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Innovation and Technology: New Start-Ups and MSMEs- Driving Growth in the Digital Age

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Abstract
Micro, Small, and Medium-Sized Enterprises (MSMEs) are critical to the growth of the nation's economy and society, and they frequently serve as testing grounds for entrepreneurship and innovation. They also contribute significantly to economic growth by being successful, efficient, flexible, and innovative entrepreneurs. Even with new governmental initiatives for the MSMEs sector in India, as well as a defined development strategy and action, MSMEs continue to face obstacles. In the recent progress in production, exports, and employment opportunities and their contribution to the country's economy is remarkable and this article aims to describe the situation of MSMEs in India.
This research uses a descriptive-analytical approach by conducting literature reviews and case studies. Data was collected through secondary sources and analyzed using a qualitative approach. This research identifies that innovation, and technology can improve MSMEs' market access, operational efficiency, product development, and productivity. E-commerce, digital marketing, business management software, and cloud computing were identified as essential tools in transforming MSMEs. Policy recommendations include improving access to resources and financing, developing digital infrastructure, digital skills training, and creating a supportive regulatory environment. This research provides a better understanding of the importance of innovation and technology in MSME transformation and can present relevant policy recommendations to support the development of MSMEs.
Keywords: MSME Transformation, Innovation, Technology, Market access, Operational efficiency.

1. INTRODUCTION

According to the ASEAN Investment Report released in September2022, Indonesia has the highest number of micro, small, and medium enterprises (MSMEs) in the ASEAN region. This statistic highlights the vital role of MSME sin the Indonesian economy. The report revealed thatin2021,thenumberofMSMEsinIndonesiareached around 65.46 million units. This figure reflects the significant contribution of the MSME sector in creating jobs, increasing people's income, and driving the country's economic growth. The MSME sector in Indonesia covers various industries, ranging from trade, manufacturing, and services to the creative sector. MSMEs also have the potential to be a key driver in reducing socioeconomic disparities and supporting sustainable development. As illustrated in the graph, Indonesia significantly differs in the number of MSMEs compared to neighboring countries in the ASEAN region. Is disparity show cases the diversity and great potential of the MSME sector in Indonesia.

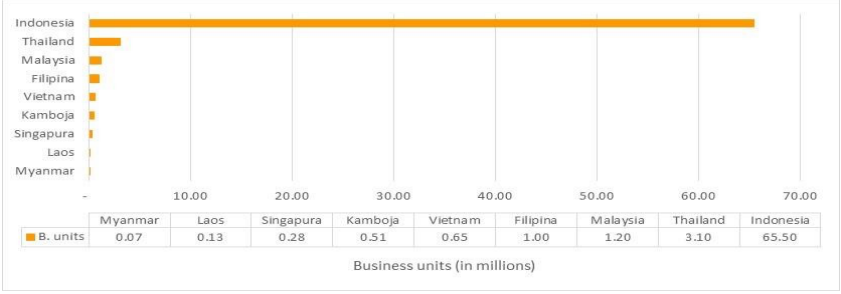
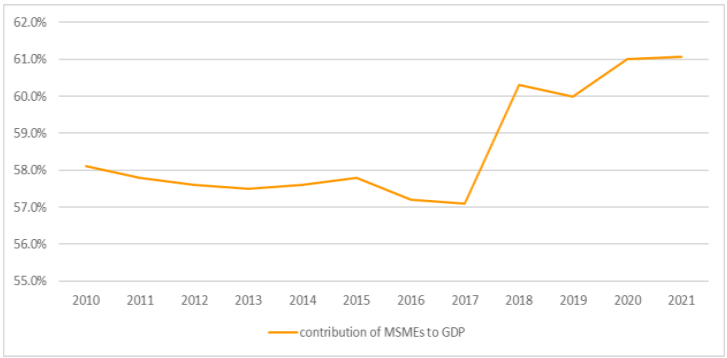


Figure1 Graph of the number of MSMEs in the ASEAN region

Source: ASEAN Investment Report released in September 2022

Micro, Small, and Medium Enterprises (MSMEs) play a significant role in Indonesia's economic growth. This significance is evident in the increasing trend of their contribution to the Gross Domestic Product (GDP) very year. Based on data published by the Ministry of Cooperatives and Small and Medium Enterprises in March 2021, MSMEs contributed 61.07% or IDR 8,573.89 trillion to the GDP in Indonesia. This significant contribution show show vital the role of MSMEs is in the country's economy. Thus, the development and empowerment of MSMEs are significant in driving inclusive and sustainable economic growth in Indonesia.

Figure2 The upward trend in the contribution of MSMEs to Gross Domestic Product (GDP)



Source: Ministry of Cooperatives Small and Medium Enterprises March 2021.

The transformation of MSMEs is an essential concern in facing global changes, especially in the context of increasingly complex economic competition. MSMEs play a vital role in a country's economic development, especially in creating jobs, accelerating economic growth, and reducing social inequality [1].However, the influence of technology and innovation in changing the face of business has significantly changed the landscape of MSMEs. Therefore, understanding and applying innovation and technology is critical in transforming MSMEs to ensure sustainability and growth in this digital era.

Previous studies have revealed the benefits of transforming MSMEs through innovation and technology. Research by Fitri et al., (2022) showed that using e-commerce can improve market access and sales of MSMEs [2]. Maheshwari et al., (2021) found that implementing business management software helped improve operational efficiency and inventory management [3]. Gui et al., (2021) highlighted using cloud computing technology to expand data storage capabilities and increase operational flexibility [4].While there have been several studies on the transformation of MSMEs through innovation and technology, there is still more research in the Indonesian context. Some studies only focus on specific sectors or types of technology MSMEs use. In addition, there is still a need to understand the barriers and challenges MSMEs face in adopting innovation and technology. Therefore, the research gap that needs to be filled is a deeper understanding of the role of innovation and technology in the transformation of MSMEs in Indonesia and the identification of barriers MSMEs face in adopting innovation and technology. This study examines the role of innovation and technology in transforming MSMEs and its impact on business growth and sustainability .In addition ,this study also wants to identify and analyze the challenges MSMEs face in adopting innovation and technology-based transformation. Furthermore, this research will develop relevant strategies and implementation measures to support the transformation of MSMEs based on innovation and technology. Finally, this research will develop a framework for evaluating and measuring the success of innovation and technology-based transformation of MSMEs. Thus, this research will provide a deeper understanding of how innovation and technology can play a crucial role in the transformation of MSMEs and provide practical guidance for stakeholders in supporting sustainable change in the MSME sector.

2. LITERATURE REVIEW

Definition of MSME

MSMEs (Micro, Small and Medium Enterprises) are businesses with specific characteristics in a country's

economy [5]. The definition of MSMEs may vary from country to country. Still, in general, MSMEs can be identified based on specific criteria, including the business scale, the number of employees, and the revenue generated [6].

Theoretically, MSMEs are categorized based on asset size, total sales, and number of employees. Based on the World Bank's definition, MSMEs can be categorized by asset size, with the micro category having assets less han or equal to a certain amount. In contrast, small businesses have assets between a certain amount and a higher amount [7]. Medium-sized enterprises have more significant assets than small enterprises but are still below the scale of large enterprises. In addition, MSMEs are also characterized by the criteria of the number of employees. In categorizing MSMEs based on the number of employees, micro- enterprises have a limited number of employees, usually less than ten people. Small enterprises have between 10 and 50 employees, while medium-sized enterprises can have a more significant number of employees but still need to reach the number at the large enterprise scale[8]. Revenue generated is also a determining factor in the categorization of MSMEs. MSMEs generally have lower income levels than large-scale enterprises[9].MSME avenues may vary depending on the business sector and other factors such as geographic region, target market, and level of competition.

MSMEs play an essential role in a country's economy. In Indonesia, for example, MSMEs are the backbone of the economy, with significant contributions to creating jobs, strengthening economic competitiveness, and reducing socioeconomic disparities. The growth and sustainability of MSMEs are directed through various policy schemes, supporting access to capital and financing and providing training and mentoring for MSME entrepreneurs.

MSMES needs to adapt to technological change and innovation in the current digital era. Using information technology, e-commerce, and other digital capabilities open up new opportunities. It enables MSMEs to expand their markets, improve efficiency and productivity, and enhance their competitiveness at the national and global levels.

In this regard, continuous encouragement for the development of MSMEs is essential in terms of government regulations and policies, entrepreneurship education, access to markets, business mentoring, and the development of an ecosystem conducive to the sustainable growth of the MSME sector.

MSME Transformation

MSME transformation is a process of change carried out by MSMEs to adapt to the changing business environment This transformation process includes various aspects, such as implementing new strategies, changes in business models, utilization of technology and innovation, and development of internal capabilities.

MSME transformation aims to increase productivity, competitiveness, and business sustainability in the face of global competition and rapid market changes. In a changing business environment, MSMEs need to have the ability to adapt to technological developments, market trends, and increasingly complex consumer needs.

Through transformation, MSMEs can improve operational efficiency, expand markets, improve product and service quality, and diversify their business. In addition, technology and innovation can be vital in achieving successful transformation. Information technology, including e-commerce and other digital platforms, can help MSMEsachieve a grander scale and reach a broader market.

In the transformation process of MSMEs, it is essential to develop internal capabilities regarding competent human resources, effective management, and a good understanding of market needs. Skills training, leadership development, and access to necessary market information drive MSME transformation.

Overall, MSME transformation is a strategic step that needs to be taken by MSMEs to remain relevant and competitive in the evolving business era. By improving productivity, competitiveness, and business sustainability, MSMEs can play a more substantial role in the economy, create jobs, and support overall economic growth. Innovation and Technology in the Context of MSMEs

Innovation and technology are critical elements in the transformation of MSMEs. Innovation involves the development of new ideas, products, processes, and business models that enable MSMEs to face challenges and capitalize on opportunities that arise around them. In transformation, innovation is essential in responding to market changes, answering consumer needs, and creating competitive advantage

On the other hand, technology relates to the utilization of tools, devices, and systems that use information and communication to improve efficiency, productivity, and information availability for MSMEs. Technological advancements, such as e-commerce, digital platforms, computer networks, business software, and artificial intelligence, provide excellent opportunities for MSMEs to improve their business performance and expand their market share

The application of technology also helps MSMEs over come resource limitations and improves accessibility, especially in terms of marketing, inventory management, data analysis, and communication with customers. By using technology well, MSMEs can achieve higher efficiency, face better competition, and improve the quality of the products and services they offer.

Education and training are significant factors in facilitating the transformation of MSMEs through innovationand technology .MSMEs need to develop their digital skills and gain a solid understanding of the latest technological developments. In addition, government policy support, access to finance, collaboration with research and development institutions, and establishing a supportive innovation ecosystem are also crucial for transforming MSMEs through innovation and technology

Overall, innovation and technology play a strategic role in transforming MSMEs into entities that are more adaptive, resilient, and able to compete in an increasingly digital and globalized economy. By utilizing innovation and technology well, MSMEs have a greater chance of achieving sustainable growth, increasing competitiveness, and substantially contributing to the country's economy.

Relevance of MSME Transformation to Innovation and Technology

The transformation of MSMEs through innovation and technology is an aspect that has significant relevance in the current business context. In the digital era and globalization, the development of information and communication technology has significantly impacted the overall business landscape [19]. The adoption of innovation and technology by MSMEs in their business strategies and operations can provide a higher competitive advantage.

Through this transformation, MSMEs can improve their operational efficiency by optimizing production processes, reducing production costs, and increasing overall productivity. MSMEs that can adapt to technological changes and utilize them in their business processes will achieve greater profits compared to their competitors who do not [20].

Moreover, this transformation also enables MSMEs to expand their access to the digital market. By adopting e-commerce technology and other digital platforms, MSMEs can reach a wider market share, even internationally [15]. In a situation where physical presence has become limited, the ad option of technology in distributing and marketing their products has become crucial.

Also, by adopting innovation and technology, MSMEs can improve the quality of their products and services. Using technology in the production process sand customer service can increase effectiveness and improve customer satisfaction, which will bring long-term benefits to the sustainability of MSME businesses [21].

In conclusion, transforming MSMEs through innovation and technology is crucial in an increasingly evolving business world. By adopting the right innovation and technology, MSMEs can achieve competitive advantage, improve operational efficiency, expand access to digital markets, and improve product and service quality. Therefore, efforts to encourage the adoption of innovation and technology in MSMEs must be supported by proper education and training, access to necessary resources, and government-supportive policies.

3. RESEARCH METHODOLOGY

The research approach used in this study is a qualitative case study. This approach allows an in-depth understanding of the role of innovation and technology in transforming MSMEs. Data for this research was collected through two research methods: desk research and case studies. In the desk study, several relevant literature sources were used to obtain theoretical and contextual information on MSME transformation and the role of innovation and technology. Meanwhile, the case studies analyzed MSMEs that have transformed through innovation and technology in depth. Case data is collected through direct interviews with the MSME owners involved, direct observation, and relevant documentation. Combining these two methods is expected to provide robust and in-depth data supporting this research to gain a holistic understanding of innovation and technology-based MSME transformation.

4. RESULTS AND DISCUSSION

The Role of Innovation and Technology in MSME Transformation

Innovation and technology are essential in improving market accessibility for MSMEs [20]. Through e-commerce platforms, MSMEs can overcome geographical boundaries and expand their business reach nationally and internationally. In addition, digital marketing strategies, such as social media, allow MSMEs to effectively promote their products and services to potential customers at a lower cost than traditional advertising. MSMEs can seize more significant market opportunities and improve their competitiveness using these innovations and technologies.

Innovation and technology also help MSMEs in optimizing their operations. MSMEs can automate administrative processes using business management software, such as bookkeeping, inventory, and financial management [22]. In addition, cloud computing technology allows MSMEs to store and access their data from anywhere securely. By utilizing these innovations and technologies, MSMEs can improve operational efficiency, reduce human error, and better allocate resources.

Innovation and technology allow MSMEs to develop innovative products and services [23]. By responding quickly to changes in market demand, MSMEs can conduct research and development (R&D) to create new products that meet consumer needs. Technology also allows MSMEs to diversify their products and services by involving digital elements, such as mobile applications or Internet of Things (IoT)-based solutions. By presenting innovative products and services, MSMEs can increase their appeal in the market and achieve a more comprehensive market share.

Innovation and technology can help MSMEs improve their efficiency and productivity . Through automated tools and machinery, MSMEs can reduce dependence on human labor, increase production, and reduce production costs. In addition, by applying the Industry 4.0 concept, MSMEs can integrate their production systems with OT (Operational Technology) and IT(Information Technology) technologies, resulting in a more efficient and monitored supply chain. By improving operational efficiency and productivity using innovation and technology, MSMEs can optimize available resources and improve their competitiveness in the market.

Challenges and Barriers to MSME Transformation

One of the main challenges MSMEs face in transforming is limited resources MSMEs often need more capital, labor, and access to technological infrastructure. Investment in innovation and technology can be a heavy burden for MSMEs with limited resources. In addition, the cost of procuring devices, training employees, and maintaining technology are also determining factors in the ability of MSMEs to implement innovation and technology.

Low digital skills and literacy levels are also a challenge in transforming MSMEs [27]. Many MSME owners and employees need to understand the potential and benefits of available technology. They may need more knowledge of business software, e-commerce platforms, or digital marketing strategies. A lack of digital skills can hinder the effective implementation of innovation and technology in MSMEs. Therefore, training and education on technology and digital literacy are needed for MSME owners and employees to optimize the potential of innovation and technology.

Data security and privacy are important issues that must be considered in transforming MSMEs. In adopting technology, MSMEs must address data protection and information security challenges. MSMEs must be aware of the risks of data leakage, cyber attacks, and identity theft. Data security and privacy concerns can hinder MSMEs' efforts to use technology and innovate. Therefore, MSMEs must implement security measures and realize the importance of compliance with applicable data security regulations and standards.

In addition to technical factors, organizational cultural challenges are an obstacle in transforming MSMEs [29]. Some MSMEs may have a conservative culture that is less open to change and innovation adoption. They may be reluctant to abandon traditional working methods and face resistance from employees to accept such changes. MSME transformation requires a change in attitude, mentality, and culture within the organization. Therefore, it is essential to educate and engage MSME owners and employees in the transformation process, provide the proper support, and create a culture that encourages innovation and the use of technology.

Strategy and Implementation Steps for MSME Transformation

The first step in implementing MSME transformation is to select and integrate the right technology for their needs. MSMEs should conduct careful research and evaluate technology solutions that align with their resources and business objectives. These solutions include selecting suitable business management software, effective-commerce platforms, or production and supply chain solutions. Integrate these technologies well to function synergistically and improve operational efficiency, including MSME marketing.

The second step in the strategy and implementation steps of MSME transformation is training and competency improvement of human resources. Improving the competencies of all members of the MSME organization is critical in implementing transformation. MSMEs need to provide continuous training and education related to adopting technologies, digital skills enhancement, business management, and innovation. This can be done through internal training, collaboration with educational institutions, or external training programs. By improving employee competencies, MSMEs can effectively utilize innovation and technology to improve their productivity and competitiveness.

The third step in this strategy is creating an innovative business environment. Creating an innovative business environment is essential in transforming MSMEs. MSMEs must foster a culture that encourages innovation, transparency, and collaboration. This can be done through in sensitizing employees who propose innovative ideas, establishing innovation teams, or setting up small research and development labs. Improved communication and collaboration among teams can also encourage more effective collaboration and the development of innovative ideas within MSMEs.

The last step in the strategy and implementation steps of MSME transformation is collaboration and partnership with external parties. Collaboration with external parties, such as educational institutions, government agencies, or other companies, can support the transformation of MSMEs [32]. MSMEs can establish partnerships with universities or research institutes to gain access to technical knowledge and resources. They can also seek support from government agencies through programs or incentives that promote MSME digital transformation. Collaboration with other companies can also help MSMEs by sharing knowledge, resources, and business opportunities. By engaging external parties, MSMEs can enhance their innovative capabilities and expand their network and market access.

Evaluation and Measurement of MSME Transformation Success

Several indicators can be used as a reference to measure the success of MSME transformation through innovation and technology. First, revenue grow this an indicator that shows the results of MSME transformation. Increased revenue can be explained by analyzing revenue changes from year to year or comparing revenue with competitors in the same industry. Furthermore, operational efficiency is an indicator that measures the extent to which MSME transformation improves the efficiency of operational processes. In this case, it can be observed through a reduction in production cycle time and a reduction in errors or failures in the production process or service provision. Productivity improvement is also an important indicator to measure. This indicator shows how effective MSME transformation is in improving productivity. Productivity can be measured based on output per hour worked or per unit of production produced. In addition, market expansion is an important indicator to measure The extent to which MSME transformation expands their market share. This can be indicated by comparing the number of new customers, market share growth, or expansion into new regions. Finally, customer satisfaction a relevant indicator to measure the success of MSME transformation. This indicator measures the extent to which the transformation can improve customer satisfaction. Customer satisfaction surveys, customer reviews, and retention rates can be measurement methods. Several methods can be used to evaluate and measure the success of MSME transformation, including data analysis, surveys and interviews, and benchmarking. Internal MSME data such as financial statements, sales data, or operational data can be analyzed to obtain relevant information in measuring the success of transformation. External data such as market data, industry trends, or competitor comparisons can also be used for comparative analysis. Customer satisfaction surveys or interviews with employees and customers can provide valuable insights into the extent to which MSME transformation has been successful and what the impact has been. Making comparisons with similar MSMEs that have been successful in transformation can provide an overview of the success of the MSME transformation. Information on best practices used by other companies can be

obtained through case studies, conferences, or business partnerships.

Economic and financial feasibility studies are an important step in measuring the success of MSME transformation. The study includes an analysis of the costs and benefits associated with the transformation. In the feasibility study of MSME transformation through innovation and technology, there are several important factors that must be considered. First, the cost of transformation is one aspect that needs to be evaluated. The cost evaluation involves assessing the investment associated with the procurement of hardware, software, employee training, and integration of new systems. Furthermore, economic benefits are also a factor that needs to be considered in this feasibility study. The estimated economic benefits that can be obtained from the transformation include increased revenue, reduced operational costs, and a higher level of efficiency in the business activities of these MSMEs. In addition, the calculation of ROI (Return on Investment) is an important step in analyzing the feasibility of MSME transformation. Through the calculation of ROI, it can be estimated the rate of return on investment that will be obtained from the transformation. This provides a clearer understanding of the extent to which investment in transformation can provide profitable results for the MSMEs concerned. This economic and financial feasibility study enables MSMEs to conduct a comprehensive evaluation of the transformation. Through cost and benefit analysis, MSMEs can understand the economic and financial impact of transformation and assess whether the investment is worth it.

Impact of MSME Transformation on Growth and Sustainability

The transformation of MSMEs through innovation and technology significantly impacts income generation [36]. MSMEs can achieve sustainable revenue growth with the proper adoption of innovation and technology. Some impact is include market expansion, improved sales efficiency, and the developing of new products and services. Through digital transformation and access to e-commerce platforms, MSMEs can reach a broader market and customers in previously hard-to-reach areas. As such, MSMEs have the potential to increase sales and revenue significantly. With the adoption of online sales technology, MSMEs can simplify the ordering and payment process. This can reduce the time spent on transactions, reduce administrative costs, and improve overall sales efficiency. The transformation of MSMEs provides opportunities to develop new products and services that add value and attract new customers. Revenue can be increased through improved pricing or diversification of the product portfolio.

MSMEs can increase the ir competitiveness in the market. In some cases, successfully transformed MSMEs can become market leaders and capture market share from larger competitors. MSME transformation can also open business partnerships and collaboration opportunities with other companies. MSMEs can access a larger market share through these partnerships and leverage synergies for sustainable growth.

The transformation of MSMEs through innovation and technology can improve operational efficiency. This impact will contribute to increased productivity and reduced operational costs, improving the sustainability of MSMEs. Aspects affected include process automation, system integration, and optimized inventory management. With the adoption of automation software and systems, MSMEs can reduce the time spent on routine administrative tasks. This will free up resources and allow more focus on core value-added activities. MSMEs can improve coordination between departments through integrated management systems, reduce redundancies, and improve overall operational efficiency. With an integrated inventory management system, MSMEs can optimize raw material procurement, reduce the risk of over stock or out-of-stock, and improve warehousing and distribution efficiency.

The transformation of MSMEs can increase consumer confidence in their businesses [38]. MSMEs can strengthen their image and reputation by adopting relevant technologies and innovations. Impacts include better customer experience, data security, privacy, transparency, and accountability. MSMEs can provide a better customer experience with integrated business governance and technology-enhanced services. This will increase customer satisfaction and build consumer trust. MSME transformation also involves protecting customer data. By adopting strong data security policies, MSMEs can increase consumer confidence in the privacy and security of their personal information. Through transparent technology, MSMEs can build consumer trust by providing accurate information about products, production processes, or responsible business practices. The positive impact of MSME transformation on revenue, market, operational efficiency, and consumer trust are critical factors in achieving sustainable growth and sustainability. By improving competitiveness and providing added value to consumers, MSMEs can

strengthen their position in the market and better face business challenges.

Policy Implications and Recommendations to Support MSME Transformation

Supporting the transformation of MSMEs requires concrete measures to strengthen access to needed resources and financing [39]. Some of the steps that can be taken to achieve this include improving access to finance and human resources. The government can develop financing programs aimed explicitly at MSMEs that want to transform. Improved access to affordable and innovative credit can help MSMEs obtain the capital needed for investment in innovation and technology. MSMEs need to have better access to skilled and educated labor. The government can collaborate with education and training institutions to develop training programs relevant to the needs of MSMEs and facilitate internship or apprenticeship programs to obtain a skilled workforce.

Good technology infrastructure and services are critical in supporting the transformation of MSMEs . Some of the measures that can be taken are resilient digital infrastructure and the provision of easy access to technology services. The government should prioritize the development of digital infrastructure in the region, including reliable and affordable internet connectivity, fast broadband speeds, and access to 5G networks. By doing so, MSMEs can adopt the necessary technologies for their transformation. The government can develop digital resource centers that provide MSMEs easy access to technology-related training, consultation, guidance, or mentorship. This center can be the main point of contact to provide technical assistance and support for MSMEs looking to transform.

Training and capacity-building programs are essential in supporting the transformation of MSMEs [17]. Some recommendations for implementing such programs include digital skills training and mentorship programs. The government can organize digital skills training programs for MSMEs that focus on mastering skills such as digital marketing, data management, business software usage, e-commerce, and cyber security. This training will help MSMEs improve their ability to use technology and optimize their transformation potential. The government can launch a mentoring and mentorship program where successfully transformed MSMEs can become mentors for other MSMEs. In this program, mentors can share their knowledge, experience, and best practices to help new MSMEs face transformation challenges.

An enabling regulatory environment is critical in supporting the transformation of MSMEs. Recommendations that can be considered in an enabling regulatory environment include Tax policy revolution, Bureaucratic Simplification, Data and Privacy Protection, Encouraging Innovation and Research, Facilitating Partnerships and Access to Markets, and Monitoring and Evaluation. The government may consider developing a tax policy that provides incentives or tax breaks to MSMEs that make investments in innovation and technology. This will provide incentives for MSMEs to continue their transformation. The government needs to streamline bureaucracy and reduce unnecessary administrative barriers for MSMEs. Business registration, licensing, or tax procedures should be streamlined to reduce administrative burdens for MSMEs looking to transform. The government should also develop policies and regulations that protect the data and privacy of customers and MSMEs. This includes protecting MSMEs' collection, use, and storage of consumer data. With clear and robust data privacy and security policies, MSMEs will feel more confident adopting new technologies.

The government can develop support programs and incentives to stimulate innovation and research in MSMEs. Assistance in the form of research funds, collaboration programs with universities or research institutions, and awards for MSME innovation can provide the necessary impetus for transformation and new product development. The government can bridge MSMEs, large companies, or other institutions by facilitating partnerships and collaborations. Programs that encourage meetings, business fairs, or knowledge exchange between MSMEs and significant players in the industry can help MSMEs gain access to broader markets and enlarge growth opportunities. It is essential to create effective monitoring and evaluation mechanisms to measure the impact of MSME transformation. The government can establish measurement systems such as key performance indicators or customers satisfaction surveys to monitor progress and evaluate the effectiveness of the transformation support programs launched. Policymakers must implement these policy measures in an integrated and sustainable manner to support the transformation of MSMEs. Collaboration between the government, education and training institutions, financial institutions, and the private sector will create a conducive environment for MSMEs to adopt innovation and technology. With the proper support, MSMEs can become strong and sustainable economic

actors and contribute significantly to local and national economic growth.

5. CONCLUSIONS

In this study, the importance of innovation and technology in the transformation of MSMEs has been discussed. The role of innovation and technology in improving market access, optimizing operational processes, product and service development, and increasing efficiency and productivity has been highlighted.

Some essential tools for MSME transformation include e-commerce platforms, digital marketing strategies, business management soft ware, and cloud computing. Research and development and the addition of digital elements are also crucial in meeting consumer demands and developing innovative products. Automation, integration of operational and information technologies, and adoption of Industry 4.0 concepts were identified as measures capable of significantly improving efficiency and productivity.

Based on this research, several implications and recommendations were identified that can support the transformation of MSMEs. The government and financial institutions must improve MSMEs' access to resources and financing by developing programs aimed explicitly at transforming MSMEs.

Furthermore, the government must focus on resilient digital infrastructure and easy access to technology services. Support for digital skills training programs and capacity building needs to be provided where the government can organize digital skills training programs relevant to the needs of MSMEs and mentoring and mentorship programs for MSMEs that want to transform. Finally, a supportive regulatory environment is a critical factor in transforming MSMEs.

Therefore, the government needs to revolutionize taxation policies, simplify bureaucracy, and protect the data and privacy of customers and MSMEs by developing appropriate policies and regulations. Overall, the transformation of MSMEs through innovation and technology has great potential to improve MSME growth and competitiveness.

However, challenges such as limited resources, low digital skills, and concerns over data security need to be addressed. By implementing the above recommendations and engaging with various stakeholders, MSMEs can overcome these barriers and unlock tremendous transformation potential. Successful MSME transformation will bring significant Economic benefit sand make a sustainable contribution to local and national economic development.

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