



The Implementation of ESG Practices: A Case Study of Batik Small and Medium-sized Enterprises in Lasem

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Abstract

Environmental, Social, and Governance (ESG) implementation is increasingly relevant for small and medium enterprises (SMEs), especially in traditional industries such as batik. This study examines how five batik SMEs in Lasem implement ESG practices based on nine key topics of the Simplified ESG Disclosure Guidelines (SEDG). Using a qualitative approach, this study collected data through in-depth interviews and observations to understand how ESG principles are applied in business practices. The findings show that Lasem Batik SMEs have adopted several aspects of ESG, especially in material waste management, worker health and safety, and community engagement. However, governance aspects such as risk reporting and anti-corruption policies are still not well structured. This study provides insights into the challenges and opportunities in implementing ESG in the traditional SME sector and its implications for the sustainability of the batik industry.

Keywords: Batik, ESG, Small and Medium-sized Enterprises, Sustainability Reporting.

Abstrak

Penerapan Lingkungan, Sosial, dan Tata Kelola (ESG) semakin relevan bagi usaha kecil dan menengah (UKM), khususnya di industri tradisional seperti batik. Studi ini mengkaji bagaimana lima UKM batik di Lasem menerapkan praktik ESG berdasarkan sembilan topik utama dari Panduan Pengungkapan ESG yang Disederhanakan (SEDG). Menggunakan pendekatan kualitatif, penelitian ini mengumpulkan data melalui wawancara mendalam dan observasi untuk memahami bagaimana prinsip ESG diterapkan dalam praktik bisnis. Temuan menunjukkan bahwa UKM Batik Lasem telah mengadopsi beberapa aspek ESG, terutama dalam pengelolaan limbah material, kesehatan dan keselamatan pekerja, serta keterlibatan dengan komunitas. Namun, aspek tata kelola seperti pelaporan risiko dan kebijakan anti-korupsi masih belum terstruktur dengan baik. Penelitian ini memberikan wawasan mengenai tantangan dan peluang dalam implementasi ESG di sektor UKM tradisional serta implikasinya bagi keberlanjutan industri batik.

Kata Kunci: Batik, ESG, Pelaporan Keberlanjutan, Usaha Kecil dan Menengah.

1. INTRODUCTION

Small enterprises have a major influence on the economies and societies of their operating regions and countries yet they contribute around 70% of global pollution (Barbosa et al., 2020). However, the main focus of Small and Medium-sized Enterprises (SMEs) remains centered on profit generation, given the absence of regulatory frameworks mandating sustainability

practices (Rodrigues & Franco, 2023a). Therefore, there is an urgent need for initiatives to promote sustainable development that go beyond the ordinary and drive the transformation of traditional business models by integrating green innovations within companies (Barbosa et al., 2020; Rodrigues & Franco, 2023a).

The role of small enterprises extends beyond fulfilling community needs; they also serve as custodians of cultural heritage. Through various products, work of art can be realized, such as in traditional batik crafts. Batik is a very famous cultural and art product in Indonesia (Roziqin et al., 2021). Batik has become an inseparable part and is highly valued in Indonesian culture, as one of the distinctive heritages of the archipelago. The uniqueness of batik can be seen from its various motifs, each of which contains profound meaning (Kusumawati et al., 2021). UNESCO's recognition of batik as an intangible cultural heritage of Indonesia in 2009 (Kusumawati et al., 2021; Mukimin et al., 2018) has significantly increased its popularity, supporting the sustainable growth of this industry until now.

Indonesian batik products are widely known to originate from regions such as Yogyakarta, Surakarta, and Pekalongan. However, many regions in Indonesia have recently embrace batik as a creative industry. One of these regions is Lasem, Rembang Regency, renowned for its Batik Tulis Lasem (Lasem Handwritten Batik) which historically is a type of coastal batik since the region is close to the shore. Over time, Batik Tulis Lasem has gained economic value for the local communities with its development in society. Batik Tulis Lasem has evolved into a creative industry in the region (Roziqin et al., 2021).

Behind its positive contribution, the handwritten batik industry also has a negative impact on the environment due to the production of liquid waste. This waste is mainly produced from the dyeing process, removing dyes from fabric fibers, and rinsing, which are often discharged into nearby water bodies without adequate treatment. Additionally, various non-biodegradable pollutants, such as iron (II) sulfate (FeSO_4), alum ($\text{K}_2\text{SO}_4 \cdot \text{Al}_2(\text{SO}_4)_3 \cdot 24\text{H}_2\text{O}$), calcium oxide (CaO), and wax (beeswax), are commonly found in this wastewater (Kusumawati et al., 2021). The presence of these pollutants exacerbates the risk of environmental pollution, especially in aquatic environments, which ultimately can lead to environmental and health problems (Birgani et al., 2016; Mukimin et al., 2018).

The increasing attention to sustainability has driven this study to focus on SMEs specializing in the production and sale of handwritten batik in Lasem District, Rembang Regency, Central Java. While most ESG research tends to focus on large, publicly traded companies, this study seeks to highlight how preserving local culture, such as batik, can be aligned with sustainability initiatives. These SMEs are noteworthy not only for their traditional craftsmanship but also for their engagement in international markets, which highlights the importance of implementation of environmental and social impacts in the industry.

Given these considerations, this study aims to explore the implementation of Environmental, Social, and Governance (ESG) aspects among Lasem Batik SMEs. Specifically, it seeks to understand how these SMEs perceive their role in contributing to environmental and social responsibility. The research addresses several key questions: how Environmental disclosure is implemented in their operational practices, how Social disclosure is managed, and how Governance disclosure is executed. By investigating these issues, this study aims to provide insights into how Lasem Batik SMEs balance the demands of tradition, sustainability, and market competitiveness.

2. LITERATURE REVIEW

Stakeholder Theory

Stakeholder Theory is a concept that describes how companies operate and is characterized by several key concepts: First, a company consists of a network of relationships between various stakeholders, which form the organization (Freeman, 1984; Freeman et al., 2010). Thus, stakeholders can be individuals or groups that have the ability to influence an organization or are influenced by an organization (Freeman, 1984; Hörisch et al., 2020). Second, according to stakeholder theory, the main task of a company manager is to create value for all stakeholders, not just for certain interests. To achieve this goal, a manager must align the various interests that exist in order to achieve common goals, not just to resolve conflicts of interest. The third main principle of stakeholder theory states that business decisions and ethical decisions cannot be separated. Both must be considered as complementary parts of the value creation process. And finally, stakeholder theory emphasizes that companies do not only exist to pursue profits, but also to fulfill goals that involve cooperation with stakeholders.

Stakeholder theory asserts that value creation is central to the essence of conducting business (Freeman et al., 2010; Hörisch et al., 2020; Mitchell et al., 1998) expand upon this concept and introduce a theory known as "value-creation stakeholder accounting." Stakeholder theory can facilitate the identification and understanding of company and stakeholder-specific requirements, as it offers: (i) Frameworks for evaluating and prioritizing planetary boundaries and Sustainable Development Goals (SDGs) relevant to individual companies' operations as well as (ii) Additional benchmarks to consider aspects of social and environmental sustainability that may not be directly linked to planetary boundaries or the SDGs but hold significance for stakeholders concerning a company's activities (Hörisch et al., 2020).

In this study, Stakeholder Theory is applied to understand how Lasem Batik SMEs implement ESG practices by considering the interests and expectations of various stakeholders. In the environmental pillar, the key stakeholders include the government, which establishes regulations related to waste management and water usage, as well as the local communities directly affected by production waste. Meanwhile, in the social pillar, employees are the main stakeholders who expect the protection of labor rights and safe working conditions, accompanied by local communities who benefit from empowerment programs, and customers who demand ethically produced products. In the governance pillar, SME owners or managers hold the responsibility to ensure good governance practices. By focusing on value creation for stakeholders in accordance with each ESG pillar, this theory helps analyze how these SMEs balance social, environmental, and governance aspects in their business practices.

Doughnut Economics

Raworth (2021) in her book entitled "*Doughnut Economics: Seven Ways to Think Like a 21st Century Economist*" provides a transformative framework in the field of economics. This framework helps humanity to rethink what the economic priorities are in the 21st century; no longer just focusing on GDP (Gross Domestic Product) growth, but also emphasizing the importance of building an economy that remains within the planet's ecological and social boundaries. This model is called "Doughnut Economics," according to its shape which resembles a donut with a hole in the middle. The inner circle represents the social foundation, while the outer circle shows the ecological boundary. Between the two circles is "*the safe and*

just space for humanity." The model shows thresholds between light green and dark green that, if crossed, mean the economy is entering the danger zone. If the outer boundaries, between dark green and the white space inside and outside the model, are crossed, it means the economy is out of balance (Hartman & Heslinga, 2023; Raworth, 2018).

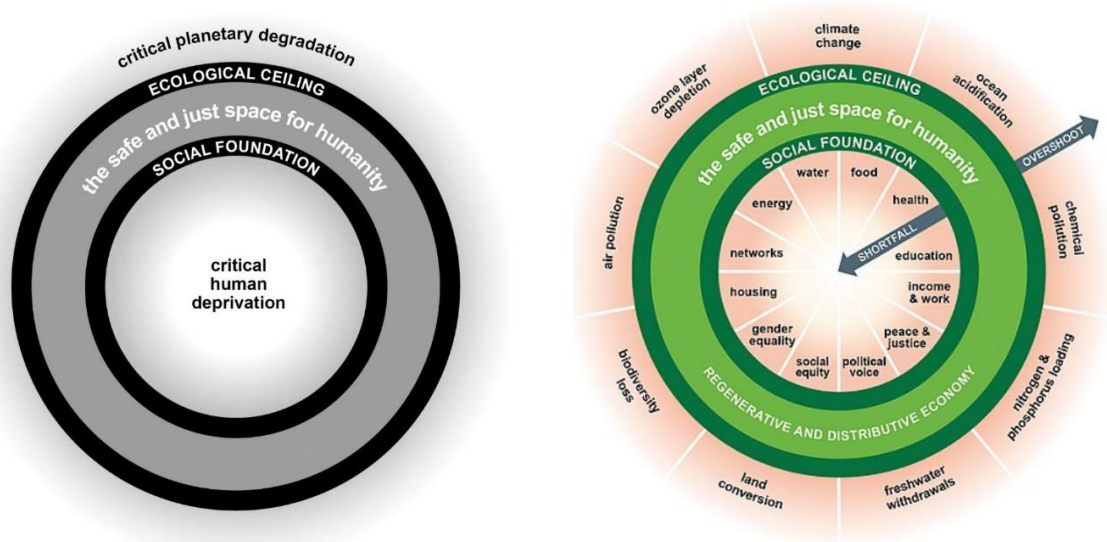


Figure 1. Doughnut Economics Model

The seven principles of Doughnut Economics focus on rethinking the purpose of economics; building a regenerative and distributive economy. These principles challenge the old view of infinite growth and highlight the importance of building an economy that thrives within ecological boundaries. Doughnut Economics is increasingly being applied in various fields, such as urban planning, corporate strategy, and policy making to encourage sustainable practices. However, its application in the context of SMEs is still rarely explored, especially in traditional industries such as batik. Its emphasis on balancing social and ecological priorities is in line with the research focus on addressing the environmental and social aspects of sustainability.

Small and Medium-sized Enterprises

Indonesian Law No. 20 of 2008 on Micro, Small, and Medium Enterprises defines Small and Medium Enterprises (SMEs) as independent productive economic activities that stand alone, carried out by individuals or business entities that are neither subsidiaries nor branches of other companies. The criteria for categorizing a business as an SME are outlined in Table 1.

Table 1. Small and Medium-sized Enterprises Criteria

Criteria	Small Enterprise	Medium Enterprise
Net Assets (excluding the value of land and buildings where the business is situated)	> IDR 50,000,000 – IDR 500,000,000	> IDR 500,000,000 – IDR 10,000,000,000
Annual Sales (as an alternative if the first criteria is not met)	> IDR 300,000,000 – IDR 2,500,000,000	> IDR 2,500,000,000 - IDR 50,000,000,000

Source: Indonesian Law No. 20 of 2008

Small and Medium-sized Enterprises (SMEs) operate on a smaller scale compared to large corporations, which often leads to their environmental impact often goes unnoticed at both regional and national levels (Rodrigues & Franco, 2023b). Despite this, small enterprises are responsible for approximately 70% of global pollution and have a significant impact on the economic and social conditions of the regions and countries where they operate. This underscores the urgent need for initiatives that encourage sustainable development beyond traditional practices (Barbosa et al., 2020; Hillary, 2000; Morsing & Perrini, 2009; Revell et al., 2010). Heightened awareness among customers, appeals from various stakeholders, and governmental pressure are increasing the responsibility of SMEs to minimize the environmental impact of their industrial activities (Rodrigues & Franco, 2023b).

Environmental, Social, and Governance Disclosure

The Simplified ESG Disclosure Guide (SEDG) for SMEs is designed to help companies in identifying and reporting information related to Environmental, Social and Governance (ESG) aspects. The SEDG has three main objectives: to provide SMEs (as the data preparers) with a simple and standard set of disclosures to track and report, provide stakeholders (as the data requesters) with a simple and standard set of disclosures to ask for, and to provide standard-setters with a simple and standard set of disclosures to support their policies. The SEDG comprises three pillars: environmental, social, and governance. Each of these pillars includes five topics as shown in Figure 2.

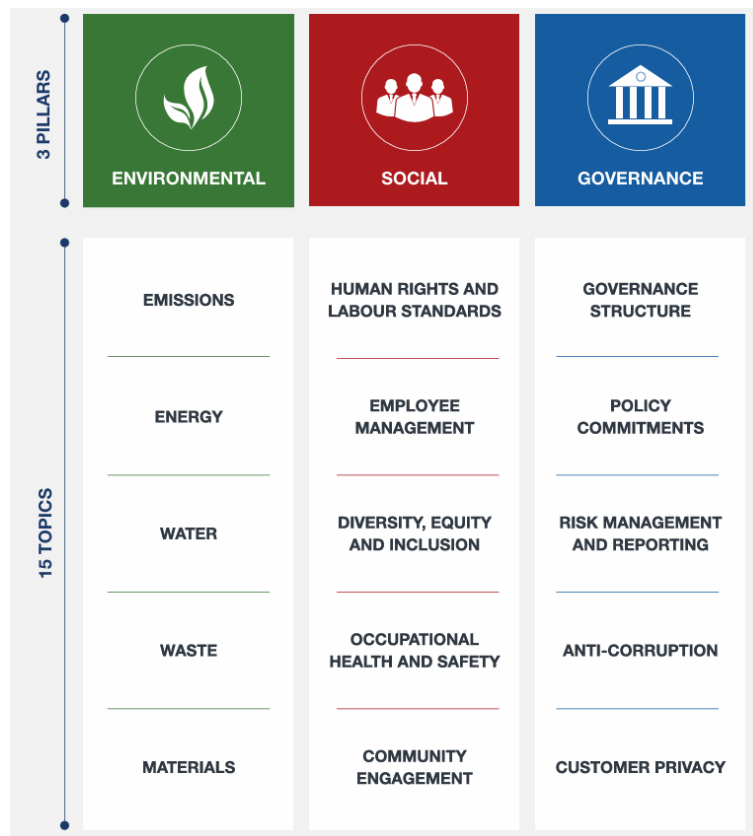


Figure 2. Pillars and Topics of SEDG for SME

Source: <https://sedg.capitalmarketsmalaysia.com/>

This study selects 9 topics out of the 15 available in the SEDG, tailored to the conditions of Batik SMEs in Lasem. These topics cover all three pillars defined by the SEDG: Environmental, Social, and Governance. In the Environmental pillar, the selected topics are water, waste, and materials, considering the significant role of water in the batik coloring process and the importance of managing waste and materials efficiently. For the Social pillar, the chosen topics include human rights and labor standards, occupational health and safety, and community engagement, reflecting the need to protect workers' rights and maintain good relations with the local community. Meanwhile, in the Governance pillar, the selected topics are governance structure, risk management and reporting, and anti-corruption, emphasizing the importance of transparency and ethical practices in business management. These nine topics were chosen as they are relevant to the conditions of Lasem Batik SMEs and are expected to contribute significantly to each ESG pillar.

3. RESEARCH METHODS

Research Object and Location

The object used in this research is sustainability practice in five (5) SMEs located in Lasem District, Rembang Regency, Central Java. These five SMEs specialize in the production and sale of handwritten batik and have expanded their market reach by exporting its handwritten batik products internationally. However, the dyes utilized are not natural, but rather synthetic dyes with bright colors, and some of the resulting waste is not properly managed.

Research Process

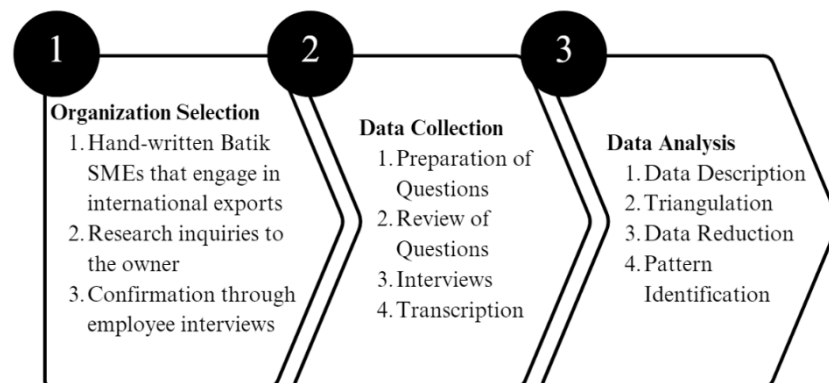


Figure 3. Research Process

The research process is shown in Figure 3. Five Lasem Batik SMEs were chosen for this research, who have engaged in international export of Indonesia's handwritten batik. Then, researchers have determined the roles of the participants required to represent the Lasem Batik SMEs in the interviews. All respondents were contacted by phone to explain the purpose of the study and to arrange interview dates. These interviews were conducted face-to-face during the month of October 2024, beginning with questioning the owners first and later the employees. Statements of the employees are needed to validate the answer of the owners. This research endeavors to offer valuable insights for companies seeking to transition towards environmentally friendly innovation, aligning with the evolving expectations of stakeholders and society.

Data Collection

The data used in this research is primary data. Primary data refers to information collected directly from the original source by researchers for their study. Researchers employ interviews as a method of data collection. This involves conducting structured or semi-structured interviews with selected individuals, addressing questions relevant to the research topic. Interviews are conducted with multiple sources at different organizational levels to ensure comprehensive data collection. The data collection process began with interviews conducted with five owners and their respective employees, followed by data triangulation.

Table 2. List of Interviewees, Position/Role, and Total Duration (minutes)

Subject	Position/Role	Duration
Interviewee 1	Owner of SME X	57
Interviewee 2	Owner of SME Y	28
Interviewee 3	Owner of SME Z	22
Interviewee 4	Owner of SME A	25
Interviewee 5	Owner of SME B	39
Interviewee 6	Employee of SME X	16
Interviewee 7	Employee of SME Y	8
Interviewee 8	Employee of SME Z	31
Interviewee 9	Employee of SME A	10
Interviewee 10	Employee of SME B	15

Table 2 presents the list of interviewees, including their position or role within the SMEs, as well as the total duration of each interview in minutes. However, the true identity of the SMEs is concealed and replaced with codes to maintain confidentiality and protect the privacy of the participants. Concealing identities is essential to ensure that the information shared by the interviewees does not lead to any potential risks or discomfort for the participating SMEs.

Triangulation is a method used to produce data that is comprehensive and accurately represents actual events (Denzin, 2015). This study focuses on data triangulation by involving others (employees) as data sources. The responses of the employees are used to confirm the answers from the owners, providing assurance that the interview results align with the actual reality within the company. The case study approach enables the collection of data from a diverse group of key informants, which helps to reduce potential bias in the data (Rodrigues & Franco, 2023b). The interviews were fully recorded with the consent of the participants and subsequently transcribed in their entirety.

4. RESULTS AND DISCUSSION

The Handwritten Batik Industry in Lasem has been running for decades. The owner of SME X himself is the sixth generation to run this business. Initially, there were not many handwritten batik entrepreneurs in this area. However, thanks to government support, new business actors have emerged who have helped popularize Lasem Batik. In the midst of this increasingly tight competition, the question arises whether the business they run affects the ecosystem in their area, considering that the process of making handwritten batik will produce waste from its raw materials, namely dyes, wax, and unbleached (mori) fabric (Saqqo & Muslimah, 2017). As a business unit, all stakeholders hope that the Lasem Batik Tulis industry

will continue to develop its business potential both domestically and internationally. Of course, it cannot be separated from good governance policies as well.

Interviews with the five owners of Lasem Batik Tulis SMEs were conducted on the same day, followed by interviews with the five employees from each SME. Interviews with these employees were conducted to confirm the answers of the SME owners, that what the owners said was what actually happened, and to ensure data accuracy. The interviews were fully recorded with the consent of the participants and subsequently transcribed in their entirety. The transcripts were then analyzed and selected based on topics related to the three pillars of Simplified ESG Disclosure.

From each pillar, three (3) topics were taken that were in accordance with the conditions of the Lasem Batik industry, so that this research covers nine (9) topics. In the Environment pillar: water, waste, material; in the Social pillar: human rights and labor standards, occupational health and safety, community engagement; and in the Governance pillar: governance structure, risk management and reporting, anti-corruption (Capital Markets Malaysia, n.d.). These nine topics were chosen because they are relevant to the conditions of Lasem Batik and contribute significantly to each pillar. For example, the topic of water was chosen because water plays an important and significant role in the process of coloring handwritten batik (Yuliana & Adriani, 2022).

Irrelevant data, such as unrelated personal opinions, were excluded from the analysis. In the initial stages of the analysis, some important patterns were found, such as a high level of attention to water and waste management as part of the Environment pillar. However, on the other hand, there are still SMEs that show limited understanding and implementation of ESG as a whole, indicating the need to increase awareness of sustainability issues.

Implementation on Environmental Pillar

In the environmental pillar, this study focuses on three topics adapted from the Simplified ESG Disclosure Guide (SEDG) (Capital Markets Malaysia, n.d.), which are water use, waste management, and material usage. These topics were chosen for their relevance to the context of Lasem Batik SMEs, where most of the production process is carried out manually, requiring significant amounts of water and materials.

Water Use

The study found that each SME has a different approach in managing environmental aspects, one of which is in the use of water. In the batik coloring process, water is the main raw material. The dye will be dissolved in water before being applied to the fabric. (Yuliana & Adriani, 2022). To understand the use of water in this process, the question “*What type of water do you use?*” was asked to the SMEs. The results showed that the water sources used varied. SME Y and SME B used rainwater that they collected during the rainy season. “*Usually I use rainwater, the color is brighter,*” said an employee of SME Y. When the dry season arrives, they will switch to using well water because the Regional Drinking Water Company’s (*Perusahaan Daerah Air Minum, PDAM*) water does not always flow as explained by the owner of SME Y. For SME B, when the dry season arrives, they will use water purchased from Kajar, a village located in the Lasem District, Rembang Regency. This village falls under the administrative area of Lasem, which is known as a center for traditional batik industries. Many batik entrepreneurs in Lasem utilize water sources from Kajar Village, especially during the

dry season, due to its stable and high-quality water availability. In addition to being used in the batik coloring process, the water is also used for the owner's household consumption.

Meanwhile, SME X and SME Z use well water in their batik coloring process. The owner of SME X explained the reason for preferring to use well water rather than the Regional Drinking Water Company's water:

"Water from the Regional Drinking Water Company contains a mixture of drugs, whether it is chlorine or other clarifying drugs which is actually not good for batik."

In the Regional Drinking Water Company's water, several mixed contents can be found, such as chlorine, which is used as a disinfectant to maintain the cleanliness of the water and protect the water from bacteria. (Afifi et al., 2021). However, the statement of the owner of SME X is contrary to SME A which actually uses water from the Regional Drinking Water Company and tank water as the main source of water in the batik coloring process. This shows that preferences for the type of water are greatly influenced by the availability and beliefs of each business actor.

Table 3. Comparison of Water Use in Five Lasem Batik Writing SMEs

	Type of Water Used	Reason for Use	Effectiveness
SME X	Well water	Avoid chemicals in Regional Drinking Water Company's water which are thought to affect the quality of batik	Effective in maintaining the quality of batik colors
SME Y	Rainwater during the rainy season and well water during the dry season	While rainwater produces brighter color, well water is used because Regional Drinking Water Company's water is not always available	Effective in utilizing natural resources, but dependent on the season
SME Z	Well water	Avoid chemicals in Regional Drinking Water Company's water which are thought to affect the quality of batik	Effective in maintaining the quality of batik colors
SME A	Regional Drinking Water Company's water and tank water	Relying on a more stable supply	Effective because it does not depend on the season
SME B	Rainwater during the rainy season, water from Kajar during the dry season	Rainwater produces brighter colors, water from Kajar is used due to the limited availability of other water sources	Effective but requires additional costs to purchase water during the dry season

Source: Processed primary data (2024)

Table 3 shows the types of water used by the five Lasem Batik SMEs, along with their reasons for choosing each water source and its effectiveness. The table highlights that water preferences are influenced by factors such as availability, perceived quality impact on batik colors, and cost considerations, demonstrating diverse approaches to water management among these SMEs. These differences reflect how each SME adapts to local conditions and resources to maintain production quality and sustainability.

Waste Management

After being used in the dyeing process, the water will then become liquid waste containing dyes (Apriyani, 2018). Liquid batik waste contains high levels of dyes and TSS (Total Suspended Solids) which can affect the photosynthesis process of aquatic plants and can affect the quality of water bodies (Finistyanto & Rosariawari, 2022). This will be the second discussion on the environmental aspect. Dyes mixed with water become dangerous if they pollute the environment around the industry. Various non-biodegradable pollutants, such as iron (II) sulfate (FeSO_4), alum ($\text{K}_2\text{SO}_4 \cdot \text{Al}_2(\text{SO}_4)_3 \cdot 24\text{H}_2\text{O}$), calcium oxide (CaO), and wax (beeswax), are commonly found in this wastewater (Kusumawati et al., 2021).

To respond to this issue, SME Z and SME A innovated by producing batik using natural dyes made from dried leaves. Batik products with natural dyes tend to have dark colors with dominant “*earth-tone*” colors such as brown, yellow, and green. Although not as striking as batik in general, handwritten batik with natural dyes has its own appeal, as evidenced by the many types of handwritten batik that are being processed in the backyard of SME A’s production house.

Even so, every Lasem Batik industry house will always try to fulfill the demands of its customers, namely handwritten batik with certain colors that require them to use dyes. The dyes contained in this water require special handling and cannot be thrown away because they can affect the photosynthesis process of plants. (Finistyanto & Rosariawari, 2022). Each SME has its own way of managing the liquid waste – which is used water from the dyeing process – that they have used. SME A has a private Wastewater Treatment Plant (*Instalasi Pengolahan Air Limbah* or WWTP) two meters below the owner's backyard. SME B explained that the water they use is then disposed of at the WWTP provided by the government.

However, SME X gave a conflicting view regarding the WWTP provided by the government. The owner of SME X explained that the government did build the WWTP in the hope that the wastewater from the batik production process could be accommodated and not pollute the environment. However, for SME X, the location of the WWTP was too high. As a result, water could not flow from the SME X production site to the WWTP. However, SME X built its own sedimentation tank so that the remaining color could settle while the water could flow into the drain. The owner of SME X explained through the sentence:

“For SMEs like us, waste processing to create an industrial standard WWTP is quite difficult if not supported by the government. Finally, we just make a sedimentation tank. The pollutant levels are still there and continue to flow into the environment.”

Through this statement, SME X realizes that its production activities also contribute to environmental pollution in its area, but they do not yet have the capability to manage liquid

waste independently. The WWTP built by the government has not been fully implemented optimally, considering that there has been no follow-up to the problem of the location of the WWTP being too high. The construction of the WWTP is an important step in managing liquid waste to prevent environmental pollution, but is often constrained by limited costs and access. (Sirait et al., 2023). Meanwhile, SME Y and SME Z do not have a special place to dispose of liquid waste from their production processes. When asked about the impacts arising from the batik production process, the owner of SME Y answered, "*(the impact) is not really there yet.*" This statement shows that the understanding and awareness of batik industry players in Lasem still need strengthening. On the topic of waste management, liquid waste management is a major challenge for batik industry players, especially for SMEs with limited resources.

Table 4. Comparison of Liquid Waste Management in Five Lasem Batik SMEs

	Liquid Waste Management Methods	Constraint	Effectiveness
SME X	Using a settling tank to settle the remaining color before the water flows into the drain.	The government's WWTP is located too high, so SME X's wastewater cannot flow there.	Less effective because there are still pollutants entering the environment.
SME Y	There is no special place for disposing of liquid waste.	Lack of understanding and awareness of the environmental impact of batik waste.	Ineffective because the waste is disposed of directly without processing.
SME Z	There is no special place for disposing of liquid waste.	Lack of understanding and awareness of the environmental impact of batik waste.	Ineffective because the waste is disposed of directly without processing.
SME A	Has a private WWTP two meters high below the owner's backyard.	No major obstacles were mentioned.	Quite effective because it has its own WWTP and the waste is treated before being disposed of.
SME B	Dispose of liquid waste into the WWTP provided by the government.	No major obstacles were mentioned.	Effective as long as the government's WWTP is functioning properly.

Source: Processed primary data (2024)

Table 4 presents the wastewater management methods used by the five Lasem Batik SMEs, highlighting the constraints faced and the effectiveness of each method. The table shows that resource and infrastructure limitations significantly affect waste management practices, leading to varying levels of effectiveness among SMEs. These differences emphasize the need for increased support and awareness to improve sustainable waste management in the batik industry.

Material Usage

In the process of making handwritten batik, various materials are used to create distinctive patterns and motifs. Wax plays a role in the '*malam*' process, which is covering parts of the fabric that do not want to be dyed. (Porwani et al., 2023). Meanwhile, mori or unbleached fabric is the main basic material for batik. (Porwani et al., 2023). After use, these two materials produce waste that can potentially become waste. However, Lasem Batik SMEs has various ways to reuse this remaining material so that it is not wasted. "*Wax becomes waste that drips from the stove and settles. However, the wax can still be processed again,*" said the owner of SME X. Regarding this, the five Batik SMEs in Lasem stated that the remaining wax from the '*pelorodan*' process will be processed again for reuse, making the wax reusable and reducing production waste.

The next material that has the potential to become waste is the main raw material in the handwritten batik industry, namely mori fabric (Apriyani, 2018). Unused mori fabric scraps have the potential to become waste, which, although small in size, is large in quantity. These scraps usually appear when these SMEs make tops such as shirts, or dresses, as done by SME X and SME A. However, SME X is able to manage these scraps of mori fabric so that they become tote bags that function as packaging for SME X with their own characteristics. However, if the mori fabric already has a batik motif on it, they will process the remaining fabric into wallets, tablecloths, and other crafts. SME A also does the same thing by processing their remaining fabric into tablecloths and handkerchiefs.

SME B processes large-sized scraps of fabric to be made into clothes and tablecloths but not for sale. They do not have small-sized scraps of fabric because the owner of SME B does not cut the mori fabric if only a little fabric is left, as explained by the owner of SME B:

"If it's less, we'll give it all (to the customer), and we'll tell the buyer that if the size is a little different, the price will also increase a little. It would be a waste if we cut it just a little."

SME Z has a waste of white mori fabric the size of a handkerchief which they then use as a learning medium for batik making for Kindergarten, Elementary School, and Junior High School students who visit their production house. They charge Rp10,000 for one handkerchief as a replacement for basic materials and teach how to make batik for free as a form of their dedication in preserving handwritten batik. This effort is not only effective in reducing waste of mori fabric, but also adds economic value through additional income for SME Z. Meanwhile, SME Y stated, "*we buy in yards, we ask for it to be cut according to our size, (so) there is no waste.*"

Table 5 presents a comparison of mori fabric waste management practices among the five Lasem Batik SMEs, focusing on their processing methods, effectiveness, economic value, and environmental impact. Each SME has a unique approach to managing fabric waste, ranging from transforming scraps into functional products to preventing waste generation by purchasing fabric cut to size. The table highlights how these practices not only contribute to waste reduction but also offer economic benefits and support environmental sustainability.

Table 5. Comparison of Mori Fabric Waste Management in Five Lasem Batik SMEs

	Processing Method	Effectiveness	Economic Value	Environmental Impact
SME X	The remaining mori fabric is made into tote bags as their signature packaging. If the fabric has a batik motif, it is processed into wallets, tablecloths, and other crafts	Very effective because all the remaining fabric is processed into functional and unique products	Providing added economic value through the sale of tote bags and batik-based crafts	Reducing fabric waste by creating useful products, supporting a circular economy
SME Y	Buy fabric by the yard and ask the supplier to cut it to size so there is no excess fabric	Effective because it does not produce fabric waste from the production process	There is no additional benefit from waste management, but production costs remain optimal	Does not produce fabric waste in the production house, but relies on suppliers in managing fabric waste
SME Z	The remaining mori fabric the size of a handkerchief is used as a learning medium for batik making for students at a rate of IDR 10,000 per handkerchief.	Very effective because the remaining fabric is utilized to the maximum	Increasing economic value through additional income from batik learning	Reducing fabric waste and contributing to education and preservation of batik
SME A	Turning leftover fabric into tablecloths and handkerchiefs	Effective in utilizing leftover fabric. However, the potential for product development can still be improved	Provides additional economic value if the product is sold	Reducing fabric waste by reusing it in the form of functional products
SME B	Large scraps of fabric are made into clothes and tablecloths, but not for sale. There are no small scraps of fabric because the fabric is not cut if only a little is left	Quite effective in reducing small fabric waste. However, it is not economically optimal because the product is not sold	Does not generate additional profit because the product is only used by yourself	Reducing fabric waste by optimizing the use of mori fabric.

Source: Processed primary data (2024)

In the environmental pillar, it can be concluded that the five SMEs get water from different sources; rainwater, well water, and the Regional Drinking Water Company's water. Leftover materials such as wax and mori fabric can be utilized properly to produce added value. Several SMEs have also used natural materials such as dry leaves to create batik with natural colors that are more environmentally friendly. The statements of the five Batik SME owners are all supported by statements from each employee that are in accordance with the statements of the SME owners. Data in the form of explanations from them show that the principle of sustainability has been implemented in some aspects of the environmental pillar. This implementation is certainly inseparable from the support and intervention of the government and other institutions that help Lasem Batik SMEs move towards sustainability, such as the WWTP provided by the local government (Meriastuti & Mutiari, 2018) and socialization from other institutions that support the development of this industry.

Implementation on Social Pillar

The majority of Lasem Handwritten Batik employees come from the Lasem area and its surroundings. "From the surrounding villages, even to other sub-districts," explained the owner of SME A. This means that the presence of these batik SMEs opens up employment opportunities for the surrounding community and helps improve the economy of the residents of the area (Etuk et al., 2014). The purchasing power of the community also increased because many have income as batik craftsmen. In the context of sustainability, the social aspect has an important role, especially for Lasem Batik SMEs which involve local communities both as workers and as part of the surrounding community. The social pillar in this study focuses on the topic of human rights and labour standards, occupational health and safety, as well as community engagement, which is adapted from Simplified ESG Disclosure Guide (SEDG) (Capital Markets Malaysia, n.d.). The three topics chosen are directly related to working conditions, worker welfare, and the contribution of Lasem Batik SMEs to the local community. The following sections present the findings based on interview transcripts, exploring what Lasem Batik SMEs have done regarding social responsibility and its impact on the sustainability of their business.

Human Rights and Labour Standards

According to Soepomo, one of the protections for workers is economic protection, namely protection for workers in the form of sufficient income (Susiana, 2019). The income received by these craftsmen can be in the form of daily wages or piecework wages. Daily wages are wages or compensation received by employees on a daily basis (Srihastuti et al., 2023; Kowel et al., 2019), while piecework wages are wages paid on the basis of completing a certain type of work (Srihastuti et al., 2023). Daily wages for batik makers range from IDR 40,000 to IDR 50,000 per day. Meanwhile, for employees who are in charge of coloring and finishing, their daily wages range from IDR 100,000 to IDR 115,000. The higher wages of up to twice as much are due to the need for extra energy in carrying out the coloring and finishing process, so this work is usually done by men. One of the SME Z employees explained:

"if (the employee is) male (the salary is) IDR 100,000, because the one who does the coloring and 'pelorodan' section is male, the daily salary is IDR 100,000."

The owner of SME Z also gives additional bonuses to his employees who are always present every Monday to Saturday. *"There is a bonus if employees come in continuously from Monday to Saturday. If you come in continuously for a month, employees will get an additional bonus,"* said the SME Z employee. Batik craftsmen generally have working hours from 8 am to 3 pm, six (6) days a week. However, there is something different that happens at SME B. Unlike the other 4 SMEs, SME B does not have employees who work at the SME owner's place due to limited space. Batik makers at SME B will take the mori fabric, canting, and wax from the owner's house and will do the batik at their respective homes. The owner of SME B said in the following quote:

"It depends on the results of the 'canting.' There are some that are priced at IDR 125,000 per piece of cloth, and the 'canting' results are very small."

Based on information from the owner and employees regarding wages, it can be seen that the wages received by batik makers have not actually met the Regency Minimum Wage standard. Reported from rembangkab.bps.go.id, the Rembang Regency Minimum Wage in 2024 is IDR 2,099,689 per month. If it is assumed that employees receive a wage of IDR 40,000 per day for 25 working days in one month, the wages received do not reach half of the Rembang Regency Minimum Wage standard. Even so, batik artisans - the majority of whom are housewives - stated that the wages received were sufficient to meet daily needs as additional income for their families.

"(The wages) are for children's snacks, because my husband is already working so this is for additional," said the SME B batik artisan who works from her home and receives piecework wages. Other batik artisans who work in other SME also stated the same thing, that the wages they receive are sufficient to increase family income. Although the batik maker of SME B said that his wages were sufficient to meet daily needs, the owner of SME X explained the reality regarding these wages:

"Many of our batik workers have switched to becoming factory employees. Maybe because they feel that the prestige is higher by working in a factory."

Based on this information, it can be concluded that in fact the owners of these SMEs are aware that their employees' wages are not in accordance with the District Minimum Wage standard, but this is beyond the ability of the owners to provide higher wages for their employees.

Occupational Health and Safety

Seeing that the wages received by employees are daily wages and piecework wages, it can be concluded that the employees are not permanent employees. This is the reason why all Lasem Batik SMEs do not provide insurance for their employees. In Indonesian Employment Social Security Agency (*BPJS Ketenagakerjaan*), there are four (4) social security programs for employment, namely Old Age Security (*Jaminan Hari Tua/JHT*), Pension Security (*Jaminan Pensiun/JPN*), Work Accident Insurance (*Jaminan Kecelakaan Kerja/JKK*), and Death Benefits (*Jaminan Kematian/JKM*) (Irdanasari & Wijayanti, 2021). Based on the data obtained, the average daily wage of batik makers in Lasem is still below the minimum wage of Rembang Regency. This condition further strengthens the reasons for SME owners not to provide insurance coverage to employees who are not permanent employees, because in

addition to the greater cost burden for business owners, workers with non-permanent status also tend to be more difficult to manage in the social security system. SME owner X explains this in the following quote:

“They are not permanent employees. They come in today, they could change jobs tomorrow. If I give them Employment Social Security, I will be confused about continuing their insurance. If they are my permanent employees, I will facilitate them the Employment Social Security. But if they are not my permanent employees, I cannot cover their Employment Social Security.”

Apparently, this has become a common practice in the Lasem area. The other four Lasem Batik SMEs also do not have permanent employees and provide insurance for their employees. However, the owners of Lasem Batik SMEs provide work safety equipment such as aprons for batik craftsmen, and boots, gloves, and masks for employees working in the waxing section. Aprons are provided to protect the body from hot wax splashes when making batik, while boots and gloves are used by workers in the waxing section to prevent direct contact with hot water and chemicals in the waxing process. Masks are also provided to reduce exposure to chemical vapors that can interfere with workers' breathing. This is in accordance with The Regulation of the Minister of Manpower and Transmigration of the Republic of Indonesia Number 8 of 2010 concerning Personal Protective Equipment (*Peraturan Menteri Tenaga Kerja Dan Transmigrasi Republik Indonesia Nomor 8 Tahun 2010 Tentang Alat Pelindung Diri*) which states that employers (owners) are required to provide Personal Protective Equipment (PPE) for workers/laborers in the workplace. Based on these provisions, SME B is the only Lasem Batik SME that is not bound by the PPE regulations because their workers work on the batik at their respective homes.

Community Engagement

In addition to opening up employment opportunities for the local community, Lasem Batik SMEs also have as a social role in its area. An employee of SME X told how SME X helps school students hone their batik skills. "during school holidays, we bring our children here to learn how to make batik, to fill their holidays too," said an employee of SME X. Other SMEs such as SME Z have their own way of contributing. SME Z receives visits from school children of various levels and teaches them how to make batik, as written in the environmental aspect of how SME Z manages their leftover mori fabric. They receive visits from various levels of schools starting from Kindergarten, Elementary School, to Junior High School. The school does not need to pay for the services of the batik craftsmen who teach their students, they only need to pay for the mori fabric in the size of a handkerchief. Other SMEs, namely SME Y, SME A, and SME B distribute basic necessities as part of their social activities.

Table 6 below provides an overview of the implementation of the social pillar by the five Lasem Batik SMEs, focusing on wages, employment social security, personal protective equipment (PPE), and community engagement activities. The table highlights the variation in wages for batik makers and finishing workers, the absence of employment social security for employees, and the provision of PPE in most SMEs. Additionally, it illustrates the different approaches to community engagement, such as teaching batik-making to students and

distributing basic necessities. This indicates that while efforts are made to fulfill the social pillar, some aspects remain challenging for these SMEs to implement fully.

Table 6. Implementation on Social Pillar

	SME X	SME Y	SME Z	SME A	SME B
Batik Maker Wages	IDR 40,000 – IDR 50,000 per day	IDR 40,000 – IDR 50,000 per day	IDR 40,000 – IDR 50,000 per day	IDR 40,000 – IDR 50,000 per day	IDR 125,000 per batik cloth
Wages for Coloring and Finishing Workers	IDR 100,000 – IDR 115,000 per day	IDR 100,000 – IDR 115,000 per day	IDR 100,000 – IDR 115,000 per day	IDR 100,000 – IDR 115,000 per day	No coloring and finishing workers
Employment Social Security	x	X	x	X	x
Personal Protective Equipment (PPE)	✓	✓	✓	✓	x (because it was not done at the owner's house)
Community Engagement	Teaching students how to make batik during the holidays	Social activity: sharing basic food supplies	Receiving school visits and teaching how to make batik	Social activity: sharing basic food supplies	Social activity: sharing basic food supplies

Source: Processed primary data (2024)

The statements from the five owners and employees of Lasem Batik SMEs show that several things in the social pillar have not been implemented properly because they are beyond the capabilities of Lasem Batik SMEs. None of the five SMEs owners are able to provide income in accordance with the Rembang Regency Minimum Wage. Likewise with the Employment Social Security (BPJS), no employees receive this protection because they are not permanent employees.

Implementation on Governance Pillar

The last pillar discussed in this study is the Governance Pillar which focuses on the topics of Governance Structure, Risk Management and Reporting, and Anti-corruption. Although the Lasem Batik industry is still classified as a Small and Medium-sized Enterprise (SME), good governance is needed to ensure that this industry will continue to run, especially considering that these five SMEs are involved in batik tulis export activities so that product quality must be maintained through this governance pillar. Strong corporate governance is often reflected in a well-implemented internal control system (Hastuti et al., 2017). In the governance pillar, this

study aims to see how SMEs maintain their credibility and transparency, while at the same time ensuring that their businesses can continue to run.

Before there was assistance from the government or private institutions, the main focus of Lasem Batik SMEs was the same as SMEs in general; centered on profit generation (Rodrigues & Franco, 2023a). It was only when the government and private institutions provided assistance that the Lasem Batik industry no longer only cared about profit, but also understood the principle of sustainability in their business activities. In his statement, the owner of SME X said:

“We actually only recently understood the principle of sustainability after some assistance. So in addition to reducing environmental pollution, it can also increase the value of the product.”

The statement of the owner of SME X provides the conclusion that the government and other private institutions also play an important role in building awareness and implementing ESG Practices in the Lasem Batik industry.

Governance Structure

As part of the governance structure, quality control in the Lasem Batik industry is carried out with direct supervision from the SME owner. *"the owner usually examines the colors that are still not suitable and others, it is directly checked by the owner,"* explained the employee of SME Z. Previously, the owner of SME Z stated that she did not want to disappoint his customers, so if there was the slightest defect in his product, he would tell his customers honestly about the imperfections in his product. This reflects a top-down approach in ensuring that product quality is maintained according to the expected standards, especially since this batik tulis product involves exports to the international market. (Patel & Desai, 2018; Subana et al., 2021). Owner involvement in quality control also shows a strong accountability mechanism, where decision making is done directly at the highest level. This kind of quality control provides flexibility in responding to customer feedback, adapting to market needs, and maintaining consumer satisfaction (Purba et al., 2022) while ensuring the sustainability and competitiveness of the Lasem Batik industry in both local and global markets.

Risk Management and Reporting

The second topic in the governance pillar is risk management and reporting. Chowdhury and Shil (2019) describe risk management as a tool that facilitates decision-making in planning, policy development, project management, and service delivery (Sihombing et al., 2023). As part of business governance, separating the owner's personal account and the business account is important to separate business money from the owner's personal money, in order to avoid expenses that occur outside the company (Parwati & Lesmana Putra, 2022). However, almost all Lasem Batik Tulis SMEs do not have their own business accounts, so when a transaction occurs with a customer, the money transferred will go into the owner's personal account. Of the five SMEs, only SME Z has implemented a separation of business accounts from the owner's personal account. The owner of SME Z stated, *"I have various accounts. For my daily cash flow, I use Bank XXX because my salary is there."*

Good financial management is crucial when facing a decline in income or even losses (Rohaniah & Rahmaini, 2021). The owner of SME X shared a time when his business income

dropped, considering that handwritten batik is not an everyday item that is always needed by the public, especially with a fairly high price. On their display in the shop, there are several hand-drawn batik cloth products with a selling price of IDR 7,000,000 to IDR 10,000,000. This means that the value of their inventory is sometimes greater than their income, because not all batik can be sold in a short time. In situations like this, the ability of SMEs to manage finances carefully is very necessary to maintain business continuity. According to the owner of SME Z, losses usually occur due to products that do not meet standards.

"Losses have often occurred from a less careful process. Sometimes my capital is IDR 200,000 but I sell it for IDR 150,000. As long as it turns back into money, so I lose IDR 50,000, it's okay," said the owner of SME Z.

Meanwhile, the owner of SME X manages his risk management by having reserve funds as much as possible and not having bank debts, except when there is a special project. SME Y manages it by reducing the amount of batik tulis production when facing losses. SME B said, *"If the stock of batik supplies piles up, the money will be used for other things,"* this was said by the owner of SME B because she also sells basic necessities. On the other hand, SME A did not answer about his risk management because the owner of SME A felt that he had never experienced a loss.

Anti-corruption

Financial management also relates to the topic of anti-corruption – the last topic in this pillar. (Seputro et al., 2017). Corruption is a type of fraud (Putra & Sihombing, 2024) and is a hidden acts carried out by design, so appropriate efforts are needed to prevent and detect such unethical acts (Mahardikasari & Nugraheni, 2022). Therefore, A well-implemented corporate governance system helps prevent opportunistic behaviors (Nugraheni, 2023). The owner of SME X explained the conditions that have become the workers' habit and are almost impossible to change, namely that payment of piecework wages must be made in advance, as stated by the owner of SME X:

"There is a risk of loss. Money, mori fabric, canting, wax, all are handed over at the beginning."

When employees want to work on batik from their homes, the owner not only hands over the mori fabric, *canting*, and wax to his employees, but also has to hand over their wages at the same time. The owner of SME X also told how in the past when he first took control of the company, he experienced losses due to employees who ran away with their wages along with the mori fabric. Several owners of Lasem Batik SMEs such as SME X and SME B actually realized that there needed to be special regulations so that employees would not just run away. However, they admitted that they could not do much because this had become a local habit. If they required employees to submit their Identity Cards, it was likely that the employees would leave and move to another SME.

Another story related to the topic of anti-corruption came from SME Z. The owner of SME Z is a civil servant so she is rarely at home. In order to continue to provide daily wages for his employees, she formed several groups in her business where each group had its own

treasurer, along with cash for employees' daily wages. The owner of SME Z explains this in the following quote:

“Every two days I check, I sign. In the bag, there are books and the remaining cash. Every two days I refill the cash.”

Statements from both owners and employees in the Lasem Batik industry show that only a portion of the governance pillars have been implemented. There is only one (1) SME that separates the business account from the owner's personal account. There are also things that cannot be implemented, such as making regulations to minimize employees who do not return, because this has been going on for a long time and it is difficult for the owners of these SMEs to change this habit. All statements from employees of each SME show a match with the statements from the SME owners.

5. CONCLUSIONS AND SUGGESTIONS

This study explores the implementation of ESG principles in five small and medium-sized batik enterprises (SMEs) in Lasem, focusing on environmental, social, and governance (ESG) aspects. The findings indicate that while the implementation of ESG principles varies among the SMEs, there are notable efforts to integrate sustainability practices, particularly in waste management, ethical labor practices, and governance mechanisms.

In the environmental aspect, SMEs have adopted sustainable practices by reusing wax and repurposing fabric scraps to minimize waste. Socially, businesses engage in ethical labor practices and community-based educational initiatives to preserve traditional batik-making skills. However, governance practices remain relatively informal, with minimal documentation and structured risk management strategies, indicating room for improvement in corporate governance frameworks.

The study highlights the challenges faced by SMEs in fully adopting ESG practices, such as resource limitations and a lack of formalized policies. Strengthening governance mechanisms, including clearer internal controls and formalized risk management processes, would enhance accountability and long-term sustainability.

It is recommended that these businesses engage in training programs focused on sustainability. Such programs should cover the importance of environmental management, social responsibility, and good governance practices. Additionally, collaboration with governmental and non-governmental organizations can

provide SMEs with access to resources and expertise that facilitate the implementation of ESG principles. Future research could explore policy interventions and financial support mechanisms to facilitate ESG adoption in SMEs, as well as investigate the role of consumer behaviour in promoting sustainable practices within the batik industry, paving the way for a more sustainable future.

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