

EFFECTIVENESS OF GOVERNMENT TRAINING PROGRAMS FOR MSMEs IN THE DIGITAL ERA: A SYSTEMATIC REVIEW FROM THE BENEFICIARY PERSPECTIVE

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Abstract

The free training program organized by the government aims to increase the competitiveness and capabilities of Micro, Small, and Medium Enterprises (MSMEs) in facing the challenges of the digital economy. However, the effectiveness of this program is still debated, especially due to the limitations of implementation in the field. This study uses a systematic literature review approach to evaluate the perspective of MSMEs on the effectiveness of the training program. The results of the study show that there is a gap between the training materials and the real needs of MSMEs, causing a low level of post-training implementation. The main factors contributing to program failure include lack of access to technology, limited resources, and a lack of ongoing assistance and policy support. In addition, many trainings do not take into account the specific characteristics of MSMEs, making them less relevant to their business conditions. The study recommends that training programs should be designed in a more contextual, industry-based manner, and combined with mentoring strategies and economic incentives. Thus, training can have a more real impact in increasing the competitiveness, innovation, and sustainability of MSMEs in an increasingly dynamic digital ecosystem.

Keywords: Training Effectiveness; MSMEs; Business Sustainability

INTRODUCTION

Improving the capabilities of Micro, Small, and Medium Enterprises (MSMEs) through government training programs has become the main focus in efforts to develop the MSME sector in the era of digitalization. Rapid digital transformation has created significant pressure for MSMEs to adapt and improve their competitiveness (Hulla et al., 2021). Although the government has allocated substantial resources for free training programs, the effectiveness of these programs is still a big question, especially given the challenges faced by MSMEs in implementing the knowledge and skills gained from such training. In the context of digital transformation, MSMEs face various fundamental obstacles that affect their ability to optimize the benefits of the training programs provided. (Kumar et al., 2020) identified that the lack of motivation from business partners and customers in adopting Industry 4.0 technology is a major challenge for MSMEs. This situation is exacerbated by limited resources and supply chain vulnerabilities owned by MSMEs, especially in developing countries (Caballero-Morales, 2021). Government training programs that do not take into account this reality risk becoming ineffective and even counterproductive. The perspective of MSMEs on the effectiveness of training programs is very crucial to research, considering their position as the backbone of the national economy. (Eggers, 2020) emphasized that MSMEs have limited resources that make them vulnerable to external shocks. In this context, training programs should not only focus on knowledge transfer, but should also consider aspects of sustainability and practical

implementation. (Saunila, 2020) underscore the importance of understanding the specific characteristics of innovation capabilities in the context of small businesses, which are often overlooked in the design of training programs. Information security and industrial espionage risks are also a special concern in the era of digitalization. (Härting et al., 2022) It found that employee training plays a vital role in preventing industrial espionage, but many government training programs have not adequately integrated aspects of digital security. This shows that there is a gap between the real needs of MSMEs and the content of the training programs offered.

The formulation of the problem that is the focus of this research includes three main aspects. First, how do MSMEs perceive the relevance and effectiveness of free training programs provided by the government in the context of digital transformation? Second, what are the factors that affect the success or failure of the implementation of the knowledge and skills gained from the training program? Third, what is the impact of MSME resource limitations on their ability to optimize the benefits of the training program they are participating in? The purpose of this study is to comprehensively analyze the effectiveness of government training programs from the perspective of MSMEs as direct beneficiaries. Specifically, this study aims to: (1) Identify the gap between the expectations of MSMEs and the reality of the training programs offered, (2) Analyze the critical factors that affect the successful implementation of training results, and (3) Formulate recommendations to improve the effectiveness of training programs based on the real needs and capacities of MSMEs. This research is expected to provide significant benefits for various stakeholders. For policymakers, the results of this research can be the basis for evaluating and improving the effectiveness of existing training programs, as well as developing new programs that are more in line with the needs of MSMEs. For MSMEs themselves, this research can help them in identifying more effective strategies to maximize the benefits of the training programs they follow. For academics, this research contributes to the development of literature on MSME capacity building and the effectiveness of government training programs. Kou et al. (2021) show the importance of a data-based approach in analyzing the performance of MSMEs, which can be applied in the context of evaluating the effectiveness of training programs. By understanding the patterns and characteristics of MSMEs that have successfully implemented the training results, future programs can be designed more targeted and sustainable.

This study adopts a comprehensive approach in analyzing the effectiveness of training programs, taking into account various aspects such as innovation capabilities, digital transformation, information security, and limited MSME resources. Through an in-depth analysis of the MSME perspective, this research is expected to produce findings that contribute to improving the quality and relevance of government training programs, as well as supporting the sustainable development of MSMEs in the digital era. The main contribution of this study lies in the holistic approach used in analyzing the effectiveness of training programs from the perspective of beneficiaries. By combining various theoretical and empirical perspectives from the current literature, this study offers a deeper understanding of the dynamics and complexities involved in MSME capacity building programs. The results of this study are expected to be a catalyst for a paradigm shift in the design and implementation of government training programs, towards a more adaptive and oriented approach to the needs of MSMEs.

LITERATURE REVIEW AND HYPOTHESIS FORMULATION

MSME Digital Transformation

Digital transformation has become a strategic imperative for Micro, Small, and Medium Enterprises (MSMEs) in the era of an increasingly competitive digital economy. (Hulla et al., 2021) underlined that digitalization offers huge opportunities for the industrial sector, but MSMEs face significant challenges in harnessing the potential of this digital transformation, especially due to the limited personnel trained in the field. This phenomenon creates a widening digital divide between MSMEs and large companies, which has the potential to threaten the sustainability and

competitiveness of MSMEs in the long term. The challenges of digitalization for MSMEs have complex and multifaceted dimensions. (Chen et al., 2021) identified four main obstacles in the digital transformation of MSMEs in the service sector: limited funding, lack of digital capabilities, limited human resources, and technical barriers. Limited funding is a fundamental challenge that affects the ability of MSMEs to invest in digital infrastructure and competency development. This situation is exacerbated by the high cost of adopting new technologies and the uncertainty of the return on investment (ROI) of digital initiatives. In the context of digital capabilities, MSMEs face difficulties in building and maintaining the necessary digital competencies. (Hulla et al., 2021) emphasized that the lack of understanding of digital technologies and limited access to digital talent are significant obstacles. MSMEs often struggle to identify technologies that are relevant to their business needs and integrate them into existing operational processes. These limitations not only affect operational efficiency but also hinder innovation and development of new products or services. The need for digital competencies in the context of MSMEs covers a wide spectrum, ranging from basic skills to more complex technological expertise. (Chen et al., 2021) revealed that MSMEs require a comprehensive understanding of various digital aspects, including data analysis, cybersecurity, the use of digital platforms, and the integration of technology in business processes. These competencies are not only limited to technical aspects but also include strategic abilities in utilizing digital technology to create business value.

Technological adaptation in MSME operations requires a systematic and structured approach. (Hulla et al., 2021) highlighting the importance of developing a digital transformation roadmap that is in accordance with the characteristics and capabilities of MSMEs. This adaptation process must consider various factors such as organizational readiness, financial capabilities, and the availability of human resources. MSMEs need to identify priority areas for digitalization and develop realistic and sustainable implementation strategies. The role of the government in supporting the digital transformation of MSMEs is very crucial. (Chen et al., 2021) identify four main roles of the government: building a digital platform for MSMEs, promoting digital/mobile payments, providing digital training, and building a digital collaboration ecosystem. This government support must be holistic and take into account the specific needs of MSMEs in various stages of their digital transformation. The implementation of digital technology in MSME operations also requires special attention to sustainability aspects. (Hulla et al., 2021) emphasized the importance of ensuring that technology adoption not only focuses on the technical aspects but also considers the long-term impact on the business model and competitiveness of MSMEs. This includes the development of internal capabilities, change management, and maintenance of the digital infrastructure that has been implemented. Digital transformation also has significant implications for MSME business models. (Chen et al., 2021) underlined that MSMEs need to develop business models that are more adaptive and responsive to technological changes. This includes a review of the value proposition, distribution channels, customer relationships, and existing cost structures. MSMEs need to identify new opportunities created by digital technology and develop strategies to take advantage of them effectively.

Data security and privacy aspects are also a major concern in the digital transformation of MSMEs. (Hulla et al., 2021) emphasizing the importance of building awareness and capabilities in managing cybersecurity risks. MSMEs need to develop security protocols that are in line with applicable industry standards and regulations, while considering the limited resources they have. The development of a digital ecosystem that supports the transformation of MSMEs is a critical factor. Chen et al. (2021) highlight the importance of building a network of collaboration between various stakeholders, including governments, educational institutions, technology providers, and MSMEs themselves. This ecosystem must be able to facilitate knowledge transfer, share resources, and create synergies that support the acceleration of MSME digital transformation.

MSME Training Program in the Context of Capacity Building

Training programs for MSME capacity building are a vital component in the strategy to strengthen the small and medium business sector. (Saunila, 2020) stated that the development of innovation capabilities in the context of small businesses requires a different approach from large companies, considering the characteristics and limitations that MSMEs have. The success of a training program relies heavily on an in-depth understanding of the specific needs and operational context of MSMEs. The types of government training programs for MSMEs can be categorized based on the focus of development and the goals to be achieved. (Willenbacher et al., 2021) identified that in the era of digitalization, data-driven process optimization is becoming increasingly important, even for small companies. Training programs need to cover technical aspects such as the use of technology and data analysis, but should also consider aspects of sustainability and resource efficiency. Some of the main categories of training programs include technical skills development, operational management, digital literacy, and process innovation. The components and structure of MSME training programs need to be designed by considering the complexity of the challenges faced. (Anifowose & Ghasemi, 2022) emphasizes the importance of five basic dimensions in total quality management that need to be integrated in the training program: top management quality practices, employee quality management, customer orientation, process management, and employee knowledge and training. An effective program structure must be able to accommodate practical learning needs while still maintaining a strong theoretical framework. The effectiveness of knowledge transfer in the context of MSME training is influenced by various factors. (Saunila, 2020) underscore the importance of understanding the specific characteristics of innovation capabilities in the context of small businesses to ensure effective knowledge transfer. The training program needs to consider learning methods that are in accordance with the culture and capacity of MSMEs, including experiential learning and problem-based learning approaches.

(Willenbacher et al., 2021) shows that the use of data and machine learning technology can make a significant contribution to the optimization of the learning process. However, the implementation of learning technology must be adjusted to the capabilities and infrastructure owned by MSMEs. Training programs need to provide adequate technical support and ensure the accessibility of learning materials for all participants. The sustainability aspect of the training program is a critical factor in the capacity development of MSMEs. (Anifowose & Ghasemi, 2022) emphasized that the speed of innovation plays an important mediating role in the relationship between total quality management and MSME performance. Training programs need to be designed to support not only short-term knowledge transfer but also the development of ongoing capabilities that drive innovation.

Evaluation of the effectiveness of training programs requires a multidimensional approach. Saunila (2020) identified the need for a holistic understanding of innovation capabilities in the context of small businesses to measure the success of training programs. Evaluation metrics should include not only the improvement of knowledge and skills, but also the impact on business performance and the sustainability of MSMEs. The integration of technology in training programs is becoming increasingly important. (Willenbacher et al., 2021) shows that increasing data volumes and digitization create the need for dynamic and intelligent analysis models, even in small companies. Training programs need to introduce MSMEs to the potential of technology while helping them develop the capabilities to utilize it effectively. Collaboration between various stakeholders in the development and implementation of training programs is a key factor in success. (Anifowose & Ghasemi, 2022) emphasizing the importance of customer orientation and process management in improving the performance of MSMEs. Training programs need to facilitate interaction and learning from various sources, including industry practitioners, academics, and fellow MSME actors. The adaptability of training programs to changes in the business environment is very important. (Saunila, 2020) underlining the need for training programs that can adapt to market dynamics and technological developments. Flexibility in program structure and content allows MSMEs to remain relevant and competitive in a dynamic business environment. Capacity building through training programs must also consider cultural aspects and local contexts. (Willenbacher et al., 2021) shows

that the implementation of new technologies and practices must be adapted to the specific characteristics and capabilities of MSMEs. Training programs need to respect and integrate local values and practices while introducing innovation and process improvement.

MSME Innovation Capability

Innovation capability is a crucial factor in determining the competitiveness and sustainability of MSMEs in an increasingly competitive era. (Saunila, 2020) affirming that a deep understanding of the characteristics of innovation in the context of small businesses is indispensable to developing effective development strategies. The innovation capabilities of MSMEs have unique characteristics that set them apart from large companies, especially in terms of flexibility and adaptability to market changes. The characteristics of innovation in MSMEs reflect the complexity and typical dynamics. (Kumar et al., 2020) identified that MSMEs face specific challenges in adopting Industry 4.0 technologies for ethical and sustainable operations. Innovation in the context of MSMEs is often incremental and oriented towards practical solutions, driven by the immediate need to respond to market demand or overcome operational constraints. Entrepreneurial competence plays a vital role in the performance of MSMEs, especially in the aspects of organizing, learning, and developing relationships (Sakib et al., 2022). The innovation characteristics of MSMEs are often reflected in their ability to integrate new knowledge with existing practices, creating solutions that are appropriate to the local context and the limited resources they have. The factors that affect the innovation ability of MSMEs are multidimensional. (Bening et al., 2023) underlining the importance of information technology knowledge and innovation in the adoption of new technologies. Their research reveals that the development of information technology and e-commerce skills is the best strategy to increase technology adoption among retail MSMEs.

Lack of motivation from partners and customers in adopting new technologies is a significant challenge (Kumar et al., 2020). External factors such as ecosystem support, access to resources, and regulations also affect the innovation capabilities of MSMEs. (Saunila, 2020) emphasizing the importance of understanding the different dimensions of innovation capabilities to develop effective interventions. The relationship between training and improving innovation capabilities shows complex dynamics. (Sakib et al., 2022) found that learning competencies have a meaningful impact on the performance of MSMEs. An effective training program must be able to develop not only technical skills but also an innovative mindset and adaptive abilities necessary in a dynamic business environment. (Bening et al., 2023) emphasizing that an understanding of critical criteria in technology adoption can help improve the effectiveness of training programs. The development of innovation capabilities through training needs to consider the Decision-Makers, Technological, Organizational, and Environmental (DTOE) framework to ensure a comprehensive and contextual approach. Sustainability aspects in the development of innovation capabilities (Kumar et al., 2020). Training programs need to help MSMEs develop the ability to evaluate and adopt new technologies while considering the long-term impact on business operations and the environment. A systematic approach to developing innovation capabilities through training (Saunila, 2020). This includes identifying the specific needs of MSMEs, developing relevant materials, and implementing effective learning methods. Training programs should be able to facilitate experiential learning and encourage experimentation in safe contexts.

Aspects of collaboration and networking in the development of innovation capabilities are becoming increasingly important. (Bening et al., 2023) identified that a shared understanding between policymakers, technology service providers, and MSME decision-makers is critical in adopting effective development strategies. Training programs need to facilitate the formation and strengthening of this collaborative network. Evaluation of the impact of training on innovation capabilities requires a comprehensive approach. (Sakib et al., 2022) suggest that competency measurement can provide a framework for designing effective training and development programs. Evaluation metrics should include not only an increase in technical capabilities but also changes in innovation mindsets and practices. The sustainability of the development of innovation capabilities

is an important consideration. (Kumar et al., 2020) emphasizing the need for a long-term approach in developing innovation capabilities that support ethical and sustainable operations. Training programs need to be designed to support continuous learning and adaptive capability development.

Limited Resources and Implementation Challenges

Limited resources are an inherent characteristic of MSME operations, creating significant challenges in the development and implementation of training results. MSMEs, as the backbone of the economy, face special vulnerability to external shocks due to the limited resources they have (Eggers, 2020). This phenomenon, known as liability of smallness, creates structural barriers in the development of organizational capabilities. Liability of smallness in the context of MSMEs has complex and multidimensional manifestations. (Tick, 2023) revealed that although the spread of Industry 4.0 technology is inevitable among MSMEs, limited resources are a limiting factor in the adoption of the technology. These limitations include not only financial aspects, but also human resources, technological infrastructure, and access to knowledge and business networks. That MSMEs in developing countries face greater challenges due to very limited resources and vulnerable supply chain relationships and business relationships (Caballero-Morales, 2021). This condition is further exacerbated by increasingly complex market dynamics and increasingly high demands for technological adaptation. (Azevedo, 2021) illustrate how crisis situations can exacerbate the impact of resource constraints, as seen in the context of a pandemic that requires rapid adaptation to new learning and training methods. Obstacles in the implementation of training results are often rooted in the incompatibility between the training content and the operational reality of MSMEs. Increasing awareness and training of specific Industry 4.0 technologies needs to be strengthened among MSMEs, but their implementation is hampered by limited understanding and organizational readiness (Tick, 2023). These barriers include the gap between the knowledge gained and the practical ability to implement it in the context of day-to-day business.

The dilemma of MSMEs in allocating limited resources between strategy development and operational funding (Eggers, 2020). The implementation of training outcomes is often hampered by the inability of MSMEs to allocate adequate resources for the necessary transition and adaptation processes. Strategies to overcome resource limitations require an innovative and adaptive approach. (Caballero-Morales, 2021) Identify innovation as a key aspect of business recovery, especially in the context of resource constraints. A multidisciplinary methodological approach is needed to guide MSMEs in optimizing the use of their limited resources while still encouraging product innovation for new markets. The importance of understanding the narrative and dissemination of Industry 4.0 technology among MSMEs to develop effective development strategies (Tick, 2023). Research shows that familiarity with certain technologies contributes significantly to the understanding and adoption of Industry 4.0, underscoring the importance of a phased approach to capability development. Adaptation of learning and training methods in the face of limited resources (Vijayan & Mork, 2020). The use of virtual classrooms and simulation-based training is an effective alternative in situations where access to conventional training is limited. This approach allows MSMEs to continue to develop their capabilities despite facing resource constraints. An effective worldview in the face of high uncertainty situations (Eggers, 2020). This strategy involves creatively utilizing existing resources and focusing on actions that can be carried out with limited resources, rather than fixating on existing limitations.

The development of collaboration networks and supporting ecosystems is a key strategy in overcoming resource limitations. (Caballero-Morales, 2021) underlining the importance of utilizing digital resources as the main facilitator for networking and innovative product development in the context of limited resources. This approach allows MSMEs to access a wider range of resources and knowledge through collaboration and resource sharing. Increased awareness and understanding of specific technologies can help MSMEs optimize the use of their limited resources. This strategy includes identifying the technologies that are most relevant to the business needs and focusing on

developing capabilities within those areas, rather than trying to adopt all new technologies at the same time.

Security and Business Sustainability

The era of digitalization has brought a significant transformation in the operational landscape of MSMEs, but at the same time it has also brought various digital security challenges that were previously not paid much attention to. In this context, digital security is a fundamental aspect that affects the sustainability of MSME businesses in the modern era. The increasing reliance on digital technologies in business operations has created new vulnerabilities that require a comprehensive approach to their management. MSMEs face various digital security risks, ranging from theft of sensitive data to operational disruptions due to cyberattacks. This phenomenon is further exacerbated by the limited understanding and resources owned by MSMEs in implementing an adequate security system. The aspect of digital security in the context of MSMEs has unique characteristics that require special attention. Budget and human resource constraints often result in MSMEs ignoring or abandoning investment in digital security systems. This situation creates security loopholes that can be exploited by irresponsible parties. These vulnerabilities are not only limited to technological aspects but also include human factors, such as lack of security awareness among employees and non-compliance with basic security protocols. Government training programs need to integrate digital security aspects more systematically to help MSMEs build effective defenses against cyber threats.

In the context of business sustainability, MSMEs need to develop a holistic approach that considers economic, social, and environmental aspects. Sustainability is no longer just about financial sustainability but also includes operational impacts on communities and surrounding ecosystems. An effective training program must be able to help MSMEs identify and implement sustainable business practices that are appropriate to their scale and capabilities. This includes the efficient use of resources, waste minimization, and the development of business models that are adaptive to environmental changes. Digital transformation has significant implications for the operational sustainability of MSMEs. Increasing efficiency through digitalization can support economic sustainability, but it also requires substantial investment and adaptation. Training programs need to help MSMEs develop measurable and sustainable digital transformation strategies, taking into account the limited resources they have. A phased approach to technology adoption can help MSMEs manage risk and ensure successful long-term implementation.

Information security is becoming increasingly crucial along with the increasing volume of data managed by MSMEs. The protection of customer data, financial information, and trade secrets requires a comprehensive but still practical security system to be implemented in the context of MSMEs. The training program should cover aspects of information security relevant to the needs of MSMEs, including basic practices in data security and response protocols to security incidents. An understanding of data protection regulations and compliance with industry security standards also needs to be integrated into the training program. The sustainability aspect in the development of MSMEs cannot be separated from the ability to adapt to market and technological changes. Training programs need to help MSMEs develop dynamic capabilities that allow them to continue to innovate and adapt to changes in the business environment. This includes the development of a sustainability-oriented entrepreneurial mindset, the ability to identify new opportunities, and flexibility in business models. A sustainable learning approach is key in ensuring the relevance and competitiveness of MSMEs in the long term.

The role of training in ensuring business sustainability requires an integrated and sustainable approach. Training programs should not stop at knowledge transfer alone but should include assistance in implementation and impact evaluation. Continuous monitoring and evaluation of the effectiveness of training programs allows for necessary adjustments and improvements to ensure relevance to the needs of MSMEs. The development of an effective feedback mechanism between training providers and MSMEs is crucial in ensuring that training programs remain responsive to the

challenges faced. The sustainability of MSME businesses is also closely related to their ability to build and maintain a strong business network. Training programs need to facilitate the establishment of collaborations and strategic partnerships that support sustainable growth. The development of a supportive business ecosystem through training programs can help MSMEs access resources, knowledge, and broader market opportunities. Collaboration between fellow MSMEs and with other stakeholders can create synergies that support the sustainability of the MSME sector as a whole.

The risk management aspect is an integral component in ensuring the sustainability of MSME businesses. Training programs need to help MSMEs develop capabilities in identifying, assessing, and managing the different types of risks they face. This includes operational, financial, digital security, and reputational risks. The development of a realistic and implementable business continuity plan is important in ensuring that MSMEs can survive and recover from possible disruptions. The role of technology in supporting the sustainability of MSME businesses needs to be emphasized in the training program. The use of appropriate technology can help MSMEs optimize their operations while maintaining cost efficiency. Training programs should help MSMEs understand how to strategically leverage technology to support their sustainability goals, including in aspects of energy management, waste management, and supply chain optimization. The development of MSMEs' internal capabilities in managing security and sustainability aspects is an important focus in the training program. This includes increasing employee awareness and competence in digital security practices and business sustainability. Training programs need to help MSMEs build an organizational culture that supports the consistent implementation of safety and sustainability practices. The development of an effective knowledge management system can help MSMEs retain and transfer important knowledge within the organization.

RESEARCH METHODS

This study adopts a systematic literature review approach to comprehensively analyze the perspective of MSMEs on the effectiveness of government training programs. This methodology was chosen because of its ability to integrate and synthesize findings from various studies in a systematic and structured manner, allowing for a deeper understanding of the phenomenon being studied. The research process is carried out through a series of planned and systematic stages, starting from the formulation of the research protocol to the synthesis and analysis of findings. The initial stage of the research began with the development of a systematic literature review protocol that included the determination of inclusion and exclusion criteria. Inclusion criteria include empirical studies published in the 2019-2024 timeframe, focusing on the evaluation of government training programs for MSMEs, and discussing aspects of digital transformation, capacity building, or MSME innovation. Exclusion criteria include studies that are not peer-reviewed, do not speak Indonesian or English, and do not specifically discuss MSMEs' perspectives on training programs. The temporal limitations of the last five years were chosen to ensure the relevance of the findings to the current digital transformation context.

The literature search process is carried out systematically using a combination of keywords that have been determined in the research protocol. The main keywords used include "MSME training program", "effectiveness of government training", "digital transformation of MSMEs", "MSME capacity development", and "MSME perspective". Searches were conducted on several leading academic databases such as Scopus, Web of Science, Science Direct, and Google Scholar. The search strategy also includes searching for grey literature from reliable sources such as government reports, research institute working papers, and conference proceedings to ensure comprehensive coverage. The article screening and selection process is carried out in two stages. The first stage involves examining the title and abstract based on the inclusion and exclusion criteria that have been set. Articles that pass the first stage then enter the second stage in the form of a full-text review to ensure suitability with the research objectives. The selection process uses a double-screening system where two researchers independently conduct a screening process to minimize bias. Differences of

opinion in the selection process are resolved through discussion and consensus by involving a third researcher as an intermediary if necessary. Data extraction from the selected articles was carried out using an analysis framework that had been developed previously. This framework includes several key dimensions such as the characteristics of the training program, the perspective of MSMEs on program effectiveness, factors affecting implementation, and the impact on the capabilities and performance of MSMEs. The extracted data also includes methodological information such as the study design, sample size, and analysis method used. The data extraction process is carried out systematically using standard templates to ensure the consistency and completeness of the information collected. Data analysis and synthesis were carried out using a thematic approach that allowed the identification of patterns and themes that emerged from the literature studied. The analysis process involves iterative coding to identify key themes related to the effectiveness of training programs from the perspective of MSMEs. The thematic analysis is focused on three main aspects according to the formulation of the research problem: the relevance and effectiveness of the program, the factors affecting the implementation, and the impact of resource limitations. The data synthesis process considers the specific context of each study to ensure accurate and meaningful interpretations.

The assessment of the quality of the study was carried out using an assessment instrument that was adjusted to the type of research being studied. For quantitative studies, the assessment includes aspects of internal validity, external validity, and reliability. For qualitative studies, the assessment focuses on credibility, transferability, dependability, and confirmability. The results of the quality assessment were used to determine the relative weight of each study in the synthesis process, ensuring that the conclusions produced were based on strong and quality evidence. The validity of the research is guaranteed through several strategies. First, the use of a systematic review protocol that has been validated before implementation. Second, the implementation of a systematic and well-documented screening and data extraction process. Third, the involvement of multiple reviewers in the selection and data analysis process to minimize bias. Fourth, detailed documentation of each stage of the research to ensure transparency and repeatability. Fifth, triangulating data sources by integrating findings from various types of studies and information sources. This study recognizes several methodological limitations that need to be considered in the interpretation of the results. First, focusing on Indonesian and English-language literature may exclude relevant findings from publications in other languages. Second, the temporal restrictions of the past five years may have overlooked important historical developments in the evolution of MSME training programs. Third, the heterogeneity of the methodology and context of the analyzed studies can affect the comparability and generalization of findings.

RESULTS AND DISCUSSION

Introduction to Results

A. Journal Article Screening

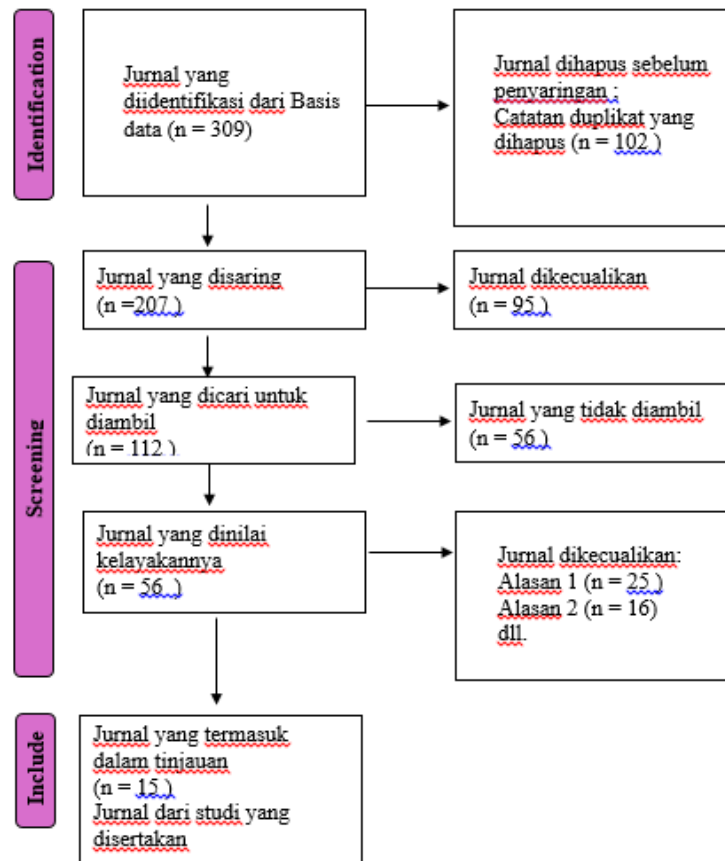


Figure 1. Flowchart Prisma

1. Identification: At this stage, an initial search is conducted to identify relevant journal articles from various databases. In your study, as many as 309 journals were successfully identified. However, not all of these journals are immediately processed further. At this stage, a duplicate removal process is also carried out, namely journals that appear more than once in searches from various sources. A total of 102 journal articles were deleted because they were considered duplicates, leaving 207 journals ready for further screening.
2. Screening: After the identification stage, the remaining journals undergo a screening process. In this process, the abstract and journal title are examined to ensure their relevance to the research topic. Of the 207 journals screened, 95 of them were excluded because they did not meet the initial criteria that had been set. At this stage, articles that do not fit the focus of the study or other inclusion criteria are removed.
3. Eligibility: After passing the initial screening stage, 112 journals were examined in more depth. However, of these, 56 journals could not be extracted or excluded for various reasons, for example, because the full text was not available, or because the journals did not meet the expected methodological or quality requirements.
4. Included: In the final stage, the remaining journals are evaluated for eligibility for inclusion in the final review of the study. A total of 56 journals have been evaluated for feasibility, but only

a total of 15 journals were finally included in the study because they met all the criteria that had been set.

This PRISMA flowchart reflects the systematic flow of the literature selection process in a systematic review, starting from the identification to the final selection of journals that are eligible for inclusion in the research analysis.

B. Brief summary results of the main findings

Table 1. Synthesis

It	Author & Year	Research Objectives	Method	Key findings	Relevance to the Study
1	(Vijayan & Mork, 2020)	Examining the concept of a learning factory for practical training for MSMEs in the manufacturing sector	Case studies	Learning factory helps with practice-based training in Industry 4.0	Highlighting the importance of a practice-based training approach for MSMEs
2	(Sima et al., 2022)	Developing a knowledge management framework for MSMEs	Concept analysis & case studies	MSME-specific knowledge management methods need to be flexible & technology-based	Explain how training can improve MSME knowledge management
3	(Safari & Saleh, 2020)	Examining the factors that drive MSME exports	Surveys & SEM	Training can improve MSME export strategies	Relevant in seeing if government training increases MSME business expansion
4	(Handley & Molloy, 2022)	Examining the mechanism of informal corporate governance in MSMEs	Literature studies	Effective governance in MSMEs can develop without a formal structure	Explain how internal MSME factors affect training effectiveness
5	(Islam et al., 2023)	Connecting spiritual leadership and innovation in MSMEs	Literature & Qualitative Studies	Spiritual leadership helps MSMEs overcome crises	Highlight how leadership affects training effectiveness
6	(Lewandowska, 2021)	Analyzing the relationship between investment, innovation, and competitiveness of MSMEs	Logistic regression	Investment in training and technology increases the competitiveness of MSMEs	Validating the importance of training as a strategic investment for MSMEs
7	(Vílchez-Román et al., 2020)	Analyzing workforce training and regulations in MSMEs	PLS-SEM & Interview	Training improves compliance with labor regulations	Showing the impact of training on the legal and administrative aspects of MSMEs
8	(Shojaifar & Järvinen, 2021)	Classify MSMEs based on cybersecurity needs	Classification studies	MSMEs have diverse levels of cybersecurity awareness	Providing insight that training must be tailored to the specific needs of MSMEs
9	(Siahaan & Tan, 2022)	Examining the factors that affect the adaptability of MSMEs during the pandemic	PLS-SEM	Institutional environment and digitalization play a role in MSME adaptation	Relevant in seeing how training can support MSME business resilience

10	(Johansson et al., 2022)	Analyzing cybersecurity awareness in manufacturing MSMEs	Qualitative studies	Micro-based training is more effective to increase cyber awareness	Provide more effective training strategies for MSME digital security
11	(Azevedo, 2021)	Researching digital training programs for MSMEs	Experimental studies	Digital-based training improves understanding and decision-making	Underlining the effectiveness of digital approaches in MSME training
12	(Nugroho et al., 2024)	Examining the adoption of e-commerce as a mediator in the relationship between government support and MSME performance	Survey & PLS-SEM	E-commerce adoption increases the positive impact of government support on MSMEs	Demonstrate that training should be associated with the application of digital technologies
13	(Rozmi et al., 2020)	Analyze the factors influencing ICT adoption by MSMEs	Interviews & thematic analysis	Internal & external factors affect the use of technology by MSMEs	Indicates that the training must consider the technological readiness of MSMEs
14	(Ibidunni et al., 2020)	Examining the relationship between knowledge transfer and innovation in informal MSMEs	SEM	Knowledge transfer does not always contribute to MSME innovation	Demonstrating the need for a training approach based on the real needs of MSMEs
15	(Gherghina, 2019)	Examining the impact of investment and innovation on the economic growth of MSMEs	Log-log regression	Innovation and investment have an effect on the economic growth of MSMEs	Strengthening the argument that training is a form of investment that can increase the competitiveness of MSMEs

MANAGERIAL IMPLICATIONS

The results of this study reveal several significant managerial implications related to the effectiveness of government training programs for MSMEs. An in-depth analysis of the MSME perspective shows that while government-provided free training programs have good intentions, their implementation often does not achieve optimal results due to a variety of complex factors. Digital transformation, which is the main focus of training programs, requires a more comprehensive approach and is tailored to the specific characteristics of MSMEs. The learning factory approach has proven to be more effective in facilitating practical learning for MSMEs, especially in the context of the adoption of Industry 4.0 technology (Vijayan & Mork, 2020). The knowledge management aspect is a critical factor in determining the success of the training program. MSMEs need a flexible and technology-based knowledge management system to be able to optimize learning and implementation of training results. Conventional approaches in knowledge transfer are often ineffective because they do not take into account the unique characteristics and resource limitations of MSMEs. Knowledge management frameworks that are adaptive and tailored to the specific needs of MSMEs have proven to be more effective in supporting the learning process and the implementation of training results (Sima et al., 2022). Improving the export capability of MSMEs through training programs requires a more strategic and structured approach. An effective training program must be able to integrate aspects of export strategy with the development of MSME digital capabilities. Research shows that training that focuses on developing export strategies can significantly improve the ability of MSMEs to enter international markets (Safari & Saleh, 2020).

However, this success is highly dependent on the suitability of training materials with the practical needs of MSMEs and the availability of post-training support. The internal governance of MSMEs plays an important role in determining the effectiveness of training programs. Although MSMEs generally have a more informal organizational structure, research shows that effective governance can thrive without the need for a rigid formal structure. Understanding the dynamics of informal governance is important in designing more effective and contextual training programs (Handley & Molloy, 2022). Leadership aspects, especially spiritual leadership, have been proven to have a significant influence on MSMEs' ability to overcome crises and implement change (Islam et al., 2023).

Investment in training and technology is a key factor in increasing the competitiveness of MSMEs. Training programs need to be seen as a strategic investment that contributes to long-term capability development. Research confirms that investment in training and technology has a positive impact on the competitiveness of MSMEs (Lewandowska, 2021). However, the effectiveness of this investment is highly dependent on the suitability of the training program with the specific needs and absorptive capacity of MSMEs. Compliance with regulations and industry standards also needs special attention in training programs. Effective training can increase MSMEs' understanding and compliance with labor regulations and other industry standards (Vílchez-Román et al., 2020). This is becoming increasingly important given the increasing complexity of regulations, especially in the context of digital transformation and globalization. Cyber security is a crucial aspect that needs to be integrated in the MSME training program. Diverse levels of cybersecurity awareness and needs among MSMEs require a tailored training approach (Shojaifar & Järvinen, 2021). Training programs need to consider variations in the level of readiness and digital capabilities of MSMEs to ensure the effectiveness of knowledge transfer and implementation of cybersecurity practices. The adaptability of MSMEs to changes in the business environment is greatly influenced by the effectiveness of training programs. The institutional environment and the level of digitalization play an important role in determining the adaptability of MSMEs (Siahaan & Tan, 2022). Training programs need to be designed to increase the business resilience of MSMEs through the development of adaptive capabilities and organizational resilience. Micro-based training approach has proven to be more effective in increasing cybersecurity awareness among manufacturing MSMEs (Johansson et al., 2022). Digital learning methods have also shown effectiveness in improving the understanding and decision-making of MSMEs (Azevedo & Almeida, 2021). The integration of e-commerce in MSME operations is an important mediator in the relationship between government support and improving MSME performance (Kou et al., 2021; Nugroho et al., 2024).

Internal and external factors simultaneously influence the adoption of technology by MSMEs, emphasizing the importance of a holistic approach in training programs (Rozmi et al., 2020). Knowledge transfer does not always directly contribute to MSME innovation, underscoring the importance of a training approach based on real needs (Ibidunni et al., 2020). Investment in innovation and capability development has proven to have a positive effect on the economic growth of MSMEs (Gherghina, 2019). Based on these findings, the government training program for MSMEs needs to be reformulated by considering several key aspects. First, the training approach must be more practice-based and tailored to the specific context of MSMEs. Second, the integration of digital technology in training programs needs to be carried out gradually and systematically. Third, the aspect of business security and sustainability must be an integral component in every training program. Fourth, post-training support and implementation assistance need to be strengthened to ensure the effectiveness of knowledge and skills transfer.

CONCLUSION

This research reveals that the effectiveness of the government's free training program for MSMEs still faces various significant obstacles. Although this program aims to improve the competitiveness and digital capabilities of MSMEs, the results of the study show that there is a gap between training materials and the real needs of MSMEs. The main obstacles include limited

resources, low relevance of training materials to real business challenges, and lack of post-training mentoring. The digital transformation expected from this program often does not run optimally due to the lack of technological readiness and innovation capabilities of MSMEs. In addition, external factors such as market uncertainty and limited access to a supportive business ecosystem also worsen the effectiveness of training. Therefore, it is necessary to reformulate training policies that are more adaptive, needs-based, and supported by sustainable mentoring strategies. With a more targeted approach, training programs can truly contribute to the growth and sustainability of MSMEs in the digital era.

CONFESSION

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BIBLIOGRAPHY

- Anifowose, O. N., & Ghasemi, M. (2022). *Total Quality Management and Small and Medium-Sized Enterprises' (SMEs) Performance: Mediating Role of Innovation Speed*.
- Azevedo, A. (2021). *Grasp the Challenge of Digital Transition in SMEs—A Training Course Geared towards Decision-Makers*. 1–20.
- Bening, S. A., Dachyar, M., Pratama, N. R., Park, J., & Chang, Y. (2023). E-Commerce Technologies Adoption Strategy Selection in Indonesian SMEs Using the Decision-Makers, Technological, Organizational and Environmental (DTOE) Framework. *Sustainability (Switzerland)*, 15(12). <https://doi.org/10.3390/su15129361>
- Caballero-Morales, S. O. (2021). Innovation as recovery strategy for SMEs in emerging economies during the COVID-19 pandemic. *Research in International Business and Finance*, 57(May 2020), 101396. <https://doi.org/10.1016/j.ribaf.2021.101396>
- Chen, C. L., Lin, Y. C., Chen, W. H., Chao, C. F., & Pandia, H. (2021). Role of government to enhance digital transformation in small service business. *Sustainability (Switzerland)*, 13(3), 1–26. <https://doi.org/10.3390/su13031028>
- Eggers, F. (2020). Masters of disasters? Challenges and opportunities for SMEs in times of crisis. *Journal of Business Research*, 116(May), 199–208. <https://doi.org/10.1016/j.jbusres.2020.05.025>
- Gherghina, S. C. (2019). *Small and Medium-Sized Enterprises (SMEs): The Engine of Economic Growth through Investments and Innovation*. 12(1).
- Handley, K., & Molloy, C. (2022). SME corporate governance: a literature review of informal mechanisms for governance. *Meditari Accountancy Research*, 30(7), 310–333. <https://doi.org/10.1108/MEDAR-06-2021-1321>
- Härting, R. C., Bühler, L., Winter, K., & Gugel, A. (2022). The threat of industrial espionage for SME in the age of digitalization. *Procedia Computer Science*, 207, 2934–2943. <https://doi.org/10.1016/j.procs.2022.09.352>
- Hulla, M., Herstätter, P., Wolf, M., & Ramsauer, C. (2021). Towards digitalization in production in SMEs - A qualitative study of challenges, competencies and requirements for trainings. *Procedia CIRP*, 104(March), 887–892. <https://doi.org/10.1016/j.procir.2021.11.149>
- Ibidunni, A. S., Kolawole, A. I., Olokundun, M. A., & Ogbari, M. E. (2020). Knowledge transfer and innovation performance of small and medium enterprises (SMEs): An informal economy analysis. *Heliyon*, 6(8), e04740. <https://doi.org/10.1016/j.heliyon.2020.e04740>
- Islam, A., Zawawi, N. F. M., & Wahab, S. A. (2023). Rethinking survival, renewal, and growth strategies of SMEs in Bangladesh: the role of spiritual leadership in crisis situation. *PSU Research Review*, 8(1), 19–40. <https://doi.org/10.1108/PRR-02-2021-0010>

- Johansson, K., Paulsson, T., Bergström, E., & Seigerroth, U. (2022). Improving Cybersecurity Awareness Among SMEs in the Manufacturing Industry. *Advances in Transdisciplinary Engineering*, 21, 209–220. <https://doi.org/10.3233/ATDE220140>
- Kou, G., Xu, Y., Peng, Y., Shen, F., Chen, Y., Chang, K., & Kou, S. (2021). Bankruptcy prediction for SMEs using transactional data and two-stage multiobjective feature selection. *Decision Support Systems*, 140, 113429. <https://doi.org/10.1016/j.dss.2020.113429>
- Kumar, R., Singh, R. K., & Dwivedi, Y. K. (2020). Application of industry 4.0 technologies in SMEs for ethical and sustainable operations: Analysis of challenges. *Journal of Cleaner Production*, 275, 124063. <https://doi.org/10.1016/j.jclepro.2020.124063>
- Lewandowska, A. (2021). Interactions between investments in innovation and SME competitiveness in the peripheral regions. *Journal of International Studies*, 14(1), 285–307. <https://doi.org/10.14254/2071-8330.2021/14-1/20>
- Nugroho, M. A., Novitasari, B. T., & Timur, R. P. (2024). The Mediating Role of E-Commerce Adoption in the Relationship Between Government Support and SME Performance in Developing Countries. *International Journal of Sustainable Development and Planning*, 19(3), 1023–1032. <https://doi.org/10.18280/ijstdp.190320>
- Rozmi, A. N. A., Nohuddin, P. N. E., Hadi, A. R. A., Bakar, M. I. A., & Nordin, A. I. (2020). Factors affecting SME owners in adopting ICT in business using thematic analysis. *International Journal of Advanced Computer Science and Applications*, 11(7), 208–218. <https://doi.org/10.14569/IJACSA.2020.0110727>
- Safari, A., & Saleh, A. S. (2020). Key determinants of SMEs' export performance: a resource-based view and contingency theory approach using potential mediators. *Journal of Business and Industrial Marketing*, 35(4), 635–654. <https://doi.org/10.1108/JBIM-11-2018-0324>
- Sakib, M. N., Rabbani, M. R., Hawaldar, I. T., Jabber, M. A., Hossain, J., & Sahabuddin, M. (2022). Entrepreneurial Competencies and SMEs' Performance in a Developing Economy. *Sustainability (Switzerland)*, 14(20), 1–18. <https://doi.org/10.3390/su142013643>
- Saunila, M. (2020). Innovation capability in SMEs: A systematic review of the literature. *Journal of Innovation and Knowledge*, 5(4), 260–265. <https://doi.org/10.1016/j.jik.2019.11.002>
- Shojaifar, A., & Järvinen, H. (2021). Classifying SMEs for Approaching Cybersecurity Competence and Awareness. *ACM International Conference Proceedings Series*. <https://doi.org/10.1145/3465481.3469200>
- Siahaan, D. T., & Tan, C. S. L. (2022). What Drives the Adaptive Capability of Indonesian SMEs during the Covid-19 Pandemic: The Interplay between Perceived Institutional Environment, Entrepreneurial Orientation, and Digital Capability. *Asian Journal of Business Research*, 12(2), 8–27. <https://doi.org/10.14707/ajbr.220125>
- Sima, X., Coudert, T., Geneste, L., & de Valroger, A. (2022). Knowledge management in SMEs: preliminary ideas for a dedicated framework. *IFAC-PapersOnLine*, 55(10), 1050–1055. <https://doi.org/10.1016/j.ifacol.2022.09.528>
- Tick, A. (2023). Industry 4.0 Narratives through the Eyes of SMEs in V4 Countries, Serbia and Bulgaria. *Acta Polytechnica Hungarica*, 20(2), 83–104. <https://doi.org/10.12700/APH.20.2.2023.2.5>
- Vijayan, K. K., & Mork, O. J. (2020). IdeaLab: A learning factory concept for Norwegian manufacturing SME. *Procedia Manufacturing*, 45, 411–416. <https://doi.org/10.1016/j.promfg.2020.04.045>
- Vílchez-Román, C., Rojas-Mendoza, A., & Huapaya-Huapaya, A. (2020). Training, average wages and taxes as factors that explain the attitude toward job regulation in contexts of informality. *Contaduría y Administración*, 65(1), 1–29. <https://doi.org/10.22201/FCA.24488410E.2019.1790>
- Willenbacher, M., Scholten, J., & Wohlgemuth, V. (2021). Machine learning for optimization of energy and plastic consumption in the production of thermoplastic parts in SME. *Sustainability (Switzerland)*, 13(12), 1–20. <https://doi.org/10.3390/su13126800>