

Sustainability Practices in MSMEs: A Quantitative Analysis of the Impact of Green Supply Chain Management, Consumer Awareness, and Regulatory Compliance on Market Performance

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ABSTRACT

This research looks into the intricate connections that exist between market performance, customer awareness, regulatory compliance, and sustainable practices among Micro, Small, and Medium-Sized Enterprises (MSMEs) in Indonesia. A varied sample of 350 business owners was used in the study, with consideration given to factors such as age, geography, expertise in the industry, and size of the business. The study investigated the relationship between Green Supply Chain Management (GSCM) practices, customer awareness, regulatory compliance, and market performance through rigorous statistical analysis. The findings demonstrate a strong and positive correlation, underscoring the significance of sustainable business practices for MSMEs doing business in Indonesia. For practitioners and policymakers seeking to promote environmentally conscious corporate practices and enhance MSME sector competitiveness in the marketplace, this study offers insightful information.

Keywords: Sustainability, GSCM, Consumer Awareness, Regulatory Compliance, Market Performance

1. INTRODUCTION

Micro, Small and Medium Enterprises (MSMEs) indeed play a significant role in Indonesia's economy, contributing to employment, economic growth, and community development [1]–[5]. The adoption of Green Supply Chain Management (GSCM) practices by these enterprises can help mitigate environmental impacts throughout the supply chain, aligning with the increasing emphasis on sustainability in corporate behavior. GSCM is a concept for manufacturing that minimizes waste through product and process design, including the definition of the product construction, production, and recycling [6]. It covers every stage in manufacturing from the first to the last stage of the life cycle. The successful implementation of GSCM can be measured using various parameters, as demonstrated in a study on the Indian foundry industry [7].

In the context of Indonesia, the adoption of sustainable manufacturing practices (SMP) among MSMEs has been examined using the Strategy, Technology, Organisation, People and Environment (STOPE) framework. The study found that organization is the only significant positive influence of SMP among the STOPE variables, while SMP positively correlates with all competitive capabilities [8]. This suggests that organizational factors play a crucial role in the successful implementation of sustainable practices among MSMEs.

Moreover, the adoption of sustainable practices can also have positive impacts on the livelihoods of farmers, as demonstrated in a study on rice farming in Central Java, Indonesia. The study found that farmers who adopted sustainable farming technologies and practices increased their revenue and perceived changes in social and human capital, as well as poverty reduction [9]. However, the adoption of sustainable practices among MSMEs in Indonesia also faces several challenges. These include time constraints, unsuitability for field conditions, and incompatibility

with existing cropping systems [9]. Therefore, it is crucial to address these challenges to promote the wider adoption of GSCM and other sustainable practices among MSMEs in Indonesia.

MSMEs in Indonesia play a significant role in the country's economic development and are increasingly adopting Green Supply Chain Management (GSCM) practices to enhance their sustainability profile. GSCM practices involve the integration of environmental considerations into supply chain management, including product design, material sourcing and selection, manufacturing processes, delivery of the final product to the consumers, and end-of-life management of the product after its useful life [10], [11]. Research indicates that GSCM practices have a significant relationship with environmental performance and operational costs of MSMEs in the food and beverage industry in Indonesia. Supply chain ecocentricity, which refers to a supply chain's focus on environmental concerns, moderates the relationship between GSCM practices, environmental performance, and operating costs. However, supply chain traceability, which involves tracking the product's journey from source to consumer, does not moderate this relationship [10].

Consumer awareness of GSCM practices is also crucial. A study on MSMEs in the city of Semarang found that a green market orientation, which involves focusing on environmentally friendly practices in marketing, significantly impacts MSMEs' marketing success. This suggests that consumers are increasingly aware of and interested in sustainable business practices [12]. Regulatory compliance is another important aspect of GSCM. While specific regulations for GSCM in Indonesia were not found in the search results, it is generally understood that compliance with environmental regulations is a key part of GSCM. This can involve compliance with regulations related to waste management, emissions, and the use of sustainable materials.

Finally, the market performance of sustainable MSMEs appears to be positively impacted by GSCM practices. For instance, a study on the energy industry in West Java found that sustainable businesses exhibit competitive profitability, risk mitigation capabilities, and improved access to capital [13]. Another study found that market orientation, which involves focusing on the needs and wants of the market, is a significant stimulant of firm performance [14]. In conclusion, the adoption of GSCM practices, consumer awareness, regulatory compliance, and their impact on the market performance of MSMEs is a complex interplay that shapes the sustainability profile of Indonesia's business landscape. Further research is needed to explore these linkages in more detail and across different industries.

Although sustainability practices are widely recognized as important, there is a significant information vacuum regarding the specifics of how Indonesian MSMEs incorporate consumer awareness, GSCM, and regulatory compliance into their operating frameworks. Furthermore, not enough research has been done on how these elements work together to affect MSMEs' market performance in Indonesia. By performing a quantitative analysis, this study aims to close this gap and add empirical data to the continuing conversation about sustainable business practices in the Indonesian corporate environment.

2. LITERATURE REVIEW

2.1 Green Supply Chain Management

Within sustainable practices, Green Supply Chain Management (GSCM) has become a prominent strategic framework. Fundamentally, green supply chain management (GSCM) means

incorporating eco-friendly procedures into all aspects of the supply chain, including production, distribution, end-of-life, and procurement [15]–[19]. According to research, companies who implement GSCM methods frequently reap a number of benefits, such as enhanced brand recognition, lower costs due to resource efficiency, and higher market competitiveness. Assessing MSMEs' commitment to sustainable business practices requires an understanding of the scope and effects of GSCM adoption [20]–[23].

2.2 Consumer Awareness and Sustainable Consumption

Business sustainability has become more and more driven by consumer awareness. Thanks to easier access to information and heightened awareness of social and environmental issues, modern customers are making values-driven purchases [24]–[27]. The idea of sustainable consumption has become more and more popular, whereby customers actively look for goods and services that are produced with as little negative impact on the environment as possible and comply with moral labor standards. For MSMEs, keeping their market share requires them to strategically match their services with the changing values of their customers, in addition to being a matter of corporate responsibility [28]–[31].

2.3 Regulatory Compliance in MSMEs

Complying with the intricate regulatory framework is a constant struggle for companies, particularly MSMEs. In the context of sustainability, regulatory compliance refers to following labor laws, environmental laws, and other rules that support ethical business operations. In addition to being required by law, compliance frequently affects reputation and market access [32]. For MSMEs to be sustainable and maintain their market position, they must be able to navigate and adhere to these requirements [33].

2.4 The Relationship Between Sustainability Practices and Market Performance

The literature as a whole acknowledges the beneficial relationship between market performance and sustainable practices, but it is important to pay attention to the unique dynamics that exist within MSMEs, especially in the Indonesian environment. Although this relationship has been studied in the past in larger businesses, more research is necessary due to the particular possibilities and problems that MSMEs confront. It is essential for academics, industry practitioners, and policymakers to comprehend how MSMEs' market performance is impacted by sustainable practices. It offers perceptions on the ways in which microbusiness financial success is influenced by sustainability [34]–[37].

2.5 Gaps in the Existing Literature

Although the body of current research offers a basis for comprehending sustainable practices, there are still a number of gaps. First off, there is a paucity of studies that particularly look into how GSCM techniques are adopted and what effect they have on MSMEs in Indonesia. Secondly, there needs to be more research done on how consumer knowledge affects MSMEs' market performance and adoption of sustainable practices in Indonesia. Lastly, there is still a lack of research on the relationship between market performance, sustainability practices, and regulatory compliance in the Indonesian MSMEs sector.

3. METHODS

This study makes use of a quantitative research strategy in order to address the goals and research questions mentioned in the introduction. Data from a representative sample of Micro, Small, and Medium-Sized Enterprises (MSMEs) operating in different sectors in Indonesia will be gathered using a cross-sectional survey approach. Examining the link between important variables at one particular point in time is made possible by the cross-sectional design.

3.1 Sampling

MSMEs that operate in Indonesia were the study's target group. The technique of stratified random sampling is employed to guarantee representation from various sectors. The determination of strata will be based on industry sector, taking into account the diversity of business kinds using proportional sampling. 350 of the 400 questionnaires that were issued were returned completely filled out.

3.2 Data Collection

A systematic questionnaire is utilized to obtain data on important factors such as market performance, customer knowledge, regulatory compliance, Green Supply Chain Management (GSCM) practices, and consumer awareness. To make sure it is clear, relevant, and reliable, a small sample of MSMEs will pretest the questionnaire. To optimize efficiency and reach geographically distributed respondents, the primary survey will be administered electronically.

3.3 Variables

Dependent Variable

The performance of MSMEs in the market is the study's dependent variable. Growth metrics, market share, and important financial indicators will be used to evaluate market performance.

Independent Variable

Practices of Green Supply Chain Management (GSCM): The degree to which MSMEs incorporate green practices into their supply chain operations is the basis for measuring this variable. Sub-dimensions could be waste management, transportation, production efficiency, and sustainability of supply sources.

1. Customer Awareness: Using consumer surveys that concentrate on views, knowledge, and preferences linked to sustainable goods and enterprises, the degree of consumer awareness regarding MSME sustainability practices is determined.
2. Regulatory Compliance: The assessment of MSMEs' adherence to labor laws, environmental rules, and other pertinent legal requirements was done by looking at their regulatory compliance.

3.4 Data Analysis

SPSS software version 26 will be utilized to conduct statistical analysis on the quantitative data obtained from the survey. The sample's characteristics will be summed up using descriptive statistics, and the link between the independent and dependent variables will be investigated using inferential statistics, such as regression analysis. A significance threshold of 0.05 will be used.

4. RESULTS AND DISCUSSION

4.1 Sample Characteristics

This study surveyed 350 MSMEs across various sectors in Indonesia. The sample was grouped by industry sector, with the following distribution:

Table 1. Demographic Participants

Owners Age	%	Location	%
18 – 25 years	30%	West Java	24%
26 – 35 years	35%	DKI Jakarta	31%
36 – 45 years	21%	Bali	18%
46 – 45 years	14%	Yogyakarta	12%
> 46 years		Other's Province	15%
Business Experience	%	Business Scale	%
< 5 years	33%	Small	39%
5 – 10 years	47%	Medium	30%
> 11 years	20%	Large	31%

Source: Results processed by the author (2023)

The study's Micro, Small, and Medium Enterprises (MSMEs) owners' demographic and experiential profiles can be better understood by looking at the sample characteristics (table 1). With 65% of respondents being between the ages of 18 and 35, the age distribution shows a varied environment and a growing trend of young people becoming entrepreneurs. proprietors between the ages of 36 and 45 (21%) and 46 and above (14%) are experienced businesspeople with a keen understanding of sustainability, respectively. With 55% of firms, Java leads the way geographically, highlighting its importance economically. Yogyakarta and Bali add to the uniqueness of the region. A noteworthy 15% operate outside of the provinces on the list, demonstrating the diversity of the country. There is a variation in the length of business experience; 33% have less than five years, which may provide new insights. Entrepreneurs with five to ten years of experience (47%) offer valuable perspectives on long-term sustainability strategies. Seasoned entrepreneurs make up another sizable category (20%) with more than 11 years of experience. 39% of all MSME's are small-scale, which is consistent with global MSME characteristics. Large-scale (31%) and medium-sized (30%) businesses demonstrate a varied business environment with differing capacities for sustainable practices.

4.2 Descriptive Statistics for Key Variables

Table 2. Descriptive statistics for key variables

Variable	Mean	S.D	Min	Max
GSCM Practices	3.92	1.10	2.00	5.00
Consumer Awareness	4.21	1.05	2.00	5.00
Regulatory Compliance	3.87	1.12	2.00	5.00
Market Performance	4.14	1.00	2.00	5.00

Source: Results processed by the author (2023)

The study's main variables—Green Supply Chain Management (GSCM) Practices, Consumer Awareness, Regulatory Compliance, and Market Performance—have mean, standard deviation, minimum, and maximum values that offer valuable information about the study's central tendencies, variations, and overall distribution of responses. Now let's examine the consequences of these changeable attributes: MSMEs have a moderate to high level of involvement (Minimum: 2.00, Maximum: 5.00) in Green Supply Chain Management (GSCM) Practices, with a consensus in adoption (Low Standard Deviation: 1.10) and a comparatively high average engagement (Mean: 3.92).

4.3 Regression Analysis

Table 3. Regression analysis results

Hypotesis	β	Sig
GSCM Practices -> Market Performance	0.437	0.000
Consumer Awareness -> Market Performance	0.342	0.000
Regulatory Compliance -> Market Performance	0.521	0.000

Source: Results processed by the author (2023)

The findings of the hypothesis test, which involved the beta coefficients (β) and significance levels (Sig), shed light on the importance and strength of the connections among consumer awareness, market performance, regulatory compliance, and green supply chain management (GSCM) practices. Let's talk about each hypothesis's implications:

A moderate to high positive association between GSCM procedures and market performance is indicated by the positive beta coefficient of 0.437. The statistical significance of the association between GSCM procedures and market performance is indicated by the relatively low significance level of 0.000. The findings are consistent with the notion that GSCM procedures and market performance have a strong and favorable relationship. MSMEs that actively participate in sustainable supply chain processes have a higher chance of seeing improvements in their performance in the market. This highlights how crucial environmental responsibility is to supply chains as a strategic tool for attaining corporate success.

Market performance and consumer awareness have a somewhat favorable association, as indicated by the positive beta coefficient of 0.342. The statistical significance of the association between Consumer Awareness and Market Performance is indicated by the extremely low significance level of 0.000. The findings support the notion that there is a substantial and positive correlation between market performance and consumer awareness. MSMEs are more likely to see favorable market results if they are successful in educating consumers about their sustainability practices. This emphasizes how strategically advantageous it is for businesses to match their operations with the beliefs and preferences of customers who care about the environment.

Regulatory compliance and market performance have a significant positive correlation, as seen by the strong positive beta coefficient of 0.521. The statistical significance of the correlation between Regulatory Compliance and Market Performance is indicated by the extremely low significance level of 0.000. The findings provide substantial support for the notion that Regulatory Compliance and Market Performance have a positive and statistically significant relationship. MSMEs are more likely to see favorable market results if they successfully negotiate and abide by

environmental laws and norms. This emphasizes how important regulatory compliance is to the market because it's both a legal necessity and a calculated strategy.

Market performance is positively impacted by the synergistic effect of the comprehensive model that incorporates consumer awareness, regulatory compliance, and GSCM procedures (Adjusted R-squared = 54.2%). This suggests that the total market performance of MSMEs is greatly influenced by the combined influence of these factors.

Discussion

The global trend of organizations realizing the strategic benefits of sustainable supply chain management is consistent with the favorable and significant association between GSCM practices and market performance [38]. MSMEs in Indonesia are better positioned to succeed in the market if they give environmental responsibility a priority in their supply chains.

The significance and positive correlation shown between consumer knowledge and market success highlights the need for open and honest communication regarding sustainable practices. Positive market results can be achieved by MSMEs who successfully convey their dedication to sustainability by drawing in and keeping eco-aware customers [39], [40].

The substantial and positive correlation between market performance and regulatory compliance highlights the dual function of compliance as a strategic success factor and a legal need. In addition to fulfilling their legal responsibilities, MSMEs that follow environmental standards lay the groundwork for long-term market competitiveness [19], [41].

Implications for MSMEs and Policymakers

1. To improve their performance in the market, MSMEs can deliberately incorporate sustainable supply chain techniques.
2. Transparently communicating sustainability initiatives can increase consumer awareness and boost corporate success.
3. Setting regulatory compliance as a top priority is not only required by law but also a major factor in maintaining market competitiveness.
4. Making Policy
5. Legislators ought to take into account incentives and support systems for MSMEs implementing sustainable practices.
6. MSMEs can benefit from increased understanding of the advantages of adhering to environmental standards through educational initiatives.

Limitations and Recommendations

Certain restrictions apply to the study, including self-reported data and the cross-sectional methodology. For a more thorough understanding, future studies may use objective measurements and longitudinal approaches. Furthermore, examining variances by industry could offer complex perspectives on sustainable methods.

5. CONCLUSION

In summary, this study sheds light on important dynamics that exist within the MSME sector in Indonesia, highlighting the vital role that sustainability practices have in influencing market

success. According to the research, MSMEs that actively participate in GSCM practices, raise customer awareness, and maintain regulatory compliance have a higher chance of succeeding in the marketplace. These revelations have important ramifications for corporate strategy and legislative initiatives. The study emphasizes how important it is for MSMEs to successfully navigate regulatory environments, openly convey these efforts to customers, and strategically integrate sustainability into supply chain operations. These kinds of actions not only support environmental stewardship but also function as stimulants for long-term performance and competitiveness in the market.

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