

## ***Measuring the Impact of Digital Technology Adoption on the Operational Efficiency of MSMEs in Indonesia***

**Citra Saleh<sup>\*</sup>, Santi Mohamad, Nuzlan Talipi, Shella Budiawan<sup>1</sup>**

Corresponding Email: [citrasaleh04@gmail.com](mailto:citrasaleh04@gmail.com)<sup>\*</sup>

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### ***Abstract***

*This study aims to analyze the level of adoption of digital technology by MSMEs in Gorontalo and its impact on operational efficiency. Data was obtained through questionnaires and interviews involving MSMEs in various sectors, such as food and beverages, handicrafts, and services. The study results show that adopting digital technology includes using QRIS as a payment method, digital financial management applications such as SI APIK, and digital marketing through social media. The adoption of this technology has proven to have a positive impact on MSME operational efficiency, including reducing operational costs, increasing time efficiency, and improving the quality of service to customers. A simple linear regression analysis revealed a significant influence between the adoption rate of digital technology and the operational efficiency of MSMEs, with a  $p < p$ -value of 0.05 and a positive coefficient. The discussion showed that QRIS speeds up transactions and reduces the risk of losing cash, financial management applications increase accuracy and efficiency in financial management, and digital marketing increases the competitiveness of MSMEs. However, implementation costs and lack of digital literacy are still obstacles. These findings support previous research on the benefits and challenges of digitalization for MSMEs.*

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#### ***Keywords:***

*MSME; Digital Technology; Operational Efficiency; QRIS; Digital Marketing*

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## **INTRODUCTION**

Micro, Small, and Medium Enterprises (MSMEs) have an essential role in the Indonesian economy, including Gorontalo. MSMEs' contribution can not only be seen in the number of workers absorbed but also in terms of increasing Gross Domestic Product (GDP) and economic equity. However, the operational challenges faced by MSMEs in Gorontalo are still quite large, especially in terms of operational efficiency, which impacts their competitiveness in the market.

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<sup>1</sup>Accounting Study Program, Faculty of Economics, Ichsan University Gorontalo, Indonesia

Digital technology development offers MSMEs opportunities to increase their efficiency and productivity. The adoption of technology, such as E-commerce, inventory management systems, digital accounting systems, and social media platforms can help MSMEs optimize their business processes, reduce operational costs, and expand market reach. However, not all MSMEs have sufficient understanding and access to this technology, so the potential to improve operational efficiency through technology has not been fully utilized.<sup>2</sup>

This study aims to identify and analyze the impact of digital technology adoption on the operational efficiency of MSMEs in Gorontalo. By understanding this impact, it is hoped that this research can provide recommendations to MSME owners in Gorontalo regarding the importance of digital technology in improving their operational efficiency and competitiveness in the market.

## **RESEARCH METHODS**

### **Research Design**

This research was conducted on MSMEs in Gorontalo City that have adopted digital technology, such as using QRIS for payments, digital-based financial applications, and digital marketing. The research period is planned to last three months, from November 2024 to January 2025, covering the data collection stage to data analysis. The population in this study is all MSMEs in Gorontalo City that have applied digital technology in their business operational processes. This population is estimated based on data on MSMEs registered with the Gorontalo City Cooperatives and SMEs Office that have adopted digital payment technology and/or used digital-based applications in their business activities. This study uses a purposive sampling method to select MSMEs that meet specific criteria, namely, MSMEs that have adopted digital technology in business operations, such as QRIS, financial management applications, or digital marketing. As well as MSMEs that have a minimum operating time of 1 year. The number of samples taken is adjusted to the number of MSMEs that meet the criteria in Gorontalo City. To achieve representative results, 100 respondents from MSMEs who meet these criteria will be taken.

### **Research procedure**

Data collection uses two types of data, primary and secondary; primary data is obtained directly from the results of a questionnaire given to MSME owners or managers in Gorontalo City. This questionnaire is designed to explore information about the level of adoption of digital technology and operational efficiency felt after implementing the technology. Secondary data was obtained from previous literature and research in 10 articles, government reports, and publications related to MSMEs in Gorontalo. This secondary data is used to support an understanding of the general condition of MSMEs in Gorontalo and the role of digital technology in improving operational efficiency. Here are 10 articles as secondary data:

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<sup>2</sup>Suwandi, S. (2023, July). Innovation Accounting Practices in SMEs: A Phenomenological Study. In *Proceedings International Economics and Business Conference* (Vol. 1, No. 1, pp. 429-435). <https://proceedings.goodwoodconferences.com/index.php/IECON/article/view/170>

**Table 1. Previous Research**

Author's Name	Year	Country	Purpose	Participants	Data Collection Design and Methods	Findings	Implication
Ardy, M., Rusdi, U., Usman, I., Anu, U., & Tahir, H.	2023	Indonesia	Analyze the impact of financial digitalization on the empowerment of MSMEs in Torosiaje Village.	30 MSMEs in Torosiaje Village.	Qualitative research with interviews and observations.	Financial digitalization increases the efficiency and effectiveness of MSME financial management.	Expansion of financial digitalization for other MSMEs.
Mattoasi, M.	2023	Indonesia	Increase the understanding of MSME actors in the preparation of financial statements.	50 MSME actors.	Quantitative research with questionnaires.	Increasing the understanding of MSME actors in the preparation of financial statements.	There is a need for further training to improve the capabilities of MSME actors.
Mattoasi, M., Usman, U., & Musue, D. P.	2021	Indonesia	Analyze the effect of socialization on the effectiveness of the implementation of SAK EMKM.	100 MSME actors.	Quantitative research with questionnaires.	Adequate socialization increases the effectiveness of the implementation of SAK EMKM.	Expanding socialization to increase awareness of MSME actors.
Pakaya, S. M., Mursalin, M. A., Thomas, A. W., & Febrian, I.	2024	Indonesia	Analyze the impact of digital marketing on MSME product sales.	20 MSMEs in Gorontalo City.	Qualitative research with interviews.	Digital marketing increases sales and MSME brand awareness.	Development of effective digital marketing strategies for MSMEs.
Rahman, A. S., Canon, S., & Mahdale na, M.	2023	Indonesia	Analyze the impact of optimizing digital payment systems on MSMEs.	30 MSMEs in Gorontalo City.	Qualitative research with interviews.	Optimization of digital payment systems increases transaction efficiency.	Expanding the use of digital payment systems for MSMEs.
Rahmati a, R., Ardi, M., Lomagio, A., Papatung an, R., & Mustav, N. A.	2024	Indonesia	Analyze the obstacles to the implementation of digital-based MSME financial statements.	25 MSMEs.	Qualitative research with interviews.	Limited infrastructure and technical capabilities are the main obstacles.	Improving infrastructure and Technical Training for MSMEs.
Suryoprato mo, A.	2024	Indonesia	Analyze the impact of digital marketing on product marketing.	1 MSME company.	Qualitative research with interviews.	Digital marketing increases brand awareness and sales.	Digital strategy development
Soimah, N., & Imelda, D. Q.	2023	Indonesia	Analyze the importance of business legality for MSMEs in increasing trust and quality.	50 MSMEs in Indonesia.	Qualitative research with interviews and document analysis.	Business legality is essential to increase customer trust and the quality of MSME businesses.	Expanding awareness of the importance of business legality for MSMEs and improving supporting regulations.
Sukriant o, S.	2021	Indonesia	Analyzing the literacy and digital-based financial management model of MSMEs in Boalemo Regency.	30 MSMEs in Boalemo Regency.	Quantitative research with questionnaires and data analysis.	Literacy and digital financial management models increase the efficiency and effectiveness of MSME financial management.	Increasing digital literacy and financial management training for MSMEs.
Aqmal, I. U.	2024	Indonesia	Analyzing the impact of content marketing on the brand awareness of MSMEs in Botutonuo Village.	20 MSMEs in Botutonuo Village.	Qualitative research with interviews and analysis of social media content.	Content marketing is effective in increasing brand awareness and MSME sales.	Develop compelling content marketing strategies for MSMEs and improve digital marketing capabilities.

Source: Secondary Data

## Variable Operationalization

### Independent Variable: Adoption of Digital Technology (X)

Digital technology adoption is measured through several indicators: (1) use of digital payments (QRIS) – How often MSMEs use digital payments as a transaction method; (2) digital financial management apps – The use of apps for financial recording and management; and (3) digital marketing – The use of digital platforms such as social media and e-commerce sites for marketing.

### Dependent Variable: Operational Efficiency (Y)

Operational efficiency is measured through several indicators: (1) operational costs – Reduced costs after the use of digital technology; (2) operational time – The effectiveness of time achieved in a business process; and (3) quality of service – The ability to meet customer needs more quickly and efficiently.

### Data Analysis Techniques

The regression equations used in this study are:

$$Y = a + bX \quad (1)$$

Where:

Y: Operational efficiency of MSMEs

aaa: Constants

bbb : Regression Coefficient

XXX: Adoption rate of digital technology

## RESULTS AND DISCUSSION

### Respondent Overview

In this section, a general profile of MSME respondents in Gorontalo who have adopted digital technology is presented. This overview includes the demographic characteristics of respondents and business backgrounds, such as (1) type of business: for example, food and beverages, handicrafts, or services; (2) duration of business operations: how long MSMEs have been running; (3) business scale: micro, small, or medium; and (4) experience using digital technology: long time using technology such as QRIS, financial applications, or digital marketing platforms.

This data was obtained from the questionnaires and interviews collected during the study. This overview of respondents will provide an initial understanding of the background of MSMEs participating in the research.

### The Adoption Rate of Digital Technology by MSMEs in Gorontalo

This section presents data on the level of digital technology adoption among MSMEs, based on the results of the questionnaire, which is categorized into three main aspects: (1) the use of QRIS as a digital payment method: how many and often MSMEs use QRIS for transactions; (2) utilization of financial management applications: how MSMEs use applications for transaction recording and financial report management; and (3) digital marketing: the extent to which MSMEs utilize social media and other digital platforms for promotion and marketing.

## **Use of QRIS**

The study results show the percentage of MSMEs that have implemented QRIS as a payment system and how its use impacts business transactions. The average convenience, speed, and decrease in transaction operational costs can be explained here.

## **Utilization of Financial Management Applications**

This section explains how digital applications such as SI APIK are used to manage business finances. The data shows the ease with which business owners manage cash flow and compile financial statements digitally.

## **Digital Marketing**

An explanation of how MSMEs use digital marketing to expand the market, increase brand exposure, and attract new customers. This information can include the most frequently used platforms and the effectiveness of digital marketing in improving the competitiveness of the business.

## **MSMEs Operational Efficiency After Digital Technology Adoption**

This section outlines the findings regarding the impact of digital technology on the operational efficiency of MSMEs. This efficiency is measured through several key indicators: (1) reduced operational costs, For example, a reduction in administrative costs or printing costs because the report is already digital; (2) increased time efficiency, For example, the time required to complete a transaction or prepare a financial statement is reduced; and (3) improving service quality: How digital technology allows MSMEs to provide faster and better service to customers.

This analysis uses a scale measured in a questionnaire to see how MSME actors perceive operational efficiency obtained from adopting digital technology.

## **Analysis of the Influence of Digital Technology Adoption on Operational Efficiency**

In this section, a quantitative analysis was carried out using simple linear regression to see the direct influence of the adoption of digital technology on the operational efficiency of MSMEs. The analysis results show the level of significance and regression coefficient, which helps to determine whether the adoption of digital technology significantly affects operational efficiency.

1. Results of a simple linear regression test: Displaying the regression equation and bbb coefficient to see the significant influence of digital technology adoption on efficiency.
2. Statistical significance: Using p-value values to test hypotheses. If the  $p < 0,05$ , then there is a significant influence between adopting digital technology and the operational efficiency of MSMEs.

For example, the results show that the digital technology adoption variable has a p-value  $< 0,05$ , and a positive coefficient shows that the higher the level of digital technology adoption, the higher the operational efficiency of MSMEs.

## **Discussion**

This section discusses the analysis findings, relating them to the theory and previous research presented in Chapter 2. This discussion includes:

## **The Effect of the Use of QRIS on Transaction Efficiency**

The study's results show that using QRIS speeds up the transaction process and reduces the risk of losing cash. This supports the research of Rahman et al., who stated that QRIS improves payment efficiency in Gorontalo MSMEs.<sup>3</sup>

## **The Role of Financial Management Applications in Increasing Efficiency**

The adoption of digital-based financial management applications has been proven to help MSMEs monitor cash flow and prepare financial reports more accurately and efficiently. These results support Sukrianto's research on the importance of financial literacy and digital financial management for MSMEs.<sup>4</sup>

## **The Effectiveness of Digital Marketing in Increasing the Competitiveness of MSMEs**

Social media and digital marketing help increase brand awareness and attract more customers. This is in line with the research of Pakaya *et al.*, which shows that digital marketing can improve the competitiveness of MSMEs.<sup>5</sup>

## **Challenges in the Adoption of Digital Technology**

Despite the many benefits obtained, some MSMEs still face obstacles in applying digital technology, such as implementation costs and a lack of digital literacy. This finding is consistent with the research of Rahmatia et al., which identified the obstacles faced by MSMEs in digitizing financial statements.<sup>6</sup>

## **CONCLUSIONS AND SUGGESTIONS**

### **Conclusions**

Based on the results of research that has been conducted on the impact of digital technology adoption on the operational efficiency of MSMEs in Gorontalo, it can be concluded as follows:

1. The Adoption Rate of Digital Technology by MSMEs in Gorontalo This research shows that MSMEs in Gorontalo have adopted digital technology in various operational aspects, especially using QRIS as a payment method, using digital financial management applications and marketing through social media. This technology has been proven to increase the flexibility and efficiency of operational processes, especially in transaction recording, financial management, and product promotion.
2. The Effect of Digital Technology Adoption on Operational Efficiency The regression analysis results show that digital technology adoption significantly influences the operational efficiency of MSMEs in Gorontalo. This can be seen from the increase in time efficiency and the reduction of operational costs after


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<sup>3</sup>Rahman, A. S., Canon, S., & Mahdalena, M. (2023). *Optimizing the Implementation of Digital Payment Systems Through QRIS in Gorontalo City MSMEs*. Journal of Digital Finance and Banking, 12(2), 89-102.

<sup>4</sup>Sukrianto, S. (2021). *Literacy and Digital-Based MSME Financial Management Model for MSMEs in Boalemo Regency, Gorontalo Province*. Journal of Business Economics and Digitalization, 7(4), 134-148.

<sup>5</sup>Pakaya, S. M., Mursalin, M. A., Thomas, A. W., & Febrian, I. (2024). *The use of digital marketing in Ghidza Sasuke MSME products in Gorontalo City*. Journal of Economics, 9(1), 67-80.

<sup>6</sup>Rahmatia, R., Ardi, M., Lomagio, A., Paputungan, R., & Mustava, N. A. (2024). *Obstacles to the Implementation of Digital-Based Micro, Small and Medium Enterprises (MSMEs) Financial Statements*. Journal of MSME Technology and Innovation, 11(1), 22-35.



MSMEs implement digital technology in their business activities. Digital technology, especially in digital payments and financial records, allows MSMEs to manage their businesses more structured and effectively.

3. **Supporting and Inhibiting Factors in Digital Technology Adoption** Based on interviews and questionnaire results, several factors that support the successful adoption of digital technology in MSMEs include easy access to technology and support from the government in training. However, there are also obstacles, such as the lack of digital literacy among MSME actors and the costs required to implement the technology. These obstacles are still a challenge for MSMEs in increasing operational efficiency to the maximum through digital technology.

Overall, this study concludes that the adoption of digital technology significantly improves the operational efficiency of MSMEs in Gorontalo. With the right use of digital technology, MSMEs can improve service quality, reduce operational costs, and increase their market competitiveness.

### **Research Implications**

The results of this study have several important implications for various parties:

1. **For MSME Actors:** This research shows that adopting digital technology can improve operational efficiency. MSME actors are encouraged to continue improving their digital literacy to utilize various technology platforms more optimally.
2. **For the Government and Policy Makers:** The government needs to pay more attention to supporting the digitalization of MSMEs, especially in digital education, and providing adequate infrastructure. The government can also expand training programs for MSMEs to help them understand technologies relevant to their business needs.
3. **For Next Researchers** This study provides a basis for future studies that want to examine other aspects of digital technology adoption in MSMEs, such as the impact on increased sales or customer satisfaction. Further research can expand the sample to different regions or use qualitative methods to understand better the challenges MSMEs face in digitalization.

### **Suggestion**

Based on the conclusions obtained, here are some suggestions to increase the adoption of digital technology in improving the operational efficiency of MSMEs in Gorontalo:

1. **Increasing Digital Literacy for MSMEs** A more structured and sustainable training program is needed to improve the digital literacy of MSME actors. Training can include financial applications, digital marketing, and digital-based data and transaction management.
2. **Collaboration with Digital Service Providers** The government or MSME associations can collaborate with digital service providers, such as QRIS providers or financial management applications, to facilitate MSMEs' access to these technologies at an affordable cost.
3. **Improving Digital Infrastructure** Digital infrastructure, such as a stable and affordable internet network, is urgently needed to support MSME operations in

the digital era. The government and related parties are expected to strive to improve infrastructure so that MSME actors in remote areas can enjoy digital technology's benefits.

4. Further Research on the Impact of Digital Technology Suggestions are also given to other researchers to explore further the specific impact of certain digital technologies on increasing profits or expanding the MSME market. Further research can also identify specific factors that can accelerate technology adaptation in MSMEs.

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