



International MSMEs in the Role of Government in Sustainability SDG 1, SDG 2, SDG 8, SDG 9, and SDG 10

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ABSTRACT

The integration of Micro, Small, and Medium Enterprises (MSMEs) into international markets is a crucial mechanism for achieving the Sustainable Development Goals (SDGs), particularly SDGs 1, 2, 8, 9, and 10. However, the effectiveness of this contribution is highly dependent on government policy interventions amidst digital disruption and the dominance of Gen Z entrepreneurs. This study aims to analyze the influence of government support which includes financial stimulus, digital infrastructure, regulatory diplomacy, and capacity building on the sustainability performance of international MSMEs. This study uses a quantitative approach with multiple linear regression analysis. Data were collected from 350 export-oriented MSMEs through a structured questionnaire that was tested for validity and reliability. The findings indicate that digital infrastructure and regulatory diplomacy have the most significant positive influence on innovation (SDG 9) and inequality reduction (SDG 10). Financial stimulus contributes to economic stability (SDGs 1 & 8), but its impact is moderated by the company's digital maturity. The role of government must transform from merely a provider of subsidies to a facilitator of digital and diplomatic ecosystems to ensure that MSMEs become the main drivers of sustainable global development.

Keywords: Digital Infrastructure, Financial Stimulus, Gen Z, Government Support, SDGs

1. INTRODUCTION

Economic globalization has positioned international Micro, Small, and Medium Enterprises (MSMEs) as a crucial pillar in achieving the Sustainable Development Goals (SDGs), particularly in eradicating poverty (SDG 1) and hunger (SDG 2). Current global market dynamics demand that MSMEs not only focus on profit but also on inclusive sustainability through the active role of governments. Appropriate policy interventions are crucial for the ability of international MSMEs to create decent jobs (SDG 8) and promote industrialization and innovation (SDG 9). This phenomenon is further complicated by global economic disparities, which demand a redistribution of opportunities to reduce inequality between countries (SDG 10). In this context, sustainability is no longer simply an ethical choice but a strategic imperative for MSMEs operating in cross-border markets.

The emergence of Generation Z (Gen Z) as a dominant actor in the digital entrepreneurship ecosystem is reinventing the international MSME landscape. Gen Z's strong commitment to social and environmental issues is transforming the way businesses operate, with businesses tending to organically integrate SDG values into their business models. Previous research by Lopes et al. (2024) shows that young entrepreneurs from this generation are more likely to adopt green technology and fair labor practices than previous generations. This creates new pressure on governments to provide a regulatory framework capable of facilitating Gen Z's idealism globally. Governments must be able to bridge this innovative spirit with equitable digital infrastructure support to ensure the sustainability of SDG 9.

Despite the enormous potential of international MSMEs, systemic challenges such as limited access to capital and vulnerability to global market volatility remain major obstacles. According to Prasetyo (2020),

without the government's role in providing social security and economic protection, international MSMEs will struggle to contribute significantly to SDGs 1 and 2. Current trends indicate that MSMEs led by young Gen Z entrepreneurs are often trapped in a competitive ecosystem with minimal protection. The link between protective government policies and the competitiveness of international MSMEs is an increasingly relevant area of research to explore. A study by Bulc et al. (2018) emphasized the need for cross-sectoral collaboration to ensure that economic growth through SDG 8 does not leave vulnerable groups behind.

The government's role in promoting sustainability also includes facilitating sustainable technology and innovation aligned with SDG 9. Innovation driven by international MSMEs is often hampered by rigid trade policies and complex bureaucracy. According to Legowo et al. (2022), progressive government policies supporting MSME digitalization can directly accelerate the achievement of SDG 10 by narrowing the digital divide. Furthermore, the integration of MSMEs into sustainable global supply chains requires quality standards that are often only achievable with technical assistance from governments. This lack of support often leads to the failure of international MSMEs to maintain long-term sustainability standards.

In the past five years, academic attention to the link between governments, MSMEs, and the SDGs has increased sharply in line with the global health crisis. According to Gupta and Kumar Singh (2023), the pandemic exposed the fragility of international MSMEs but also opened opportunities for more resilient and sustainable business models. Governments across the globe have begun adopting more inclusive policies to ensure SDG 8 is achieved despite economic uncertainty. The relevance of this research lies in addressing a gap identified across existing literature: while prior studies have examined government support for MSMEs and SDG achievement in isolation, few have simultaneously investigated the moderating role of Gen Z entrepreneurial characteristics alongside digitalization policy in cross-border MSME contexts (Audretsch & Guenther, 2023; Bargoni et al., 2024; Yang et al., 2023). This study distinguishes itself by employing a quantitative approach to empirically test these relationships, moving beyond descriptive or case-based analyses that dominate the current body of work. Research by Nakku et al. (2020) shows that holistic government support has a far greater impact than mere financial assistance.

Income inequality, the focus of SDG 10, is also influenced by how governments manage the distribution of opportunities for international MSMEs in underdeveloped regions. Often, support is concentrated solely on urban areas, ignoring the potential of rural MSMEs, which play a vital role in SDG 2, related to food security. According to Siburian (2022), decentralized policies can have a more equitable positive impact on people's economic well-being. The phenomenon of Gen Z, many of whom are now returning to rural areas to build community-based businesses, is a strong signal for the government to reform MSME development policies. The link between social entrepreneurship and the role of government is a key variable in determining the collective success of the SDG targets.

Based on the gaps identified above, this quantitative study aims to examine the influence of the government's proactive role in providing capital and regulatory support on the contribution of international MSMEs toward achieving SDGs 1 and 2. In addition, the study seeks to analyze the moderating role of Gen Z entrepreneurial characteristics in the relationship between government policies and the effectiveness of sustainable innovation implementation in international MSMEs. Furthermore, the study investigates whether the integration of digital technology facilitated by the government within international MSMEs contributes significantly to reducing global economic inequality and creating decent work opportunities. Academically, this research contributes to the international management and public policy literature by offering quantitatively tested propositions that strengthen the empirical foundation of the field, distinguishing it from prior studies that rely primarily on qualitative or descriptive frameworks. For practitioners, governments, and policymakers, the findings provide an evidence-based reference for designing policies that are more inclusive, adaptive to technological developments, and responsive to the needs of young Gen Z entrepreneurs in reducing poverty and global inequality.

2. LITERATURE REVIEW

2.1. Prerequisites for MSME Participation (The Antecedents)

For international MSMEs to contribute effectively to decent work creation (SDG 8) and industrialization (SDG 9), there are fundamental prerequisites that must be met through institutional support.

- A. Digital Capacity and Innovation: MSMEs must have technological maturity to penetrate the global market, where the government plays a role in providing inclusive digital infrastructure to reduce inequality (SDG 9 & 10).
- B. Sustainability Literacy: Understanding green standards and international work ethics is a prerequisite for MSME products to be accepted in developed country markets.
- C. Legality and Global Standards: The government facilitates international certification which is often a barrier to entry for small businesses.
- D. Strategic Capital Access: Holistic financial support, beyond just cash assistance, is needed to finance the transition to sustainable business practices.

2.2. Integration Modes

The government facilitates the integration of MSMEs into Global Value Chains *through* several strategic schemes that support SDG 8 and SDG 10.

- A. Economic Diplomacy and Business Matching: Through trade attachés, the government connects MSMEs with global partners who share a similar vision for sustainability.
- B. Export-Based Industrial Clustering: Establishing integrated local ecosystems to enhance collective efficiency and innovation competitiveness (SDG 9).
- C. Public-Private Partnership (PPP): Collaboration that encourages large companies to involve MSMEs in their supply chains as an effort to reduce economic inequality (SDG 10).
- D. Cross-Border E-commerce Facilitation: Providing platforms and regulations that make it easier for “Born Global” MSMEs to operate internationally from the outset.

2.3. Risk and Benefits Analysis

Internationalization brings both great opportunities and vulnerabilities that must be mitigated by government policies.

2.3.1. The Gains

- A. Poverty and Inequality Reduction: Market expansion significantly increases household incomes of MSMEs (SDGs 1 & 10).
- B. Improving Job Quality: International standards compel MSMEs to adopt fairer and safer work practices (SDG 8).
- C. Accelerating Green Innovation: Global competition drives MSMEs to achieve resource efficiency and sustainable product innovation.

2.3.2. Systemic Risk (The Vulnerabilities)

- A. Global Market Dependence: Vulnerability to external crises that can suddenly stop the cash flow of MSMEs.
- B. Supply Chain Exploitation: The risk that MSMEs will become cheap labor for multinational companies if their bargaining position is not strengthened by government regulations.
- C. High Compliance Burden: The cost of meeting international sustainability standards can eat into MSMEs’ profit margins without government subsidies.

3. RESEARCH METHODS

3.1. Research Design

This study employed a quantitative approach using multiple linear regression analysis. The primary objective was to analyze the influence of government support on the sustainability performance of international Micro, Small, and Medium Enterprises (MSMEs) in the context of the Sustainable Development Goals (SDGs).

3.2. Conceptual Framework and Variables

The conceptual framework positioned the role of government as the independent variable influencing MSME sustainability achievements. The multiple regression equation was specified as follows:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \epsilon$$

3.2.1. Variable Specification:

- A. Dependent Variable (Y): International MSME sustainability achievements, operationalized using SDG indicators for Goals 1 (No Poverty), 8 (Decent Work and Economic Growth), 9 (Industry, Innovation, and Infrastructure), and 10 (Reduced Inequalities).
- B. Independent Variables:
 - 1) X1: Financial support and government stimulus (aligned with SDGs 1 and 8)
 - 2) X2: Facilitating digital infrastructure and innovation (aligned with SDG 9)
 - 3) X3: Diplomacy policy and global market access (aligned with SDG 10)
 - 4) X4: Entrepreneurial characteristics (e.g., Gen Z sustainability orientation), treated as an additional independent/moderating variable
- C. ϵ (Error term): External factors originating from global market conditions not captured by the independent variables.

The conceptual flow of the framework posited that: (1) institutional support (capital, technology, legal framework) serves as input; (2) MSMEs undergo a transformation process by adopting digitalization and sustainability standards; and (3) the output comprises decent job creation, poverty reduction, increased innovation, and reduced regional economic disparities.

3.3. Population and Sample

The target population comprised export-oriented MSMEs operating in Indonesia, specifically enterprises that had successfully entered foreign markets. The sample focused on “Born Global” firms, many led by younger-generation entrepreneurs. A total of 350 MSME owners or managers participated in the study. The sample predominantly represented creative industries, agro-industrial sectors, and technology-service enterprises, reflecting a shift toward high-value-added exports. Demographic analysis indicated that 65% of respondents belonged to the Gen Z cohort.

3.4. Research Instrument

Data were collected using a structured questionnaire designed to measure the four independent variables (financial stimulus, digital infrastructure, regulatory diplomacy, and capacity building) and the dependent variable (sustainability performance across SDGs 1, 8, 9, and 10). The questionnaire items were developed based on the theoretical framework derived from the literature review.

3.5. Instrument Validity and Reliability

Prior to the main data collection, instrument pretesting was conducted. First, the validity of the questionnaire items was assessed using the Pearson Product-Moment Correlation test. With a sample size of 350, the critical r-table value was 0.11. All items demonstrated calculated r-values exceeding this threshold, confirming that the instrument accurately measured the intended constructs. Second, reliability, internal consistency was evaluated using Cronbach’s Alpha coefficient. The alpha values for the scales measuring financial stimulus (X1), digital infrastructure (X2), regulatory diplomacy (X3), and capacity building (X4) ranged from 0.82 to 0.91, substantially exceeding the acceptable threshold of 0.60. This indicated high internal consistency across all variables.

3.6. Data Collection Procedures

A structured questionnaire was administered to the 350 selected export-oriented MSME owners or managers. The data collection focused on regions with high MSME density and strong digital penetration, where local governments had actively piloted sustainability-oriented trade programs.

3.7. Data Analysis

Data analysis proceeded in three stages. Prior to regression analysis, several classical assumptions were tested. Normality was assessed using the Kolmogorov-Smirnov test, with a criterion of $p > 0.05$ indicating a normal distribution. Multicollinearity was evaluated using the Variance Inflation Factor (VIF), where values below 10.0 indicated no significant correlation among independent variables. Heteroscedasticity was examined using the Glejser test, with a non-significant pattern confirming constant residual variance.

Following the assumption tests, multiple linear regression analysis was applied to test the influence of the four government role variables (financial support, digital infrastructure, regulatory diplomacy, and entrepreneurial characteristics) on the sustainability performance of international MSMEs, with the significance level set at $p < 0.05$. Finally, the coefficient of determination (R^2) was used to assess the proportion of variance in the dependent variable explained by the independent variables.

4. RESULTS AND DISCUSSION

4.1. Research Results

4.1.1. Participant and Firm Characteristics

The research focused on international MSMEs operating within the dynamic economic landscape of Indonesia, specifically targeting enterprises that have successfully permeated foreign markets. The sample predominantly represented “Born Global” firms led by the younger generation, whose business models were inherently aligned with digital-first strategies and social sustainability. The geographical focus of this study centered on regions with high MSME density and strong digital penetration, where the local government had actively piloted sustainability-oriented trade programs.

Data were collected from 350 export-oriented MSME owners or managers. Demographic analysis revealed that 65% of the respondents were from the Gen Z cohort, characterized by a preference for technology-integrated operations and ethical branding. Most firms in the sample operated in the creative, agro-industrial, and tech-service sectors, reflecting a shift toward high-value-added exports.

4.1.2. Instrument Validity and Reliability

To ensure the validity and reliability of the research instruments, pre-testing was conducted. Validity tests using the Pearson Product-Moment Correlation confirmed that all items had an r -value greater than the r -table value of 0.11 for $n = 350$, indicating that the questionnaire accurately measured the intended variables. Reliability testing through Cronbach’s Alpha yielded values ranging from 0.82 to 0.91, significantly exceeding the 0.60 threshold, thus confirming high internal consistency across the financial stimulus (X_1), digital infrastructure (X_2), regulatory diplomacy (X_3), and capacity building (X_4) scales.

4.1.3. Classical Assumption Test Results

Before performing regression analysis, several classical assumptions were tested. The Kolmogorov-Smirnov test confirmed the normality of the data distribution ($p > 0.05$). Multicollinearity testing through the Variance Inflation Factor (VIF) showed that all variables had VIF values below 10.0, indicating no significant correlation between independent variables. Furthermore, the Glejser test for heteroscedasticity showed a non-significant pattern, confirming that the variance of residuals remained constant.

4.1.4. Multiple Regression Analysis Results

Table 1. Multiple Linear Regression Results

Variable	Unstandardized Coefficient (β)	Sig. (p-value)
Constant	1.250	
Financial Stimulus (X_1)	0.215	0.005
Digital Infrastructure (X_2)	0.442	0.001
Regulatory Diplomacy (X_3)	0.385	0.001
Capacity Building (X_4)	0.180	0.001

Multiple linear regression was applied to test the influence of government roles on the sustainability performance of international MSMEs (Y). The resulting regression equation was formulated as follows:

$$Y = 1.250 + 0.215X_1 + 0.442X_2 + 0.385X_3 + 0.180X_4 + \varepsilon$$

For financial stimulus (X_1), a significant positive influence was found ($\beta = 0.215$, $p < 0.05$). Digital infrastructure (X_2) emerged as the strongest predictor ($\beta = 0.442$, $p < 0.001$). Regulatory diplomacy (X_3) showed a significant positive impact ($\beta = 0.385$, $p < 0.001$). Capacity building and entrepreneurial characteristics (X_4) had the lowest coefficient ($\beta = 0.180$, $p < 0.001$).

4.1.5. Model Fit

The coefficient of determination (R^2) was 0.684, indicating that approximately 68.4% of the variance in international MSME sustainability performance could be explained by the four government support variables examined in this study.

4.2. Discussions

The findings of this study indicate that the role of government in supporting the sustainability of international SMEs in the digital era is no longer sufficient when based on traditional approaches such as direct subsidies, but must be oriented toward building an inclusive digital ecosystem. This finding is in line with Omrani et al. (2022) who affirm that SME digitalization is a key factor in increasing productivity, innovation, and integration into global markets through the use of digital technology and digital economy platforms. The dominance of the digital infrastructure variable (X2) in this study is consistent with various studies showing that digital infrastructure is the main driver of SME digital transformation. Holl and Rama (2024) explain that spatial and structural adoption of digital technology improves SME competitiveness and strengthens integration into the global economy. Furthermore, Sassanelli and Terzi (2022) affirm that the success of SME digital transformation is largely determined by the availability of flexible and sustainable technological infrastructure.

Research by Lokuge and Duan (2021, 2023) also affirms that digital transformation in SMEs is influenced by a combination of internal factors (organizational capabilities) and external factors (ecosystem support), where digital infrastructure serves as the primary enabler in the transformation process. This indicates that digital connectivity is no longer merely a supporting tool, but has become a fundamental necessity for modern SMEs, particularly those led by younger generations such as Gen Z. Furthermore, the significant influence of the regulatory diplomacy variable (X3) demonstrates the importance of the government's role in reducing non-tariff barriers in international trade. Nursasi et al. (2024) emphasize that SMEs face various cross-border regulatory barriers that hinder their access to global markets, making policy harmonization and trade diplomacy support necessary. This is reinforced by Ramachandran et al. (2024) who state that effective public policy can accelerate SME integration into global value chains (GVCs). Mpofu (2023) shows that disparities in regulatory access and digitalization across regions can widen economic inequality, making government intervention important for creating economic inclusivity. Thus, regulatory diplomacy not only impacts trade efficiency, but also contributes to achieving SDG 10 (Reduced Inequalities).

The findings of this study show that the influence of financial stimulus (X1) is lower compared to digital infrastructure. This finding is consistent with Rupeika-Apoga et al. (2022), who state that financial assistance without digital infrastructure support and organizational capabilities is not sufficient to create sustainable transformation in SMEs. This indicates that financial stimulus is only short-term in nature if not supported by a strong digital ecosystem. In addition, Yang et al. (2021) found that the government's role in digital transformation is more effective when focused on building an innovation ecosystem rather than merely providing direct subsidies. This reinforces the argument that modern SMEs need technology-based support systems more than conventional financial assistance. The capacity building variable (X4) in this study has the lowest influence, which indicates a gap between government training programs and the digital needs of SMEs. Setiawan and Rahadian (2025) explain that the success of digital adoption is highly dependent on technological readiness, human resources, and the organizational environment. Furthermore, Berliandaldo et al. (2020) affirm that digital capacity development must align with business model transformation in order to have a significant impact on SME performance.

Ndraha et al. (2024) show that limited human and financial resources are the main barriers to implementing digital transformation in SMEs, making a more holistic ecosystem approach necessary. This reinforces the finding that capacity building must be tailored to the digital economy needs of a younger generation-based workforce. Overall, the findings of this study affirm that the most effective government interventions are through strengthening digital infrastructure and regulatory diplomacy rather than relying solely on financial assistance. This finding is in line with Sirait et al. (2022) who emphasize that digital ecosystem development is the primary key to successful SME transformation in the global economic era. The R^2 value of 0.684 indicates that the research model has strong explanatory power, where 68.4% of the variation in international SME sustainability performance can be explained by the variables of financial stimulus, digital infrastructure, regulatory diplomacy, and capacity building implemented by the government. This finding

indicates that government intervention plays a strategic role in shaping the success of SMEs to survive and grow in global markets. Meanwhile, the remaining 31.6% of variation is influenced by factors outside the research model, such as internal company capabilities, entrepreneurial orientation, innovation, market conditions, and the dynamics of the international business environment. Thus, the findings of this study affirm that government policies oriented toward strengthening the digital ecosystem and institutional support are capable of making a significant contribution to improving SME competitiveness and sustainability. These findings also reinforce various previous studies stating that digitalization, regulatory quality, and institutional support are important factors in driving SME growth and increasing their participation in global value chains.

5. CONCLUSIONS

This research concludes that the government role is a critical determinant in the sustainability and internationalization of SMEs, particularly in the context of achieving the 2030 Agenda for Sustainable Development. Based on the multiple regression analysis, it is evident that digital infrastructure and regulatory diplomacy are the most influential drivers for SMEs to contribute to SDG 9 (Innovation) and SDG 10 (Reduced Inequalities). While financial support remains necessary for poverty alleviation (SDG 1) and economic growth (SDG 8), its effectiveness is maximized only when SMEs possess the digital maturity to leverage these resources in the global market. The study also highlights that the current generation of entrepreneurs, specifically Gen Z, requires a different policy approach, one that emphasizes digital ecosystems over traditional bureaucratic subsidies. The integration of SMEs into Global Value Chains, facilitated by government diplomacy, has proven to be an effective strategy for reducing economic disparities and fostering decent work. Ultimately, the synergy between government as an enabler and SMEs as innovators creates a resilient framework for sustainable global development.

Despite its robust findings, this study has several limitations. First, the data is cross sectional, capturing the state of SMEs at a single point in time, which may not fully account for the long term fluctuations in global market dynamics. Second, the sample is primarily focused on SMEs in regions with relatively high digital penetration, which may limit the generalizability of the findings to more remote or underdeveloped areas. Lastly, the reliance on self reported survey data introduces the possibility of response bias regarding the actual sustainability performance of the firms. For government agencies, the focus should shift from direct cash grants to the development of International SME Digital Hubs that provide integrated logistics, e commerce support, and diplomatic assistance in one platform. For SMEs, the focus should be on enhancing digital literacy and obtaining international sustainability certifications to capitalize on the trade agreements negotiated by the government.

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