



Optimizing the Productivity of MSMEs through Digital Literacy in Kotamobagu, North Sulawesi, Indonesia

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Abstract

This study was conducted with the aim of determining the ability of MSME actors to understand, use, and evaluate information obtained through digital media. This study examines in more depth the impact of digital literacy in forming cognitive and technical skills to communicate and interact effectively with consumers. This study uses a descriptive qualitative approach method by conducting in-depth interviews with 11 informants including one key informant, namely the Chairperson of the MSME Association in Kotamobagu. This study also uses FGD with parties related to the research subject to obtain valid data based on source triangulation. The results of the study show that most MSME actors have better productivity when utilizing technology in carrying out their activities. The use of technology in communicating and interacting with consumers provides more optimal results at 62.78% compared to using traditional methods in communicating their products. MSME actors who do not utilize technology in their business activities are MSME actors who are not productive and are generally elderly people who still have to work to support their families.

Keywords: MSME productivity, digital literacy

Introduction

The role of MSMEs is very large for the growth of the Indonesian economy, with the number reaching 99% of all business units. In 2023, MSME business actors will reach around 66 million. The contribution of MSMEs reaches 61% of Indonesia's Gross Domestic Product (GDP), equivalent to IDR 9,580 trillion. MSMEs absorb around 117 million workers (97%) of the total workforce (Tambunan, 2024).

The MSMEs category is basically based on the amount of business capital at the time of establishment. If the business capital reaches a maximum of one billion rupiah (excluding land and buildings for business premises), then it is categorized as a Micro Business class

(Sudarsono, 2015). Businesses with business capital of more than one billion rupiah up to five billion rupiah are included in the Small Business class. Businesses with business capital of more than five billion rupiah up to ten billion rupiah are included in the Medium Business class. Larger than this, then it becomes a Large Business class (Sudarsono & Yusuf, 2023).

One of the main steps in optimizing MSME productivity based on digital literacy is strengthening the ability to utilize information technology (Sudarsono, 2015). MSME actors need to have a deep understanding of digital platforms such as e-commerce, social media, and business management applications that can help MSME actors run their businesses more effectively (Hasanuddin Remmang, 2021; Nabilah et al., 2021). With a good understanding of this technology, MSME actors can automate various operational aspects, such as marketing, sales, and inventory management, so that time and resources can be saved for more strategic activities (Wijoyo, 2021).

Mastery of digital literacy also allows MSMEs to utilize data optimally. Data is one of the important assets in running a modern business (Sudarsono, 2022). Through digital literacy, MSMEs can learn how to collect, analyze, and interpret data obtained from online activities, such as consumer behavior on social media or market trends in e-commerce. The use of big data can help MSMEs make better and more targeted decisions, increasing the chances of business success amidst increasingly fierce competition (Sudarsono et al., 2020).

In addition, optimizing productivity through digital literacy also means that MSMEs must be able to adapt to changes in technological trends. The digital world is always evolving, so MSMEs need to continue learning and honing new skills, such as utilizing AI (Artificial Intelligence), digital payment technology, to blockchain technology that has the potential to change business systems in the future (Esch & Black, 2021; Sudarsono, 2022). This adaptation is important so that MSMEs not only survive but also thrive in the midst of rapidly changing times (Wahyudi et al., 2024).

E-commerce platforms are one of the digital media that are very useful for MSMEs in increasing productivity (Aulia & Riva'i, 2024). Through this platform, business actors can reach wider consumers without geographical limitations, while utilizing various analytical features provided to monitor the performance of products and services presented. By using this feature, MSMEs can adjust marketing strategies more quickly and precisely (Subakti et al., 2024). In addition, marketing costs through digital platforms are relatively more affordable compared to conventional methods, which can ultimately increase business efficiency.

Support from the government and various related parties is very important in helping MSMEs improve their digital literacy. Training programs, mentoring, and facilitation of technology access need to continue to be encouraged to ensure that MSMEs have the skills needed to optimize the use of technology (Susilo et al., 2023). In addition, digital infrastructure that is evenly distributed and easily accessible throughout Indonesia must also be a priority, considering that many MSMEs are still in rural and remote areas with minimal internet access.

With digital literacy-based optimization, MSMEs can be more resilient in facing future challenges. MSMEs will be able to run their businesses more efficiently, reduce operational

costs, and open up new opportunities in the global market (Putri et al., 2024; Sitanggang, 2022). Digital transformation is not just an option, but a necessity for MSMEs to continue to grow and contribute more to the national economy. Adequate digital literacy will be the key to opening new doors for MSMEs in this digital economy era (Wahyudi et al., 2024).

Methods

The research approach used is qualitative descriptive which aims to understand the impact of digital literacy on MSME actors as a phenomenon or event studied through an in-depth description of MSME behavior in running their business (Wellner, 2021). This approach is used to explore the experiences, understandings, and perspectives of business actors as informants regarding the optimization of MSME actor productivity with technology as part of the activities carried out. The research method with a qualitative descriptive approach is carried out to be able to provide comprehensive information by emphasizing rich and in-depth narrative descriptions. In this study, researchers try to interpret the meaning of the data obtained during research in Kotamobagu, so that they can provide a broader understanding of the phenomenon being studied.

One of the main methods used in this study is in-depth interviews with informants. These interviews allow researchers to obtain rich and detailed information from selected informants. Through in-depth interviews with 11 informants, researchers have explored further into views, experiences, and emotions that cannot be expressed in other research methods. In-depth interviews conducted by researchers also provide flexibility for researchers to adjust questions according to the context of the answers to each informant, so that the information obtained is more specific and relevant.

In this study, 11 informants have played an important role as the main source of data. These informants are individuals who have influence, knowledge, experience, or direct involvement with the topic being studied. The selection of these informants was carried out purposively, namely based on very specific criteria that are relevant to the objectives of the study (Whittle & Reissner, 2024). The selection of informants has gone through a fairly intense observation stage to ensure that the data obtained has high depth and relevance. These informants come from various backgrounds and different roles so that they are able to provide much-needed information.

To ensure data validity, this study uses triangulation of data sources. Triangulation is a method to check the validity of data by comparing information obtained from various sources (Schlunegger et al., 2024). Triangulation of data sources allows researchers to see the consistency or differences in perspective between various informants or other data sources so that researchers can ensure that the interpretation of the data produced is not biased or based on only one point of view. Triangulation is very helpful in strengthening research findings and increasing the reliability of research results.

The entire process in the research conducted, starting from data collection through in-depth interviews to data analysis with triangulation, aims to produce a comprehensive understanding of the phenomenon being studied. This research not only provides a

descriptive picture, but also seeks to uncover the meaning and dynamics hidden behind the data (Azhari et al., 2023).

Results

Kotamobagu is an autonomous region in the form of a city located in North Sulawesi Province, Indonesia. Located in the southern part of the province, Kotamobagu is part of the Bolaang Mongondow Raya region, which culturally and historically has strong ties to the Bolaang Mongondow Kingdom. This area borders Bolaang Mongondow Regency on all sides and has an area of approximately 108.89 km². Geographically, Kotamobagu is located on a relatively high plain with views of the surrounding hills and mountains, providing a fertile natural character and supporting the agricultural sector. The tropical climate and sufficient rainfall make this area ideal for the production of food crops and plantations, such as coffee and cocoa.

In terms of demographics, the population of Kotamobagu is a mix of various ethnicities, with the majority of the population coming from the Mongondow tribe, the indigenous tribe of the region. In addition, there are also residents from the Gorontalo, Minahasa, and several other ethnicities, which provide cultural diversity in community life. The Mongondow language is a regional language that is still widely used alongside Indonesian. Islam is the majority religion in Kotamobagu, but religious diversity is also reflected in its social life, where tolerance and harmony between religious communities are the characteristics of the local community.

In the economic sector, Kotamobagu has developed as a center of trade and services in the Bolaang Mongondow Raya region. The regional economy is supported by the agricultural sector, trade, and micro, small, and medium enterprises (MSMEs). Traditional markets and modern shopping centers are the main places for the movement of the local community's economy. In addition, the tourism sector is also starting to develop, with natural and cultural potential that attracts tourists, such as mountain tourist attractions, waterfalls, and local cultural heritage. The local government continues to encourage the development of infrastructure, education, and health to improve people's welfare and open up new investment opportunities in various sectors.

The results of this study also show that increasing digital literacy can significantly increase sales and market access for businesses. This study has revealed that companies with good digital capabilities are able to utilize e-commerce platforms, social media, and digital marketing tools more effectively, thereby reaching more customers in various regions, both locally and internationally. Digital literacy allows businesses to leverage data analytics to understand consumer behavior, target markets more precisely, and make smarter marketing decisions. In addition, the use of digital tools also makes it easier for companies to reduce operational costs, increase efficiency, and open access to new markets that were previously difficult to reach. As a result, businesses with strong digital literacy can increase sales volume and expand market reach more quickly and effectively.

The results of the study show that the increase in productivity of MSMEs is greatly influenced by digital literacy. Digital literacy plays a significant role in boosting operational efficiency and competitiveness of business actors. Based on in-depth interviews with MSMEs, it was revealed that the majority of MSMEs who have adopted digital technology, especially through e-commerce platforms and social media, have experienced increased sales and wider market access. Informants stated that by using digital technology, MSMEs can reach consumers outside the traditional geographic areas they are currently targeting, which ultimately contributes to increasing turnover not only serving the surrounding community but also consumers from outside the area.

In addition to increasing market access, research also shows that the use of digital technology allows MSMEs to optimize the production process and business management carried out. Several informants reported that the use of stock management applications, digital accounting systems, and online payments were very helpful in saving time and costs in running a business. The use of this software speeds up the administration process and reduces the potential for human error, which often occurs in manual administration and financial management. Digital literacy not only has an impact on marketing, but also on increasing overall operational efficiency.

The results of this study indicate that increasing digital literacy significantly optimizes production processes and business management. The study found that companies with high levels of digital literacy are better able to utilize technologies such as automation systems, resource management (ERP) software, and data analytics to improve operational efficiency and decision-making. In the production process, digital literacy enables the application of technologies such as IoT and AI to monitor and control production in real time, which reduces errors and increases productivity. Meanwhile, in business management, digital literacy enables company leaders to access information and data more quickly and accurately, manage human resources with cloud-based management tools, and improve collaboration through digital platforms. As a result, businesses with higher levels of digital literacy show improvements in efficiency, flexibility, and competitiveness in the market.

The results of this study have also shown that digital literacy plays an important role in increasing product visibility, especially through the use of effective digital marketing strategies. Companies with high digital literacy are better able to use online platforms such as social media, websites, and e-commerce to reach consumers more widely and precisely. Understanding SEO (Search Engine Optimization) and SEM (Search Engine Marketing) techniques allows products to be more easily found by potential customers through search engines. In addition, the ability to use data analytics helps companies personalize ads, understand market trends, and target audiences more accurately. As a result, companies with good digital literacy are able to increase brand awareness and expand the reach of their products, which in turn increases sales conversions and competitiveness in the market.

In terms of marketing, MSMEs who have good digital literacy are able to utilize social media and digital marketing strategies to increase the visibility of MSME products. Research informants stated that social media such as Instagram, Facebook, and TikTok are effective

tools for attracting new consumers and distributing information consistently. MSMEs use features such as paid advertising, collaboration with local influencers, and creative content to build brand awareness. These results show that with adequate digital literacy, MSMEs can develop more effective and targeted marketing strategies and increase the productivity of these business actors.

The research results also found that there are still a number of MSMEs who face obstacles in optimizing the use of technology in their businesses. Some informants stated that the lack of technical knowledge and limited network infrastructure hampered efforts made in adopting digital technology. Informants who were less familiar with digital technology also had difficulty in managing their social media and e-commerce accounts and even rarely understood digital analytics. This problem indicates that better training and infrastructure support is needed to ensure that all MSMEs can enjoy the benefits of digital transformation.

The results of this study also show the importance of support from external parties, such as the government, financial institutions, and educational institutions, in accelerating digital literacy among MSMEs. Several informants acknowledged that digital training programs provided by the government and non-profit organizations greatly assisted MSMEs in improving digital skills. In addition, access to financing that supports digital transformation is also important and is greatly needed by MSMEs. With the availability of microloans or grants specifically for technology investment, MSMEs can overcome capital barriers that often-become barriers to adopting new technologies and developing their businesses.

In this study, several findings show that MSMEs who have successfully integrated digital technology into their businesses have higher productivity patterns compared to those who have not. Data collected from various sources, including field observations and business documents of MSMEs, show that digital transformation helps accelerate production cycles, reduce operational costs, and increase customer satisfaction. With increased productivity, MSMEs become more competitive in both domestic and international markets.

Overall, the results of this study confirm that digital literacy is a key factor in optimizing the productivity of MSMEs. To achieve full success in the digital transformation, collaboration between MSMEs, the government, and the private sector is needed in providing adequate access to technology, training, and financial support. Thus, MSMEs in Indonesia, especially in Kotamobagu, North Sulawesi, can optimally utilize digital technology and contribute more to the current national economic growth.

Discussion

Digital Literacy Increase Sales and Market Access

Digital literacy plays an important role in helping MSMEs increase sales and expand market access. Mastery of technology allows business actors to utilize various online platforms, such as e-commerce, social media, and websites to market the products or services offered more effectively. The use of platforms such as Instagram, Facebook, or marketplaces

such as Tokopedia and Shopee allows business actors to reach a wider range of consumers, not limited to certain geographic areas (Martini et al., 2022; Suryopratomo & Jaelani, 2022; Wulandari & US, 2021). Digital promotions carried out massively and measurably through visual content, videos, and paid advertising on social media can increase product exposure, attract consumer buying interest, and directly impact the increase in sales of MSME products.

Digital literacy opens access to various tools and analytics that can help MSMEs understand consumer behavior. Big data obtained from digital tools such as Google Analytics or social media insights, business actors can find out which products are most in demand, where online store visitors come from, and consumer purchasing patterns (Tupikovskaja-Omovie & Tyler, 2021). This understanding allows MSMEs to develop more targeted marketing strategies, increase the efficiency of marketing campaigns, and maximize the sales potential of MSME products. Digital literacy also allows business actors to use search engine optimization (SEO) techniques and pay-per-click (PPC) advertising, which have the potential to bring more traffic to online stores owned by MSMEs (Rakhmadani & Arum, 2022).

With wider access to the digital market, MSMEs are not only limited to the local market but can also access domestic and international markets. Global e-commerce platforms such as Amazon, Alibaba, and Etsy provide opportunities for MSMEs to export the products offered at relatively affordable costs (Carbo, 2022). Digital literacy allows business actors to understand how to manage cross-border transactions, from inventory management, international payment methods, to shipping goods abroad. This provides a great opportunity for MSMEs to compete in the global market, increase the scale of their business and expand their customer base abroad, which ultimately increases revenue and business growth significantly (Abrate & Viglia, 2019; Budiana et al., 2022).

Digital literacy plays a pivotal role in increasing sales by equipping businesses with the tools and skills to effectively engage with customers through digital platforms. Understanding how to navigate e-commerce websites, social media channels, and digital advertising platforms allows businesses to expand their reach and target specific customer segments with precision. For instance, through search engine optimization (SEO), businesses can make their products more discoverable to potential buyers searching online, while pay-per-click (PPC) ads help capture immediate consumer interest. Additionally, social media marketing enables businesses to interact directly with customers, build relationships, and drive engagement that can lead to increased sales. Digital literacy ensures that businesses can efficiently utilize these platforms to convert online traffic into real purchases.

In terms of market access, digital literacy significantly broadens a company's ability to penetrate new and diverse markets. By utilizing global e-commerce platforms like Amazon, Alibaba, or Etsy, businesses can sell products beyond local boundaries, reaching international customers with ease. Understanding digital tools such as geotargeting in ads or using localization strategies on websites (offering language and currency options) allows businesses to cater to diverse audiences, breaking down geographical barriers. This enhanced market access not only increases sales but also provides businesses with valuable insights into the preferences of different demographic groups, enabling them to tailor their offerings more

effectively. Furthermore, through email marketing and online CRM tools, businesses can nurture long-term customer relationships and continuously expand their market base.

Additionally, digital literacy allows businesses to leverage data analytics to optimize their sales strategies and further expand market access. By analyzing customer behavior data from platforms like Google Analytics, Shopify, or even social media insights, businesses can identify trends, track purchase patterns, and assess the performance of their marketing campaigns. These insights help refine product offerings and marketing tactics, ensuring businesses meet customer demands more accurately and proactively adjust to market changes. As a result, businesses equipped with strong digital literacy are better positioned to scale their operations, increase sales through data-driven decision-making, and tap into emerging markets more efficiently than those relying solely on traditional methods.

Digital Literacy Optimizes Production Processes and Business Management

Digital literacy not only plays a role in marketing aspects, but also has a significant impact on optimizing production processes and business management. By utilizing digital technology, MSMEs can accelerate the production process through the use of special software and applications designed for automation and efficiency (Griffith, 2013; Ramos et al., 2022). For example, by using an inventory management application, business actors can track stock in real-time, manage inventory more effectively, and prevent shortages or excess stock. This not only reduces production costs but also speeds up response time to market demand, so that business actors are able to fulfill orders faster and on time.

Digital literacy allows MSMEs to utilize cloud computing technology in business management. With a cloud-based system, business data such as financial reports, customer data, and product information can be stored and accessed securely from anywhere (Abeyasinghe, 2021; Vajjhala, 2021). This makes it easier to monitor and manage the business, especially for MSMEs who have branches or operations in various locations throughout Indonesia. The use of digital accounting software such as accounting software allows business actors to automate financial records, minimize human error, and obtain financial reports quickly and accurately. Financial data that is always up to date allows business actors to make better decisions regarding expenses, investments, and cash management of the business they run (Darman & Nur Andini Hilumalo, 2023; Yaniar et al., 2021).

Digital literacy can facilitate MSMEs to integrate customer relationship management (CRM) technology that allows them to better monitor and understand customer needs (Dayanti et al., 2021). With CRM, businesses can track customer purchase history, provide more personalized service, and build strong long-term relationships with consumers (Saura et al., 2021). Businesses can use technology to manage order-based production processes, so they can adjust products according to market demand more flexibly. This entire process not only increases productivity and product quality, but also ensures that businesses can operate more efficiently, minimize errors, and increase overall customer satisfaction.

Digital literacy is essential for optimizing production processes as it empowers businesses to integrate advanced technologies into their workflows, enhancing efficiency and

reducing operational costs. With a strong foundation in digital tools, companies can implement automated systems such as robotics, computer-aided manufacturing (CAM), and Internet of Things (IoT) devices to streamline production tasks. These technologies allow for more precise control over processes, reduce human error, and ensure consistent quality output. For example, using enterprise resource planning (ERP) software, businesses can automate supply chain management, production scheduling, and inventory control, which minimizes delays and optimizes the allocation of resources. Digital literacy enables employees to effectively manage and operate these systems, leading to faster production cycles and increased capacity.

In business management, digital literacy facilitates better decision-making through the use of data analytics and cloud-based management platforms. Business leaders with digital skills can use analytics tools to monitor key performance indicators (KPIs), track market trends, and assess operational efficiency in real time. Tools like customer relationship management (CRM) software and project management platforms (such as Asana or Trello) enable managers to oversee workflows, allocate resources more efficiently, and maintain clear communication across teams. Cloud computing allows for centralized data storage and access, ensuring that critical business information is available to decision-makers at any time, from any location. By understanding and leveraging these technologies, business managers can make informed decisions, respond quickly to market changes, and improve overall business performance.

Moreover, digital literacy plays a critical role in improving collaboration and communication across different departments within a business. Platforms such as Slack, Microsoft Teams, and Google Workspace enable seamless communication, file sharing, and project collaboration, eliminating the need for physical meetings and paperwork. This digital proficiency enhances the agility of businesses, allowing teams to work cohesively regardless of location, leading to increased productivity and more responsive business management. Furthermore, with digital literacy, businesses can embrace remote work models and hybrid environments, ensuring that operations remain smooth and uninterrupted even in dynamic work settings. In essence, by fostering digital literacy across all levels of a company, businesses can optimize both production processes and overall management, leading to improved outcomes, cost savings, and a competitive edge in the market.

Digital Literacy Increases Product Visibility

Digital literacy plays a very crucial role in increasing the visibility of MSME products in an increasingly competitive market. With a good understanding of digital marketing, MSMEs can utilize various online platforms to promote their products effectively (Malesev & Cherry, 2021; Matta & Gupta, 2021). Through social media such as Instagram, Facebook, and TikTok, business actors can create creative content that attracts consumers' attention, such as promotional videos, product reviews, and interactive content (Cici Ijan & Ellyawati, 2023; Klug & Autenrieth, 2022). The use of relevant hashtags and collaboration with influencers are also effective strategies to increase product exposure to a wider audience. With higher visibility, MSME products can be better known and in demand by various market segments.

In addition to social media, search engine optimization (SEO) is also an important component to increase product visibility (Purbasari et al., 2021; Usmany et al., 2024). Understanding SEO means that MSMEs can ensure that the website or online store they use appears on the first page of Google search results when consumers search for relevant products. The use of the right keywords, quality content, and technical optimization on the website are some important aspects of SEO that can help improve rankings in search engines (Purbasari et al., 2021). By being ranked high, products are easier to find by potential consumers, which in turn can increase site traffic and potential sales.

Tech-savvy MSMEs can also take advantage of paid advertising on digital platforms to instantly increase product visibility. Through services such as Google Ads or Facebook Ads, business actors can target consumers based on specific demographics, interests, and behavior. This digital advertising allows the products offered to appear in front of more targeted consumers, so that the potential for sales conversion is higher (Codignola, 2021; Vashchyla & Marushka, 2022). With measurable advertising and the right marketing strategy, product visibility can increase significantly in a short time, providing great opportunities for MSMEs to expand market reach and increase the competitiveness of the products offered amidst changing market dynamics (Rajagukguk & Putri, 2024).

Digital literacy plays a crucial role in enhancing product visibility in today's highly competitive market. As businesses increasingly shift to digital platforms, the ability to effectively use digital tools and technologies becomes essential for promoting products. Digital literacy enables businesses to leverage various online channels, such as social media, search engines, and e-commerce platforms, to reach a wider audience. Through understanding how to optimize content for search engines (SEO), utilize social media marketing, and implement digital advertising, companies can significantly boost their online presence, ensuring that their products are easily discoverable by potential customers. Mastery of digital tools allows businesses to adapt quickly to consumer behavior trends and maximize the reach of their marketing campaigns.

In addition to enhancing visibility, digital literacy also empowers businesses to create more engaging and targeted content. With a strong understanding of data analytics, businesses can analyze consumer preferences, track user engagement, and tailor marketing strategies to specific audience segments. This personalization increases the likelihood of customer engagement and conversion, making the product more appealing and relevant to consumers. Utilizing platforms like Google Analytics, Facebook Ads, and email marketing software, businesses can craft well-informed, data-driven strategies that enhance the effectiveness of their campaigns. By constantly optimizing content, targeting the right audience, and utilizing the right digital channels, businesses can improve brand awareness and product recognition.

Finally, digital literacy provides businesses with the skills to track, measure, and refine their visibility strategies. With access to advanced digital tools, companies can monitor key performance indicators (KPIs) such as website traffic, click-through rates, and conversion rates. This real-time feedback enables businesses to adjust their marketing efforts promptly,

ensuring continuous improvement and better return on investment (ROI). Additionally, digital platforms offer cost-effective ways to test new markets, reach niche audiences, and gather customer feedback, ultimately enhancing long-term visibility. As a result, businesses with strong digital literacy are better equipped to navigate the fast-evolving digital landscape, sustain product visibility, and build lasting relationships with customers.

Challenges and Barriers in Optimizing Digital Literacy

One of the main challenges in optimizing digital literacy among MSMEs is the lack of access to adequate digital infrastructure. In many areas, especially in rural or underdeveloped areas, slow or unstable internet connectivity is a major obstacle (Golzadeh & Gharachorloo, 2021; Verma et al., 2022). This prevents business actors from optimally utilizing digital technology, both in production processes, marketing, and business management. Poor infrastructure also prevents MSMEs from accessing training or online resources needed to improve digital skills. Without adequate internet access, opportunities to expand markets through digital platforms and increase productivity are very limited (Purbaningsih et al., 2022).

Another significant challenge is the low level of digital skills among MSMEs, especially micro and small businesses. Many MSMEs, especially the older generation, still have difficulty understanding and using digital technologies, such as financial applications, e-commerce, and social media for marketing (Herrando et al., 2021; Kelsey, 2017). The lack of understanding of how to use this technology causes many business actors not to maximize the potential offered by digital literacy. This lack of knowledge is exacerbated by the lack of access to training programs that are tailored to the needs of MSMEs. MSMEs that are less tech-savvy tend to lag behind their more digital-savvy competitors (Riona Pasaribu & Ronda, 2024).

In addition to limited access and skills, cost is also a barrier for many MSMEs. Although some digital platforms such as social media can be used for free, optimizing digital marketing through paid advertising, the use of business management software, or cloud computing technology requires a significant investment (Tambunan, 2024). For many MSMEs operating with limited capital, the cost of switching to digitalization is often considered too high and risky. Many MSMEs also do not understand the potential return on investment (ROI) from using digital technology, so MSMEs are hesitant to allocate resources to digitalization initiatives (Darmawansyah & Sismiati, 2021). This combination of financial constraints and uncertainty of results is the main obstacle in optimizing digital literacy among MSMEs.

Optimizing digital literacy within organizations presents several challenges and barriers that can hinder the full utilization of digital tools and technologies. One of the primary obstacles is the digital skills gap among employees, where there is often a disparity between the level of digital proficiency required for advanced tools and the current skill sets of workers. Many employees, especially in industries that have traditionally relied on manual processes, may lack the technical knowledge needed to operate sophisticated software, manage data, or engage in digital marketing effectively. This skills gap creates difficulties in

implementing new technologies, as companies must invest heavily in training programs or risk inefficiencies, underutilized technology, and potential setbacks in productivity.

Another significant barrier is limited access to technology infrastructure, particularly for small businesses or those operating in regions with less developed digital ecosystems. High costs associated with adopting advanced digital tools, such as cloud platforms, AI-based software, or automated machinery, can deter businesses from fully embracing digitalization. Additionally, inadequate internet connectivity or outdated hardware can limit the ability of a company to optimize digital literacy initiatives. These infrastructure challenges make it difficult for businesses to integrate digital tools into their operations, limiting opportunities to improve production, marketing, and customer engagement. As a result, businesses may fall behind in competitiveness, especially in fast-moving digital environments.

Lastly, resistance to change within organizations is a common barrier to optimizing digital literacy. Many employees and managers may be accustomed to traditional work methods and are reluctant to adopt new digital processes due to concerns about job displacement, the complexity of learning new systems, or skepticism about the long-term benefits. This cultural resistance can stall digital transformation initiatives, even if the technology is in place and accessible. To overcome this, organizations need to foster a mindset of continuous learning and adaptability, encouraging employees at all levels to embrace digital tools as a means of enhancing their roles rather than replacing them. Addressing this cultural resistance through leadership support, clear communication, and incentives for digital proficiency is crucial for optimizing digital literacy and unlocking its full potential within a business.

Conclusion and Recommendation

Conclusion

Based on the study, it can be concluded that digital literacy has a significant influence on increasing the productivity and competitiveness of MSMEs. Mastery of digital technology by MSME actors allows them to run their businesses more efficiently, both in terms of operations, marketing, and financial management. The use of e-commerce platforms, social media, and digital business management applications not only expands market access, but also significantly increases product exposure, which ultimately contributes to increased turnover. However, this study also revealed a gap in the adoption of digital technology, especially in rural areas that still experience limited infrastructure and access to digital training.

Furthermore, digital literacy has also proven to be an effective solution in facing the challenges of globalization and increasingly tight market competition. MSMEs who are able to utilize digital technology are better prepared to compete in the global market by utilizing international trading platforms and accessing customers in various countries. In addition, digital literacy improves the ability of business actors to make more appropriate decisions based on data available in real time. However, the results of this study also show that

challenges such as limited skills, knowledge, and costs are still obstacles for most MSMEs to fully adopt digital technology.

Optimal digital literacy can make MSMEs better prepared to face challenges in the digital and globalization era. Support from various parties, ranging from the government, private sector, to the business community, is needed to ensure that MSMEs can access and utilize digital technology properly. Collaborative efforts in improving infrastructure, providing training, and providing financial incentives will greatly assist in accelerating digital transformation among MSMEs. Only with strong digital literacy can MSMEs increase productivity, expand markets, and compete on a global scale.

The implications and sustainability innovations of this study are that increasing digital literacy among MSMEs can drive significant transformation in their operations and competitiveness. By improving their understanding and skills in using digital technologies, MSMEs can adopt efficient business management tools, leverage e-commerce platforms to expand market reach, and implement more effective digital marketing strategies. Innovations in this study can include the development of community-based training programs, online learning platforms, and partnerships with educational institutions and the private sector to support continuous learning. In addition, government policies that support digital infrastructure and provide incentives for MSMEs to adopt technology are essential to create a conducive environment. With all of this, MSMEs can not only increase productivity and efficiency, but also contribute to inclusive economic growth, sustainable job creation, and the achievement of sustainable development goals (SDGs) through innovation and adaptation to changing market dynamics.

Recommendation

To accelerate the adoption and optimization of digital literacy among MSMEs, the first recommendation presented by researchers is the need for government support in improving technological infrastructure, especially in rural and underdeveloped areas. Equal and quality internet access is the main requirement for MSMEs to be able to optimize the use of digital technology. The government also needs to encourage policies and incentives that support digital transformation, such as providing subsidy programs or financial assistance for the purchase of technological devices needed by MSMEs. Good technological infrastructure will help reduce the digital divide between regions and enable businesses in remote areas to remain competitive in the market.

The next recommendation is to increase the capacity of MSMEs through structured training and mentoring programs in digital literacy. These training programs must be tailored to the needs and skill levels of business actors, ranging from the use of basic applications such as inventory management to more complex digital marketing strategies. Educational institutions, government, and the private sector need to work together to provide training that is easily accessible and sustainable. In addition, training needs to include practical knowledge on how to use data to make better business decisions, as well as increasing understanding of the potential long-term benefits of investing in digital technology.

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