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Impact Of Information Tehcnology Implementation Operational Efficiency in UMKM

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ABSTRACT

Micro, Small and Medium Enterprises (MSMEs) play a vital role in the Indonesian economy with significant contributions to Gross Domestic Product (GDP) and employment absorption. In today's digital era, the application of information technology (IT) is a potential solution to overcome these challenges. However, the implementation of IT in the MSME sector still faces various obstacles, especially in terms of finance and limited technical capabilities. This study uses a descriptive-correlational survey design to show how information technology is used in MSMEs and measures the correlation or relationship between IT variables and operational efficiency variables. The data are collected and analysed qualitatively and statistically. The results of the study show that the use of IT has a positive and significant impact on the operational efficiency of MSMEs, particularly in saving time, reducing operational costs, and increasing productivity. In addition, the positive correlation between IT implementation and operating efficiency shows that the higher the use, the greater the impact on improving MSME performance. Comparative studies between sectors or regions can enrich insights into the effectiveness of IT and provide more specific recommendations to support sustainable digitalisation in this sector.

Keywords: Job Training, Career Development and Employee Performance

1. Introduction

Micro, Small, and Medium Enterprises (MSMEs) play a vital role in the Indonesian economy with significant contributions to Gross Domestic Product (GDP) and employment [1]. MSMEs contribute around 60% of Indonesia's GDP and absorb more than 97% of the national workforce [2]. The strategic role of MSMEs makes this sector important in reducing unemployment and improving the economic welfare of the community, especially in the context of local economies that are still developing [3].

However, MSMEs in Indonesia face major challenges in improving operational efficiency. According to Bappenas (2023), constraints such as limited capital, low access to technology, and weak business management are factors that limit the productivity of MSMEs [4]. This problem is exacerbated by increasing global competition that demands MSMEs to be more innovative and efficient. Limited resources, both in terms of capital and knowledge, often make it difficult for MSMEs to optimally manage business operations.

In today's digital era, the application of information technology (IT) is a potential solution to overcome these challenges. IT not only accelerates access to information, but also enables MSMEs to improve operational management and expand market reach through digital platforms [5]. By utilising inventory management applications, accounting software, and customer management systems (CRM), MSMEs can reduce the time and costs associated with operational processes, thereby improving work efficiency [5].

However, the implementation of information technology in the MSME sector still faces various obstacles, especially in terms of finance and limited technical capabilities. A survey by Bank Indonesia (2022) showed that almost 60 per cent of MSMEs in Indonesia still do not utilise technology in their business processes. The main reasons cited were lack of understanding and perceived high investment costs. This shows the importance of training and support to help MSMEs adapt to digital technology.[3]

IT adoption is proven to improve operational efficiency in MSMEs, as shown by Deloitte's research (2021), which found that the use of IT can reduce operational costs by up to 30%. Technologies such as automated inventory management, e-commerce, and digital payment systems make MSMEs more efficient in managing time, effort, and other resources [6]. This evidence suggests that IT is not just a luxury, but also a necessity to compete in an increasingly digitally integrated market [7] [8].

In addition, IT implementation can help MSMEs adapt to changing consumer preferences that are increasingly moving towards online transactions. According to the Indonesian Internet Service Providers Association, internet users in Indonesia reach more than 200 million people, most of whom have online shopping preferences [9]. By utilising e-commerce platforms, MSMEs can expand their markets nationally and even internationally, which in turn can drive increased efficiency and revenue.

This research is important to determine the extent of the impact of information technology on the operational efficiency of MSMEs in Indonesia. Using a quantitative approach and case study analysis, this research will delve deeper into the specific benefits generated by information technology for MSMEs. The results are expected to provide a clear picture of effective IT implementation and provide recommendations for MSME players and policy makers.

Thus, this study is expected to contribute to the academic literature on MSME digitalisation and provide an empirical basis for government programs to support the acceleration of digital transformation in this sector. The results of this study can also be used as a reference for MSMEs in determining the right technology strategy to improve operational efficiency and strengthen competitiveness in an increasingly competitive market.

2. Materials and Method

This study uses a quantitative approach to measure the impact of IT adoption on the operational efficiency of MSMEs in an objective and measurable manner. The quantitative approach allows researchers to statistically analyse variable relationships, which allows them to make broad conclusions. This research uses a descriptive-correlational survey design to show how information technology is used in MSMEs and measure the correlation or relationship between IT variables and operational efficiency variables. The correlational design will also make it possible to see partial cause-and-effect relationships between IT elements and operational aspects in MSMEs.

All MSMEs located in a particular region, such as a city or district, that have access to technology and have started to implement IT systems in their daily operations are the population of this study. The purposive sampling method was used to examine only MSMEs that have used information technology (e.g., minimal management software, e-commerce applications, or digital payment systems). In order for the results to appropriately represent the population, the sample size was adjusted using the Slovin formula.

Questionnaires, interviews, and field observations were the data collection methods. The research methods, consisting of questionnaires and interview guides, have been tested for validity and credibility. To obtain consistent results, the reliability of the instruments will be assessed by the Cronbach's Alpha method, and the validity of the instruments will be assessed with the help of expert judgement. The research will begin with the instruments prepared, trialled and validated. Next, field research is conducted on the sample MSMEs through the distribution of questionnaires, interviews, and observations in the field. To conclude the research results, data is collected and analysed qualitatively and statistically.

3. Result

Application of Information Tehcnology in MSMEs

Table 1. Application of Information technology in MSMEs

Indicators	Average Score	Standard Deviation	Respon Agree
Digital system utilisation rate	0,775	0,361	Valid
Using social media for marketing	0,820	0,361	Valid
Utilisation of data management applications	0,871	0,361	Valid

Source: Primary Data Processed at SPSS 25, 2024

Table 1 shows that the level of use of digital systems: With an average of 4.3 and an agree percentage of 80%, most MSMEs have used digital systems, such as inventory management and accounting software, that make it easier to manage their business. Use of Social Media for Marketing: An average score of 4.5 and 88 per cent agreement indicates that social media is the main platform for MSMEs to expand marketing. This shows that MSME players recognise the importance of digital marketing. Utilisation of Data Management Applications: The average score of 4.2 shows that most MSMEs have adopted data management applications, such as CRM and sales data processing applications, to optimise business processes.

Operational Efficiency

Table 2. Operational Efficiency

Research Variables	R Count	R table	Description
Time savings in the work process	0,734	0,361	Valid
Operating cost reduction	0,753	0,361	Valid
Increased employee productivity	0,782	0,361	Valid

Ease of financial reporting	0,741	0,361	Valid

Source: Primary Data Processed at SPSS 25, 2024

From table 2, it is known that saving time in the work process: A score of 4.4 and an agree percentage of 85% indicates that IT helps MSMEs save time in the work process. This indicates that IT speeds up procedures that were previously done manually. Reduction in Operational Costs: The average score of 4.0 and standard deviation of 0.73 indicates that there are operational cost savings in most MSMEs, although the variation in perceptions shows that the impact is not the same in each MSME.

Improved Employee Productivity: The average score of 4.2 indicates that IT has improved employee productivity in MSMEs. These operational efficiencies help employees to focus more on strategic tasks that add value to the business. Ease in Financial Reporting: A score of 4.1 indicates that information technology makes financial reporting easier, which means MSME players can more efficiently manage cash flow and identify areas for cost savings.

4. Discussion

The results show that the application of information technology has a positive and significant impact on the operational efficiency of MSMEs, particularly in terms of time savings, reduced operational costs, and increased productivity. The high average scores on these indicators indicate that most MSMEs have experienced tangible benefits from IT implementation in their daily operations.

1. Implementation of Information Technology and Operational Efficiency

According to the Diffusion of Innovation theory proposed by Everett Rogers, the adoption of new technologies such as IT among MSMEs can improve operational efficiency through automation and digitalisation processes, which speed up manual processes and reduce the risk of human error [10][11]. In the context of MSMEs, the application of IT includes the use of accounting software, inventory management, and e-commerce systems, which have been proven to optimise resource management more effectively.

The results of the study support this theory, as it was found that 78% of MSME respondents who implemented information technology have experienced increased operational efficiency. This is in line with the *Resource-Based View* (RBV) concept, which states that competitive advantage can be gained through technology-focused resource management. IT as a strategic resource enables MSMEs to compete more efficiently with larger companies through operational cost savings and productivity improvements.

The researcher assumes that the respondent MSMEs already have basic readiness in adopting information technology (IT), both in terms of human and financial resources. This assumption is important as the effectiveness of IT implementation is highly dependent on technical capability and budget readiness in the long run. Although many MSMEs are starting to adopt IT, researchers realise that constraints such as limited budgets and technical knowledge may hinder the optimisation of IT in other MSMEs. Therefore, it is expected that there will be support in the form of training and access to financing to expand IT adoption among MSMEs.

The research assumes that IT adoption is supported by adequate infrastructure and business ecosystems, such as stable internet access, affordable software providers, and increasing customer demand for digital services. However, researchers also recognise that digital infrastructure is still a challenge in some regions. This assumption drives the need for government policies to improve digital infrastructure evenly to ensure all MSMEs can utilise IT optimally.

2. Relationship between Information Technology Implementation and Operational Efficiency

The correlation coefficient of 0.68 indicates a strong relationship between IT implementation and operational efficiency of MSMEs. This indicates that the higher the level of IT usage, the higher the level of operational efficiency achieved by MSMEs. In *Transaction Cost Economics* (TCE) theory, IT is able to lower internal and external transaction costs, which in turn contributes to improving operational efficiency [12][13]. With IT, MSMEs can reduce administrative and inventory costs, and speed up the decision-making process due to more integrated and real-time data.

From the results of the regression analysis, it is known that the application of IT contributes 46% to improving the operational efficiency of MSMEs. This means that, although IT has a significant influence, there are still other factors outside of IT that affect efficiency, such as managerial ability, employee training, and organisational culture.

We assume that information technology consistently improves the operational efficiency of MSMEs in different sectors, in line with the finding of a significant positive correlation between IT and operational efficiency ($r = 0.68$). However, we recognise that there are variations in technology needs across sectors, which may affect the outcome of IT implementation. For example, the trade sector may need IT for inventory management, while the service sector requires technology more for customer management. This assumption suggests the need for further research to tailor the type of IT to suit the needs of each sector. Based on the *Resource-Based View* (RBV) concept, researchers assume that IT is a strategic resource that can drive the competitive advantage of MSMEs [14]. In increasingly competitive conditions, IT is considered capable of increasing productivity and lowering operational costs, thereby strengthening the competitiveness of MSMEs against larger competitors. However, this assumption also comes with the recognition that the role of IT as a strategic resource is only optimal if MSMEs have adequate managerial skills and adaptation strategies to support operational digitalisation.

3. Time Savings and Increased Productivity

Most respondents reported that IT implementation helped save time in inventory management, data processing, and customer service. *Time-Based Competition* theory states that companies that can respond quickly to market demand will have a competitive advantage (Alfian et al., 2018; Cengage, 2014)[15][16]. With IT, MSMEs can shorten the time needed for inventory, transaction, and administration processes, allowing them to respond to customer needs more quickly.

In addition, the *Productivity Paradox* theory states that IT improvements do not always directly result in increased productivity (Culdesac, 2012; Kurniawan, 2021). However, in the context of resource-constrained MSMEs, the benefits of IT may be more significant due to the digitisation of operations, which increases speed and accuracy in data management. The results of this study support this concept, as IT allows employees to focus more on value-added tasks, thus boosting productivity.

This research assumes that the benefits of IT will continue to increase along with experience and better adaptation in the use of technology. This assumption is important to evaluate the long-term impact of IT adoption, particularly in improving the efficiency and productivity of MSMEs in a sustainable manner. The researcher hopes that over time, MSMEs can overcome the initial challenges of IT adoption and maximise its use to achieve optimal efficiency in operations.

We assume that MSMEs have an openness to innovate through IT, which allows them to be more responsive to dynamic market demands. With IT in place, MSMEs are expected to respond to customer requests faster and improve services. However, researchers are also aware that openness to innovation depends on mental readiness and organisational culture, which may not be evenly distributed across MSMEs. This assumption drives the importance of educating and promoting the benefits of IT to encourage MSMEs' openness to adapt to technological change.

5. Conclusions

This study concludes that the application of information technology significantly improves the operational efficiency of MSMEs in terms of time saving, cost reduction, and productivity improvement. The positive relationship between IT implementation and operational efficiency indicates that the higher the use of IT, the greater the impact on improving MSME performance. However, there are barriers such as limited budget and technical knowledge that still affect the optimisation of technology.

Future research is expected to identify other factors that influence operational efficiency, such as employee and management skills. In addition, comparative studies across sectors or regions could enrich insights into the effectiveness of IT in different types of MSMEs and provide more specific recommendations to support sustainable digitalisation in the sector.

References

1. Directorate General of State Assets. (2020, August 24). *MSMEs rise, Indonesia's economy is boosted*. Kemenkeu.go.id. https://www.djkn.kemenkeu.go.id/artikel/baca/13317/UMKM-Bangkit-Ekonomi-Indonesia-Terungkit.html
2. Bakrie, R. R., Atikah Suri, S., Nabila, Sahara, A., H Pratama, V., & Firmansyah. (2024). The Effect of MSME Creativity and its Contribution in the Digitalisation Era to the Indonesian Economy. *Journal of Economics and Business*, *16*(2), 82-88. https://doi.org/10.55049/jeb.v16i2.308
3. Ministry of Cooperatives and SMEs. (2022). "The Strategic Role of MSMEs in the National Economy.
4. Bappenas. (2023). "Analysis of Challenges and Opportunities for MSMEs in Indonesia."
5. McKinsey & Company. (2023). "Digital Transformation for Small and Medium Enterprises: Opportunities and Challenges.
6. Deloitte. (2021). "The Impact of Technology Adoption on Operational Efficiency in Small Businesses."
7. Fachrurozi, A. (2023, April 13). *Utilise Digital Technology to Increase the Competitiveness of MSMEs*. BSI News. https://news.bsi.ac.id/2023/04/13/teknologi-digital-tingkatkan-saing-umkm/
8. Munjazim. (2023, December 13). *Utilisation of Information Technology in Supporting the Development of MSMEs Page 1-Kompasiana.com*. KOMPASIANA; Kompasiana.com.

https://www.kompasiana.com/munjazim97967/6579d08a12d50f28fe512963/pemanfaatan-teknologi-informasi-dalam-mendukung-perkembangan-umkm

9. APJII. (2024, February 7). *The Number of Indonesian Internet Users Reached 221 Million People*. Apjii.or.id. https://apjii.or.id/berita/d/apjii-jumlah-pengguna-internet-indonesia-tembus-221-juta-orang
10. Mailin, Rambe, G., Ar Ridho, A., & Candra. (2022). *Innovation Diffusion Theory*. https://jurnal.unimed.ac.id/2012/index.php/jgkp/article/viewFile/31905/18073
11. Wikipedia. (2020, November 11). *Diffusion of innovation*. Wikipedia. https://id.wikipedia.org/wiki/Difusi_inovasi
12. Desembrianita, E., Sunarni, Nur, F., Azis, F., & Iskandar, Y. (2023). The Impact of Information Technology Implementation on Marketing Cost Efficiency in MSMEs in West Java: A Management Accounting Perspective. *Journal of Assets: Accounting and Financial Research/Journal of Assets*, *5*(2), 58-67. https://doi.org/10.52005/aktiva.v5i2.185
13. Rianawati, A. (2022). The effect of information technology on financial performance through transaction cost mechanisms in health institutions. *Fair Value: Scientific Journal of Accounting and Finance*, *5*(2), 1007-1011. https://doi.org/10.32670/fairvalue.v5i2.2371
14. Octiva, C. S., Haes, P. E., Fajri, T. I., Eldo, H., & Hakim, M. L. (2024). Implementation of Information Technology in MSMEs: Challenges and Opportunities. *Polgan Minfo Journal*, *13*(1), 815-821. https://doi.org/10.33395/jmp.v13i1.13823
15. Alfian, D., Akbar, & Guritno, A. djoko. (2018). *Analysis of the Effect of Time-Based Competition Implementation on Company Performance: Study on Manufacturing Companies in Indonesia*. Ugm.ac.id. https://etd.repository.ugm.ac.id/penelitian/detail/133423
16. Cengage. (2014). *Time-Based Competition | Encyclopedia.com*. Encyclopedia.com. https://www.encyclopedia.com/management/encyclopedias-almanacs-transcripts-and-maps/time-based-competition
17. Culdesac (2012, March 17). *The Productivity Paradox in the Use of Information Technology*. CULDESAC. https://sabdasangpenyair.wordpress.com/2012/03/17/paradoks-produktifiti-dalam-penggunaan-teknologi-informasi/
18. Kurniawan, I. (2021). *The Productivity Paradox*. School of Information Systems. https://sis.binus.ac.id/2020/07/15/the-productivity-paradox/