

The Influence of Green Supply Chain Management on Business Sustainability Through Green Innovation as a Mediating Variable on Natural Color Batik SMEs in Bantul Regency

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ABSTRACT

This study shows how business sustainability is influenced by Green Supply Chain Management (GSCM) and uses the mediating role of Green Innovation (GI) to explain the relationship. The quantitative descriptive method was used in this study. With a sample size of 50 Natural Batik SMEs, the population of this study was all Natural Batik SMEs in Bantul Regency spread across two villages, namely Wukirsari and Trimulyo. The data analysis method used in this study was SmartPLS 3. The results of the study indicate that: 1) GSCM has a positive effect on Business Sustainability; 2) GSCM has a positive effect on Business Sustainability; 3) GI mediates the effect of GSCM on Business Sustainability of Natural Batik UKM in Bantul Regency.

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1. INTRODUCTION

Companies face challenges in building business sustainability due to increasing economic development, social problems and environmental damage. As shown by research [1] that companies facing competitive, regulatory and societal pressures, balancing economic, social and environmental performance is becoming increasingly important. Generally, companies convert resources into goods and services, ignoring the negative impacts on the environment and society in the process [2] [3]. Therefore, every company should not only focus on the financial aspect, but must also strive for business sustainability [4]. So the existence of this risk is important for companies to have an orientation and adopt

environmentally friendly practices in their production processes to achieve business sustainability [5].

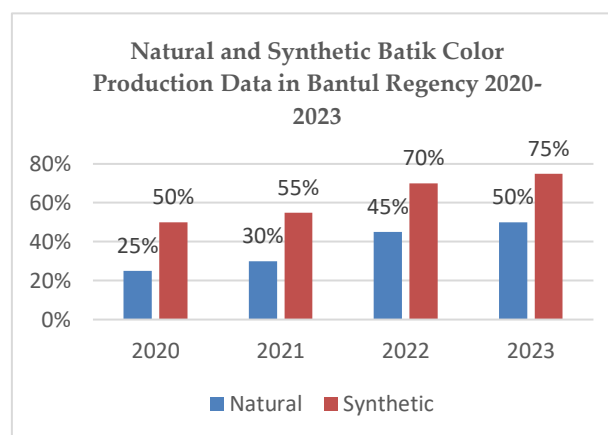
In developing countries, natural resources are gradually depleting and environmental problems are getting worse because businesses prioritize economic growth over preserving society and the environment. [6] shows how environmental management is increasingly important for small and medium enterprises. Indonesia as a developing country whose economy grows from the contribution of SMEs, has its own challenges in managing production by adopting environmentally friendly practices to achieve business sustainability. Because SMEs have the potential to grow big, but also contribute to production problems such as pollution and waste through the use of

chemical raw materials that are difficult to decompose and the lack of proper waste processing that has an impact on public health and the environment. Because of the large responsibility of SMEs for environmental damage, SMEs play an important role in achieving environmentally friendly practices and supporting the transition to sustainable development [7].

Batik SMEs in Indonesia have grown rapidly since the inauguration of batik as an intangible cultural heritage of Indonesia on October 2, 2009 by UNESCO. The use of synthetic dyes in the batik process has been going on for a long time, considering the cheaper costs, speed and ease of batik making and its stability. The colors produced are diverse and tend to be sharper. However, the use of synthetic dyes has a negative impact on society and the environment. Kompas.id shows that the synthetic batik industry has a bad and dangerous impact on the surrounding environment. Batik waste that is disposed of carelessly if it seeps into the well and then the water is consumed has the potential to harm health. Moreover, if it enters the river, it will have a wide impact because if it has poisoned the river, it will run to the sea. Starting from the destruction of river biota, to the extinction of marine biota.

Natural color batik SMEs in Bantul Regency are oriented towards nature, the

products produced are environmentally friendly products because it uses non-hazardous raw materials and the production process is processed in such a way. Although awareness and attention to environmental issues are increasing, there is still a significant gap between current practices and the sustainable model needed to address environmental problems. In recent years, the production of natural color batik has increased every year, however, the amount of natural color batik produced is less than that of synthetic color batik. The activities that hinder the production process of natural color batik are the scarcity of certain natural color raw materials, unstable prices for natural dye raw materials, repetitive and complicated dyeing processes, lack of awareness of making natural dye pastes, minimal number of suppliers of natural color raw materials and weak management of cooperative relationships with the distribution chain. Therefore, practices such as choosing suppliers who carry out environmental responsibilities, implementing environmentally friendly procurement regulations and provisions, and reducing waste and pollution in the manufacturing process can help improve business sustainability [8].



Source: Interview results, 2024

Business sustainability is a company's approach to achieving business competitiveness by using sustainable

strategies [9] [10]. As of right now, the production process has harmed the environment by generating trash, upsetting

ecosystems, and depleting natural resources. This is due to various factors, including low production costs, lack of compliance with government regulations and provisions, employees' inability to innovate, high procurement of environmentally friendly technology, and lack of awareness of its negative impacts. The UN also launched the Sustainable Development Goals (SDGs) in 2015, which address social, environmental, and economic sustainability, in recognition of the increasing threats to global sustainability. The SDGs aim to change practices such as supply chain management and other business practices to improve business sustainability and reduce sustainability related impacts. [11].

The supply chain is very important for delivering products to end consumers, companies need to have a green orientation in the supply chain that leads to Green Supply Chain Management [12]. Green Supply Chain Management activities have become important and one of the most effective sustainability practices as a result of increasing global environmental awareness [13]. Green Supply Chain Management helps companies improve business sustainability across all upstream and downstream supply chain activities, from raw material purchasing to raw material disposal [14] [15]. Previous research related to Green Supply Chain Management conducted by [16] [17] said that business sustainability is influenced by Green Supply Chain Management, in contrast to [18] who stated that Green Supply Chain Management does not influence business sustainability. In addition, [19] also saw the lack of implementation of green supply chain management, especially among SMEs, which tend to be slow to implement Green Supply Chain Management due to their limited resources and capabilities [20].

Today's dynamic and innovative business environment, operating an environmentally conscious company is no longer an option for long-term and sustainable survival for SMEs. NRBV supports a framework where companies with higher Green Supply Chain Management that

use Green Innovation have a greater probability of increasing competitive advantage and thus increasing Business Sustainability [21]. According to [22] [23] [12] stated that Green Supply Chain Management has a positive influence on Business Sustainability, besides having a positive influence on Green Innovation. Green Innovation is also thought to be able to mediate the relationship between Green Supply Chain Management and Business Sustainability because both have a positive relationship [24]. In addition, other studies have also proposed that Green Innovation is a mediator of the relationship between Green Supply Chain Management practices and Business Sustainability [22]. Businesses that consider environmental factors, such as unpredictable climate change and depletion of natural resources, can achieve Green Innovation [26]. This is the reason why companies must take the opportunity to earn income from new raw materials that are abundant and have not been widely utilized. In this case, the Natural Color Batik SME in Bantul Regency develops the potential of natural resources such as jolawe fruit, mahogany bark and indigo paste to be used as a source of raw materials for batik dyes so that the coloring process in making batik and the impacts caused on environmental quality can be minimized.

2. LITERATURE REVIEW

2.1 Green Supply Chain Management

Environmentally friendly supply chain management, according to [26], takes into account how business operations affect the environment throughout a company's supply chain, from raw materials to final goods. Green Supply Chain Management indicators are [27]:

1. Collaboration with Suppliers & Customers
2. Green Purchasing
3. Eco-Design
4. Internal Environmental Management

2.2 Green Innovation

Green innovation according to [28], is the process of creating new products and processes and modifying existing ones with the aim of reducing the negative impacts of business. According to [29] Green Innovation indicators are as follows:

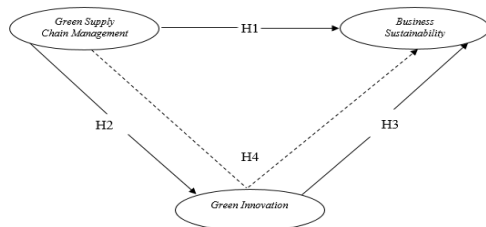
1. Green Process Innovation
2. Green Product Innovation

2.3 Business Sustainability

According to [30], business sustainability is a long-term, profit-oriented corporate strategy used by businesses to generate value by minimizing the negative impacts of their operations on society and the environment. Business Sustainability indicators consist of Three parts, namely [31]:

1. Economic Performance
2. Social Performance
3. Environmental Performance

2.4 Hypothesis



H1: Green Supply Chain Management has a positive and significant effect on Business Sustainability.

H2: Green Innovation has a positive and significant effect on Business Sustainability.

H3: Green Supply Chain Management has a positive and significant effect on Green Innovation.

H4: Green Supply Chain Management has a positive and significant effect

3. METHODS

The quantitative descriptive method is applied in this investigation. The population in this study were all Natural Batik SMEs in Bantul Regency. The number of samples in this study was 50 SMEs. The sampling technique for this study used saturated sampling with data collection using questionnaires. Primary data were used in this investigation. Researchers collected data at Natural Batik SMEs in Bantul Regency for 1 week starting from June 2 to June 9, 2024. The data analysis tool used for hypothesis testing is the SmartPLS 3.0 software application.

4. RESULTS AND DISCUSSION

4.1 Descriptive Analysis of Respondents

The results of the study provide findings that respondents as managers are more dominant than owners, namely 33 respondents or equivalent to 66.0% of the total respondents. Respondents are dominated by the length of business 1-5 years as many as 20 respondents (40.0%). Furthermore, this finding shows that the most dominant respondent income is in the range of less than IDR 20,000,000 as many as 20 respondents (40.0%). The characteristics of respondents are presented in Table 1.

Table 1. Respondents Characteristics

Respondent Identity	Category	Frequency	Percentage
Position	Owner	17	34.0%
	Manager	33	66.0%
	Total	50	100.0%
Length of Business	1 – 5 year	20	40.0%
	6 – 10 year	16	32.0%
	11 – 15 year	10	20.0%
	16 – 20 year	3	6.0%

	>20 year	1	2.0%
	Total	50	100.0%
Annual Income	<Rp. 12.000.000	7	14.0%
	Rp. 12.000.000 – Rp. 30.000.000	20	40.0%
	Rp. 30.000.001 – Rp. 50.000.000	11	22.0%
	Rp. 50.000.001 – Rp. 70.000.000	5	10.0%
	> Rp. 70.000.000	7	14.0%
	Total	50	100.0%

Source: Processed primary data, 2024

4.2 Measurement Model Analysis

After assessing the characteristics of the respondents, it can be seen that all variables show reliability and validity as seen in Table 2. The outer loading of each item has exceeded the threshold of 0.7. Furthermore, the Average Variance Extracted (AVE),

Cronbach Alpha and Composite Reliability values have exceeded the thresholds of 0.50, 0.60 and 0.70 respectively. To assess discriminant validation, the Fornell-Larcker Criterion and Heterotrait-Monotrait Ratio (HTMT) are used as seen in Table 3.

Tabel 2. Reliability and Validity

Variable	Items	Outer Loadings	Cronbach Alpha	Composite Reliability	AVE
<i>Green Supply Chain Management</i>	X1.1	0.845	0.972	0.974	0.644
	X1.2	0.825			
	X1.3	0.764			
	X1.4	0.760			
	X1.5	0.817			
	X1.6	0.777			
	X1.7	0.829			
	X1.8	0.860			
	X1.9	0.828			
	X2.10	0.860			
	X2.11	0.825			
	X2.12	0.849			
	X2.13	0.876			
	X3.14	0.734			
	X3.15	0.807			
	X3.16	0.712			
	X4.17	0.710			
	X4.18	0.840			
	X4.19	0.754			
	X4.20	0.786			
	X4.21	0.765			
<i>Green Innovation</i>	Z1.22	0.872	0.942	0.953	0.743
	Z1.23	0.891			
	Z1.24	0.785			
	Z1.25	0.872			
	Z2.26	0.884			
	Z2.27	0.885			
Z2.28	0.886				
	Y1.29	0.840	0.976	0.978	0.753

<i>Business Sustainability</i>	Y1.30	0.875			
	Y1.31	0.879			
	Y1.32	0.869			
	Y1.33	0.925			
	Y1.34	0.935			
	Y2.35	0.911			
	Y2.36	0.726			
	Y2.37	0.918			
	Y2.38	0.905			
	Y2.39	0.893			
	Y2.40	0.775			
	Y3.41	0.862			
	Y3.42	0.830			
	Y3.43	0.844			

Source: Processed primary data, 2024

Tabel 3. Fornell-Lacker Criteria

	Business Sustainability	Green Innovation	Green Supply Chain Management
Business Sustainability	0.868		
Green Innovation	0.758	0.862	
Green Supply Chain Management	0.666	0.863	0.802

Source: Processed primary data, 2024

Tabel 4. Heterotrait-Monotrait Ratio (HTMT)

	Business Sustainability	Green Innovation	Green Supply Chain Management
Business Sustainability			
Green Innovation	0.777		
Green Supply Chain Management	0.668	0.641	

Source: Processed primary data, 2024

4.3 Structural Model Analysis

The next step is the structural model. Predictive relevance (Q^2) and coefficient of determination (R^2) are used to evaluate the structural model. The research model is distinguished and assessed using the R^2 value. Table 5 displays the R-square value for the Business Sustainability variable, which is 0.632. This indicates that 63.2% of the variation in the Business Sustainability variable can be explained by the model based

on the Green Innovation and Green Supply Chain Management variables, with the remaining 36.8% being explained by other variables. The model's ability to explain the Green Innovation variable is 40.2%, with the remaining 59.8% being explained by other factors, according to the R-square value of 0.402 for the Green Supply Chain Management variable.

Tabel 5. R-Square (R^2)

Variable	R^2
Green Innovation	0.402
Business Sustainability	0.632

Source: Processed primary data, 2024

4.4 Hypothesis Testing

Based on the results obtained through the bootstrapping process presented in Table 6, it can be seen that GSCM shows a significant positive effect on BS ($\beta = 0.309$, $p < 0.048$), GSCM shows a significant positive

effect on GI ($\beta = 0.643$, $p < 0.000$), GI has a significant positive effect on BS ($\beta = 0.562$, $p < 0.000$). On the other hand, it should be noted that GSCM shows a positive and significant effect on BS through GI ($\beta = 0.356$, $p < 0.001$).

Table 6. Path Coefficients Test Results

Path	Original Sample	T-Statistic	p-Value	Decision
GSCM -> BS	0,309	1,985	0,048	Accepted
GSCM -> GI	0.643	7.953	0.000	Accepted
GI -> BS	0.562	4.168	0.000	Accepted
GSCM -> GI -> BS	0.356	3.242	0.001	Accepted

Source: Processed primary data, 2024

DISCUSSION

According to the results of the hypothesis testing, GSCM significantly and favorably affects BS, supporting hypothesis H1. Prior studies demonstrating the positively effects of GSCM on BS also corroborate this conclusion [22]. In contrast to [18] who stated that green supply chain management does not affect business sustainability.

According to the results of the hypothesis testing, GSCM significantly and favorably affects GI, supporting hypothesis H2. Supporting evidence for this conclusion is earlier studies demonstrating the potential positively of GSCM on GI [22] [23].

According to the results of the hypothesis testing, GI significantly and favorably affects BS, supporting hypothesis H3. Additionally, prior studies have demonstrated that GI might positively influence on BS [24].

The H4 hypothesis is confirmed by the hypothesis testing results, which suggest

that GSSM significantly and favorably affects BS through GI. Previous studies demonstrating that GSCM can positively affect BS through GI [22] also supports this conclusion.

5. CONCLUSION

This study shows several findings, namely GSCM has a positive and significant influence on BS. GSCM has a positive and significant influence on GI. GI has a positive and significant influence on BS. GSCM has a positive and significant influence on BS through GI. From the results of the study it is known that all variables are already in the high category, but companies are expected to maintain and improve green supply chain management strategies and green innovation in products and production processes in order to encourage long-term business sustainability.

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