An Exploration of the Potential Benefits and Challenges of Integrating Technology into Governance Systems in the MSME Industry

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ABSTRACT

This study looks into how digital technologies are being used by Chhattisgarh's MSMEs, with a particular emphasis on how technology affects stakeholder satisfaction and operational efficiency. A quantitative research design was used, and 200 respondents from a variety of industries completed a structured questionnaire. Purposeful sampling was used to ensure representativeness. Adoption of new technologies and operational efficiency were found to be significantly positively correlated by regression analysis, which also showed that the model explained 84% of the variance. Independent samples t-tests revealed additional evidence of a barrier to competitiveness: MSMEs with high implementation costs showed lower levels of technology adoption. Businesses that effectively incorporated technology, on the other hand, reported increased stakeholder satisfaction and significant gains in governance processes. The results highlight how crucial it is to overcome financial barriers in order to improve MSMEs' adoption of digital technology, boost operational efficiency, and create a more competitive business climate.

Keywords: Technology Integration, Governance Systems, Operational Efficiency, MSMEs, Implementation Costs, Stakeholder Satisfaction

I INTRODUCTION

The way business management features have developed has made MSMEs aware of how important technology is to improving their governance structures. MSMEs are essential to most economies, but they also face challenging challenges like limited resources, intense competition, and burdensome laws. By utilizing cutting-edge technology, MSMEs will have the opportunity to standardize operations, increase efficiency, and improve data management for better decision-making processes.

Despite these benefits, MSMEs that integrate technology face challenges including high implementation costs, rapid technological obsolescence, and resistance to change. Furthermore, a dearth of research has explored the connection between technology and buyer satisfaction—that is, the satisfaction of management, employees, and owners. To maximize the benefits of technology integration, it is essential to comprehend how technology influences the experiences of each stakeholder group.

This study looks at the advantages and disadvantages of a technology-integrated governance framework for MSMEs. Based on the effects of technology adoption on operational efficiency, implementation costs, and stakeholder satisfaction, this research aims to provide helpful insights and recommendations based on how MSMEs' owners and managers can overcome the challenges of implementing technology to improve their governance practices.

1.1.Background of the Study

Micro, Small, and Medium-Sized Enterprises (MSMEs) are critical to economic growth and innovation in the modern corporate climate. These businesses deal with a variety of difficulties, such as scarce resources, complicated regulations, and intense competition. Technology integration into governance systems is a major area where MSMEs

are looking to improve their operations. The successful implementation of cutting-edge technologies has the ability to optimize workflows, boost productivity, and enhance organizational effectiveness. Technology is developing at a rapid pace, changing many industries and providing new tools and processes that have a big impact on organizational governance. Technology integration offers MSMEs a number of advantages, including better decision-making, better data management, and increased operational efficiency. The road to technology adoption is not without difficulties, though. Reluctance to change, high implementation costs, and technology obsolescence can all be major obstacles to a successful integration.

Due to budgetary limitations and a lack of technical know-how, many MSMEs find it difficult to integrate new technology practically, despite their potential benefits. Furthermore, the effect of technology on stakeholder satisfaction is still an important but little-studied topic. Different stakeholders may have different opinions about how technology affects their work environment and level of job satisfaction. These stakeholders include owners, managers, and employees. Technology integration into governance systems entails not just updating technology but also financial investment, change management, and strategic planning. In order to steer future decisions and create an atmosphere that is conducive to technological improvements, it is imperative to comprehend the ways in which technology adoption impacts operational efficiency and stakeholder satisfaction in MSMEs.

The purpose of this study is to investigate the possible advantages and difficulties of incorporating technology into MSMEs' governance structures. The study looks at how adopting technology affects stakeholder satisfaction, implementation costs, and operational efficiency in an effort to give owners, managers, and policymakers of MSMEs useful information. It is anticipated that the results will advance knowledge of the dynamics of technology integration and provide useful suggestions for improving MSMEs' governance procedures.

1.2. Overview of Technology Integration in Governance Systems

Technology is changing the face of governance and improving the way that governments interact with their constituents. There are several advantages to integrating cutting-edge technology like social media and artificial intelligence (AI) into public administration, including better service delivery and more openness. However, this change also poses serious problems with regard to cybersecurity, data privacy, and ethical considerations. The use of AI in decision-making is one of the most significant developments in governance. AI systems can quickly process and analyze big datasets since they are powered by machine learning and predictive analytics. This makes it possible to make more complex and informed policy decisions, maximizing the allocation of resources and advancing urban development projects.

1.3. Impact of Technology on Operational Efficiency

Businesses in a variety of industries have used technology as a strategic asset, giving them the ability to obtain a competitive advantage and adjust to the constantly shifting dynamics of the market. Technology has developed into an essential tool for improving organizational efficacy and achieving corporate objectives, thanks to automation, big data analytics, cloud computing, and artificial intelligence, among other technologies. The optimization of business processes is a noteworthy facet of technology's impact on organizational effectiveness. Organizations can enhance overall productivity, cut expenses associated with operations, and eliminate manual errors by automating routine procedures and implementing digital tools. Employee concentration on value-added tasks like creativity, problem-solving, and customer service is made possible by this, which promotes organizational success and growth. Technology has also revolutionized the way

businesses collaborate and communicate. The way teams connect, share information and collaborate has been completely transformed by the introduction of digital communication platforms, project management software, and virtual workplaces. Due to the ease with which employees can interact across geographical boundaries, productivity is increased and a culture of teamwork is fostered. Through the gathering and examination of enormous volumes of data, technology has also given enterprises access to insightful information. With the development of big data analytics and machine learning algorithms, businesses can now leverage data to identify patterns, trends, and correlations that are significant for decision-making and strategy optimization. Data-driven insights are becoming a critical component of organizational effectiveness, being used in everything from consumer behavior research for tailored marketing to predictive analytics for demand forecasting. In addition, technology has quickened the rate at which new ideas and services are developed. Businesses may use cutting-edge technologies like blockchain, IoT, and artificial intelligence (AI) to develop creative solutions that adapt to changing consumer demands. Organizations can enhance their performance in the marketplace by adopting technology developments to remain ahead of the competition, explore new markets, and adapt to changing client demands.

1.4. Research Objectives of the Study

• To analyse how integrating technology into governance systems enhances efficiency, transparency, and decision-making within MSMEs.

• To investigate the key obstacles MSMEs face when adopting technology in governance, including cost, training, and cybersecurity issues.

• To explore the views of MSME owners, managers, and employees on the impact of technology integration on governance practices and identify their concerns and expectations

1.5. Research Hypothesis

• H1A: The adoption of advanced technology in governance systems is positively correlated with increased operational efficiency in MSMEs.

• H1B: MSMEs that face high implementation costs for technology integration report lower levels of technology adoption compared to those with lower implementation costs.

• H1C: There is a significant difference in stakeholder satisfaction levels between MSMEs that have integrated technology into their governance systems and those that have not.

1.6. Conceptual Framework

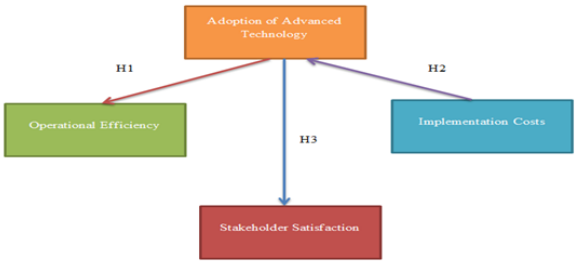


Figure 1: Framework of the study

II LITERATURE REVIEW

Loo et al. (2023) conducted an extensive systematic review to gain insight into the challenges encountered by Malaysian MSMEs, or Micro, Small, and Medium-sized Enterprises, in their pursuit of innovation and adoption of new technologies. Problems like low technical efficiency and slow adoption of new technology are common for these MSMEs. In order to tackle these issues, the paper analyzes popular theories of technology adoption (TAM, DOI) and well-known theories of organizational behavior (RBV, ST). Politicians can help micro, small, and medium-sized enterprises (MSMEs) become more competitive by implementing targeted initiatives and ensuring that technology is effectively used. The Malaysian economy would benefit from its increased growth and resilience if this were to happen.

Umami et al. (2023) carried out an in-depth survey of the success factors of MSMEs and stressed that technology adoption and utilization had greatly contributed to business performance. Their results revealed that digital technologies had enabled

better access to financial services, enhanced inter-organizational cooperation, and strategic alliances. The significance of the developments to the governance systems was that with the incorporation of technology, there was an enhanced flow of information, enhanced decision-making processes, and enhanced accountability and transparency in the organization levels. The paper also pointed out that strategic collaboration assisted by digital platforms had led to more systematic and coordinated governance within MSMEs.

Kurniawan et al. (2023) examined the effects of financial policy-related variables, creative financial practices, and technology adaption on the long-term financial performance and recovery of Indonesian MSMEs during the COVID-19 epidemic. Using (PLS-SEM) with SMARTPLS software, the study examined data from 1,026 MSME samples. Purposive sampling was used in the data collection process, both offline and online. The results showed that MSMEs' financial performance throughout the pandemic was considerably enhanced by their capacity to adopt new financial practices and adjust to technological advancements. Furthermore, it was discovered that the association between technology adoption and sustainable financial performance was positively moderated by creative financial strategies. The study also showed that both directly and indirectly perceived policy efficacy, preferential bank policies, and government financial support had a significant impact on MSMEs' financial performance. These findings highlighted the critical role that technological adaption and financial support play in helping MSMEs survive and recover during economic downturns.

Jha et al. (2022) highlighted how crucial knowledge management is to businesses in general and MSMEs in particular in the current competitive environment. They maintained that knowledge management—which includes both financial and non-financial aspects—is essential for corporate growth. The study demonstrated how MSMEs can benefit from using knowledge from internal stakeholders, external partners, and customers by developing a knowledge-enriching system. It was determined that knowledge management techniques are strategic initiatives that have a major impact on an organization's capacity for innovation, competitive advantage, and overall performance. The study highlighted how disruptive technologies, such as cloud computing, AI/ML, and intelligent automation, may improve knowledge management systems. These systems are essential for boosting customer experience, cutting costs, and shortening time to market. The authors came to the conclusion that in order for MSMEs to grow sustainably and maintain their competitiveness, they must combine knowledge management techniques with cutting-edge technologies.

Machado et al. (2021) explored the barriers and enablers relating to the adoption of Industry 4.0 technologies in MSME supply chains. They found out that high-cycling technologies like automation, data analytics, and digital monitoring systems resulted in enhanced transparency and traceability, which are important elements of efficient governance systems. Nevertheless, the research also found that there were various barriers that prevented effective implementation such as financial limitations, absence of technical skills, organizational change reluctance, and institutional support. Meanwhile, the authors highlighted such enablers as friendly government policies, organizational preparedness, and strategic alignment that contributed to the implementation of digital technologies. These results were especially applicable to the governance systems, as it also emphasized the theoretically possible benefits of improved monitoring and control, and the pragmatic constraints of MSMEs.

Gani et al. (2020) examined how Human Resource Information Systems (HRIS) could be optimized under MSMEs and how digital systems contributed to improving internal governance. The research revealed that HRIS helped to achieve better management of the workforce, higher accuracy of

data and more transparency in the organization. These systems helped make informed decisions by automating administrative processes and providing access to data in real-time, which helped to strengthen internal control structures. However, another limitation as highlighted by the study was the poor technological infrastructure, untrained staff and limited funding which inhibited the successful adoption of such systems. These problems were indicative of the general problems of MSME governance, with resource constraints and technological disparities hindering switching to digital governance models.

III RESEARCH METHODOLOGY

3.1. Research Design

The study established the integration of technology into MSME governance systems using a descriptive survey research design. It was determined that a descriptive survey study approach would be suitable for gathering and classifying the complex data regarding present practices, advantages, difficulties, and stakeholder perspectives in an organized and methodical manner.

3.2. Research Approach

It used a Quantitative Approach to examine how technology is integrated into MSMEs' systems of governance. These MSMEs were selected for the study based on their capacity to measure the variables, quantify the relationship under inquiry, and generalize findings to a wider sample.

Using a quantitative approach is primarily motivated by the need to quantify the effects of technology integration on MSMEs' governance practices. Furthermore, the methodology was designed to gather and evaluate quantifiable data in order to spot trends, validate theories, and reach unbiased judgments on the advantages, difficulties, and perspectives of different parties concerning the use of technology.

3.3. Sample Population

There are about 80,000 Micro, Small, and Medium-Sized Businesses in Chhattisgarh as per the data of The Institute of Chartered Accountants of India (2021). Owners and managers of MSMEs as well as employees would make up the sample population for this research study in order to gather all the pertinent data on the incorporation of technology into governance structures. Table 1 presents the sample Selection of the study.

Table 1: Sample Selection

Category	**Total Respondents**	**Owners /CEOs**	**Managers**	**Employees**	**Percentage of Total Sample**
Manufacturing	50	10	20	20	33.33 %
Service	50	10	20	20	33.33 %
Retail	30	10	10	10	20.00 %
Other Sectors	20	5	10	5	13.33 %
Total	**150**	**35**	**60**	**55**	**100%**

Source: As per own source

3.4. Sample Size

The study's target sample size was 150 MSMEs in the state of Chhattisgarh. In order to properly represent the range of functions played by an MSME, including owners, managers, and employees, the sample size was determined.

3.5. Sampling Technique

In order to choose the most representative sample of MSMEs in Chhattisgarh, Purposeful sampling was utilized in this study. This method works well for focusing on particular groups of respondents who have appropriate expertise and experience integrating technology into governance processes.

3.6. Data Collection

The goal of this study is to present a thorough analysis of the incorporation of technology into MSMEs' governance frameworks through the collection of data from primary and secondary sources.

A. Primary Data

Direct primary data collection from the respondents was accomplished through the use of in-depth interviews and a structured survey. Quantitative data was gathered from Chhattisgarh's

MSME owners, managers, and staff through structured surveys. In the structured surveys, questions with closed-ended and Likert scale responses were used to assess the extent of technological adoption, implementation costs, operational efficiencies, and stakeholder satisfaction. To reach a more diverse respondent population, surveys were distributed via print, internet survey tools, and email. Reminders were sent out in order to boost the return rate. The structured questionnaire is divided into three sections:

Section 1 Technology Adoption and Operational Efficiency: The purpose of this section is to assess the connections between MSMEs' operational effectiveness and their use of technology. What impact does the addition of new technology to governance systems have on efficiency and productivity?

Section 2 Implementation Costs and Technology Adoption: This section examines the relationship between the cost of technology implementation and the level of adoption of that technology in MSMEs. It looks for evidence of the impact of cost-effective solutions on adoption rates as well as whether greater costs act as a barrier to adoption.

Section 3 Stakeholder Satisfaction and Technology Integration: This chapter describes how the integration of technology into governance systems affects stakeholder satisfaction and whether or not stakeholders are happier with technologically advanced enterprises.

B. Secondary Data

Secondary data is utilized to augment the source data. Many studies, theoretical frameworks, and prior conclusions on technology adoption and its implications on organizational performance were reviewed in-depth in the literature. A range of sources are consulted, including books, academic journals, company reports, conference papers, and reports obtained from academic databases such as Google Scholar and JSTOR.

3.7. Tools Used for Data Analysis

For the purpose of this study, the data were analysed both statistically and qualitatively to provide an integrated assessment of the adoption of technology in MSMEs' governance structures. Several statistical analysis tasks, such as correlation analysis, hypothesis testing, and descriptive statistics, were performed using SPSS. This aids in the correlation analysis of a number of variables, such as the uptake of new technology, implementation expenses, operational effectiveness, and satisfaction levels. Regression analysis and t-tests were performed using SPSS to determine how independent variables affected the dependent variable and to measure group differences.

IV DATA ANALYSIS AND RESULTS

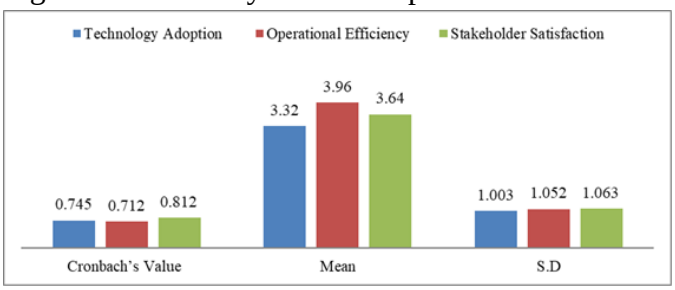
The reliability and descriptive statistics for the questionnaire parts are shown in Table 2. Each scale's internal consistency is indicated by the reliability, which is determined by Cronbach's alpha.

3.1. Reliability and Descriptive Statistics

Table 2: Reliability and Descriptive statistics

	No. of items	Cronbach's Value	Mean	S.D
Technology Adoption	5	0.745	3.32	1.003
Operational Efficiency	5	0.712	3.96	1.052
Stakeholder Satisfaction	5	0.812	3.64	1.063

Figure 1: Reliability and Descriptive statistics



Source: SPSS

Reliability and descriptive data for the measurement of the study constructs are included in the questionnaire sections. The Cronbach's alpha for the "Technology Adoption" is 0.745, indicating

a dependable measurement and a modest impression of the impact of technology on operational efficiency. This is demonstrated by the mean scores of 3.32 and the standard deviation of 1.003 for the study. Operational Efficiency With a mean of 3.96 and a standard deviation of 1.052, respondents believe that implementation cost is a significant issue in the adoption of technology; Cronbach's alpha is 0.712, indicating a satisfactory level of dependability. With a mean score of 3.64 and a standard deviation of 1.063, the “Stakeholder Satisfaction" section, which has the highest reliability (Cronbach's alpha=0.812), presents an overall positive picture of the impact of technology integration on stakeholder satisfaction.

3.2. Regression

Table 3: Model summary of variables

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.896[a]	.840	.748	.81523

a. Predictors: (Constant), Adoption of Advanced Technology in Governance Systems

Source: SPSS

Table 3 illustrates the high explanatory power of the regression model, which demonstrates the association between high-tech adoption and operational efficiency in MSMEs. The operational efficiency at 84% is explained by the R-squared of 0.840, and the modified R-squared of 0.748 attests to the model's dependability. The model's accuracy in estimating operational efficiency is demonstrated by the standard error of 0.81523:

Table 4: ANOVA Summary

ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	369.236	4	62.369	83.152	.000[b]
	Residual	114.236	145	.712		
	Total	483.472	149			

a. Dependent Variable: Operational Efficiency in MSMEs

b. Predictors: (Constant), Adoption of Advanced Technology in Governance Systems

Source: SPSS

An ANOVA result on the statistically significant regression is shown in the above table 4. The p-value is 0.000 and the F-value is 83.152. In order to support the idea that advanced technology increases operational efficiency, the model uses technology adoption to forecast operational efficiency with a high degree of confidence.

Table 5: Coefficient of Determination of the Variable

Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.812	.410		1.256	.023
	Adoption of Advanced Technology in Governance Systems	.085	.079	.084	.866	.001

a. Dependent Variable: Operational Efficiency in MSMEs

Source: SPSS

The regression coefficients shown in Table 5 show a strong and positive correlation between operational efficiency and the use of cutting-edge

technologies With an unstandardized coefficient of technology adoption of 0.085 and a beta value of 0.084, the constant deviates from zero. The adoption of advanced technology and operational efficiency are positively correlated, as indicated by the t-value and p-value of 0.866 and 0.001, respectively.

Result: The findings support the hypothesis that the integration of advanced technology improves operational efficiency in MSMEs.

3.3. Independent sample T-test

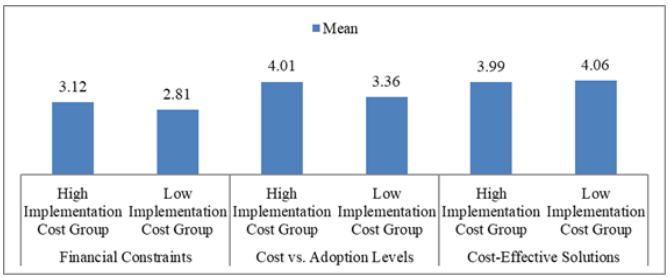
The findings of an independent sample t-test comparing the degrees of technology integration between MSMEs with high implementation costs and those with lower expenses are shown in Table 6.

Table 6: Independent Sample T-test for comparing the Technology integration

Technology integration	**Group**	**Mean**	**Levene's Test**		**t-test for Equity of Means**		
			F	**Sig**	**t**	**df**	**Sig**
Financial Constraints	High Implementation Cost Group	3.12	5.595	0.018	-0.239	148	0.012
	Low Implementation Cost Group	2.81					
Cost vs. Adoption Levels	High Implementation Cost Group	4.01	0.010	0.920	-0.050	148	0.023
	Low Implementation Cost Group	3.36					
Cost-Effective Solutions	High Implementation Cost Group	3.99	0.028	0.823	-0.221	148	0.032
	Low Implementation Cost Group	4.06					

Source: SPSS

Figure 2: Mean of Technology Integration



Source: SPSS

According to the results, MSMEs with high implementation costs report an average technology integration score of 3.12, whilst those with low implementation costs have an average score that is lower, 2.81. With a t-value of -0.239 and a p-value of 0.012, the t-test findings show a significant difference in the levels of technology adoption, suggesting that lower levels of adoption are correlated with greater implementation costs. Analogously, when the cost is compared to adoption levels, the high-cost group scored 4.01 while the low-cost group scored 3.36 (t = -0.050, p = 0.023). Furthermore, the high implementation cost group scored 3.99 when evaluating cost-effective alternatives, while the low implementation cost group scored 4.06 (t = -0.221, p = 0.032).

Result: These findings imply that MSMEs with greater expenses are less likely to adopt technology, suggesting an integration barrier that may have an impact on their competitiveness.

Table 7 compares the levels of stakeholder satisfaction between MSMEs with and without technology integrated into their governance structures.

Table 7: Independent Sample T-test of stakeholder satisfaction between MSMEs with and without technology integration

	Group	**Mean**	**Levene's Test**		**t-test for Equity of Means**		
			F	**Sig**	**t**	**df**	**Sig**
Perceived Benefit	Technology Integrated	4.01	5.236	0.874	-0.	148	0.032

s of Integration	No Technology Integration	2.99			521		
Technology Integration Satisfaction	Technology Integrated	3.03	4.236	0.745	-0.745	148	0.034
	No Technology Integration	4.03					
Impact on Governance Practices	Technology Integrated	3.33	5.001	0.623	-0.417	148	0.011
	No Technology Integration	3.02					

Source: SPSS

According to the data, MSMEs with technology integration report a mean satisfaction score of 4.01, which is higher than the 2.99 score reported by those without technology integration. The findings of the t-test reveal a significant difference ($t = -0.521$, $p = 0.032$), suggesting that there are considerable perceived advantages to technological integration. Additionally, a mean score of 3.03 for integrated enterprises against 4.03 for non-integrated firms ($t = -0.745$, $p = 0.034$) indicates stakeholder satisfaction with technological integration. Furthermore, there is a noteworthy influence on governance practices, as integrated MSMEs score 3.33 as opposed to 3.02 for non-integrated ones ($t = -0.417$, $p = 0.011$).

These results demonstrate the benefits of technological adoption in improving operational effectiveness and stakeholder interactions by showing that MSMEs with technology integration not only experience higher levels of satisfaction from stakeholders but also perceive positive implications on their governance practices.

V CONCLUSION AND FUTURE RESEARCH

The results of this study clearly show that Chhattisgarh's micro, small, and medium-sized enterprises (MSMEs) can operate more efficiently when they use cutting-edge technology. Descriptive statistics emphasized the significance of technology adoption and its related costs, while reliability analysis verified the validity of the measuring scales included in the questionnaire. A strong positive association between the integration of advanced technology and operational efficiency was found using regression analysis, which was supported by the model's high explanatory power. Moreover, the t-tests for independent samples demonstrated that MSMEs with substantial implementation expenses reported reduced levels of technology adoption, underscoring a crucial obstacle that may impact their competitiveness. On the other hand, MSMEs who effectively incorporated technology into their governance frameworks reported notable advantages in their operational procedures and increased stakeholder satisfaction. These findings highlight the need for focused interventions to help MSMEs get over financial barriers to adopting new technologies, creating an atmosphere that encourages innovation and boosts operational efficiency.

Suggestions for Future Research:

• Cost-Benefit Analysis of Technology Adoption: MSMEs could benefit from a cost-benefit analysis of technology adoption to assist them in identifying areas for cost-cutting and to try to lower high implementation costs.

• Studies that focus on particular MSME sectors may yield more targeted data because the issues and effects of technology might vary greatly throughout different industries.

• Stakeholder Perspectives: More research is required to determine why stakeholders in technology-integrated MSMEs evaluate their level of satisfaction lower. This research should focus on identifying any potential weaknesses in the systems that support and implement these technologies.

• Policy Implications: Examine potential legislative solutions that could assist MSMEs in defraying the expenses of implementing technology to enhance stakeholder participation, and share any relevant research results. These suggestions may be appropriate for both legislators and entrepreneurs.

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