JEE 13 (2) 2024 : 216-220

Journal of Economic Education

http://journal.unnes.ac.id/sju/index.php/jeec

How an Effective Strategy For Implementing Ecopreneurship in Batik MSMEs? Analythical Hierarchy Process Approach

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Article Info

Article History :
Received May 2024
Accepted September 2024
Published December 2024

Keywords:
Batik UMKM,
Ecopreneurship,
Environmentally Friendly

Abstract

This study aims to formulate an effective strategy for implementing ecopreneurship in batik MSMEs. The sampling technique used purposive sampling to ensure that the selected samples have a direct relationship with ecopreneurship practices. Key respondents include MSME owners, environmental experts, academics, and policy makers in the MSME sector. Data collection was carried out through structured interviews, questionnaires, and documentation studies. The questionnaire was designed to evaluate the priorities of respondents. The results of the study indicate that the first priority strategy alternative in the strategy for implementing ecopreneurship in batik MSMEs is the substitution of synthetic dyes for natural dyes with a local weight of 0.60 and a global weight of 0.24. This shows the urgency to reduce environmental impacts through the use of environmentally friendly raw materials. The development of recycled raw materials and the processing of liquid waste into new products are ranked second because of the relevance of both in supporting efficiency and sustainability..

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p-ISSN 2301-7341
e-ISSN 2502-4485

INTRODUCTION

The implementation of ecopreneurship in batik Micro, Small, and Medium Enterprises (MSMEs) faces various significant challenges, although this concept is increasingly relevant to support environmental sustainability. Globally, ecopreneurship offers a solution to reduce industrial waste, increase energy efficiency, and encourage green innovation in the production process. However, its implementation in the MSME sector, especially in the batik industry, is still constrained by limited resources, environmentally friendly technology, and lack of literacy and awareness of MSME actors about the importance of sustainability. Previous research has shown a gap phenomenon where the batik industry, as part of the leading creative sector in Indonesia, still contributes to environmental pollution through synthetic dye waste and inefficient energy use (Fitria & Yustisya, 2021).

From a theoretical perspective, ecopreneurship is associated with the paradigm of sustainable innovation that emphasizes production process efficiency and environmental responsibility. However, the implementation of this theory in the context of batik MSMEs is often not optimal. This gap can be explained by the lack of structured and data-based implementation strategies, as well as the unavailability of decision models that can help MSMEs identify priorities in adopting ecopreneurship practices (Elgazzar et al., 2012).

The research gap is also seen in the lack of studies that integrate quantitative methods such as the Analytical Hierarchy Process (AHP) to analyze optimal strategies in implementing ecopreneurship. This approach allows for data-based priority evaluation of various factors, such as raw material use efficiency, process innovation, and market potential for environmentally friendly products. For example, a study in Bojonegoro Regency showed that AHP can be used to identify strategies to improve the performance of batik MSMEs, but there has been no in-depth focus on the dimensions of sustainability and ecopreneurship in similar studies (Putri et al., 2022).

Addressing these gaps requires a systematic approach that not only considers technical and economic dimensions but also environmental sustainability. Therefore, this study uses the AHP approach to formulate an effective strategy for implementing ecopreneurship in batik MSMEs. This focus is expected to provide real contributions to the development of sustainable business models while increasing the competitiveness of batik products in the global market.

RESEARCH METHODS

This study uses a quantitative approach with the Analytical Hierarchy Process (AHP) method to analyze and formulate effective ecopreneurship implementation strategies in batik UMKM. AHP was chosen because of its ability to manage multi-criteria decision problems involving various aspects, such as economic, social, and environmental, which are relevant to the principles of ecopreneurship. The research process begins with the identification of critical factors through literature reviews, discussions with experts, and direct observation of batik UMKM.

The population of the study was batik MSMEs registered with relevant government institutions in the research area, while the sampling technique used purposive sampling to ensure that the selected samples were directly related to ecopreneurship practices. Key respondents included MSME owners, environmental experts, academics, and policy makers in the MSME sector.

Data collection was conducted through structured interviews, questionnaires, and documentation studies. The questionnaire was designed to evaluate respondents' priorities for various strategic alternatives, such as the use of environmentally friendly raw materials, energy efficiency, production process innovation, and waste management. The data were then analyzed using AHP software to determine the weight and priority of each strategic alternative based on predetermined criteria.

The analysis steps include:

1. Establishing a decision hierarchy that includes primary objectives, criteria, and strategic alternatives.
2. Pairwise comparison to obtain a comparison matrix.
3. Eigenvector calculation to determine data priority and consistency.

Synthesize the results to develop the most effective recommendation strategy.

RESULTS AND DISCUSSION

AHP analysis in this study is used to analyze the priority of effective strategies for implementing ecopreneurship in batik UMKM. The results of the AHP analysis in this study are as follows:

Table 1. AHP Analysis Results on Main Criteria

No	Main Criteria	Priority Weight
1	Use of Environmentally Friendly Materials	0.46
2	Production Process Efficiency	0.24
3	Waste Management	0.21
4	Product Innovation	0.09

Source: Processed Primary Data.

Based on table 1, it can be explained that the main criteria that is the first priority in the ecopreneurship implementation strategy is the Use of Environmentally Friendly Materials with a weight of 0.46.

Table 2. Results of Analysis on Alternative Strategies

No	Alternative Strategy	Local Weight	Global Weight	Ranking
1	Substitution of synthetic dyes with natural dyes	0.60	0.24	1
2	Development of recycled raw materials	0.40	0.16	2
3	Optimization of energy-saving technologies	0.70	0.21	3
4	Operational efficiency training	0.30	0.09	5
5	Processing liquid waste into new products	0.80	0.16	2
6	Implementation of a centralized waste disposal system	0.20	0.04	6
7	Diversification of sustainable batik products	0.50	0.05	4
8	Marketing products with green labels (eco-labels)	0.50	0.05	4

Source: Processed Primary Data.

Table 4.2 shows that the first priority strategic alternative in the ecopreneurship implementation strategy for batik MSMEs isSubstitution of synthetic dyes to natural dyes with a local weight of 0.60 and a global weight of 0.24. This shows the urgency to reduce environmental impacts through the use of environmentally friendly raw materials. The development of recycled raw materials and the processing of liquid waste into new products are ranked second because of their relevance in supporting efficiency and sustainability. Other strategies, such as product diversification and marketing with eco-labels, have a lower weight, but are still important for the long term.

Discussion

The use of environmentally friendly materials is a top priority in the implementation of ecopreneurship in batik MSMEs. Natural dyes such as indigo leaves, jolawe tree bark, and other natural materials are increasingly in demand because they can reduce the negative impact of synthetic dye waste on the environment. The strategy of substituting synthetic dyes for natural dyes obtained the highest global weight (0.24), indicating the significance of this implementation. In addition to supporting environmental sustainability, batik products with natural dyes have added value in the international market because they are considered more authentic and safe for consumers (Fitria & Yustisya, 2021; Chahal et al., 2014). Another alternative, namely the development of recycled raw materials, such as waste cloth into creative products, is also important. This approach not only reduces waste but also opens up opportunities for product diversification (Dangelico & Vocalelli, 2017).

Production process efficiency is the second priority, with a focus on optimizing energy-saving technologies (global weight 0.21). Technologies such as solar drying systems or low-energy-consuming machines can reduce operational costs while supporting sustainability. Operational efficiency training (global weight 0.09) helps MSMEs understand energy-saving practices and increase productivity. According to Putri et al. (2022), the adoption of efficient technology not only reduces carbon emissions but also strengthens the competitiveness of MSMEs amidst the demands of the green market.

Waste management receives special attention, especially through the strategy of processing liquid waste into new products, such as organic fertilizers or natural dyes (global weight 0.16). This approach supports the principle of the circular economy and provides additional economic impacts for MSMEs. In contrast, the implementation of a centralized waste disposal system (global weight 0.04) is an alternative with a lower weight because it requires significant infrastructure investment and can only be done with the support of the government or local community (Martínez, 2015). Product innovation is an important element in ensuring business sustainability. Diversification of sustainable batik products, such as eco-friendly fashion products, received a global weight of 0.05. This is in line with the trend of consumers who are increasingly concerned about ethical and environmentally friendly products (Nuryakin & Maryati, 2022). Marketing products with eco-labels also provides added value in increasing consumer trust in the environmental commitment of MSMEs (Dangelico & Vocalelli, 2017).

The analysis results show that the success of ecopreneurship implementation depends on the synergistic combination of these strategies. MSMEs that focus on environmentally friendly materials and efficient production processes will be more competitive in the global market, while product innovation and waste management provide opportunities for diversification and long-term sustainability. Government and private sector support in providing training, technology, and funding are essential to optimally realize the potential of ecopreneurship.

CONCLUSION

Based on the results of the research and This study identifies effective strategies for implementing ecopreneurship in batik MSMEs using the Analytical Hierarchy Process (AHP) approach. The results of the analysis show that the use of environmentally friendly materials, especially the substitution of synthetic dyes with

natural dyes, is a top priority because of its significant impact on reducing environmental pollution while increasing product competitiveness. The efficiency of the production process through the optimization of energy-saving technology also plays an important role in supporting business and environmental sustainability. The management of liquid waste into new products, such as organic fertilizer, supports the principle of a circular economy and provides additional economic benefits for MSMEs. Meanwhile, product innovation, such as sustainable batik diversification and eco-label-based marketing, opens up opportunities for MSMEs to meet the needs of the growing green market. For Batik MSMEs, it is suggested to gradually adopt natural dyes and utilize affordable energy-saving technology to increase production efficiency. In addition, MSMEs can focus on sustainable product innovation by adding added value through green labels or eco-labels to attract consumers who care about the environment.

The government needs to provide policy support in the form of incentives, such as subsidies for environmentally friendly raw materials or funding for the procurement of energy-saving technology. Training and mentoring programs also need to be improved to help MSMEs understand and implement ecopreneurship practices effectively.

ANKNOWLEDGMENT

We would like to express our gratitude to the National Research and Innovation Agency (BRIN) for providing funding support for this research through the Advanced Indonesian Research Competition (RIIM) scheme in 2024.

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