

Strengthening Rural Food SME Competitiveness through Digitalization and Village Cooperatives

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Abstract

The competitiveness of rural food micro, small, and medium enterprises (MSMEs) is constrained by limited market access, uneven digital literacy, and weak institutional support. This study aims to analyze these conditions and develop an integrative strategy for strengthening food MSME competitiveness through digitalization and the Merah Putih Village Cooperative (KDMP) in support of local economic development. A qualitative case study was conducted in Sekarpuro Village, Pakis District, Malang Regency. Data were collected through observations, semi-structured interviews, focus group discussions, and document analysis involving KDMP management, food MSMEs, village government, and subdistrict authorities. Data were analyzed using the interactive model of Miles, Huberman, and Saldaña, thematic analysis, and SWOT analysis. The findings show that KDMP functions as a coordination hub for MSME empowerment and digitalization, while its emerging digital information system supports institutional transparency and coordination. The study develops an Integrative Model for Strengthening Food MSME Competitiveness based on five stages: input, process, output, outcome, and impact. Conceptually, the model integrates the Resource-Based View (RBV), Dynamic Capabilities Theory, and Institutional Theory to explain how strategic resources, adaptive capabilities, and institutional coordination jointly strengthen competitiveness. The findings provide practical guidance for sustainable rural MSME empowerment and local economic development.

Keywords: Digitalization, Food MSMEs Competitiveness, Local Economic Development, Merah Putih Village Cooperative, SWOT Analysis.

1. Introduction

Micro, Small, and Medium-Sized Enterprises (MSMEs) are the backbone of Indonesia's economy because they make a significant contribution to employment, income equality, and national economic growth (Aftitah et al., 2024; Arifa et al., 2025). In the food sector, MSMEs not only serve as drivers of the local economy but also play a vital role in ensuring food security, increasing the value added of agricultural commodities, and promoting the well-being of rural communities. However, increasing market competition, shifts in consumer behavior toward the digital economy, and demands for supply chain efficiency require food MSMEs to transform their businesses in order to remain competitive.

The digitization of Indonesia's food sector still faces significant gaps, particularly among food-related MSMEs in rural areas (Astuti et al., 2025; Faturrahman et al., 2025). Digital transformation has not yet been fully realized because it is influenced not only by technological



factors but also by local economic structures that remain weak and unintegrated. Most food MSMEs still rely on conventional marketing, have limited capacity to utilize digital platforms, and are not yet able to integrate information technology into their production, distribution, or marketing processes. These conditions have prevented food MSMEs particularly those organized into farmers' groups from competing effectively in an increasingly competitive market, both at the regional and national levels (Benavides-Espinosa et al., 2024).

The growth of the digital economy is indeed opening up significant opportunities for food-related MSMEs to increase productivity and expand market access (Muthalib et al., 2025). The use of marketplaces, social media, digital payments, and business management apps has proven effective in improving operational efficiency, expanding marketing networks, strengthening customer relationships, and increasing the added value of products. Digitalization also enables the creation of shorter, more transparent, and more efficient supply chains, thereby enhancing the bargaining power of businesses within the digital economy ecosystem (Zahoor et al., 2023). However, various studies show that the success of digital transformation is not determined solely by the availability of technology, but is also influenced by human resource capacity, institutional support, access to financing, and a supportive business ecosystem.

The main challenges faced by food MSMEs in rural areas remain multidimensional. Limited market access causes most business owners to rely on middlemen, resulting in relatively low and unstable selling prices for their products. Long distribution chains reduce profit margins, while limited access to formal financing restricts MSMEs' ability to innovate, modernize equipment, and expand their businesses. On the other hand, the quality of packaging, branding, product certification, and digital marketing strategies remains suboptimal, preventing products from achieving their full value-added potential. These conditions are further exacerbated by low digital literacy among business owners, limited mentoring, and weak collaboration among stakeholders in the rural economic ecosystem. (Joshi et al., 2025; Rita & Nastiti, 2024).

In this context, the government, through Presidential Instruction No. 9 of 2025, initiated the establishment of the Merah Putih Village/Subdistrict Cooperatives as a national strategy to strengthen the village-based people's economy. The Merah Putih Village Cooperatives (KDMP) are expected to serve as community economic service centers by providing access to financing, distribution, marketing, logistics, business assistance, and the strengthening of marketing networks for local products. With these functions, village cooperatives have the potential to serve as economic intermediaries between MSME actors, farmer groups, financial institutions, the government, and digital markets. However, the implementation of this policy still faces challenges in the form of suboptimal integration between the institutional strengthening of cooperatives and the MSME digitization strategy, resulting in economic benefits that have not yet been maximized.

Previous studies have generally examined the digitization of MSMEs, digital marketing, product innovation, and the institutional strengthening of cooperatives as independent variables. Research on digital transformation has focused more on the aspects of technology adoption and digital marketing (Hidayat et al., 2025), meanwhile, research on cooperatives has focused more on institutional functions and access to financing. There is still very limited research that integrates business digitalization, institutional strengthening of the Merah Putih Village Cooperative, and enhancing the competitiveness of food-based MSMEs leveraging local potential into a single comprehensive strategic model. Consequently, there is a research gap in the form of the lack of an integrative model capable of explaining the synergistic

relationship between digitalization, village cooperative institutions, and the enhancement of the competitiveness of food-based MSMEs as part of strengthening the local economy.

Empirically, Pakis Subdistrict is one of the areas in Malang Regency with a fairly well-developed local economy. According to the 2026 Manggala Bhakti Praja MSME survey in Pakis Subdistrict, there are 423 MSME operators active in various business sectors, ranging from the food industry, handicrafts, fashion, and services to trade (Badan Pusat Statistik, 2021). This figure indicates that MSMEs play a strategic role as drivers of the local economy and as employers in the Pakis subdistrict. However, the majority of MSMEs are still micro-scale businesses with limited production capacity, access to digital marketing, business management, and the use of information technology in their business processes. This situation has prevented local products from achieving optimal competitiveness, particularly in the food sector, which holds significant potential for growth through innovation and digital transformation.

On the other hand, local economic institutions actually have sufficient resources to support the development of MSMEs. According to data from the Malang Regency Central Statistics Agency, Pakis Subdistrict has 69 cooperatives, consisting of 1 Village Unit Cooperative (KUD), 1 agricultural cooperative, 6 non-agricultural cooperatives, and 61 other cooperatives (Badan Pusat Statistik, 2021). This figure indicates that, institutionally, Pakis Subdistrict has relatively adequate economic infrastructure to serve as a foundation for strengthening MSMEs. However, these cooperatives have not yet fully functioned as drivers of digital transformation, marketing aggregators, providers of access to financing, or links between MSMEs and modern supply chains. As a result, the potential for synergy between cooperatives and MSMEs in building a competitive local economic ecosystem has not yet been optimally utilized. This situation is particularly relevant in light of the implementation of the “Merah Putih Village Cooperative” policy, which aims to position these cooperatives as economic service hubs for rural communities. If the existing capacity of cooperatives in Pakis Subdistrict can be integrated with business digitalization and capacity-building for food-sector MSMEs, a more efficient, inclusive, and sustainable local economic ecosystem will emerge.

Based on these conditions, this study offers an innovative approach in the form of an Integrative Model for Strengthening the Competitiveness of Food MSMEs, which integrates digital transformation with the strengthening of the role of the Merah Putih Village Cooperative in building a sustainable local economic ecosystem. This model views digitalization not merely as the adoption of technology, but as part of a village economic empowerment system that involves collaboration among food MSMEs, farmer groups, village cooperatives, local governments, and various other stakeholders. This integration is expected to improve market access, value chain efficiency, and product innovation; increase access to financing; and strengthen the sustainability of food MSMEs.

Therefore, this study aims to analyze the conditions and challenges faced by food-based MSMEs, evaluate the role of the Merah Putih Village Cooperative in supporting the enhancement of MSME competitiveness, identify the level of digital readiness among business operators, and formulate an integrative strategic model combining digitalization and village cooperatives to enhance the competitiveness of food-based MSMEs by leveraging local potential. The resulting model is expected to provide a theoretical contribution to the development of the concept of SME empowerment based on a digital ecosystem and to offer practical recommendations for the government, village cooperatives, and SME operators in strengthening the local economy in a sustainable manner.

2. Literature Review

This study employs three mutually integrated theoretical frameworks. The Resource-Based View (RBV) serves as the grand theory to explain that the competitive advantage of MSMEs is built through the management of the organization's strategic resources. Furthermore, Dynamic Capabilities Theory is used to explain the ability of MSMEs to adapt, develop, and transform these resources through the process of digitalization. Meanwhile, Institutional Theory is used to explain the importance of institutional support, particularly the role of the Merah Putih Village Cooperative as an institution that facilitates collaboration, mentoring, market access, and the strengthening of business networks. The integration of these three theories forms the conceptual basis for formulating a model to strengthen the competitiveness of food-based MSMEs through digitalization and village cooperatives, with a focus on strengthening the local economy.

2.1. Resource-Based View

The Resource-Based View (RBV) is one of the main theories explaining how organizations achieve competitive advantage through the management of strategic resources. According to Barney (1991), an organization will gain a competitive advantage if it possesses resources that are valuable, rare, inimitable, and non-substitutable. In the context of MSMEs, these resources are not limited to physical assets but also include digital capabilities, knowledge, business networks, the quality of human resources, and institutional support. Therefore, digitalization and the existence of the Merah Putih Village Cooperative can be viewed as strategic resources that strengthen MSMEs' ability to improve business efficiency, expand market access, and create sustainable competitive advantage. Recent studies indicate that RBV remains one of the most relevant theories for explaining the relationship between digital transformation and the competitiveness of MSMEs (Eravia & Samsir, 2025; Escob Barragan & Becker, 2025).

2.2. Dynamic Capabilities Theory

The Dynamic Capabilities Theory, developed by David J. Teece, explains that organizations must have the ability to identify opportunities (sensing), capitalize on opportunities (seizing), and undergo organizational transformation (transforming or reconfiguring) in order to adapt to changes in a dynamic business environment (Saeedikiya et al., 2024). In the digital economy era, these capabilities are crucial for MSMEs to develop innovations, improve operational efficiency, strengthen organizational agility, and respond quickly to changes in consumer behavior (Zhang et al., 2024). The digitalization facilitated by the Merah Putih Village Cooperative is a form of dynamic capability development because it not only provides access to digital technology but also enhances the ability of MSME actors to learn, adapt, build networks, and respond to market changes in a sustainable manner. This approach aligns with the concept of Dynamic Capabilities, which views digital transformation as a process of developing organizational capabilities, rather than merely the adoption of technology (Priyono & Hidayat, 2024). Various studies have also shown that dynamic capabilities contribute positively to increased competitiveness, organizational performance, and the success of digital transformation among MSMEs, particularly in dynamic and uncertain business environments (Saputra et al., 2024).

2.3. Institutional Theory and The Role of Village Cooperatives

Institutional Theory explains that an organization's success is influenced by its institutional environment, which consists of regulations, social norms, and interorganizational networks (Scott, 2013). Various studies show that the success of organizational transformation is influenced not only by internal resources but also by the quality of institutions that support the processes of adaptation, collaboration, and organizational legitimacy. Therefore, in this study, the Merah Putih Village Cooperative is positioned as a local economic institution that serves to connect MSME actors with the village government, subdistrict government, financial institutions, and markets, thereby fostering a more integrated business ecosystem (Kraus et al., 2022; Troise et al., 2022). This institutional role is important because digital transformation requires not only the adoption of technology, but also governance support, guidance, coordination, and collaboration among stakeholders that can accelerate the diffusion of digital innovations among MSMEs (Verhoef et al., 2021). Thus, cooperatives serve as institutional enablers that accelerate the implementation of digitalization while strengthening the MSME business ecosystem based on local potential.

2.4. Strengthening the Competitiveness of MSMEs through Digitalization and Village Cooperatives

The competitiveness of MSMEs refers to a business's ability to generate added value, ensure business sustainability, and respond effectively to changes in the business environment (Gupta & Jagtap, 2024; Hidayat et al., 2025). Digital transformation has become one of the key strategies for enhancing competitiveness through the use of social media, online marketplaces, digital payments, information systems, and technology-based marketing (Benavides-Espinosa et al., 2024; Rita & Nastiti, 2024). However, various studies show that the success of digitization is greatly influenced by institutional support, human resource capacity, business networks, and government policy (Faturrahman et al., 2025; Ndiata et al., 2025). Therefore, this study developed an integrative model that combines digitalization with the role of the Merah Putih Village Cooperative as a driver of the local economy. The model views digitalization and village cooperatives as a single, mutually complementary system for enhancing the competitiveness of food-related MSMEs and strengthening the local economy.

2.5. Previous Research

The study conducted by Hidayat et al. (2025) aimed to analyze strategies for strengthening the competitiveness of MSMEs through the use of digitalization and product innovation as a means of boosting the local economy. This study emphasizes that digital transformation such as the use of social media, online marketplaces, and digital marketing can expand market reach, improve operational efficiency, and strengthen relationships between MSME operators and consumers. In addition, product innovation is viewed as a key factor in creating added value, improving product quality, and building a competitive advantage for MSMEs amid increasingly dynamic market competition. Research findings indicate that the success of digitalization depends not only on the availability of technology but is also influenced by the level of digital literacy, the innovative capabilities of business owners, and support from various stakeholders. Enhancing human resource capacity through digital training and product development is a key strategy to enable MSMEs to adapt to changes in consumer behavior and developments in the digital economy. Thus, digitalization and product innovation have been shown to contribute to increased competitiveness among MSMEs while also having a positive impact on local economic growth.

Next, a study conducted by Gupta and Jagtap (2024) aimed to identify the various barriers faced by food MSMEs in India in adopting digital transformation and to formulate

digital implementation strategies capable of enhancing business competitiveness. This study employed a mixed-methods approach, combining a literature review with the Decision-Making Trial and Evaluation Laboratory (DEMATEL) method to analyze the relationships among factors hindering digital transformation. The results indicate that limited internet infrastructure, low digital literacy, insufficient capital, and weak organizational readiness are the primary barriers to digital transformation among food-sector MSMEs. The study also emphasizes that successful digitization requires government policy support, improved digital competencies among business owners, and collaboration among stakeholders so that digitization can enhance operational efficiency, market access, and the competitiveness of food-sector MSMEs.

Next, a study conducted by Benavides-Espinosa et al. (2024). analyzed the impact of digital transformation on agrifood business performance and examined the role of innovation capacity in improving company performance. The study was conducted on 98 agrifood MSMEs in Spain using a quantitative approach with Partial Least Squares Structural Equation Modeling (PLS-SEM) analysis. The results of this study indicate that digital transformation has a positive impact on improving the performance of agrifood businesses. Digitalization strengthens companies' innovation capabilities through improved customer service, new product development, digital marketing, and after-sales service. Furthermore, innovation capacity is a key factor that reinforces the relationship between digital transformation and increased competitiveness among agrifood companies. This study demonstrates that digitalization can enhance the competitiveness and performance of agrifood MSMEs through innovation. However, the study has not yet examined the role of local institutions as factors supporting the success of digital transformation. The proposed research offers a novel approach by incorporating the Merah Putih Village Cooperative as an institution that supports access to financing, business mentoring, strengthening of marketing networks, and enhancement of the digital capacity of agrifood MSMEs, thereby hopefully generating a more sustainable model for strengthening competitiveness.

Next, a study conducted by Permadi (2025) aimed to identify various barriers to the implementation of MSME digitalization in several regions in Indonesia using a case study approach. The study's findings indicate that the main challenges to digitalization include low digital literacy, limited technological infrastructure, insufficient access to financing, low human resource capacity, and suboptimal support from the government and local economic institutions. The study also confirms that the success of digital transformation is determined not only by the availability of technology, but also by the support of an ecosystem involving the government, financial institutions, and organizations that assist MSMEs.

3. Methods

This study employs a qualitative approach using a case study design to gain a comprehensive understanding of how the competitiveness of food-related MSMEs is enhanced through digitalization and support from the Merah Putih Village Cooperative within the context of the local economy. The case study approach was chosen because it allows for an in-depth exploration of the phenomenon based on real-world conditions, interactions among actors, and the evolving socioeconomic dynamics at the research site (Creswell, 2013; Yin, 2017).

3.1. Research Location

The research was conducted in Pakis Subdistrict, Malang Regency, focusing on Sekarpuro Village as a hub for food MSME activities and the implementation of the Merah Putih Village Cooperative. The location was selected through purposive sampling because the area possesses local economic potential supported by the presence of MSME operators, farmer groups, and village cooperatives, which contribute to strengthening the community-based economic ecosystem. Based on 2026 data from the Mangala Bhakti Praja MSME program in Pakis Subdistrict, there are 423 MSME operators spread across the Pakis Subdistrict, while according to the Malang Regency Central Statistics Agency, Pakis Subdistrict has 69 cooperatives consisting of Village Unit Cooperatives (KUD), agricultural cooperatives, non-agricultural cooperatives, and other cooperatives. These conditions make Pakis Subdistrict a representative location for examining the synergy between business digitalization and the institutional strengthening of cooperatives in enhancing the competitiveness of food-related SMEs.

3.2. Data Source and Data Analysis

Research informants were selected using purposive sampling, taking into account their ability to provide information relevant to the research objectives. The informants consisted of the management of the Merah Putih Village Cooperative in Sekarpuro Village, food MSME operators, the Chair of the KDMP, a representative from Pakis Subdistrict, and the MSME Coordinator. The study involved a total of informants, distributed across these stakeholder categories according to their roles and relevance to the research objectives. The criteria for informants included active involvement in business or institutional activities, experience in food marketing and production, and willingness to participate in the research process. should be replaced with the verified number from the field records before resubmission.

Data collection was conducted using a triangulation of methods, namely field observations, in-depth interviews, focus group discussions (FGDs), and a review of documents. Observations were used to identify the actual conditions of production, marketing, and the use of digital technology, as well as the role of cooperatives in supporting MSME activities. In-depth interviews were conducted using a semi-structured approach to explore the perceptions, experiences, obstacles, and needs of MSME actors and cooperative managers regarding digital transformation and strengthening business competitiveness. Furthermore, FGDs were held to build consensus among stakeholders regarding strategies for developing food-based MSMEs through digitalization and village cooperatives. The documentary review examined cooperative institutional documents, MSME data, local government reports, and statistical data from the Central Statistics Agency of Malang Regency.

Data analysis was conducted in stages using the interactive model developed by Miles, Huberman, and Saldaña, which includes data condensation, data presentation, and the drawing and verification of conclusions (Miles et al., 2014). Thematic analysis was used to identify patterns of problems, opportunities, and development strategies for food MSMEs. Subsequently, the analysis results were integrated with a Strengths, Weaknesses, Opportunities, and Threats (SWOT) analysis to formulate strategies for enhancing competitiveness based on the internal and external conditions of MSMEs as well as the institutional framework of village cooperatives. The integration of these two approaches resulted in the design of an Integrative Model for Strengthening the Competitiveness of Food MSMEs through Digitalization and the Merah Putih Village Cooperative, which serves as the conceptual output of this research.

To ensure the credibility of the research findings, source triangulation, methodological triangulation, and member checking with key informants were conducted. Source triangulation was carried out by comparing information obtained from MSME operators,

cooperative administrators, village officials, and subdistrict officials. Methodological triangulation was carried out by comparing the results of observations, interviews, focus group discussions (FGDs), and documentation. In addition, the interpretation of the research findings was reconfirmed with several key informants through a member checking process to ensure consistency between the research findings and the empirical conditions in the field.

4. Results and Discussion

4.1. Research Results

4.1.1. Institutional and Digital Findings

The findings indicate that the Merah Putih Village Cooperative (KDMP) in Sekarpuro Village has entered an operational phase as a village economic institution while its permanent building is still under construction (see Figure 1). Administrative, service, and coordination activities are temporarily conducted at the Sekarpuro Village Office. More importantly, the cooperative has begun to function as a coordination hub connecting the village government, Pakis Subdistrict Government, MSME coordinator, and food MSME actors. This coordination supports the dissemination of empowerment programs, business mentoring, capacity building, and digitalization initiatives. The evidence therefore suggests that the early institutional role of KDMP is defined less by physical infrastructure and more by its capacity to coordinate actors and resources within the local economic ecosystem.

Digitalization is emerging as a complementary dimension of this institutional role. KDMP has begun developing the Village Cooperative Information System (SIMKOPDES) to provide institutional information, while digital media are being encouraged for product promotion, stakeholder communication, and dissemination of MSME empowerment programs. For food MSMEs, the transition from predominantly conventional marketing toward digital channels is intended to expand market reach, strengthen product visibility, and improve access to broader marketing networks. At the same time, the findings show that digital readiness remains uneven, particularly in digital literacy, digital marketing skills, product branding, and the availability of human resources capable of managing digital systems. These limitations indicate that technology adoption must be accompanied by continuous mentoring and institutional support.



Figure 1. Merah Putih Village Cooperative (KDMP) in Sekarpuro Village

Source: Authors' documentation (2026)

The SWOT findings consolidate the internal and external conditions identified across the field data. The main strengths are KDMP's coordinating role, strong support from the

Sekarpuro Village and Pakis Subdistrict Governments, the potential base of MSMEs in Pakis Subdistrict, the emerging digital information system, and the commitment of cooperative leaders. The principal weaknesses are uneven digital literacy, inconsistent use of digital marketing, limited digital human-resource capacity, and cooperative infrastructure that is still under development. Opportunities include the national Merah Putih Village Cooperative policy, expanding digital platforms and marketplaces, government support for MSME digitalization, growing demand for local food products, and opportunities for collaboration with financial institutions and private-sector actors. Threats include competition from products outside the region, changing consumer preferences, uneven technological adaptability, digital transaction security risks, and changes in digital market policies.

Taken together, the SWOT analysis places KDMP Sekarpuro in a Strength-Opportunity (SO) position. The priority strategy is therefore to use existing institutional support and local MSME potential to accelerate digital transformation. The strategy includes strengthening digital literacy, developing social-media- and marketplace-based marketing, improving packaging and branding, integrating MSME information into cooperative services, and expanding business mentoring and stakeholder networks. This SO orientation also clarifies that digitalization should not be treated as a stand-alone technology program; it should be implemented as part of a coordinated village economic development system.

Meanwhile, the threats faced include increasing competition for food products in the digital market, rapidly changing consumer preferences, and the persistent digital capability gap among MSME actors. Further, the success of cooperative implementation is heavily influenced by consistent mentoring, member participation, and sustained policy support from various stakeholders. Based on the SWOT matrix, KDMP Sekarpuro's position falls under the Strength-Opportunity (SO) strategy, which involves leveraging institutional strengths and government support to optimize opportunities for digital transformation in enhancing the competitiveness of food MSMEs. This strategy is realized through strengthening institutional coordination, enhancing the digital capacity of MSME operators, developing the cooperative's information system, expanding digital marketing networks, and integrating cooperative services with various community economic empowerment programs. These findings indicate that the success of KDMP is determined not only by the existence of the cooperative organization but also by its ability to build a collaborative ecosystem that integrates institutional frameworks, digitalization, and SME empowerment as a unified strategy for local economic development.

4.1.2. SIMKOPDES and KDMP Digitalization

Digitalization of cooperative management can be seen in the interface of the KDMP Sekarpuro website as seen in Figure 2.



Figure 2. Merah Putih Village Cooperative (KDMP) Sekarpuro Website Interface
Source: Authors' documentation (2026)

The Strengths, Weaknesses, Opportunities, and Threats of the cooperative are detailed in the SWOT Analysis as in Table 1.

Table 1. SWOT Analysis of KDMP Sekarpuro

Factor	Research Findings
Strengths	The role of KDMP as a center for village economic coordination; support from the Sekarpuro Village Government and the Pakis Subdistrict; a significant number of MSMEs as a source of potential for local economic development; the emerging availability of a digital cooperative information system; and the commitment of cooperative leaders to support MSMEs.
Weaknesses	The level of digital literacy among some MSME operators still varies; digital marketing is not yet implemented uniformly; there is a shortage of human resources with digital skills; and the cooperative infrastructure is still under development, so services are not yet optimal.
Opportunities	The national policy on the Merah Putih Village Cooperative; the growing use of digital platforms and marketplaces; government support for MSME digitization programs; rising demand for local food products; opportunities for collaboration with financial institutions and the private sector.
Threats	Competition from out-of-region products via digital platforms; rapidly changing consumer behavior; the limited ability of some MSMEs to keep up with technological advancements; security risks associated with digital transactions; and changes in digital market policies.

Source: Authors' analysis (2026)

4.1.3. Impact Synthesis: Cooperative Strengthening and Digitalization

The findings suggest that KDMP's early institutionalization creates conditions for more coordinated MSME development. Rather than demonstrating a measurable causal effect on turnover or employment at this early stage, the evidence points to emerging impacts in three areas: institutional coordination, economic opportunity, and social participation. Institutionally, coordination among village and subdistrict authorities, KDMP, and MSME actors has become more structured. Economically, the integration of cooperative services and digitalization creates opportunities for wider market access, stronger product promotion, business mentoring, and improved access to information and financing. Socially, collective participation and trust in village economic institutions are being strengthened through shared programs and coordination mechanisms.

These impacts should be interpreted as early-stage outcomes rather than long-term effects. The cooperative is still strengthening its institutional capacity, and the available evidence does not yet establish quantified changes in income, turnover, employment, or productivity. The principal empirical contribution at this stage is therefore the identification of an institutional mechanism through which digitalization can be organized, supported, and sustained: KDMP connects local government resources, MSME needs, mentoring, information, and digital market opportunities. This mechanism provides the basis for the integrative model developed below.

4.1.4. Integrative Model for Strengthening Food MSME Competitiveness

The central conceptual contribution of this study is an Integrative Model that connects institutional support, digital transformation, MSME capacity building, competitiveness, and local economic development. The model is derived from the convergence of field observations, interviews, FGDs, documentary evidence, and SWOT analysis. Rather than treating digitalization and cooperative strengthening as separate interventions, the model positions

KDMP as an institutional enabler that coordinates resources, actors, and empowerment programs within one local economic ecosystem.

The model begins with institutional support and available local resources, including government commitment, the KDMP organization, MSME actors, and digital infrastructure. These inputs are translated into coordinated processes of mentoring, training, stakeholder coordination, digital information management, digital marketing, and business development. The immediate outputs are stronger institutional capacity and improved digital capabilities among MSME actors. These outputs are expected to support broader market access, stronger product value, and improved competitiveness, which in turn contribute to a more integrated and sustainable local economic ecosystem.

The model also clarifies the role of digitalization at two interconnected levels. At the institutional level, SIMKOPDES supports transparency and access to cooperative information. At the enterprise level, social media, marketplaces, digital marketing, and digital business practices provide mechanisms for improving visibility and market access. The two levels are connected through KDMP's coordination function, which can translate institutional support into practical services for MSME operators.

The FGD findings further indicate that MSME digitalization requires an institution capable of coordinating needs that individual business owners cannot address independently, including digital literacy, product development, mentoring, financing information, and marketing networks. Accordingly, the model treats collaboration as a cross-cutting mechanism rather than as a separate component. The resulting five-stage structure is presented immediately after Figure 3.

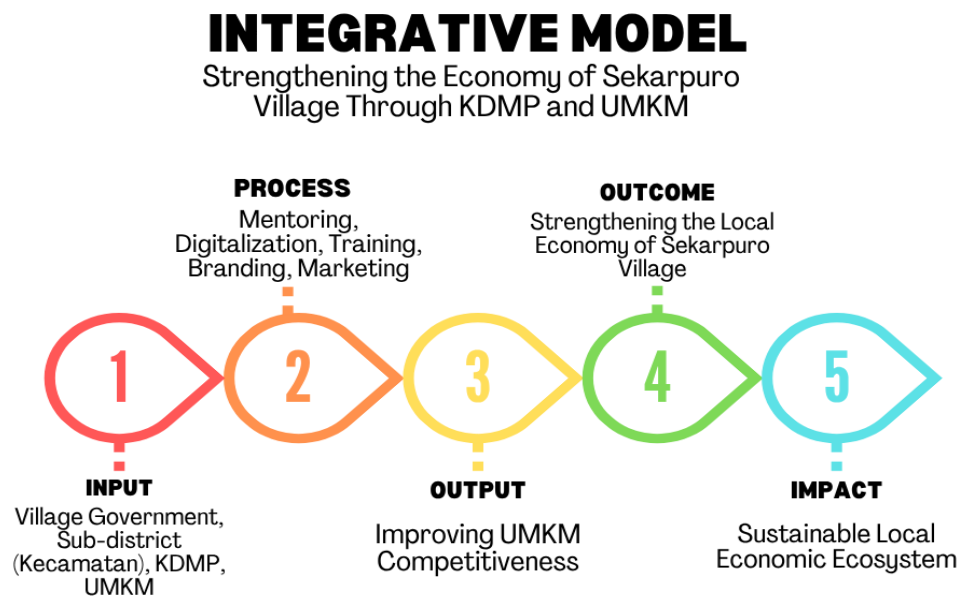


Figure 3. Integrative Model for Strengthening the Competitiveness of MSMEs in Sekarpuro Village

Source: Authors' analysis (2026)

The model positions KDMP as an institutional enabler that links strategic resources, adaptive capabilities, and institutional coordination. This interpretation is consistent with the Resource-Based View, Dynamic Capabilities Theory, and Institutional Theory, which together explain why digital transformation is more likely to generate sustainable competitiveness when technology is embedded in organizational capabilities and supportive institutions.

4.1.5. Five-Stage Structure of the Integrative Model

The Integrative Model presented in Figure 3 consists of five interconnected stages: Input, Process, Output, Outcome, and Impact. The five stages illustrate how institutional support provided by the Merah Putih Village Cooperative (KDMP), combined with digital transformation and MSME capacity building, is translated into improved competitiveness and sustainable local economic development. Rather than functioning as separate components, the five stages form a sequential and mutually reinforcing mechanism in which the output of one stage becomes an important foundation for the subsequent stage.

Table 2. Five-Stage Integrative Model for Strengthening Food MSME Competitiveness

Stage	Main Components	Key Activities/Mechanisms	Immediate Output
Input	Institutional support, human resources, digital infrastructure, MSME potential, government support, and cooperative resources	Identification of MSME needs, mobilization of institutional resources, stakeholder commitment, and provision of initial support	Available resources and institutional readiness for MSME development
Process	Institutional coordination, digital transformation, capacity building, mentoring, and stakeholder collaboration	Coordination between KDMP, village government, subdistrict government, MSME actors, and other stakeholders; digital literacy training; digital marketing; business mentoring; product development; and access to information and financing	Improved institutional coordination, digital capability, and MSME capacity
Output	Digital adoption, strengthened business capacity, improved product identity, and expanded marketing networks	Utilization of digital platforms, social media, marketplaces, SIMKOPDES, improved packaging and branding, business management development, and integration of MSME services through KDMP	Increased digital readiness, market connectivity, and business capability
Outcome	MSME competitiveness and improved business performance	Expansion of market access, stronger product value, improved marketing effectiveness, wider business networks, and increased ability to adapt to changing consumer and technological conditions	Stronger and more adaptive food-sector MSMEs
Impact	Sustainable local economic development and community welfare	Continuous collaboration, inclusive digital economic development, strengthened village economic institutions, and sustainable MSME development	A more resilient, inclusive, and sustainable local economic ecosystem

Source: Authors' analysis (2026)

Looking at the Table 2, the Input stage represents the foundational resources required to initiate the model. These inputs include the institutional presence of KDMP, government support, the potential of food-sector MSMEs, human resources, digital infrastructure, and the commitment of relevant stakeholders. In Sekarpuro Village, the establishment of KDMP and

the support provided by the village and subdistrict governments constitute important institutional resources for strengthening the local economic ecosystem

The Process stage transforms these resources into coordinated empowerment activities. The central mechanism is collaboration among KDMP, the village government, the subdistrict government, MSME operators, and other relevant stakeholders. At this stage, digital literacy improvement, business mentoring, product development, digital marketing, information dissemination, and access to financing are implemented. Thus, the process does not merely involve technology adoption but also the development of organizational and human capabilities needed to use digital technology effectively

The Output stage refers to the immediate changes generated by these processes. These include increased digital readiness among MSME operators, greater utilization of digital platforms, improved product branding and packaging, stronger business management capabilities, and broader marketing networks. The development of SIMKOPDES also represents an institutional output because it improves access to cooperative information and supports greater transparency in village economic services

The Outcome stage captures the medium-term effects of the model on MSME competitiveness. Improved digital capabilities and institutional support enable MSMEs to expand market access, strengthen product value, improve marketing practices, develop business networks, and respond more effectively to changes in consumer preferences and technological developments. Competitiveness, therefore, is understood not simply as increased sales but as the capacity of MSMEs to adapt, innovate, and maintain their position within an increasingly digital market

Finally, the Impact stage represents the longer-term contribution of the model to sustainable local economic development. The integration of institutional strengthening, digital transformation, and MSME capacity building is expected to create a more resilient and inclusive village economic ecosystem. In this stage, KDMP functions not merely as a cooperative business entity but as an institutional enabler that connects resources, government programs, digital services, MSME actors, and market opportunities. The ultimate impact is therefore reflected in sustainable MSME development, stronger local economic institutions, broader participation in the digital economy, and improved community economic welfare

The five stages demonstrate that digitalization should not be implemented as an isolated technological intervention. Its effectiveness depends on the availability of institutional resources, collaborative processes, capacity development, and continuous support. The model consequently positions KDMP as an institutional bridge that connects inputs and processes to measurable MSME outputs, competitiveness outcomes, and longer-term local economic impacts.

4.2. Discussion

The findings indicate that food MSME competitiveness in Sekarpuro is shaped by the interaction between digital capabilities and institutional coordination. The evidence does not support interpreting digitalization as a purely technological intervention. Instead, digital tools become more useful when an institution such as KDMP organizes mentoring, information, coordination, and access to networks. This finding extends the empirical meaning of digital transformation from technology adoption to capability development within a local economic ecosystem.

Although Hidayat et al. (2025) related digitalization and innovation to competitiveness and Gupta and Jagtap (2024) and Permadi (2025) highlighted barriers such as digital literacy and digital capability at the enterprise level, neither explored the institutional mechanism

underpinning digital adoption. This research gap is also not addressed by the research carried out by Benavides-Espinosa et al. (2024), whose study on agrifood sector also does not discuss the local institutions. The novelty of this research is bringing together the digitalization, MSME capability, and the institutions for cooperation within one village-level framework wherein KDMP serves as the mechanism transforming digital opportunities into capability through the integrative model explained through RBV, Dynamic Capabilities Theory, and Institutional Theory. Since KDMP is still at its initial stage, the results illustrate mechanisms and not causality of long-term effects.

From the Resource-Based View (RBV), the competitive resources identified in Sekarpuro include not only physical and financial resources but also intangible resources such as digital capabilities, institutional support, knowledge, and collaboration networks. KDMP and the supporting government institutions therefore function as strategic resources to the extent that they enable MSMEs to access and combine resources that individual micro-businesses may struggle to obtain independently. The contribution of the study is to show how these resources can be organized collectively at the village level.

The findings also reinforce Dynamic Capabilities Theory. The process of moving from conventional marketing toward digital platforms requires MSMEs to sense market opportunities, seize them through digital marketing and product development, and reconfigure business practices as consumer preferences and technologies change. In Sekarpuro, this adaptive process is still emerging; uneven digital literacy indicates that capability development is incomplete. Continuous mentoring is therefore not an auxiliary activity but a mechanism for enabling repeated learning and adaptation.

Institutional Theory provides a complementary explanation for why the transformation is occurring unevenly. Digitalization is embedded in a network of formal institutions, coordination practices, and stakeholder relationships. KDMP's emerging role as a coordination hub connects village and subdistrict authorities with MSME actors and development programs. Thus, institutional effectiveness determines whether available digital opportunities can be converted into practical business capabilities. The result is a governance mechanism in which technology, organizational learning, and institutional support reinforce one another.

The study's main conceptual contribution is the integration of these three perspectives into a single village-level competitiveness model. RBV explains what resources matter; Dynamic Capabilities Theory explains how actors develop and reconfigure those resources; and Institutional Theory explains how rules, relationships, and organizational arrangements enable or constrain the process. The five-stage model makes this integration operational by tracing the pathway from inputs and coordinated processes to outputs, outcomes, and longer-term impacts.

The model also establishes an important boundary for interpreting the findings. Because KDMP is still in an early institutional phase, the study identifies mechanisms and emerging outcomes rather than demonstrating long-term causal effects on income, employment, or productivity. Future evaluations can therefore use the model as a basis for tracking indicators such as digital adoption, market reach, sales channels, product value, access to finance, and business sustainability over time. This distinction strengthens the analytical contribution while avoiding claims that exceed the qualitative evidence.

Practically, the findings imply that local governments and KDMP managers should prioritize continuous digital mentoring, institutional capacity building, integrated information services, product branding, and cross-stakeholder marketing networks rather than isolated technology provision. The model may inform similar rural settings, but its

transferability should be assessed against differences in institutional capacity, MSME characteristics, digital infrastructure, and local market conditions.

5. Conclusion

This study finds that strengthening the competitiveness of rural food MSMEs in Sekarpuro requires the integration of digitalization, MSME capacity building, and cooperative governance. KDMP has begun to function as a coordination hub that connects village and subdistrict government support with MSME development activities, while its emerging digital information system provides an initial foundation for institutional transparency and communication. The SWOT analysis indicates an SO strategic position, supporting priorities such as digital literacy, digital marketing, branding, mentoring, and network development. The study's central contribution is the five-stage Integrative Model including input, process, output, outcome, and impact which explains how institutional resources and coordinated digitalization can be translated into stronger MSME capabilities and competitiveness. The model integrates RBV, Dynamic Capabilities Theory, and Institutional Theory by linking strategic resources, adaptive processes, and institutional arrangements. Because the KDMP remains at an early stage of development, the findings should be understood as evidence of emerging mechanisms and outcomes rather than quantified long-term impacts. The model nevertheless provides a structured basis for policy design and future evaluation of rural MSME empowerment, with replication depending on the institutional and socioeconomic characteristics of other villages.

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5.3. Conflict of Interest Statement

The authors report that there is no conflict of interest regarding the publication of this paper.

5.4. Author Contributions

A.T.H. & A.Y.: Conceptualization, Investigation, Formal analysis, Funding acquisition, Visualization Writing – Original Draft.

K.D.I.M.: Methodology, Supervision, Validation, Project administration, Writing – Review & Editing.

R.F.N.: Software, Data Curation, Resources.

5.5. Declaration of Generative AI and AI-assisted Technologies

In the process of preparing this paper, the authors employed Claude for language editing purposes and improving the grammatical clarity. All outputs provided by the AI tool have been critically reviewed and edited by the authors to make sure that they are accurate, clearly expressed, and follow academic standards. The authors assume full responsibility for the integrity and content of this manuscript.

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