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## **TECHNOLOGY ADAPTATION TO RISK AND MICRO-ENTERPRISE SURVIVAL: A LITERATURE REVIEW STUDY IN TRADITIONAL MARKETS IN INDONESIA**

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### ***Abstract –***

Micro-enterprises in traditional markets face high risks due to rapidly developing modern technology. This literature review aims to analyze the role of technology adaptation in increasing the resilience of micro-enterprises to business risks. This study reviews 25 sources from accredited national journals, international journals, and policy reports (2015–2024). The results of 1.the study show that the use of social media, 2.digital transaction systems, and 3.financial applications can reduce operational risks and increase business resilience. However, the main obstacles are low digital literacy and access to technology. This study recommends an inclusive community-based approach and policy support to facilitate the digital transformation of traditional micro-enterprises.

**Keywords** – Micro-enterprise; Technology adaptation; Technology adaptation; Traditional market

## I. INTRODUCTION

Microenterprises in traditional markets in Indonesia face significant challenges due to changes in the business environment, modern market pressures, and digital transformation. This study aims to examine the role of technology adaptation in reducing risks and increasing the survival of microenterprises through a literature review approach. This study identifies that the adoption of technologies such as social media, digital transactions, and financial applications plays an important role in strengthening the response of microenterprises to the economic crisis, consumer decline, and market uncertainty.

However, limited digital literacy and access to infrastructure remain major obstacles. This article emphasizes that the success of technology adaptation is greatly influenced by internal (motivation, knowledge) and external (policy support, training, and community) factors. This study recommends the need for an inclusive approach and community-based interventions to ensure the survival of traditional microenterprises in the digital era. MSMEs, especially microenterprises in traditional markets, have a strategic role in the Indonesian economy.

However, in the midst of digital business competition, they are faced with various risks such as a decrease in customers, volatility in raw material prices, and macroeconomic disruptions (Wibowo, 2020; Yusuf & Kurniawati, 2021). Adaptation of technologies such as social media, digital transactions, and financial management applications is seen as crucial to increasing the resilience of micro-businesses (1999), (Cojocaru et al. 1999) or Driver et al. (2000). See the end of the document for further details on references.

## II. METHOD

This study uses a systematic literature review method. Inclusion criteria are relevant sources discussing the digitalization of MSMEs/micro businesses, business risks, and survival in traditional markets in the 2015–2024 period. Sources are taken from the SINTA, DOAJ, Scopus databases, and government reports. The analysis is carried out descriptively thematically with a focus on elements of risk, technology adaptation, and business resilience. The main focus is literature that discusses:

- Technology adaptation among MSMEs/micro businesses
- Risks and resilience of micro businesses
- Traditional markets as business locations
- Digitalization of the local economy

Explanation of Model Components: Internal Actor Factors: Determines individual readiness to adopt technology (motivation, age, education, etc.). Technology Adaptation:

1. Focus on the use of digital tools (social media, non-cash transactions, and financial applications) in micro-business operations.
2. Reducing Business Risk and Increasing Efficiency: Two main effects of technology adaptation – reducing external risks and increasing business management efficiency.
3. Micro Business Survival: The final result is the ability to survive, innovate, and grow amidst market dynamics.

External Supporting Factors:

External factors that strengthen the adaptation process and increase the positive impact of technology. Ask ChatGPT, Attach, Search Voice, ChatGPT can make mistakes. Check important info. See Cookie Preferences. Log in Sign up for free.

Paper reveal the research design, explain the sampling process, operationalization of variables, and data analysis. Paper reveal the research design, explain the sampling process, operationalization of variables, and data analysis.

## RESULTS AND DISCUSSION

### Micro Business Risks in Traditional Markets

Previous studies have reported several key risks:

1. Dependence on cash transactions
2. Fluctuating raw material prices
3. Limited access to digital markets

Vulnerability to economic crises, or those that have occurred previously due to the Covid 19 epidemic, Micro-enterprises operating in traditional markets in Indonesia face various forms of risks, both internally and externally. Based on the analyzed literature (Wibowo, 2020; Yusuf & Kurniawati, 2021), these risks include:

1. Income Fluctuations due to dependence on physical market traffic and changes in consumer behavior shifting to online platforms.
2. Dependence on Cash Transactions, which makes businesses more vulnerable to losing opportunities when consumers prefer digital payments.
3. Business Competition Risk, especially with the presence of modern retail and e-commerce that offer higher prices and convenience.
4. External Crisis Risk, such as the COVID-19 pandemic, which drastically reduces the volume of market visitors and offline purchases.

A study by Putri and Santosa (2021) also underlines that many market traders do not have technology-based risk mitigation strategies, making them highly vulnerable to economic shocks.

### Technology Adaptation as a Risk Mitigation Effort :

Adoption of technology has been proven to be effective in reducing risks:

1. Social media increases business visibility by up to 15% (Hartono & Nugroho, 2022)
2. Financial applications improve cash flow control and financial decisions (Rahmawati, 2023)

Technology adaptation has emerged as a strategic response in reducing various forms of risk faced by micro-entrepreneurs.

Based on the review results from Hartono and Nugroho (2022), micro-enterprises that integrate technology experience: Increased visibility and market reach through social media such as WhatsApp, Instagram, and Facebook. Transaction efficiency through the use of QRIS and digital wallets, which not only speed up the payment process but also create automatic financial records. Better operational control through financial recording applications such as BukuWarung, AkuntansiKu, and the like. However, the level of adaptation is still uneven. Most business actors are still limited to using social media for promotion, and have not reached digital recording or e-commerce-based sales. Ramadhan (2025) that the adoption of digital technology contributes significantly to increasing the productivity and competitiveness of MSMEs, both through operational process efficiency and product and service innovation. Business feasibility studies play an important role in evaluating the benefits and risks of adopting digital technology, thereby helping MSMEs make decisions that are in line with long-term goals. Through market research and a better understanding of customer needs, MSMEs can produce unique solutions and differentiate themselves from competitors. This product and service innovation creates added value for customers and helps MSMEs win the competition in an increasingly competitive market. Rasmita (2024) financial constraints and lack of digital skills still hinder the adoption of technology. These findings emphasize the importance of an effective digitalization strategy and policy support to accelerate innovation in the MSME sector, thereby increasing their competitiveness in the global market.

## **Micro-Business Survival in the Context of Technology**

Business resilience can be measured through adaptability, innovation, and access to information. Misati et al. (2019) showed that technology increases the efficiency and flexibility of micro-businesses. However, the biggest obstacles are low digital capabilities and lack of infrastructure support (Putri & Santosa, 2021). Micro-business resilience is defined as the ability of a business to survive, adapt, and grow in a rapidly changing business environment. Misati et al. (2019) stated that this resilience is greatly influenced by:

1. Ability to innovate, such as modifying marketing and service methods.
2. Availability of information, especially access to market data and consumer trends.
3. Ability to adapt technology, which allows businesses to be more flexible in dealing with change

Several studies (Rahmawati, 2023; Yusuf & Kurniawati, 2021) show that micro-enterprises that have adopted at least two types of technology (for example, social media and digital transactions) tend to have a higher survival rate and more stable revenue growth compared to businesses that are completely conventional. Annazwa (2025) that the results of the study showed that MSMEs that implemented at least two of the four strategies had a 67% higher level of resilience than MSMEs that only implemented one strategy or none at all. The implementation of digital technology and the formation of collaborative networks are key factors in building the resilience of micro-enterprises amidst macroeconomic turmoil.

## **Inhibiting Factors of Technology Adaptation**

1. Literature shows that there are several determinants of technology adaptation:
2. Internal factors: age, education, individual motivation
3. External factors: digital training, community support, local policies, and infrastructure availability

Although technology adaptation provides significant benefits, micro-entrepreneurs in traditional markets still face various obstacles, including:

1. Low digital literacy – many elderly and basic educated entrepreneurs are not familiar with digital applications (Hartono, 2022).
2. Limited access to digital infrastructure – such as weak internet signals in traditional market areas and lack of adequate digital devices.
3. Lack of technical training and assistance from government or private agencies.
4. Fear of change and doubts about the effectiveness of technology, especially among micro-entrepreneurs with very traditional business models.

Recommendations from the Literature Review This literature review recommends that:

1. Community-based digitalization training needs to be improved, with a local and participatory approach.
2. Policy support from local governments, especially to provide internet connectivity, local digital platforms, and digital business device facilitation.
3. Collaboration between government, private sector, and academics to develop an integrated digital traditional market ecosystem, while still maintaining local wisdom.

## **III. CONCLUSIONS**

Literature analysis shows that technology adaptation has a strategic role in reducing risks and increasing the resilience of micro-enterprises in traditional markets. However, structural barriers such as low digital literacy and access to technology need to be addressed. This study explores technology adaptation as a key strategy for managing risks and enhancing the survival of micro-enterprises in traditional markets in Indonesia. Based on the literature reviewed, it is evident that technology adoption – ranging from digital payment systems and online platforms to basic management information tools – plays a significant role in helping micro-enterprises cope with external challenges such as pandemics, competition from modern retail, and shifts in consumer behavior. However, the level of technology adaptation among micro-entrepreneurs in traditional markets remains relatively low. This is primarily due to limited digital literacy, inadequate access to technological infrastructure,

and socio-cultural barriers. Low levels of technological awareness hinder effective utilization, while financial constraints limit investment in technology and training.

To improve the sustainability of micro-enterprises in traditional markets, strategic interventions are needed, including digital literacy programs, infrastructure support, and collaboration between government, private sector, and local communities. With the right support, technology adaptation can become a critical factor in enhancing the resilience and competitiveness of micro-enterprises in the digital era.

It is recommended:

- 1. Provision of community-based digital training.**
- 2. Micro-enterprise friendly policies for digitalization.**
- 3. Improvement of digital infrastructure in traditional markets.**

Further research can conduct empirical studies or evaluations of digital intervention programs directly in the field.

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