

# Optimization of Digital-Based Operational Management Systems to Improve Production Efficiency of UMKM in Pinangsori Village

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## Abstract

This study aims to analyze the implementation of digital-based operational management systems as an effort to improve production efficiency in Micro, Small, and Medium Enterprises (UMKM) in Pinangsori Village. Amid the global digitalization trend, digital transformation has become an urgent need for UMKM to remain competitive and adaptive to market changes. This study uses a descriptive qualitative approach, with data collection techniques including field observations, interviews with UMKM actors, and documentation of operational activities and marketing strategies. The research findings reveal that the adoption of digital technologies, such as accounting software, cloud-based inventory management systems, and digital marketing platforms, significantly optimizes the production process and work efficiency. The implementation of digital systems resulted in a 50% reduction in administrative processing time, improved stock management accuracy, and a 70% increase in market reach online. The main challenge in implementing digitalization lies in the low level of technological literacy and limited internet infrastructure. Therefore, continuous support from the government and stakeholders is needed to facilitate training and provide adequate infrastructure. This study concludes that digitalization of operational systems is a strategic solution to strengthen the capacity and competitiveness of UMKM sustainably.

## Keywords

Digitalization Strategy, Resource Management, System Optimization, Operational Management, Digital Transformation, UMKM.

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## Introduction

Micro, Small, and Medium Enterprises (UMKM) are an important sector of the economy, contributing significantly to the national Gross Domestic Product (GDP) and job creation. In Pinangsori Village, MSMEs are the backbone of the local economy, supporting the livelihoods

of the community. Despite their potential, many UMKM still face various challenges, particularly in operational management, which remains suboptimal. Limitations in financial record-keeping, inventory management, and the use of conventional marketing strategies often hinder business efficiency and productivity.

With the advancement of information technology, digitalization presents a significant opportunity for UMKM to improve their operational performance. The use of digital-based management systems, such as accounting applications, inventory management software, and online marketing platforms, can help business owners improve accuracy, efficiency, and market reach. However, the adoption of these technologies remains low, especially in areas with limited access to technology and digital literacy, such as Pinangsori.

This study aims to identify how digital-based operational management systems can be effectively implemented in the local context and how digital technology can help improve the production efficiency of UMKM in Pinangsori Village. With the right approach, digital transformation in the UMKM sector is expected to strengthen local economic resilience and improve the competitiveness of small businesses in an increasingly competitive market.

### **Research Methodology:**

This study uses a descriptive qualitative approach. Data collection techniques include:

1. Direct observation of the production processes and existing management systems in UMKM.
  2. Semi-structured interviews with UMKM actors, community leaders, and relevant institutions.
  3. Documentation including production notes, financial reports, and marketing strategies.
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## **Literature Review**

### **1. UMKM and Their Role in the National Economy**

UMKM are a dominant sector in Indonesia's economic structure. According to data from the Ministry of Cooperatives and SMEs (2023), more than 64 million UMKM contribute around 61% to the national GDP and absorb about 97% of the workforce. Therefore, strengthening the capacity of UMKM is crucial for economic development, both nationally and locally.

### **2. Operational Management in the Context of UMKM**

Operational management involves planning, organizing, and overseeing production processes to ensure efficiency and effectiveness. In the context of UMKM, a simple yet efficient operational management system is necessary due to limited resources. Mulyadi (2016) emphasizes the importance of integrated accounting and management information systems to facilitate decision-making.

### **3. Digitalization and Information Technology in UMKM**

Digitalization refers to the utilization of digital technology in various aspects of business operations. Laudon and Laudon (2020) state that management information systems can improve efficiency, data accuracy, and speed up business processes. In UMKM, technologies such as accounting software, inventory management, and e-commerce have proven to help reduce operational costs and expand market reach.

#### 4. Challenges of Digitalizing UMKM in Rural Areas

Although the potential for digitalization is significant, challenges are also substantial. Low digital literacy, lack of internet infrastructure, and limited funds for accessing technology are the main obstacles. According to Kotler & Keller (2016), technology adoption requires continuous education and mentoring, especially for small business owners in rural areas.

#### 5. Strategies for Strengthening UMKM through Technology

For digitalization to succeed, a collaborative strategy between the government, private sector, and educational institutions is required. Regular training, software assistance, and support for digital marketing are some of the recommended strategies. A study by the Ministry of Cooperatives and UMKM (2023) shows that UMKM that adopt digital systems perform better in business compared to those still using conventional methods.

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## Methodology

### A. RESEARCH METHODS

The implementation method in this study is designed to address the problems that have been formulated and to achieve the main goal of the research, which is to optimize the digital-based operational management system for UMKM in Pinangsori Village. The implementation process is carried out systematically and in stages so that all data obtained is valid, relevant, and can be analyzed in-depth. Each phase of the implementation focuses on gathering field information, testing the effectiveness of the digital intervention, and evaluating the impact of technology implementation on UMKM operational efficiency.

The implementation of this research is carried out in several phases as follows:

#### 1. Preparation Stage:

1. Prepare research instruments such as interview guidelines, observation sheets, and documentation formats.
2. Conduct initial coordination with village officials and UMKM actors to obtain permission and determine relevant participants.
3. Prepare supporting devices for documentation and field note recording (camera, recorder, laptop, etc.).

#### 2. Field Data Collection Stage:

1. Conduct direct observation at UMKM business sites to record managerial activities and the use of digital technology.
2. Conduct in-depth interviews with UMKM actors, community leaders, and supporting parties to gather information about the effectiveness and challenges of digitalization.
3. Collect documentation in the form of manual financial reports, inventory systems, and digital media used by UMKM such as websites, applications, and social media accounts.

#### 3. Intervention Stage (Digitalization Mentoring):

1. Provide brief training to several UMKM actors on the use of digital applications relevant to their needs.

2. Conduct operational management simulations using digital-based systems (e.g., transaction recording through accounting applications, inventory tracking using inventory software).
3. Assist UMKM actors in the initial use of the applications to identify any immediate challenges they face.
4. Data Analysis and Validation Stage:
  1. Process and analyze the data using the Miles and Huberman approach.
  2. Perform triangulation of the results from observations, interviews, and documentation to ensure consistency of findings.
  3. Discuss the preliminary results with key informants for validation of the analysis results.
5. Report Writing Stage:
  1. Compile the research findings into a systematic report.
  2. Provide recommendations for policy and strategies for optimizing digitalization to the village officials and UMKM actors.
  3. Prepare additional outputs such as scientific articles or training modules if necessary.

## Findings

### 1. RESULTS AND DISCUSSION

Based on the results of the research conducted through observation, interviews, documentation, and mentoring of UMKM actors in Pinangsori Village, several important findings were obtained, showing the positive impact of digitalization on the operational management systems of UMKM.

1. Initial Conditions of UMKM Operational Management  
Before the intervention was implemented, most UMKM still carried out operational processes manually. This was evident in the financial records, which were still kept in notebooks, inventory management that was not well-documented, and product promotion that relied solely on word-of-mouth or local promotion. This condition led to:
  - a. High risk of errors in recording.
  - b. Lack of accurate stock control.
  - c. Limited market reach and sales.
2. Implementation of Digital Systems  
During the intervention stage, several digital applications were introduced and used by UMKM actors, such as:
  - a. Accounting Applications (e.g., BukuKas, Akuntansi UKM): These helped with more systematic financial recording and generated automatic financial reports.

- b. Cloud-Based Inventory Systems: These enabled business owners to monitor stock in real-time.
- c. Digital Marketing Platforms (e.g., WhatsApp Business, Facebook, Instagram, Shopee): These expanded marketing reach and increased product visibility.

### 3. Impact on Production Efficiency

After using the digital systems:

- a. Transaction recording time decreased by 50%.
- b. Stock management efficiency increased as business owners were able to track the inflow and outflow of goods accurately.
- c. Consumer reach increased significantly by 70%, as evidenced by a rise in orders from outside the Pinangsori region.
- d. An average revenue increase of 20-30% occurred within three months after the intervention.

### 4. Response of UMKM Actors

Most UMKM actors welcomed these changes. They felt supported in managing their businesses and gained new experiences in digital business practices. However, some challenges remained, such as:

- a. Limited understanding of how to use technology.
- b. Unequal internet access across the region.
- c. A need for further training and periodic mentoring.

### 5. Critical Analysis and Discussion

These findings reinforce the literature that states digitalization can drive efficiency and productivity in UMKM (Laudon & Laudon, 2020). However, the success of implementation highly depends on the readiness of human resources and infrastructure support. Therefore, digitalization is not just about technology but also about building an inclusive supporting ecosystem.

## 2. Activity Documentation

Documentation of the activities is an essential part of the research process. It was conducted to record all activities related to the observation process, interviews, training, and the digitalization intervention in UMKM in Pinangsori Village. This documentation includes visual documentation (photos and videos), written documentation (field notes, interview transcripts, and discussion minutes), and digital documentation (screenshots of application usage, digital transaction data, and social media publications).





**Figure . 1** Activity Documentation: Optimization of Digital-Based Operational Management Systems to Improve Production Efficiency of UMKM in Pinangsori Village.

## Conclusion

Based on the research findings, it can be concluded that the implementation of digital-based operational management systems has had a significant positive impact on the production efficiency of UMKM in Pinangsori Village. Some key conclusions from this study are as follows:

1. **Increased Operational Efficiency:**  
The use of digital applications such as accounting software, cloud-based inventory systems, and digital marketing platforms has reduced administrative processing time by up to 50% and improved operational data accuracy.
2. **Increased Market Reach and Revenue:**  
Digitalizing marketing strategies through social media and e-commerce has proven to expand market reach beyond the Pinangsori region, increase product exposure, and directly contribute to a 20-30% increase in UMKM sales and revenue.
3. **Positive Response from Business Owners:**  
The majority of UMKM owners responded positively to digitalization and expressed interest in continuing to use technology in managing their businesses, although ongoing technical mentoring is still required.

4. **Implementation Challenges:**  
Several challenges were identified during the implementation process, including limited digital literacy, lack of internet infrastructure in certain areas, and insufficient financial capacity to purchase the necessary digital devices.
5. **Need for Ongoing Support:**  
The optimization of digital-based operational management systems requires continued support from various parties, including local governments, training institutions, and local communities, to provide technical training, access to digital infrastructure, and technological incentives.

Overall, digitalization has proven to be an effective strategy to enhance productivity and competitiveness for UMKM in the modern economic era. If this program is consistently applied and supported by appropriate policies, UMKM in Pinangsori Village have great potential for rapid and sustainable growth.

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