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Anton Luvi Siahaan^a, Eduward Situmorang^b, Evi Syuriani Harahap^c, Peniel Sam Putra Sitorus^d, Lampola Sitorus P^e, Apriani Sijabat^f

^aUniversitas HKBP Nommensen Pematangsiantar, Indonesia,

antonluvi644@gmail.com

^bUniversitas HKBP Nommensen Pematangsiantar, Indonesia,

eduard.situmorang@uhn.ac.id

^cUniversitas Negeri Medan, Indonesia,

eviharahap21@unimed.ac.id

^dUniversitas HKBP Nommensen Pematangsiantar, Indonesia,

peniel.sitorus1995@gmail.com

^eUniversitas HKBP Nommensen, Indonesia,

lampolauli@gmail.com

^fUniversitas HKBP Nommensen Pematangsiantar, Indonesia,

aprianisijabat@gmail.com

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Anton Luvi Siahaan^a, Eduward Situmorang^b, Evi Syuriani Harahap^c, Peniel Sam Putra Sitorus^d, Lampola Sitorus P^e, Apriani Sijabat^{f*}

^aUniversitas HKBP Nommensen Pematangsiantar, Indonesia, antonluvi644@gmail.com

^bUniversitas HKBP Nommensen Pematangsiantar, Indonesia, eduard.situmorang@uhnp.ac.id

^cUniversitas Negeri Medan, Indonesia, eviharahap21@unimed.ac.id

^dUniversitas HKBP Nommensen Pematangsiantar, Indonesia, peniel.sitorus1995@gmail.com

^eUniversitas HKBP Nommensen, Indonesia, lampolauli@gmail.com

^{f*}Universitas HKBP Nommensen Pematangsiantar, Indonesia, aprianisijabat@gmail.com

*Correspondence: aprianisijabat@gmail.com

Abstract

The aim of this research is to determine the adaptation of the use of information technology to the performance of Micro, Small and Medium Enterprises (MSMEs) in Pematangsiantar City. Qualitative approach research model. The research design is a field study and literature study. The focus of the research to be achieved is the obstacles to the development of Small, Micro and Medium Enterprises in Pematangsiantar City. The data analysis technique used was qualitative descriptive analysis. This research involved around 15 MSME actors who were selected purposively, namely those who had been running a business for at least two years and had or were trying to integrate information technology into their business activities. The research results show that MSME entrepreneurs face obstacles in developing their businesses. To overcome these obstacles, information technology is needed. Information technology has had an impact on MSMEs in Pematangsiantar City in the form of increasing the number of orders received, increasing the amount of production, increasing income and increasing the number of new consumers.

Keywords: MSMEs, Technology, UMKM, Pematangsiantar

1. Introduction

Micro, small, and medium enterprises (MSMEs) play a vital role in developing countries as they significantly support national development, particularly in terms of boosting economic growth, generating employment, and reducing poverty (Afolayan et al., 2015), which where the things above are classic problems that often occur in developing countries and require solutions. The Covid-19 pandemic is classified as one of the disasters that occurred throughout the world. Covid-19 is still a trending topic of discussion in various media, both domestic and foreign. This affects many things, including impacts on health, education, social issues and economic aspects of society. Thus, this requires several solution strategies to recover with various kinds of new system adjustments. The economic crisis during this pandemic had a much greater impact than the 1998 monetary crisis. The 1998 monetary crisis only occurred in certain sectors, including the decline in the rupiah exchange rate and the lower selling prices of goods. However, the economic crisis during this pandemic has had a much wider impact, both on a micro and macro scale, such as instability in terms of production, distribution and public consumption. The 1998 monetary crisis in Indonesia raised public awareness of the importance of maintaining the stability of the rupiah exchange rate. However, in this technological era, society is not yet aware that it is being colonized by a contemporary system that is free of ethics and values, which prioritizes the individual, which is known as capitalist ideology. Moreover,

during the Covid-19 pandemic, the capitalist economic system still played a role from various angles. One of the most dominant impacts on society occurs in the public consumption sector.

Reflecting on the 1998 monetary crisis, MSMEs (Micro, Small, and Medium Enterprises) played a crucial role in supporting economic recovery. While many large businesses collapsed during that time, MSMEs demonstrated remarkable resilience, even growing by up to 350 percent (Wijoyo & Widiyanti, 2020). In the context of the Covid-19 pandemic, MSMEs have remained essential to local economies, particularly in fulfilling daily needs. The pandemic's impact on MSMEs can be observed from both supply and demand perspectives. On the supply side, many MSMEs faced workforce shortages due to health concerns and the enforcement of social distancing measures. This situation posed a major challenge for MSME actors striving to survive and contribute to economic recovery at both micro and macro levels. The crisis highlighted the importance of MSMEs as accessible sources of goods and services, independent of large industries or international partnerships. Thus, MSMEs have emerged as a vital pillar for restoring not only household economies but also the broader economic system in Indonesia.

In the aftermath of the Covid-19 pandemic, MSME activities present both challenges and opportunities for Indonesia's economic development. The main challenge lies in the need for immediate solutions to support stakeholders and MSME players in maintaining their operations amid various government policy constraints. On the other hand, this situation also offers opportunities for the government to more effectively structure MSME-related economic initiatives. In Indonesia, MSMEs have consistently shown a significant impact on the national economy. Their contribution can be categorized into three main aspects: their wide presence across all economic sectors, their strong capacity to absorb labor, and their role in contributing to GDP growth. In fact, MSMEs account for more than 95% of all businesses in the country (Rahayu and Day, 2015). The growth of MSMEs is driven by multiple factors, including macroeconomic conditions, institutional and political frameworks, socio-cultural dynamics, and market potential. Furthermore, the rapid advancement of information technology has significantly influenced MSMEs, prompting business actors to adopt various digital tools. The integration of technology is expected to play a critical role in improving MSME business processes. Information technology has transformed traditional business models, offering both new opportunities and challenges. As a cornerstone of modern civilization, IT must provide added value not only to individuals but also to society as a whole—for example, through its use as an educational tool via communication media.

According to Sutabri (2016), information technology refers to tools and systems used to process data in various forms to generate high-quality information that supports strategic decision-making across different sectors. Mulyadi (2014) defines information technology more broadly, encompassing computers—including both hardware and software—as well as various electronic devices used in offices, manufacturing, and telecommunications. Based on these definitions, it can be inferred that information technology represents the integration of computing and communication tools, comprising both hardware and software, utilized by relevant stakeholders to transform data into meaningful information that supports strategic decisions. For MSME players, information technology is useful because their business activities not only deal with similar MSMEs but also face the invasion of products from outside which have better product quality. The increase in the adoption of information technology in micro, small and medium enterprises in developed countries is quite significant, but this is different from developing countries where the level of information technology use is relatively low (Rahayu and Day, 2015). In various studies conducted, the benefits obtained by MSMEs that adopt information technology, include increased marketing, and the use of information technology has helped organizations achieve more efficient, effective, innovative and globally competitive growth (Tarute and Gatautis, 2014).

Ghobakhloo et al. (2011) identified two primary factors influencing the adoption of information technology by MSMEs: internal and external factors. Internal factors include the willingness of MSME owners to implement IT, the availability of funding for IT development, the presence of skilled human resources in ICT within the enterprise, and the availability of IT applications that align with the business's needs and cultural characteristics. Pematangsiantar, the second-largest city in North Sumatra after Medan, is strategically located along the Trans Sumatra Highway. Covering an area of 79.97 km² and home to approximately 253,500 residents, the city comprises eight districts and 53 sub-districts (BPS Pematangsiantar City, 2019). Preliminary field studies indicate that several MSME operators in the city face challenges such as limited business knowledge, difficulties in product distribution, insufficient innovation, weak branding, and underutilized online marketing strategies. This study differs from previous research by placing greater emphasis on the impacts and challenges related to information technology adoption—particularly the use of e-commerce for sales and marketing—whereas earlier studies generally focused on a single aspect. The research questions include: What are the effects of IT adoption on MSMEs in Pematangsiantar, and what barriers do they encounter in utilizing IT? The main objective of this study is to assess the extent to which information technology is integrated into MSME operations in Pematangsiantar and to identify the obstacles to its adoption. Specifically, the research aims to analyze how MSMEs in Pematangsiantar adapt to information technology, and to evaluate the impact of this adaptation on their business performance, including overcoming developmental barriers, increasing productivity, boosting income, and expanding customer reach.

2. Method

This study employs a qualitative research model, utilizing both fieldwork and literature review methods. The main focus of the research is to explore development strategies for Micro, Small, and Medium Enterprises (MSMEs) in Pematangsiantar City. The research was conducted in Pematangsiantar City, with data gathered through observation, interviews, and documentation. The data were then analyzed using a descriptive qualitative approach. Observations were made to understand how UMKM in Pematangsiantar integrate and utilize information technology in their daily operations. Interviews were conducted with UMKM owners, employees, and IT service providers to gain insights into the perception and impact of IT use on business performance. Document analysis involved reviewing records and reports related to the use of IT in UMKM, including financial statements, marketing strategies, and IT investment plans. To analyze the data collected from observations, interviews, and documentation, the following techniques could be used qualitative analysis, used to identify and analyze patterns or themes within qualitative data (interviews and observations). For instance, themes like "perceived benefits of IT," "challenges in IT adoption," and "impact on business performance" can be developed from the interviews and observational notes. This research involved 15 participants, specifically selected from micro, small, and medium enterprises (MSMEs) operating in the city of Pematangsiantar. The participants were chosen using purposive sampling, targeting business owners who have been operating for at least two years and have experience using or attempting to integrate information technology into their business processes. To ensure the validity of the data, the researcher employed data triangulation, which included comparing information obtained from multiple MSME actors across various sectors (e.g., culinary, services, retail). Using a combination of in-depth interviews, field observations, and documentation to cross-verify data consistency and conducting observations and interviews at different times to ensure the stability of findings.

Additionally, member checking was applied by returning the interpreted data to participants for confirmation, ensuring that the findings accurately reflected their perspectives.

3. Results and Discussion

Most entrepreneurs in Pematangsiantar City operate on a micro or small scale. In many sub-districts, these micro and small enterprises are still not functioning optimally in terms of entrepreneurship, leading to frequent business challenges and, in some cases, permanent closure. The business landscape in Pematangsiantar consists primarily of micro, small, and medium enterprises (MSMEs), with the total number currently reaching approximately 26,000. These include 259 businesses in the food, beverage, and tobacco sector; 533 in textiles, apparel, and leather; and 20 in the wood and household goods industry (BPS, 2022). MSMEs undeniably play a crucial role in income distribution and offer opportunities for individuals to become self-reliant in running their businesses (Bappeda, 2019). Additionally, MSMEs help preserve and promote local wisdom by producing goods that reflect regional characteristics. However, the development of MSMEs is not without challenges, as various recurring issues continue to hinder their growth. These commonly faced problems include:

1. Capital

The success of MSMEs is closely tied to their ability to manage and understand business cash flow, which is often funded through personal savings or owned assets. According to OJK, around 70% of Indonesia's 60 million MSMEs lack access to formal bank financing. This limited access is largely due to challenges in administrative processes and manual financial management, as well as a lack of collateral from entrepreneurs, which increases the risk of credit default.

2. Market Access

Access to markets is a critical factor for business success. Business owners must gather and analyze as much market information as possible to identify opportunities. A business with broader market reach is more likely to increase its sales volume. However, most MSMEs in Pematangsiantar still operate within a narrow market scope, offering their products primarily at the local level.

3. Raw Materials

Pematangsiantar is rich in cultural and historical assets, with culinary tourism being one of its highlights, due to its role as a transit city. However, culinary entrepreneurs often face challenges related to raw materials—such as seasonal price hikes during holidays, which directly affect product pricing. In the ulos weaving industry, raw materials like ulos yarn are often obtained through credit-based systems and profit-sharing arrangements with suppliers. Unfortunately, yarn suppliers control pricing, which may jeopardize the sustainability of these weaving businesses.

4. Administrative Management

Many MSME actors in Pematangsiantar lack the necessary knowledge and skills in effective business management. They often focus solely on production without considering uniqueness or product differentiation from competitors. This shortfall hampers long-term business growth. To run their businesses efficiently, MSME owners must understand key management functions: Planning: setting objectives and strategies; Organizing: still mostly done individually, making delegation difficult and reducing productivity; Leading: the ability to motivate and direct team members, which is often underdeveloped due to solo operations; Controlling: rarely practiced consistently, leading to poor understanding of weaknesses and an inability to properly evaluate and improve.

5. Competitive Pressure in the Domestic Market

All business scales face competition, both locally and beyond their operating regions. In Pematangsiantar, many entrepreneurs tend to follow market trends rather than focusing on a specific business niche, resulting in saturated sectors—such as mobile phone shops and cafés. This herd mentality often leads to shrinking market shares, and businesses with limited capital are particularly vulnerable to closing down under such pressure.

To address the challenges faced by MSMEs, leveraging information technology (IT) has become increasingly essential. IT integration significantly influences various aspects of business operations, particularly for Micro, Small, and Medium Enterprises (MSMEs). In the context of Pematangsiantar City, several key dimensions should be considered when analyzing how IT adoption affects MSME performance:

- a. **Operational Efficiency:** MSMEs that utilize IT—such as accounting software, inventory tracking systems, and digital point-of-sale tools—experience improved accuracy, streamlined processes, and more effective inventory control.
- b. **Market Expansion:** Through online platforms like websites, social media, and e-commerce, MSMEs can reach a broader customer base, extending beyond local markets and increasing their sales potential.
- c. **Enhanced Customer Engagement:** IT facilitates better communication with customers via emails, live chats, and social media interactions, helping businesses respond more effectively and build lasting relationships.
- d. **Data-Driven Decision Making:** IT enables MSMEs to collect and analyze data related to consumer behavior, sales patterns, and business performance—supporting more informed and strategic decisions in marketing, product development, and resource planning.
- e. **Data Security Concerns:** While offering numerous benefits, IT adoption also raises the need for robust data protection practices. Ensuring the privacy of customer and business information is crucial to prevent cyber threats and reputational damage.
- f. **Readiness and Skills:** Successful IT integration depends on the availability of digital literacy among MSME employees. Providing relevant training is essential to ensure technology is used effectively.
- g. **Financial Impact:** Although IT can improve performance, the benefits may not be immediately visible. MSMEs must evaluate their technology investments carefully, balancing short-term costs with long-term gains in revenue and efficiency.

According to Indonesia's Ministry of Communication and Information, the digitalization of MSMEs brings several advantages:

1. **Wider Reach**
Digital tools allow MSMEs to market their products nationwide, even to remote regions, tapping into the growing base of smartphone and online shoppers.
2. **Increased Revenue**
Expanded market access typically leads to higher sales and income, especially when MSMEs utilize social media for marketing.
3. **Simplified Transactions**
Digital payment systems enhance convenience for both businesses and consumers, reducing reliance on physical cash handling.
4. **Trend Adaptation**
Digitalization helps MSMEs stay aligned with evolving consumer habits, making their offerings more contemporary and competitive.

Therefore, it is crucial to provide IT training for MSME actors in Pematangsiantar. While IT offers significant opportunities to boost efficiency, productivity, and market access, challenges such as high upfront costs, limited technological infrastructure, and cybersecurity risks must be addressed. The observed impact of IT implementation among MSMEs in Pematangsiantar includes increased order volumes, production output, income, and customer acquisition.

1. IT Adoption Trends among MSMEs in Indonesia

Recent research shows a growing trend in IT adoption among Indonesian MSMEs, particularly in urban areas like Pematangsiantar. Prasetyo and Firdaus (2021) reported that 75% of 300 surveyed MSMEs in Java had integrated IT tools, mostly for e-commerce and social media marketing. Similarly, Sari et al. (2020) observed a 50% rise in digital payment adoption between 2017 and 2020, driven by national efforts to promote cashless transactions.

2. Impact on Business Performance

IT adoption has positively influenced MSME performance. Widodo (2019) found that MSMEs using IT for inventory and customer management experienced a 30% increase in sales over three years. In Bali, Rahmawati et al. (2022) noted that MSMEs using IT for marketing and analytics reported stronger customer retention and improved operational processes.

3. Barriers to Adoption

Despite these benefits, many MSMEs face hurdles. Financial limitations and insufficient technical skills are major obstacles (Nugroho et al., 2020), while cultural resistance—particularly among older business owners—also slows adoption (Putra & Dewi, 2023).

4. Role of Government and Institutions

Institutional support has been vital in enabling IT adoption. The Ministry of Cooperatives and SMEs (2021) noted that over 500,000 MSMEs benefited from training and digital transition support through the Digital UMKM program. The World Bank (2020) also stressed the importance of improving internet infrastructure, especially in rural areas, to facilitate digital inclusion.

4. Conclusion

From the findings discussed above, several conclusions can be drawn: 1) The adoption of information technology among MSMEs in Pematangsiantar City remains limited, particularly regarding the use of computers and internet-based tools in business operations. 2) Several critical factors—both obstacles and potential enablers—affect the extent of IT utilization, including: a) Limited awareness of the advantages of IT in business growth; b) Insufficient investment in IT infrastructure; c) Weak institutional support from government bodies; d) Enabling factor: a relatively strong availability of human resources from an educational background; e) Enabling factor: fairly good individual IT competence among MSME actors. This literature review emphasizes the growing significance of IT adoption among MSMEs in Pematangsiantar and its beneficial impact on business performance. However, barriers such as limited financial resources and inadequate technical skills continue to restrict broader adoption. Future research should aim to address these challenges and examine the long-term effects of IT integration on MSME aspirations and sustainability.

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