristov & Appolloni, 2022).

The development of literature shows that strengthening the MSME financing system requires a transformation from a conventional approach to a risk-based one. financing. Dynamic Perspective Capabilities Theory (Teece, 2007), Service- Dominant Logic (Vargo & Lusch, 2008), and Signaling Theory (Spence, 1973) explains that organizational adaptability and the quality of financial information are important signals that influence the level of trust and financing decisions. At the same time, various studies on Early Warning Systems (EWS) show that the integration of financial indicators, liquidity, cash flow, and other risk variables can improve the accuracy of financial predictions. distress and support more proactive decision making (Samitas et al., 2020). In fact, prediction models based on financial indicators and machine Learning has been proven to be able to detect potential business failures long before a crisis occurs, thus enabling mitigation measures to be carried out more effectively (Hafeez et al., 2022; Huynh & Uebelmesser, 2024).

Based on these conditions, this study develops Financial Information Rating System (FIRMS) as an Integrated Financial Rating model and Early Warning System that supports risk-based mechanisms financial Allocation for MSMEs and cooperatives. FIRMS integrates repayment indicators capacity, cash flow quality, liquidity, financial planning, human resources quality, financial governance, and business sustainability into a risk rating system that produces a more objective and adaptive classification of financial health. FIRMS serves not only as a financing feasibility assessment tool but also as an early warning system. warning system, bankruptcy mitigation instruments, and a basis for more accurate, transparent, and sustainable financing decision-making (Hopkin, 2018 & Spence, 1973).

Although various studies have developed credit models scoring, financial distress prediction, and financial literacy assessment, there is not much research that integrates re-

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payment capacity, financial planning, human resources quality, and early warning system into Financial Information Rating System used as a basis for risk-based financial allocation to MSMEs and cooperatives. This gap is the main focus of FIRMS development in this study".

LITERATURE REVIEW

Financial Risk Mitigation

Mitigation is the process of identifying, measuring, and controlling risks that have the potential to disrupt business sustainability, particularly in cooperatives and MSMEs, which generally still face limitations in cash flow management, access to financial information, and risk control capacity. Hopkin (2018) states that risk management not only functions to minimize potential losses but also strengthens the organization's ability to maintain business sustainability through more adaptive and measured decision-making. In practice, MSME financial risks often appear in the form of default, cash flow instability, low liquidity, and inaccurate financing allocation. Altman et al. (2017) emphasized that business failure in the small business sector is largely influenced by the weakness of the early detection system for financial distress, low quality of financial information, and limited risk evaluation mechanisms that are able to describe the real condition of the business.

Risk-Based Financial Allocation

Risk-based concept financial The Basel Allocation Policy emphasizes that financing decisions must consider the level of risk, repayment capacity, and business sustainability, not solely on the basis of collateral or administrative completeness. Committee on Banking Supervision (2020) explains that a risk-based financing system allows financial institutions to classify financing more objectively and adaptively according to debtor characteristics. However, in practice, most cooperatives and MSME financing institutions still use a collateral-based approach. financing, so that many potential business actors experience limited access to financing despite having good business capacity. This approach is in line with Signaling The theory put forward by Spence (1973) states that the quality of financial information can be an important signal in building trust and determining investment and financing decisions.

MSME Financial Governance

Lusardi and Mitchell (2014) explain that the ability to understand and use financial information significantly influences the quality of financial decision-making and business sustainability. Low financial literacy and weak financial governance cause many MSMEs to experience difficulties in debt management, operational cost control, and long-term financial planning. Ramirez and Lim (2021) emphasize that the success of MSMEs and community-based businesses is greatly influenced by the organization's capacity to manage financial re-

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sources systematically and sustainably. Therefore, strengthening financial governance is a crucial component of risk mitigation and business sustainability. *Early Warning System (EWS)*

An Early Warning System (EWS) is an early detection mechanism used to identify potential risks before they develop into a larger crisis. In the financial sector, EWS is used to predict potential *financial crises. distress,* default, and liquidity inadequacy. According to Sahut and Mili (2011), EWS functions as a predictive instrument that helps organizations or financial institutions take mitigation measures more quickly and precisely. The application of EWS in MSMEs is still relatively limited because most business actors do not have an adequate financial information system. Furthermore, the financing evaluation system used is still administrative and not based on business risk mapping. In fact, an early detection system based on financial information can help cooperatives and financing institutions identify businesses that have the potential to experience a decline in payment capacity. In this context, the development of *Financial Information Rating System* (FIRMS) is important as a risk classification mechanism and early detection of potential business bankruptcy.

METHOD

This study uses a descriptive-developmental approach which aims to describe the development and implementation of Financial Information. Rating System (FIRMS) as a risk-based financial allocation model in mitigating MSME bankruptcy. This approach was chosen because the research does not focus on testing the relationship between variables, but rather on developing a financial information rating system and risk mitigation mechanisms that can describe the financial condition of businesses more comprehensively. The research was conducted on MSMEs and cooperatives in the Greater Malang area, which have heterogeneous business characteristics. Data collection was conducted to identify financial management patterns and financing practices in MSMEs. Interviews were conducted with business actors and financial practitioners to obtain information on financing mechanisms, business risks, and the need for a financial mitigation system.

FIRMS development is carried out by integrating several main indicators, namely repayment capacity, business cash flow quality, liquidity, financial governance, financial management behavior, and business sustainability indicators. All of these indicators are compiled into a financial risk classification mechanism that produces business risk level categories and risk-based financing allocation recommendations. FIRMS is also designed as an early warning system. warning a system that is able to detect financial potential distress earlier.

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RESULT AND DISCUSSION

Financial Information Rating System (FIRMS)

Financial Information Rating System (FIRMS) is a financial information rating model through the integration of financial and non-financial indicators such as repayment. capacity , business cash flow quality, liquidity, financial governance, financial behavior, and business sustainability. This system is designed to generate risk classifications that can be used as a basis for financing decisions and financial risk mitigation . Unlike the credit model, While conventional scoring focuses more on collateral and credit history, FIRMS prioritizes business management quality and sustainability capacity as key indicators. Through its risk classification mechanism, FIRMS is expected to serve as a bankruptcy mitigation tool and early warning system. warning system in detecting financial potential distress earlier.



Figure 1. Dashboard FIRMs

The research results show that FIRMS is capable of building a more adaptive financial mitigation mechanism through the integration of financial governance, repayment capacity, and business sustainability indicators. To date, MSME financing mechanisms have been dominated by administrative approaches and physical collateral, thus failing to reflect the true state of a business's financial health, ultimately increasing the risk of non- performance. financing and business failure. FIRMS offers a more comprehensive approach through risk mapping based on cash flow quality, repayment capacity, liquidity stability, and financial governance patterns. From a Risk Perspective Management Theory , this system allows financing institutions to identify financial potential distress in a more preventative and systematic manner. Furthermore, research findings also show that MSMEs and cooperatives with strong cash flow management and financial planning capabilities tend to have lower

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risk levels than businesses with unstable financial patterns. These findings reinforce the Signaling The theory put forward by Spence states that the quality of financial information is an important signal in building financing trust and the sustainability of economic relations between business actors and financial institutions.

FIRMS as a Risk-Based Financial Allocation Mechanism

The development of FIRMS shows a paradigm transformation in the MSME financing system from a conventional approach to a risk-based mechanism. financial Allocation . Traditional financing systems generally emphasize collateral and administrative completeness, often neglecting the quality of the business and the financial management capacity of MSMEs. This situation results in less targeted financing distribution, where businesses with good prospects but lacking collateral experience difficulty accessing financing, while high-risk businesses obtain funding without adequate repayment capacity analysis. FIRMS offers a more objective approach through an evidence-based mechanism. Allocation , a financing allocation system based on the empirical financial conditions of a business, such as cash flow patterns, installment repayment capacity, financial management quality, and operational sustainability. This approach enables cooperatives and financing institutions to classify risks more accurately, making financing decisions more rational and measurable.

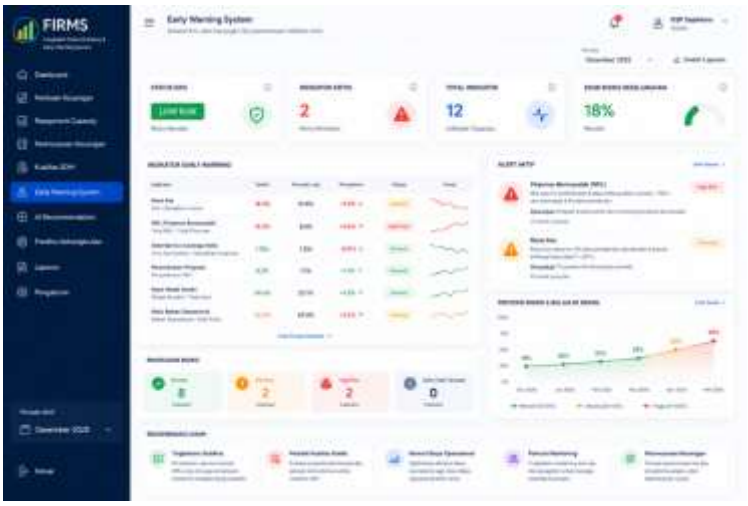


Figure 2. Early Warning System Display

In addition, FIRMS strengthens the predictive approach. financing through early function warning A financial risk assessment system (FIRMS) is capable of detecting signs of declining financial capacity before a business experiences permanent default. Indicators such as cash flow instability, declining liquidity, and weak cost control are early signals in the

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financial risk mitigation process . Thus, FIRMS functions not only as a financing selection tool but also as an instrument for ongoing monitoring of business sustainability. From an institutional perspective, FIRMS implementation has the potential to increase the efficiency of the MSME financing system through a more accurate risk mapping mechanism, thereby reducing problem financing and improving the quality of the financing portfolio. At the same time, business actors are encouraged to improve governance and the quality of financial reports to achieve better risk categories. This demonstrates that FIRMS has the capacity to build a financing system that is healthier, more transparent, and oriented towards long-term sustainability.

Contextualization of Cooperative and MSME Scale

The results of the study indicate that the effectiveness of FIRMS is influenced by the scale and characteristics of MSMEs. Large cooperatives generally have more structured administrative and financial record-keeping systems, allowing for more accurate risk classification. Cash flow stability and the existence of internal control systems also provide large cooperatives with better risk mitigation capacity than small cooperatives, which still face limited human resources, weak financial record-keeping, and high dependence on short-term financing. In the MSME sector, significant differences in characteristics are seen between micro MSMEs and developing MSMEs. Micro MSMEs generally still use experience-based financial management and do not have a clear separation between personal and business finances, resulting in less stable financial information and complicating the formal risk mapping process. Conversely, developing MSMEs demonstrate better financial management capacity, particularly in cash flow control, business planning, and financing management, and therefore tend to be assigned a lower risk category in the FIRMS system.



Figure 3. Analysis report dashboard

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These findings indicate that a financial mitigation approach cannot be applied uniformly to all business categories because each business scale has different levels of vulnerability and mitigation needs . Small cooperatives and micro-SMEs require a more flexible, mentoring-based financing approach, while large cooperatives and developing MSMEs require a more complex evaluation system supported by structured financial data. Therefore, FIRMS functions not only as a risk classification system but also as an instrument for contextualizing financing policies based on business capacity and characteristics. From an economic development perspective, understanding business heterogeneity is crucial to prevent unequal access to financing and reduce the risk of business failure in the micro-sector. Therefore, the implementation of FIRMS has the potential to create a more inclusive, equitable, and capacity-based financing system.

Sustainability and Financial Resilience Implications

The implementation of FIRMS has important implications for strengthening the *sustainability* and financial resilience of MSMEs. This system demonstrates that business sustainability is determined not only by the amount of capital or access to financing, but also by the ability of business actors to maintain financial stability and manage risks sustainably. FIRMS encourages the formation of a more disciplined financial management culture through risk classification mechanisms and business sustainability evaluations. In the context of financial resilience, FIRMS can strengthen the adaptability of cooperatives and MSMEs to economic pressures and market uncertainty. An integrated risk mapping system enables business actors and financing institutions to take corrective action more quickly before risks develop into financial crises. This is especially important in dynamic economic conditions, where MSMEs are often the business group most vulnerable to market changes, inflation, and declining purchasing power.

Furthermore, FIRMS also strengthens financial governance by increasing transparency and accountability of financial information. Businesses seeking a favorable risk category must demonstrate quality cash flow management, business stability, and financing discipline. This mechanism indirectly encourages improved business management quality and professionalism in cooperative and MSME management. On a broader scale, FIRMS implementation has the potential to strengthen a healthier and more sustainable financing ecosystem. A risk-based financing system can reduce inaccurate financing distribution, increase fund management efficiency, and strengthen relationships between financial institutions and businesses. Thus, FIRMS is relevant not only as a bankruptcy mitigation tool but also as an economic development instrument that supports the sustainability of the MSME and cooperative sectors.

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CONCLUSION AND SUGGESTION

This research succeeded in developing Financial Information Rating System (FIRMS) as Integrated Financial Rating and Early Warning System that supports risk-based mechanisms financial allocation for cooperatives and MSMEs through integration of repayment indicators capacity , cash flow quality, liquidity, financial planning , human resources quality , and financial governance into an objective, adaptive, and evidence-based risk rating system. The results of the study indicate that FIRMS is not only capable of producing more accurate classifications of financial health levels and assessments of financing eligibility, but also serves as an early detection mechanism . warning system) in identifying financial potential distress before it develops into business failure. Thus, FIRMS provides a conceptual contribution to the development of predictive- based financial risk mitigation models. risk analytics while offering practical solutions for financing institutions, cooperatives, governments, and MSMEs to improve the quality of financing decisions, strengthen financial resilience, reduce the risk of problematic financing, and encourage the formation of a more inclusive, sustainable, and resilient financing ecosystem.

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