

# Factors of Information Technology Adoption in Culinary MSMEs in Minahasa

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## ABSTRACT

Adopting information technology (IT) plays an important role in increasing the competitiveness and efficiency of culinary micro, small, and medium enterprises (MSMEs), especially in the Minahasa region, rich in local culinary traditions. This study aims to identify the factors that affect the adoption of IT in culinary MSMEs in Minahasa. A quantitative approach is used by collecting data from MSME owners through surveys designed to explore the technology, organizational, and environmental dimensions. The results of the analysis show that factors such as perception of ease of use, implementation cost, government support, and competitive pressure have a significant influence on IT adoption decisions. The study also found that the level of digital literacy of MSME owners and access to IT infrastructure are key elements that support the adoption process. This research provides insights for policymakers and practitioners in designing relevant and sustainable strategies to increase IT adoption to strengthen the culinary MSME sector in Minahasa.

**Keywords:** information technology, culinary MSMEs, technology adoption, Minahasa, digital literacy

## INTRODUCTION

Micro, Small, and Medium Enterprises (MSMEs) have a strategic role in the Indonesian economy, especially in areas with high cultural and tourism potential, such as Minahasa. Culinary MSMEs in this region are not only guardians of traditional culinary wealth but also contribute significantly to the employment and income of the local community. However, the challenges of globalization and technological developments require MSMEs to continue to adapt to survive and compete in the digital era. Information technology (IT) has proven to be a key enabler in improving operational efficiency, expanding market reach, and creating innovations in MSMEs. Through the adoption of IT, MSMEs can access digital platforms for marketing, financial management, and inventory management (Ahmad et al., 2019). However, the adoption of IT among MSMEs, especially culinary MSMEs in Minahasa, still faces various obstacles. These obstacles include limited digital literacy, the cost of technology implementation, and the lack of supporting infrastructure in this region.

Culinary MSMEs in Minahasa have a strategic role in maintaining local cultural heritage and supporting the regional economy. However, in the increasingly competitive digital era, many culinary MSMEs in this region still face challenges in utilizing information technology (IT) to support their business activities. While research shows that IT adoption can help MSMEs improve operational efficiency, expand market reach, and increase competitiveness, in reality, the rate of IT adoption among culinary MSMEs in Minahasa is still relatively low. Some potential factors that affect low IT adoption in this sector include internal constraints such as limited digital literacy of business owners, limited funds for technology investment, and a lack of understanding of the benefits of IT. In addition, external factors such as lack of access to IT infrastructure, suboptimal government support, and competitive pressure from other businesses can also be obstacles. However, so far, there is still a gap in the deep understanding of how these factors interact and influence IT adoption decisions among culinary MSMEs in Minahasa.

The fundamental question that arises is: What are the main factors that affect the adoption of information technology by culinary MSMEs in Minahasa? Furthermore, what is the interaction between technology, organization, and environmental factors in the adoption process? This research is important because without a clear understanding of the barriers and drivers of IT adoption, culinary MSMEs in Minahasa risk losing the opportunity to compete in an increasingly digital market. This research aims to fill this gap by comprehensively exploring the factors that affect IT adoption, as well as providing data-driven recommendations for stakeholders to design relevant and applicable strategies in driving the digital transformation of MSMEs in the culinary sector.

Previous research on the adoption of information technology (IT) in MSMEs, including in the culinary sector, has provided various solutions aimed at overcoming challenges and encouraging digital transformation. In general, these solutions can be grouped into three main dimensions based on the Technology-Organization-Environment (TOE) framework: technology, organization, and environment. Researchers have highlighted the importance of providing technology that suits the needs and capacities of MSMEs (Alshamaila et al., 2018). For example, Simple and Affordable IT Platform: Solutions in the form of cloud-based software for accounting, stock management, and digital

marketing have been designed to be easy to use for MSMEs with limited digital literacy. Technical Training: Many studies recommend technical training to improve the understanding of MSME owners and staff regarding the use of digital tools, such as digital payment applications and e-commerce platforms (Cruz-Jesus et al., 2019). Solutions at the organizational level focus on strengthening the internal of MSMEs, including Improving Digital Literacy. Several studies propose training programs specifically designed for small business owners to make them more confident in using technology in their daily activities. Digital Business Model: Other researchers recommend the adoption of digital-based business models, such as food delivery services through apps or the sale of culinary products through e-commerce platforms (Dwivedi et al., 2019). External factors are often the main driver or hindrance in IT adoption. The solutions offered include Government Support: Assistance programs in the form of technology subsidies, free training, and supporting policies such as regulations to make it easier for MSMEs to access technology. Partnerships with the Private Sector: Previous researchers have emphasized the importance of collaboration between MSMEs and technology providers, educational institutions, and local communities to create an inclusive digital ecosystem. IT infrastructure: Solutions in the form of increased internet access in remote areas, such as the provision of affordable broadband connections, are often the focus of research (Gangwar et al., 2019). Relevant Case Studies Several studies show the success of culinary MSMEs in other regions through initiatives such as digital incubator programs or direct mentoring from technology mentors. This gives a clear picture that practical solutions can be adapted to the local context in Minahasa. From these various solutions, it is clear that the successful adoption of IT in culinary MSMEs depends on the synergy between appropriate technology, internal readiness of the organization, and adequate external environmental support. This study will deepen the analysis related to the relevance and sustainability of these solutions in the specific context of culinary MSMEs in Minahasa.

This study aims to identify the factors that affect the adoption of IT in culinary MSMEs in Minahasa. Using the Technology-Organization-Environment (TOE) Framework approach, this research will explore how aspects of technology, organization, and environment contribute to IT adoption decisions. This study is expected to provide a deeper understanding of the dynamics of IT adoption in the culinary MSME sector and serve as a foundation for policymakers and stakeholders to develop effective and inclusive strategies in driving digital transformation. Through this research, it is hoped that culinary MSMEs in Minahasa can optimally utilize information technology to strengthen their competitiveness, preserve local culinary wealth, and contribute to sustainable economic development in the area.

## METHOD

This study uses a quantitative approach to identify and analyze factors that affect the adoption of information technology (IT) in culinary MSMEs in Minahasa. The Technology-Organization-Environment (TOE) framework is used as a theoretical basis for grouping the analyzed factors into three main dimensions: technology, organization, and environment.

### 1. Research Design

This research is in the form of a descriptive-analytical survey. Data were collected through a structured questionnaire designed based on the relevant indicators of the TOE framework. Data analysis was conducted to understand the relationship between various factors and IT adoption rates.

### 2. Population and Sample

The research population is all culinary MSMEs operating in the Minahasa area. The sample was determined using the purposive sampling technique, with the following criteria:

- a) MSMEs engaged in the culinary sector, such as restaurants, food stalls, caterers, or snack sellers.
- b) MSME owners or managers who have direct experience in decision-making related to the use of IT.
- c) MSMEs that have been operating for at least one year.

The sample size was determined based on the Slovin formula with a margin of error of 5%, and was taken from several sub-districts representing the Minahasa region. The number of samples is 150 MSMEs

### 3. Research Instruments

The questionnaire used in this study consists of several parts:

- a) Part I: Demographic Data includes information on age, education, type of business, and length of operation of MSMEs.
- b) Part II: Technology Dimensions includes the perception of ease of use, relative benefits, and compatibility of IT with business needs.
- c) Part III: Organizational Dimensions include digital literacy, human resources, and owners' commitment to innovation.
- d) Part IV: Environmental Dimensions include access to IT infrastructure, government support, and competitive pressures.

### 4. Data Collection

Data was collected through a direct survey using a questionnaire filled out by respondents. In addition, semi-structured interviews were conducted to gain additional insights from several MSME actors represented.

### 5. Data Analysis

The data obtained were analyzed using descriptive and inferential statistical techniques, with the following steps:

- a) Descriptive Statistics: To describe the characteristics of respondents and the distribution of research factors.

- b) Logistic Regression Analysis: To test the relationship between factors in the technology, organizational, and environmental dimensions and IT adoption rates.
- c) Validity and Reliability Test: To ensure that the research instrument produces consistent and valid data.

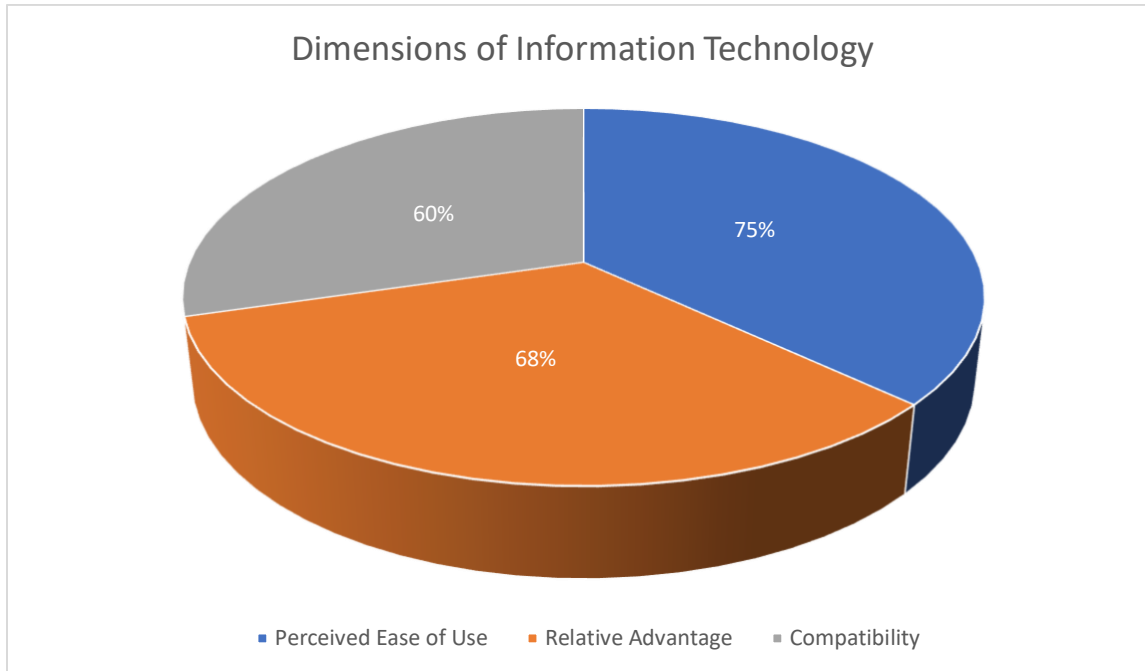
## RESULTS AND DISCUSSION

This research produced several important findings related to factors that affect the adoption of information technology (IT) in culinary MSMEs in Minahasa. Based on the data analysis carried out, the main results are summarized in the three dimensions of the Technology-Organization-Environment (TOE) framework as follows:

### 1. Technology Dimension

The results of this study show that there is Ease of Use of Information Technology namely Most respondents (75%) stated that the ease of use of IT, such as digital payment applications or online marketing platforms, is the main factor driving adoption. MSMEs that consider IT easy to learn and use are more likely to integrate the technology into their daily operations. In addition, the results of this study also show that as many as 68% of respondents believe that IT provides significant benefits, such as increased efficiency and access to a wider market. However, about 32% of others are still hesitant, mainly due to a lack of understanding of the potential of IT. Compatibility: Technologies designed to meet the specific needs of culinary MSMEs are being adopted more quickly. MSMEs that offer delivery services, for example, are more likely to use digital platforms than those that operate traditionally.

This study also analyzes factors in the technological dimension that affect the adoption of information technology (IT) in culinary MSMEs in Minahasa. The findings are supported by quantitative data from a survey of 150 respondents and qualitative data from in-depth interviews with ten culinary business actors. See Figure 1.



**Figure 1.** Dimensions of Information Technology

**Perceived Ease of Use:** 75% of respondents stated that ease of use is an important factor in IT adoption. MSMEs that feel that technology is easy to use have a higher adoption rate than MSMEs that experience technical difficulties. Examples of popular applications include digital payment platforms (such as OVO and GoPay) that are considered to have simple interfaces. One restaurant owner stated: "I started using the digital cashier app because my son said it was easy. After trying, it turns out that it makes it easier to record transactions." However, some traditional business actors feel less confident in using new technology without guidance.

**Relative Advantage** As many as 68% of respondents believe that IT provides real benefits, such as increased efficiency and access to a wider market. Respondents who use social media for marketing, such as Instagram and Facebook, report a 30%-50% increase in sales compared to before IT adoption. One food stall owner reported that "After starting to use Facebook for promotions, customers almost doubled, especially from outside the region." This suggests that the perceived benefits encourage the desire to continue using technology (Hussain & Ghadially, 2019).

**Compatibility:** as many as 60% of respondents consider technology that is compatible with their business needs to be easier to adopt. MSMEs with delivery services tend to be faster to adopt applications such as GoFood and GrabFood because they fit their business model. The owner of the catering business stated: "An app system like GoFood is very helpful because it fits the way we work, especially for accepting orders online." On the other hand, some businesses feel that certain technologies are less relevant, such as applications that are too complicated for small businesses.

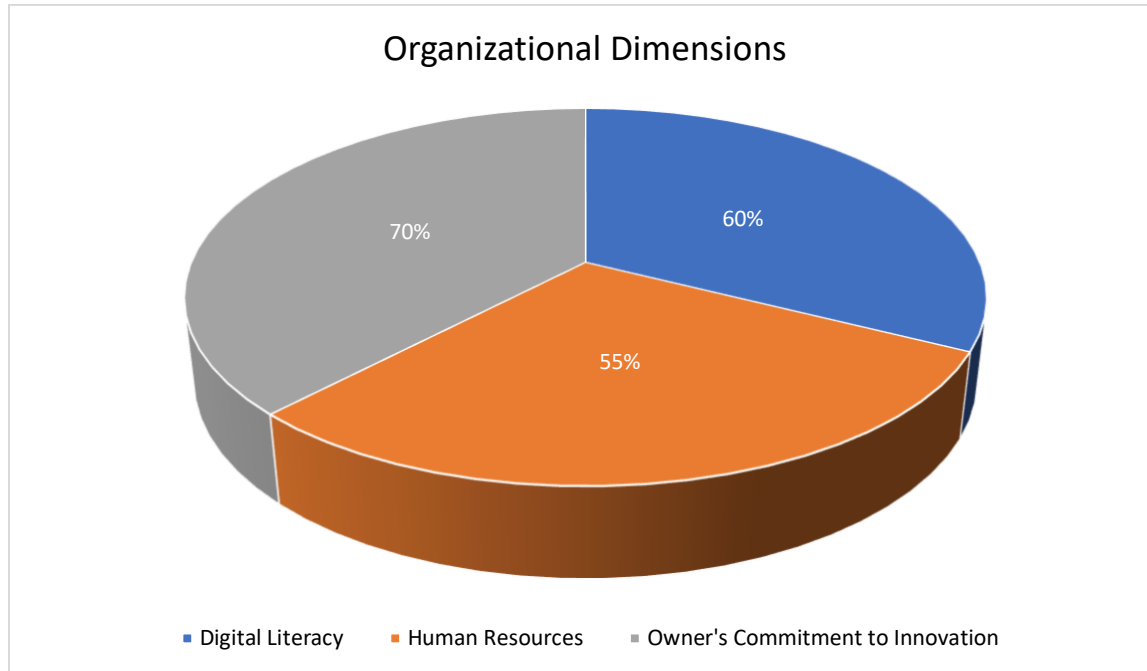
The technological dimension is proving to play a key role in driving IT adoption. Ease of use, relative benefits, and compatibility with business needs are the main factors influencing adoption decisions (Leong et al., 2018). Based on these findings, recommendations for increasing IT adoption include:

- 1) Developing simpler and more user-friendly technologies.
- 2) Provide practical training that demonstrates the immediate benefits of using IT.
- 3) Providing flexible applications suitable for various types of culinary businesses in Minahasa.

These results provide a foundation for the development of more relevant and effective strategies in encouraging the digital transformation of culinary MSMEs in the Minahasa region.

## 2. Organizational Dimension

The results of this study show that in the organizational dimension, there is a Digital Literacy factor, and the level of digital literacy is the main obstacle. As many as 60% of respondents admitted that they lacked confidence in using new technology, even though they were aware of its benefits. In addition, the Business Owner's Commitment, i.e., Business Owners who are open to innovation and technological updates, have a significant influence on IT adoption decisions. 70% of respondents who have business owners with a proactive attitude in seeking training or IT solutions report higher adoption rates. The findings of this study also show that financial resources such as limited funds are an obstacle for 55% of MSMEs in adopting technology. Hardware costs and software subscriptions are major obstacles for small businesses with low profit margins. This study explores factors in the organizational dimension that affect the adoption of information technology (IT) in culinary MSMEs in Minahasa. The findings are supported by quantitative data from a survey of 150 respondents and qualitative data from in-depth interviews with ten culinary business actors. See Figure 2.



**Figure 2.** Organizational Dimensions

The results of this study show that there is Digital Literacy among Business Owners or Managers, namely, 60% of respondents admitted to having a low to moderate level of digital literacy, which is an obstacle in adopting IT. Of the respondents who have a high level of digital literacy, 75% of them have integrated IT into their business operations, such as using digital cashier applications and social media for marketing. One food stall owner stated that: "I know technology can help, but I don't know where to start. Everything looks complicated." This shows that low digital literacy is a barrier for most traditional MSMEs in Minahasa.

The Human Resources (HR) factor also showed that 55% of respondents stated that the limitations of staff skills were an obstacle to the optimal use of technology. Respondents who have young, tech-savvy staff report higher rates of IT adoption than businesses run by owners without the support of tech-competent staff. The owner of a small restaurant revealed: "My son is the one who helps manage the restaurant's social media. If it were just me, there probably wouldn't be any new customers from the internet." This highlights the importance of having human resources capable of supporting IT adoption, both from family and staff.

The Owner Commitment to Innovation Factor shows that 70% of respondents who have business owners with an open attitude towards innovation report active use of IT. Owners who frequently attend training or seminars on technology tend to be faster in implementing digital solutions. A caterer owner stated that: "I often participate in trainings held by the government or the community. From there, I learned to use delivery apps like GoFood, and now I have more customers." This shows that a commitment to learning and innovation can accelerate IT adoption.



The organizational dimension plays a crucial role in the adoption of IT in culinary MSMEs in Minahasa. Digital literacy factors, the availability of competent human resources, and the owner's commitment to innovation are the main determinants of successful technology implementation (Nguyen & Waring, 2019). Based on these findings, some of the recommendations that can be implemented are:

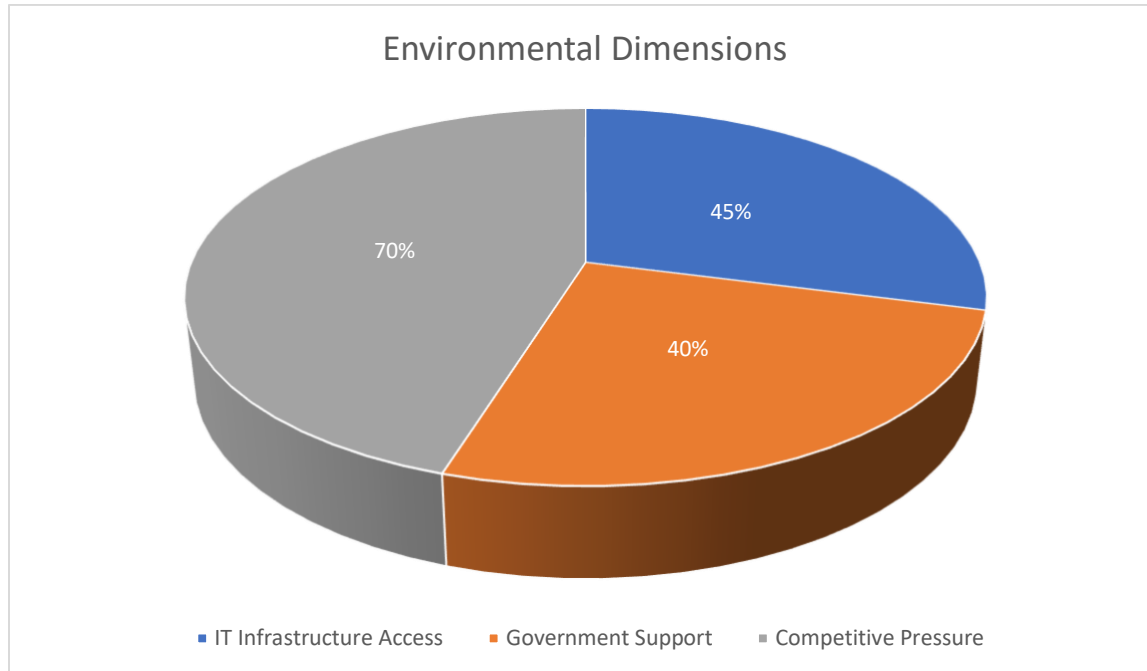
- 1) Digital Literacy Training is a simple and practical training program for business owners that focuses on relevant technology applications.
- 2) HR Competency Improvement, such as Cooperation with educational or training institutions to provide a skilled workforce in IT.
- 3) Development of Innovative Attitudes, such as Campaigns to encourage business owners to be more open to change through seminars or experience-sharing sessions.

These findings show that focusing on the organizational dimension can accelerate the digital transformation of culinary MSMEs in Minahasa, increasing their competitiveness in the technological era.

### 3. Environmental Dimensions

The results of this study show that the environmental dimension has several factors such as IT Infrastructure Access, namely The results show that limited internet access in several areas of Minahasa is an obstacle for 45% of respondents. The availability of fast and stable connections greatly affects the smooth use of technology. In addition, Government Support as Only 40% of respondents feel they have received real support, such as training or technology subsidies, from the government. More structured and widespread support is considered important to drive IT adoption. Another factor is Competitive Pressure, namely MSMEs that face competitive pressure from other businesses, including those who have used IT, are more motivated to adopt technology to increase their competitiveness.

This study identifies factors in the environmental dimension that affect the adoption of information technology (IT) in culinary MSMEs in Minahasa. The research findings are supported by quantitative data from a survey of 150 respondents and in-depth qualitative interviews with ten culinary MSME actors. See Figure 3.



**Figure 3.** Environmental Dimensions

The results of this study show that the IT Infrastructure Access factor As many as 45% of respondents reported that an unstable or expensive internet connection is the main obstacle in adopting IT. Of the respondents who have good quality internet access, 80% of them have used digital-based technology, such as cashier applications or e-commerce platforms. A food stall owner in a remote area stated: "The internet here is often slow, so it's difficult to use a cashier app or take orders online." This shows that the quality of IT infrastructure greatly affects the ability of MSMEs to adopt technology.

In addition, the findings of this study also show that the Government Support factor is only 40%. Respondents feel they have received adequate support from the government, such as IT training, device assistance, or internet access subsidies. Respondents who took part in an IT training program reported an increase in confidence and skills, with 65% of them then adopting new technologies. The owner of a restaurant in the city center said: "We have participated in training from the government on digital marketing. It helped, but unfortunately, it was only held once." This indicates that despite initiatives from the government, the consistency and reach of the program need to be improved.

Competitive Pressure Factors Contribute As many as 70% of respondents admitted that pressure from competitors who used IT first encouraged them to consider technology adoption. MSMEs located in areas with a high level of competition, such as urban centers, are faster to adopt technology than MSMEs in rural areas. A catering business owner stated: "We started using delivery applications because other restaurants were already using them. If they don't participate, our customers can move to other places." Competitive pressure from other businesses encourages MSMEs to immediately adopt technology to remain competitive.

The environmental dimension has a great influence on the adoption of IT in culinary MSMEs in Minahasa. Adequate infrastructure access, active support from the government, and competitive pressure proved to be key factors in adoption decisions (Oliveira et al., 2019).

Recommendations that can be given are:

- 1) Improvement of IT Infrastructure, namely, the Government and internet service providers need to expand access to quality internet at affordable prices, especially in remote areas.
- 2) Government Support Programs, namely training programs and technology subsidies, must be designed more consistently, with a wider scope to reach all MSMEs, including in rural areas.
- 3) Competitive Strategies, i.e., Governments or local communities can encourage collaboration between MSMEs to share best practices in technology adoption, reducing unhealthy competitive pressures.

The results of this study provide a strong basis for policymakers and related parties to accelerate digital transformation in the culinary MSME sector, increasing their competitiveness in the digital era.

This study identifies that ease of use, digital literacy, and competitive pressure are the main drivers of IT adoption. On the other hand, limited financial resources and access to infrastructure are significant obstacles (Rana et al., 2019). These results underscore the importance of a holistic approach in supporting the digital transformation of culinary MSMEs in Minahasa. Governments and stakeholders are advised to:

- 1) Expanding access to digital literacy training.
- 2) Provide financial subsidies or incentives for technology investment.
- 3) Improving IT infrastructure, especially internet access in rural areas.

This research provides a foundation for a more effective strategy in encouraging IT adoption in the culinary MSME sector in Minahasa.

## CONCLUSION

This study concludes the factors that affect the adoption of information technology (IT) in culinary MSMEs in Minahasa through the Technology-Organization-Environment (TOE) framework. Based on quantitative and qualitative data analysis, it was found that the success of IT adoption in culinary MSMEs is influenced by various factors that are interrelated in three main dimensions. Technology Dimension is the factor of ease of use, relative benefits, and technology compatibility are the main drivers. Technology that is designed to be simple, relevant, and easy to understand increases adoption rates, especially among MSMEs who already understand its benefits for operational efficiency and market improvement. Organizational dimensions such as digital literacy of business owners or managers, human resource competence, and commitment to innovation play a significant role. Low levels of digital literacy and limited human resources are barriers, but businesses with owners who are proactive about innovation show higher adoption rates. Environmental Dimensions such as IT infrastructure access factors, government support, and competitive pressures from the market influence

adoption decisions. MSMEs in regions with good internet access and government support have a greater chance of adopting IT. In addition, competitive pressure from other businesses encourages MSMEs to remain relevant through digital transformation.

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