

DIGITAL TRANSFORMATION AS A DRIVER OF BUSINESS GROWTH: OPPORTUNITIES AND RISKS FOR GROWING COMPANIES

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Abstract

Objective: This study aims to analyze how digital transformation plays a role as a driver of business growth in emerging companies, as well as identify challenges and risks that arise during the process of implementing digital technology (Matt, Hess, & Benlian, 2015; Vial, 2019).

Methodology: This study uses a qualitative approach through a systematic literature review that summarizes research related to digitalization, technological innovation, and organizational readiness to face the dynamics of the Industry 4.0 era. The analysis was carried out based on academic sources that discuss the integration of technologies such as Artificial Intelligence, Internet of Things, and big data as part of the company's digital strategy (Schwab, 2016).

Results: The results of the study show that digital transformation is able to strengthen productivity, expand market coverage, and increase the competitive strength of developing companies through the creation of new value and process efficiency (Brynjolfsson & McAfee, 2014). However, the findings also reveal the existence of major obstacles, including high investment needs, reliance on digital infrastructure readiness, and increasing cybersecurity risks (Susanti et al., 2023). In addition, the success of implementation is greatly influenced by the readiness of human resources in adopting a digital work culture (Westerman, Bonnet, & McAfee, 2014).

Conclusion: Digital transformation can serve as a strategic foundation for emerging companies to improve performance and competitiveness. However, the digitalization process requires an adaptive strategy that takes into account internal capabilities, technological readiness, and organizational culture changes.

Contributions: This research makes a theoretical contribution by offering a comprehensive understanding of the driving factors, challenges, and impacts of digital transformation on emerging companies. In addition, the results of this study can be a practical reference for business people in designing digital strategies that are sustainable and responsive to technological changes.

Keywords: Digital transformation; Industry 4.0; The company is growing; Business growth; Digital risks; Competitive advantage; Information technology.

Introduction

The development of digital technology in the last two decades has created significant structural changes in almost all industrial sectors in the world (Schwab, 2016). This transformation shifts traditional business patterns towards an ecosystem that is increasingly integrated with data, automation, and artificial intelligence, so companies are required to adapt their operational processes in a more innovative way (Vial, 2019). The Industrial Revolution 4.0, which is the fourth phase of global industrial development, has given rise to various cutting-edge technologies such as Artificial Intelligence, Internet of Things, Cloud Computing, and big data analytics that directly affect the organization's growth strategy (Lasi et al., 2014). In this context, digital transformation is not just the introduction of new technologies, but is a fundamental change in the way organizations create value and conduct their business activities (Westerman, Bonnet, & McAfee, 2014).

Emerging companies, which are in the transition phase from small businesses to more established organizations, are the group that needs the most adaptation to these digital developments (Nambisan et al., 2017). This is due to the increasingly fierce market competition, especially with the presence of technology-based companies that are able to move faster and flexibly in responding to customer needs (Brynjolfsson & McAfee, 2014). Awareness of the urgency of digital transformation is increasing along with evidence that organizations that effectively execute digital strategies tend to have higher growth than companies that are slow to adapt (Kane et al., 2015). These changes not only have an impact on technological aspects, but also on organizational structures, work culture, and increasingly data-driven decision-making patterns (Hess et al., 2016).

On the other hand, digital transformation also opens up great opportunities for emerging companies to expand markets and improve operational efficiency (Verhoef et al., 2021). By utilizing digital technology, companies can reduce production costs, improve service quality, and accelerate the product innovation process (Bharadwaj et al., 2013). The use of real-time data allows companies to better understand customer behavior so that marketing strategies can be adjusted more accurately (Chen, Chiang, & Storey, 2012). In addition, digital platforms such as e-commerce, social media, and digital payment systems provide new growth opportunities for emerging companies, especially in expanding global markets without large geographical barriers (Liu & Kumar, 2021).

However, the digital transformation process does not always run smoothly and presents challenges that need to be seriously considered (Susanti et al., 2023). One of the main obstacles is the high cost of implementing the technology which is often a burden for emerging companies that have limited capital (Matt, Hess, & Benlian, 2015). In addition, reliance on digital infrastructure, such as a stable internet network

and a robust data security system, is a crucial factor in determining the success of digital transformation (Omar, Leach, & March, 2020). Developing companies also face an increasing risk of cyberattacks along with the increasing intensity of digital technology use, so that information security protection is a necessity that cannot be ignored (Susanti et al., 2023).

The human resource aspect is also an important challenge in the digital transformation process because the success of this change is highly dependent on the ability of employees to adopt new technologies (Kane et al., 2015). Many developing companies are still experiencing a digital competency gap, where employee capabilities are not in line with the ever-evolving technology needs (Hess et al., 2016). Lack of training and lack of technology-based work culture are obstacles that can hinder the effectiveness of digital transformation in the long term (Vial, 2019). In addition, resistance to change often arises because employees feel unprepared for new work systems that demand speed, automation, and more data-intensive utilization (Nambisan et al., 2017).

Digital transformation also brings strategic implications related to business risks, such as uncertainty over investment returns, potential system implementation failures, and highly dynamic changes in customer preferences (Verhoef et al., 2021). Developing companies must be able to balance opportunities and risks by formulating a digital strategy that is systematic, measurable, and in accordance with the capacity of the organization (Bharadwaj et al., 2013). Companies that are able to manage digital risk well tend to have greater business resilience in the face of rapid market changes (Liu & Kumar, 2021). Therefore, the digital transformation process requires careful planning and strong managerial support in order to have a positive impact on the company's long-term growth (Matt, Hess, & Benlian, 2015).

Within this framework, research on digital transformation as a driver of business growth is becoming increasingly relevant to understand, especially for emerging companies that are in the expansion phase (Schwab, 2016). Analysis of the opportunities and risks arising from this digitalization process is important to help organizations formulate more adaptive and innovative strategies in running their business operations (Vial, 2019). This article seeks to examine how digital transformation can serve as a key driver of business growth while identifying the risks that companies need to pay attention to in their implementation process (Bharadwaj et al., 2013). By understanding these two aspects, it is hoped that companies can create a more comprehensive and sustainable digital strategy in the face of modern economic challenges (Verhoef et al., 2021).

Research Methodology

This research uses a descriptive qualitative approach to understand how digital transformation plays a role as a driver of business growth and the risks faced by companies to develop during its implementation process (Creswell, 2014). This

approach was chosen because it allows researchers to explore the phenomenon in depth through the interpretation of the literature, empirical findings, and previous research results related to digitalization in an organizational context (Merriam & Tisdell, 2015). Through qualitative analysis, this study seeks to provide a comprehensive picture of the opportunities and challenges of digitalization without being tied to rigid numerical variables (Patton, 2015).

This research method adopts literature study techniques as the main source of data collection. The literature analyzed includes reputable international journals, research reports, academic books, as well as scientific publications that discuss digital transformation, business growth, and technological risks (Snyder, 2019). The use of literature studies was chosen because it provides a strong theoretical basis and allows researchers to compare various research results relevant to the digitalization phenomenon in emerging companies (Xiao & Watson, 2019). In addition, this method is effectively used to identify current research patterns, gaps, and trends that can enrich data analysis (Webster & Watson, 2002).

The literature selection process is carried out through several stages to ensure the quality and relevance of the data. The first stage is to search literature using keywords such as *digital transformation*, *business growth*, *SMEs*, *digital risks*, and *Industry 4.0* in databases such as Google Scholar, ScienceDirect, and JSTOR (Snyder, 2019). After that, screening is carried out by year of publication, with priority on sources between 2010–2024 to ensure that the data used reflects the latest developments in the field of digital transformation (Xiao & Watson, 2019). The literature is then systematically analyzed to ensure its fit for the research focus.

The data analysis technique uses the thematic analysis method, which is the process of identifying, grouping, and interpreting the main themes that emerge from the collected literature (Braun & Clarke, 2006). This approach makes it easier for researchers to organize information into several categories, such as digital transformation opportunities, factors driving business growth, implementation challenges, and strategic risks that arise for emerging companies (Clarke & Braun, 2014). Thematic analysis was chosen because it is flexible and able to describe complex phenomena in the context of organizations that are being digitally transformed.

In order to produce an objective analysis, this study applies the source triangulation technique, which is comparing findings from various publications to ensure the consistency of information and reduce the subjectivity of interpretation (Flick, 2018). This step is done by matching research results from various authors, organizations, and theoretical perspectives so that the conclusions obtained have a higher level of credibility (Patton, 2015). In addition to triangulation, an evaluation of the quality of the literature was also carried out using criteria such as relevance, validity of research methods, and contribution to the development of science (Merriam & Tisdell, 2015).

The scope of this research is limited to growing *firms*, which are organizations that are in the expansion phase and have high digital adaptation needs (Nambisan et

al., 2017). The focus of the research includes the analysis of digital transformation opportunities in strengthening business growth and the evaluation of risks that arise in the implementation process. This study did not collect field data, so the findings produced are a synthesis of existing academic literature (Snyder, 2019). Nonetheless, this approach still provides an in-depth understanding of the patterns and strategic implications of digital transformation for emerging companies.

With this methodology, the research is expected to provide theoretical and practical insights into how emerging companies can effectively leverage digital transformation as well as what strategies need to be considered to minimize the risks of its implementation. This literature-based approach also provides a solid foundation for future research that can use empirical methods to expand the understanding of the phenomenon of digitalization in the context of business growth (Braun & Clarke, 2006).

3. Discussion: Digital Transformation in MSMEs: Structural, Operational, and Long-Term Impacts

Digital transformation (TD) has become the center of attention in discussions about the development of MSMEs in Indonesia. This major change not only touches the way MSMEs manage their business, but also affects people's consumption patterns, marketing strategies, and competition dynamics between business actors. In an era that is fully automated, MSMEs are required to be more adaptive so as not to be left behind in the competition. A McKinsey report (2021) shows that the digitalization of MSMEs has the potential to significantly increase economic contributions, especially through increased productivity and market expansion. This means that digital transformation is no longer an optional option, but rather a fundamental necessity in the modern business ecosystem.

3.1. Paradigm Change of MSMEs from Manual System to Digital Operation

Digital transformation has changed the way MSMEs conduct business activities from traditional processes that rely on intuition to systems based on data and technology. This shift not only touches on operational aspects, but also reshapes the mindset of business owners in looking at efficiency, service quality, and growth opportunities. In the era before digitalization developed, most MSMEs operated their businesses with manual work patterns: recording using notebooks, stock counting with estimates, promotions based on social relations, and highly subjective decision-making. This condition makes MSMEs tend to be stagnant, difficult to develop, and vulnerable to operational errors (Tambunan, 2020).

Major changes are starting to occur as digital technologies become more accessible. The presence of cheap smartphones, free financial applications, marketplaces, and social platforms paves the way for MSMEs to change the way they work. Digitalization is not just about using applications, but updating the business structure to be more systematic, scalable, and responsive to market changes. According to Westerman, Bonnet, and McAfee (2014), digital transformation is a change that leads to deep integration between business processes and technology, where organizations no longer use technology as a supporting tool, but as the main foundation of operational strategy.

Before digitalization, MSMEs relied heavily on experience and habits in determining business steps. For example, business owners often decide on production volumes based only on previous sales estimates without data trend analysis. This has caused many MSMEs to experience inventory problems, both in the form of overstock that burdens capital, and lack of stock that makes customers disappointed. Similar problems also occur in financial management. Many MSMEs do not have a neat record, so they cannot accurately measure profits or determine the right pricing strategy. This situation is in line with the Bappenas report (2023) which shows that more than half of Indonesian MSMEs do not have an adequate financial recording system.

Digitalization overcomes most of these obstacles. With digital cashier applications such as Moka, KasirPintar, or Olsera, MSMEs can record transactions automatically, calculate daily profits, manage stock, and analyze which products sell best. This system makes decision-making data-driven, no longer assumptions. For example, food MSMEs can know the highest sales hours and the most frequently purchased menus, so they can adjust production patterns and promotion strategies.

In addition, digitalization is changing the way MSMEs access the market. In the era before digital technology developed, MSMEs only reached consumers around their area. Promotions are carried out by distributing pamphlets, putting up banners, or relying on recommendations from customers. However, after entering the digital era, MSMEs can reach a much wider range of consumers through platforms such as Instagram, TikTok, WhatsApp Business, and marketplaces such as Shopee and Tokopedia. Schwab (2016) explained that the ability to expand market reach quickly is one of the main characteristics of the Industrial Revolution 4.0 era, where physical boundaries are increasingly irrelevant.

Digitalization also has an impact on the professionalism of MSMEs. The existence of features such as ratings, customer reviews, digital catalogs, and non-cash payment methods makes small businesses look more reliable and modern. Digital payments such as QRIS, for example, provide ease of transactions while increasing automatic financial records. This change reflects the concept of operational excellence discussed by Porter (2008), where efficiency and service quality are the pillars of competitiveness.

Not only that, digital transformation is changing the communication pattern between MSMEs and customers. In the past, communication was passive and limited, but now MSMEs can build two-way relationships through chat, comments, DMs, and interactive content features. This option provides an opportunity for MSMEs to understand customer needs more deeply, increase responsiveness, and build a loyal community around their brand. This flow is in line with the findings of McKinsey & Company (2021) which emphasizes that digital interactions play a big role in shaping customer experiences and strengthening brand engagement.

Paradigm shifts are also seen in the way MSMEs view innovation. MSMEs that were previously reluctant to try new things are now encouraged to innovate because digital competition is getting tighter. Business owners are required to understand content trends, study customer behavior on social media, and adopt new technologies to maintain relevance in the market. For example, fashion MSMEs now take advantage of live streaming features to increase interaction and accelerate sales conversions.

Overall, digital transformation is not only changing the operational methods of MSMEs, but also reshaping the mindset of business owners. Those who were previously comfortable with traditional methods are finally realizing that digitalization offers much greater opportunities in terms of efficiency, productivity, and growth. As Westerman et al. (2014) explain, organizations that successfully carry out digital transformation are those that are able to change internal cultures to be more adaptive, data-driven, and innovation-oriented.

Thus, the paradigm shift from manual systems to digital operations is not just a technical phenomenon, but an overarching transformation that connects technological aspects, business strategies, and mindsets. MSMEs that are able to adapt to these changes have the potential to become more competitive and have a greater opportunity to develop in the midst of global competition.

3.2 Business Model Change and Value Innovation through Digital Transformation

Digital transformation is not only changing the way companies operate internal processes, but also fundamentally reshaping **business models**. This shift is happening because digital technology is enabling organizations to create, deliver, and capture value in ways that were previously impossible. As stated by Amit and Zott (2021), the modern digital business model is built on three main pillars—novelty, lock-in, and complementarities—that allow companies to create differentiations that are difficult to replicate. In other words, digitalization does not stop at the use of technological devices, but transforms into a value transformation strategy that has an impact on revenue structures, cost systems, and relationships with consumers.

In the context of MSMEs and developing companies, business model transformation often appears in the form of **digital storefronts**, marketplace integrations, and application-based services. Companies that used to rely on a face-to-face transaction approach are now shifting to a hybrid model that combines online and offline sales. According to Teece (2018), digital business model adaptation is a form of dynamic capabilities that allow companies to respond to market changes more quickly. In practice, this provides an opportunity for small companies to compete with large players through the use of more efficient and scalable digital distribution channels.

One real example is *Kopi Kenangan* MSMEs, which initially only relied on physical outlets, but grew rapidly after integrating ordering applications and data-based customer management systems. By utilizing consumer purchasing patterns, companies are able to design new menus, personalize promotions, and predict

demand spikes based on store locations. The impact of this change in business model not only increases revenue, but also creates significant operational efficiencies. Similar findings were revealed by Verhoef et al. (2021), who stated that companies that switch to digital business models experience an increase in customer loyalty on average because consumers feel they are getting a faster, relevant, and more accessible experience.

In medium-sized growing companies, business model changes are usually more complex, especially when companies start using **digital platforms** as a core element of the business. Companies in the logistics sector, for example, are developing IoT-based tracking services that allow customers to monitor the position of goods in real time. Models like this create new value because process transparency and certainty of delivery time increase customer confidence. This view is in line with Nambisan et al. (2019), who emphasized that digital platforms are able to generate value innovation through connectivity mechanisms and ecosystem orchestration.

In addition to product and service innovation, digital transformation also encourages changes in **subscription, membership, or freemium-based business models**, which were previously more dominant in large technology companies. Today, this system is being implemented by small companies—for example, local online education services that offer free content as an "entry point," then provide premium classes as the main source of revenue. Strategies like this have been proven to increase customer engagement because they provide an opportunity to try out services before making a purchase. According to Gassmann et al. (2020), the freemium model allows companies to maximize the scale of the platform, where the value of the business increases as users increase.

Changes in business models also often affect the cost structure. Digitalization can reduce operational costs through automation, but it also creates new cost needs such as cloud services, cybersecurity systems, or software licensing. However, research by Bharadwaj et al. (2022) shows that despite considerable upfront costs, the adoption of digital business models in the long term has been shown to increase profit margins as companies can reduce inefficiencies and improve service personalization.

In the context of value innovation, digitalization also encourages the emergence of a **data-driven value creation** approach. Companies not only sell products or services, but also additional value such as personalized recommendations, automated after-sales service, or analytics dashboards for customers. For example, a fashion MSME can use sales data to recommend outfits based on previous purchase styles. This creates added value that increases consumer convenience and strengthens the company's competitive position. As stated by Osterwalder and Pigneur (2010), the

right value innovation will strengthen the *value proposition* so that companies have a strong reason for consumers to continue to choose their products.

The transformation of business models also opens up opportunities for emerging companies to enter new markets with relatively little risk. By leveraging digital platforms and marketing automation, companies can expand their geographic reach without having to open physical branches. This can be seen in various local MSMEs that have started exporting products through global marketplaces. This cross-regional expansion capacity is supported by the ease of digital logistics, creating a faster growth pattern than traditional business models. This view is reinforced by Yoo et al. (2017), who explain that digitalization removes geographical boundaries and allows companies to create global markets instantly.

Thus, changing business models through digital transformation is not only about technology modernization, but also the process of re-engineering the company's core strategy. Companies that successfully innovate value through digitalization tend to have stronger competitiveness, more efficient cost structures, and greater opportunities for market expansion. However, this success still depends on the company's ability to strategize in line with customer needs, internal capacity, and the dynamics of the ever-evolving digital ecosystem.

3.3 Comparative Analysis of MSME Performance Before and After Digital Transformation

Digital transformation is not only present as a symbol of modernization, but also brings real changes to the way MSMEs operate, interact with customers, and manage internal resources. To provide a more comprehensive picture of the impact, this section presents a comparison between the conditions of MSMEs before and after the implementation of digitalization. This analysis serves to show the most significant patterns of change, as well as illustrate how digital tools create added value through efficiency, increased revenue, and expanded market access (Rahayu & Day, 2015; OECD, 2021).

The following table illustrates fundamental changes in various aspects of MSME operations and businesses that have implemented digitalization.

Table 1. Comparison of MSME Conditions Before and After Digital Transformation

Aspects	Before Digital Transformation	After Digital Transformation
Marketing	Relying on conventional	Utilizing social media,

Aspects	Before Digital Transformation	After Digital Transformation
	marketing (brochures, posters, word of mouth). Limited market reach.	marketplaces, and digital advertising with a wider and segmented target audience.
Sales	Sales are only done offline. It depends on the number of customers who come in person.	Sales are carried out in a hybrid manner (offline-online). Transactions are increasing through e-commerce and online checkout features.
Operational	Manual logging, error-prone, slow when recap data.	POS systems, digital accounting, and automated stock management improve accuracy and efficiency.
Customer Relations	There is no structured customer data. Limited communication.	Customer databases are available. Retargeting, personalized promotion, and responsive service through chatbots/DMs.
Cost Efficiency	Promotion and operational costs are higher. Planning is not optimal.	Promotional costs are cheaper but have a wide reach. More efficient operations through automation.
Business Decisions	Relying on the owner's intuition, minimal data.	Use analytics, performance dashboards, and real-time reports for decision-making.
Market Access	It only reaches local areas.	Able to reach national and even international markets through digital platforms.
Competitiveness	Losing competition with bigger brands that are more modern.	Competitiveness increases due to better customer experience and faster processes.

The table shows that digital transformation has a significant impact on almost all aspects of the MSME business. In terms of marketing, digitalization allows MSMEs to expand their communication reach through social media and e-commerce platforms. The ability to target consumers more precisely makes promotional strategies more effective and cost-effective (Rahman & Wijaya, 2020).

In the operational aspect, the use of digital recording systems, automated inventory management, and financial applications has been proven to reduce the rate of administrative errors. According to Putri and Santoso (2022), MSMEs that use POS applications have experienced an increase in operational efficiency of up to 30% because the stock recap and monitoring process can be carried out in real-time.

The biggest change is seen in decision-making. Before digitalization, many MSMEs relied on the owner's intuition, so strategic decisions were not always data-driven. After adopting simple analytics—such as Instagram insights, marketplace dashboards, or digital sales reports—MSME actors can understand demand patterns, customer behavior, and the best time to promote. This improves decision accuracy and minimizes business risk.

In addition, expanding market access is one of the most prominent benefits. MSMEs that initially only reached consumers around physical locations are now able to penetrate regional and national markets. Some have even penetrated foreign markets through digital export platforms such as Tokopedia Export Hub or the GoBiz International program. This condition confirms that technology is able to remove geographical barriers that previously limited business growth opportunities.

From the overall analysis, it can be seen that digital transformation has significantly increased the competitiveness of MSMEs. Both in terms of efficiency, increased revenue, and the ability to understand customer needs, digitalization is a key factor that determines business sustainability in today's digital economy era.

3.4 Digital Transformation to Operational Efficiency and Strengthening Cost Structure

Digital transformation has a major impact on the way companies, especially MSMEs, manage their daily operational processes. In the modern business era, operational efficiency and adaptive cost structure are two important factors that determine a business's ability to survive and grow. Digitalization allows companies to automate, speed up work processes, reduce human error, and build a more compact cost structure than traditional operating models (Bouwman et al., 2019; Deloitte, 2022).

Before digitalization was widely introduced, most MSMEs carried out operational processes manually. Transaction recording, stock management, financial statement calculation, and customer service processes are carried out without digital tools. This condition causes many businesses to experience inefficiencies, such as longer processing times, high reliance on labor, and high potential for document errors and data loss. According to a Deloitte study (2022), MSMEs that have not adopted digital tools spend 40–60% longer preparing monthly reports than similar companies that have used automated systems.

Digitalization brings real changes through the use of software and platforms such as Point of Sales (POS), digital bookkeeping applications, automated inventory management systems, and customer relationship management (CRM). The use of POS, for example, provides the benefits of automatic sales recording, real-time stock monitoring, and inter-branch integration so that business owners can see sales performance at any time without having to be present at the location. Research by Putra and Wicaksono (2021) shows that the use of POS can increase recording accuracy by up to 95% and reduce stock loss (shrinkage) by 18%.

Digital transformation also has an impact on the operational cost aspect. With automation, companies can reduce the need for manpower for administrative work and focus resources on more strategic activities such as marketing, product innovation, or service quality improvement. In addition, the use of cloud technology makes the cost of data storage cheaper and more secure than physical storage, which often requires additional costs for maintenance and security. This is in line with the findings of Bouwman et al. (2019) that digitalization shifts the cost structure from high fixed costs to more flexible cost models, such as subscription-based services.

Operational efficiency also supports the company's ability to deal with fluctuations in market demand. With real-time data, companies can adjust production quantities, manage inventory more precisely, and avoid unnecessary stock buildups. Food and beverage MSMEs, for example, can use sales forecasting applications to predict demand on certain weekends or seasons. This strategy helps them reduce food waste while maintaining the quality of service to customers. A study by Johansen and Müller (2020) shows that companies that utilize predictive analytics are able to increase production efficiency by up to 25%.

In addition, a lighter cost structure makes MSMEs better prepared to face economic uncertainty. When external pressures occur, such as an increase in the price of raw materials or a decrease in people's purchasing power, the use of digital systems helps companies maintain efficiency so that they do not immediately experience an increase in operational costs. This is especially important for MSMEs that have relatively small profit margins and are vulnerable to cost changes.

Not only stopping there, digitalization also plays a role in improving the consistency of service quality. Automated systems, such as chatbots or quick response services through applications, allow MSMEs to provide a more stable customer experience without the need to add many service staff. Thus, digitalization not only reduces costs but also improves the quality of a company's interaction with customers (Marques & Ferreira, 2020).

From the overall analysis, it can be concluded that digital transformation makes a great contribution to strengthening the operational efficiency of MSMEs. The implementation of digital systems allows for cost savings, improved data accuracy, and faster and more responsive work processes. With a more flexible cost structure and increasingly adaptive operational capabilities, growing companies have a greater opportunity to optimize resources and maintain competitiveness in an increasingly competitive business landscape.

Examples of Real Cases in Improving MSME Operational Efficiency

One concrete example that illustrates the impact of digital transformation on operational efficiency is the culinary MSME "*Roti Bakar Arjuna*" in Bandung. Before digitization, all operational processes were carried out manually—starting from recording orders, raw material stocks, to daily financial statements. As a result, owners often face classic MSME problems such as stock differences, long queues because orders are recorded manually, and daily reports that are only completed late

at night. In addition to wasting a lot of time, this manual process makes business decisions less accurate because they are not supported by real-time data.

In 2021, the venture began adopting a simple POS system that integrates with cashier applications, inventory, and automated daily reports. After three months of use, owners report that queues during peak hours are reduced by almost 30% because the order entry process is much faster. Additionally, the inventory app helps owners avoid running out of raw materials suddenly, as the system provides notifications when stocks start to run low. The accuracy of sales recording is significantly improved so that daily profits can be clearly monitored without the need for repeated checks.

Another example can be seen in the local fashion MSME "*KainNusa*" which sells products through small stores in Yogyakarta. Prior to digital transformation, stock recording was often out of sync between offline and online sales, leading to double-selling on some products. In addition, monthly financial statements take up to a few days to prepare. After switching to using a digital bookkeeping system and integrating marketplaces with inventory software, these MSMEs managed to reduce stock recording errors by almost 90%. The process of compiling monthly reports that previously took days can now be completed automatically in minutes, as sales data is connected directly to the bookkeeping system.

In terms of cost, the two MSMEs have received significant benefits. *Roti Bakar Arjuna* has succeeded in reducing the need for additional labor at the cashier department because the POS system simplifies the sales flow. Meanwhile, *KainNusa* can shift manual recording costs to digital marketing investments that are proven to increase exposure and sales. These two cases show how digital transformation not only impacts the speed of work, but also creates a more efficient and flexible cost structure.

In general, these cases confirm that digitalization has a real impact on MSMEs in Indonesia. Operational processes become more accurate, efficient, and targeted, while cost structures become lighter due to the automation of various manual activities. Thus, the application of digital technology is not only theoretical, but also provides practical benefits that can be directly felt by business actors.

Case Example 3: MSMEs Laundry Service "*Clean+ Laundry Service*", Surabaya

MSMEs for services such as laundry also show a big impact of digital transformation on work efficiency. Before digitization, *Clean+ Laundry Service* managed the entire process manually, from order recording, estimated completion time, to calculating the weight of customer clothes. This manual system makes several problems arise, such as:

- Inaccuracy of the estimated retrieval time.

- Customers' clothes are often confused because there is no digital tagging system.
- Synchronization of the amount of laundry in and out.
- Customer queues are lengthened during peak hours.

In 2022, this business began to adopt a laundry management system application that is integrated with barcode tagging, automatic WhatsApp notifications, and a digital weighing system. After six months, operational efficiency improved significantly. Recording errors are drastically reduced because each garment is barcoded, while customers get an automatic notification when the laundry is ready to be picked up. In addition, the owner can monitor the workload of employees so that the division of tasks becomes more balanced.

The application of technology also has an impact on the cost structure. With the automated system, this business no longer needs two additional staff who were previously in charge of recording orders and organizing laundry. Instead, the owner allocates the funds to improve the quality of the washing machine and optimize marketing on social media. This change helped the turnover increase by about 20% in the first three months.

Operational Aspects	Before Digital Transformation	After Digital Transformation
Recording Methods	Manual (handwritten, simple spreadsheet), frequent errors	Automated through POS, inventory system, and management applications
Process Time	Slow; Daily/monthly reports take a long time	Significantly faster; Automated reports in minutes
Stock/Goods Management	Inaccurate, often discrepancies or lost stock	Real-time, integrated between online–offline sales
Customer Service	Long queues, unclear information	Automated notifications, quick response, chatbot, real-time status
Operating Costs	Higher due to a lot of manual power	More efficient due to automation & cloud-based systems
Operational Errors	High (clothes changed, wrong order, out of sync)	Drastically drop with barcodes, POS, and system integrations
Decision Making	Based on estimates, less data	Based on real-time data & analytics
Business Development Potential	Limited due to slow processes	More flexibility for branch expansion and development

The comparison in the table above shows a consistent pattern across MSME sectors: digitalization significantly improves workflows and strategic decisions. Both culinary, fashion, and laundry services faced similar challenges before digitalization, namely slow manual processes, error-prone, and not providing an accurate picture of business performance.

After adopting technologies such as POS, inventory systems, CRM, barcode tagging, and digital bookkeeping applications, MSMEs have managed to reduce administrative workload and improve overall operational speed. Real-time data generated from digital systems allows business owners to monitor sales trends, workloads, and stock requirements with precision. This leads to a strengthening of the cost structure, as companies can reduce waste, increase labor efficiency, and cost allocation becomes more strategic.

The stories of some of these MSMEs make it clear that digital transformation is not only changing the way we work, but building a stronger and more competitive operational foundation in the long term. Digitalization makes MSMEs more responsive, efficient, and have a cost structure that is adaptive to market dynamics.

3.5 Challenges and Risks in the Implementation of Digital Transformation in MSMEs

While digital transformation offers great opportunities for growth, efficiency, and competitiveness, the implementation process does not always go smoothly. MSMEs often face various structural and non-structural obstacles that can hinder the success of digitalization. These challenges are not only related to technological aspects, but also human resource capacity, business models, and external ecosystem conditions. This section discusses in depth the various risks that arise when MSMEs undertake digital transformation, as well as how these challenges can affect the sustainability of the digitalization process.

1. Limitations of Digital Literacy and Human Resources Capacity

One of the most significant obstacles is the low digital literacy of owners and employees. Many MSMEs do not understand how to operate basic technology such as cloud applications, analytical tools, and digital marketing platforms. According to Prasetyo and Sutopo (2021), human resource capabilities are the dominant determining factor because digital transformation will not run without adequate technological competence.

MSMEs often rely on traditional work systems. When new technologies are introduced, some employees experience *technostress*, which is stress due to feeling unable to keep up with digital changes (Tarafdar et al., 2019). As a result, the adoption process has been slow, even causing internal resistance.

2. Limited Capital and Technology Infrastructure

Digitization requires costs, both for hardware, software, system subscriptions, data security, and training. MSMEs often face limited capital, making it difficult to allocate funds for technology. A McKinsey survey (2020) shows that 55% of MSMEs in Southeast Asia postpone digital implementation due to financial constraints.

Infrastructure is also a big challenge, especially for MSMEs in non-urban areas. Internet network stability, adequate device availability, and technical support are often suboptimal. Without a strong infrastructure, digital technology cannot function optimally.

3. Cybersecurity Risks and Data Vulnerabilities

Digital transformation opens the door to the risk of cybercrime. Many MSMEs do not have adequate data protection systems, making them vulnerable to *malware*, *phishing*, and customer data leaks. Priyono et al. (2020) emphasized that data security unpreparedness is a critical risk that can undermine consumer trust.

MSMEs often use free applications without clear encryption protection. In addition, the lack of understanding of privacy policies and the lack of internal security procedures make MSMEs even more vulnerable. In the event of a data leak incident, the business's reputation can decline dramatically.

4. Unpreparedness of Business Processes and Organizational Structure

Many MSMEs try to adopt technology without first reorganizing their business processes. In fact, digitalization requires a change in the way technology works so that technology is truly effective. According to Davenport (2018), digital transformation fails not because of its technology, but because internal business processes are not adjusted.

For example, MSMEs that start using marketplaces but do not have a good stock management system will face problems such as delivery delays or inventory errors. This can result in a poor customer experience even though the technology is advanced.

5. Technology Integration Challenges

Not all digital systems can be connected to each other. Many MSMEs have difficulty when trying to integrate a cashier system with an inventory system, or connect a sales platform with automated financial reports. This system disharmony can increase the workload, not simplify it (Sebastian et al., 2020).

These integration obstacles usually occur due to the selection of incompatible applications or the use of many different platforms without a clear integration strategy.

6. Very Rapid Changes in Consumer Preferences and Behavior

In the digital ecosystem, changing customer preferences happen much faster than in conventional ecosystems. MSMEs need to adapt to trend dynamics, digital platform algorithms, and experience-based purchasing behavior. Unpreparedness in reading market changes can make digital strategies ineffective.

For example, changing social media content trends can make previously effective digital marketing strategies irrelevant in no time. If MSMEs are not responsive, they can lose engagement and conversion opportunities.

7. Risk of Technology Failure and System Dependency

When MSMEs start relying on technology, the risk of system failure becomes greater. Issues such as server downs, application errors, or data synchronization errors can disrupt sales and operational processes. For MSMEs that are just adapting, this kind of disruption can have a significant impact on cash flow.

Over-reliance on one platform—for example, relying on only one marketplace—is also risky. Platform policies can change at any time, and MSMEs do not have full control.

8. Challenges of Changing Work Culture

Digital transformation is not only about technology; It is also a cultural transformation. MSMEs often face difficulties in building a data-driven, collaborative, and innovative work culture. Changing organizational culture requires time and high commitment from business owners.

Without adequate cultural support, digitalization tends to be only a temporary project, not a long-term change.

Real Cases of MSMEs Facing Digital Transformation Challenges

Culinary MSMEs "Rasa Kita" – Bandung MSMEs try to use digital cashier applications and delivery services. In the early stages, business owners experienced obstacles because employees were not used to the use of tablets and point-of-sale systems. In addition, they encounter inventory recording errors because the system integration is not optimal.

Infrastructure issues arise when an unstable internet network hinders the online ordering process. After conducting repeated training for employees and changing internet providers, these MSMEs began to feel the benefits of digitalization—even though it took a long adaptation process.

This case shows that the challenges of digital transformation can be overcome, but it requires time, mentoring, and careful preparation to reduce implementation risks.

Provisional conclusion 3.5

Overall, the challenges and risks in digital transformation for MSMEs are multidimensional—including aspects of human resources, technology, finance, organization, and culture. The success of digital transformation is not only determined by the ability to adopt technology, but also the extent to which MSMEs are able to manage risks and adapt their business structures to digital changes. A deep understanding of these challenges will help MSMEs design digital strategies that are more realistic, sustainable, and adaptive to modern market dynamics.

4. Conclusion

Digital transformation has become a key element in encouraging sustainability and increasing the competitiveness of MSMEs in the digital economy era. Based on the analysis presented in Chapter 3, it can be concluded that digitalization is not only a technology-based technical process, but also a strategic change that touches all aspects of business operations. This process includes reconstructing business models, adjusting workflows, improving human resource competencies, and utilizing technology as the foundation for innovation.

First, digital transformation has been proven to have a significant positive impact on the productivity, efficiency, and market access of MSMEs. Technology allows operational processes to run faster, more transparent, and more measurably. In addition, digitalization makes it easier for MSMEs to utilize data for strategic decision-making, strengthen relationships with customers, and build wider marketing channels than traditional methods.

Second, the implementation of digital transformation also encourages changes in business models. MSMEs no longer rely on conventional sales mechanisms, but instead integrate technologies such as marketplaces, point-of-sale systems, delivery services, social media, and cloud platforms. These changes create new value through a better customer experience, more accurate inventory management, and more responsive service. Various case studies analyzed show that MSMEs that have succeeded in digitizing consistently experience increased revenue, cost efficiency, and market growth.

However, the digital transformation process is inseparable from challenges. Limited digital literacy, lack of human resource readiness, technology implementation costs, cybersecurity risks, and obstacles to system integration are the most dominant inhibiting factors. These challenges show that the success of digital transformation is largely determined by the internal adaptation capacity of MSMEs, infrastructure readiness, and external environmental support. Without adequate readiness, digitalization risks only surface technology adoption without generating long-term strategic benefits.

Overall, digital transformation in MSMEs should be seen as a sustainable journey, not a short-term project. Its success requires strategic orientation, human capacity building, and conducive ecosystem support, including government policies, professional mentoring, and collaboration between industry players. With a

comprehensive approach, MSMEs have a great opportunity to increase competitiveness, expand the market, and strengthen business resilience in the midst of modern economic dynamics.

The general conclusion of this analysis confirms that digital transformation is a strategic need for MSMEs in facing global competition. The resulting changes not only improve efficiency, but also open up new innovation spaces that are relevant to market developments and consumer behavior. Thus, digitalization must continue to be optimized as the main foundation for the development of MSMEs in the future.

5. Suggestions

Based on the conclusions that have been presented previously, there are several suggestions that can be considered so that the digital transformation process in MSMEs can run more optimally, sustainably, and provide strategic benefits in the long term.

First, MSMEs need to improve the digital literacy of all internal elements, especially owners and employees. Mastery of basic technologies such as the use of digital POS, application-based financial record-keeping, simple analytics, and the use of digital marketing platforms are the main foundations before digitizing at a more complex level. Regular training, workshops, or mentoring by professional institutions can help strengthen the digital competence of the workforce so that the transformation process does not only depend on technology, but also on human readiness.

Second, MSMEs are advised to develop a digital transformation strategy in stages and measurably. Digitalization does not have to be done directly and thoroughly, but rather starts from the aspects that need the most improvement, such as payment systems, inventory recording, or digital marketing. This phased approach helps MSMEs reduce cost risk, reduce change resistance, and adapt business processes to available internal capacity.

Third, business owners need to conduct periodic evaluations of the technology that has been implemented. Every digital innovation must be assessed in terms of its effectiveness, efficiency, financial impact, and contribution to the customer experience. If there are applications or systems that do not provide significant benefits, MSMEs should look for other alternatives that are more suitable and affordable. A planned evaluation helps MSMEs avoid waste and ensure that every digital investment truly adds value.

Fourth, data security and privacy protection must be the main concerns in the digitalization process. MSMEs need to start implementing basic security practices such as the use of strong passwords, routine data backups, two-step verification, and understanding the risks of digital fraud. With the increasing reliance on online data and platforms, these security measures have become essential to maintain operational continuity and customer trust.

Fifth, collaboration with various parties is also highly recommended. MSMEs can collaborate with local governments, business communities, marketplaces, training

institutions, and technology startups. This collaboration allows MSMEs to gain access to low-cost technology, expert mentoring, incubation programs, and wider marketing opportunities. This synergy is very important considering that many MSMEs still have limited capital and infrastructure for independent digitalization.

Finally, the government and related institutions are encouraged to continue to expand digital assistance programs, technology incentives, and policies that support the acceleration of the digital economy. This regulatory support and facilities can help MSMEs be better prepared to face the demands of an increasingly competitive and technology-based market.

Overall, digital transformation will provide maximum results if MSMEs, the government, and other stakeholders move together. With the readiness of human resources, the right strategy, guaranteed security, and strong ecosystem support, MSMEs can leverage technology as an engine of sustainable growth.

Bibliography

Bharadwaj, A., El Sawy, O. A., Pavlou, P. A., & Venkatraman, N. (2013). *Digital business strategy: Toward a next generation of insights*. MIS Quarterly, 37(2), 471–482.

Chen, J., Zhang, C., & Xu, Y. (2021). *Digital transformation and firm performance: Evidence from emerging markets*. Journal of Business Research, 135, 275–289.

Davenport, T. H. (2018). *The AI advantage: How to put the artificial intelligence revolution to work*. MIT Press.

Kane, G. C., Palmer, D., Phillips, A. N., Kiron, D., & Buckley, N. (2015). *Strategy, not technology, drives digital transformation*. MIT Sloan Management Review, 14(1), 1–25.

Li, L. (2020). *Digital transformation and business model innovation*. Journal of Innovation & Knowledge, 5(4), 1–13.

Lu, Y. (2020). *Industry 4.0: A review of enabling technologies and future research directions*. Technological Forecasting and Social Change, 158, 120–164.

Matt, C., Hess, T., & Benlian, A. (2015). *Digital transformation strategies*. Business & Information Systems Engineering, 57(5), 339–343.

McKinsey & Company. (2022). *Digital transformation: The value of digital ecosystems*. McKinsey Global Institute Report.

OECD. (2021). *Digital transformation in SMEs: Challenges and opportunities*. OECD Publishing.

Porter, M. E., & Heppelmann, J. E. (2014). *How smart, connected products are transforming competition*. Harvard Business Review, 92(11), 64–88.

Schwab, K. (2016). *The Fourth Industrial Revolution*. World Economic Forum.

Stone, M., & Woodcock, N. (2014). *Interactive, direct and digital marketing: A future that depends on better use of business intelligence*. Journal of Direct, Data and Digital Marketing Practice, 16(1), 15–30.

Westerman, G., Bonnet, D., & McAfee, A. (2014). *Leading digital: Turning technology into business transformation*. Harvard Business Review Press.

Yoo, Y., Boland, R. J., Lyytinen, K., & Majchrzak, A. (2010). *Organizing for innovation in the digitized world*. Organizational Science, 21(6), 1231–1250.