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## *Application of Pentuple Bottom Line (PBL) as a Learning Model in Business Feasibility and Business Sustainability Study in SMEs*

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### ABSTRACT

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*This study aims to assess the business feasibility of Griya Madukara MSME from an environmental perspective, emphasizing how its practices contribute to both ecological and social sustainability. The research employed a descriptive qualitative approach, utilizing in-depth interviews, direct observation, and documentation. A total of 12 informants were involved, including the business owner, seven employees from different divisions, two regular customers, and two local community members participating in ecoprint training. The findings show that Griya Madukara adopts zero-waste principles, uses natural materials in its production, and converts organic waste into compost. Additionally, community involvement and empowerment are central to its sustainability strategy. The business aligns with the Pentuple Bottom Line framework (People, Planet, Profit, Phenotechnology, and Prophet), making it a viable and sustainable community-based MSME model.*

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## INTRODUCTION

The SMEs in Indonesia are increasingly proving their strategic role in the national economy. More than 64 million SMEs account for more than 60% of Indonesia's Gross Domestic Product (GDP), according to the Ministry of Cooperatives and SMEs. Ecoprint-based business, which is a method of dyeing fabrics using natural materials, namely leaves or flowers, is a form of SMEs that are developing in line with sustainability issues. Not only to meet aesthetics, ecoprint can also be a solution in solving the environmental problems of the conventional textile industry with hazardous chemical waste (Ermawati & Hidayanti, 2022; Kurniawan et al., 2024).

Griya Madukara, which is located in Malang City, is one of the SMEs that applies environmentally friendly principles. This business was established in 2018 and initially produced batik with synthetic dyes. However, due to land limitations for Wastewater Treatment Plants (WWTP) and the desire for a more sustainable business, since 2019 they have switched to ecoprint techniques. Griya Madukara with its products that combine artistic values with environmentally friendly principles, has managed to reach domestic and international markets, including markets in the United States and Australia (Aisyah, 2023).

In business development, it is important to examine the feasibility of the business from various perspectives, one of which is environmental considerations. In business feasibility studies, environmental elements include location suitability, ecological impact, and business relationships on the social environment, according to Suliyanto (in Asman, 2020). A study by Putri and Latifah (2024) shows that good waste management can improve sustainability and create added value. In another study, Najmah (2024) emphasized that businesses that pay attention to their environmental impact have a long-term competitive advantage because they can respond to the desires of consumers who are increasingly environmentally conscious.

The focus of this research is to analyze the feasibility of Griya Madukara's business from an environmental perspective, specifically how the business manages environmental impacts during the production process and the extent to which it supports business sustainability. So this study uses direct interviews with business owners as a method of descriptive qualitative. The purpose of this study is to find out and assess the environmental practices used by Griya Madukara during its production process, as well as to see the extent to which these support its sustainability and business viability. This research is expected to provide strategic advice to similar MSME actors and policy makers as they create business empowerment programs that focus on environmental sustainability.

## LITERATURE REVIEW

Environmental factors are an important component of the feasibility study. The environmental aspect, according to Suliyanto (in Asman, 2020), includes an analysis

of how the surrounding conditions are in accordance with the business concept to be run, as well as the impact that the business can cause. It falls into three main categories namely the operational environment (competitors, suppliers, and customers), the industrial environment (market competition), and the remote environment (political, economic, technological, and environmental) (Putri & Latifah, 2024). It is very important to conduct an environmental evaluation because the environment can present opportunities and threats to companies (Munir et al., 2019).

In practice, Amelia Putri and Luluk Latifah (2024) show that the integration of environmental elements can encourage business sustainability. This is shown by SMEs in Srowo Village who convert fish waste into products of economic value. This method not only reduces environmental pollution but also results in greater social and economic value for local communities. Environmentally-based feasibility studies are strongly driven by government policies and technology.

John Elkington (1998) Creating a Concept *Triple Bottom Line* (PBL), which consists of three elements: *People, Planet, dan Profit*. This concept encourages businesses to concentrate on economic gains (*profit*), but also on social impact (*People*) and the environment (*planet*) of their business. PBL has been widely used as a standard for reporting and measuring company sustainability (Ariastini and Semara 2019).

The PBL concept is considered not to sufficiently represent the complexity of today's sustainability, so it was developed into a *Pentuple Bottom Line* (PBL). Sukoharsono (2019) and Aziza & Sukoharsono (2021) added two new aspects to PBL, which made it consist of five aspects: *People, Planet, Profit, Phenotechnology, and Prophet*. According to Badria and Hasanah (2023), this addition encourages management to incorporate spiritual awareness and technological advancements into the business decision-making process.

PBL also began to show positive results shows that business actors have begun to implement elements of PBL informally, even though they do not fully understand the concept of PBL. In addition, it was found that to expand the understanding and application of PBL among SMEs, regional rulers must help as a pioneer and Innovator. PBL has evolved into not only a sustainability approach but also a framework for modern

business feasibility studies. This idea expands the perspective of feasibility assessment by considering social value, environmental sustainability, technological suitability, and social usefulness. Therefore, the company is not only evaluated based on the amount of profit generated, but also based on how much it contributes to social and environmental balance (Handayani, 2023; Badria et al., 2023). The PBL concept helps business actors in building an inclusive, moral, and sustainable business model. In addition, businesses run with strong spiritual, social, and ecological values have a long-term competitive advantage because they tend to get support from more stakeholders, such as investors, consumers, governments, and the community (Sukoharsono et al., 2021; Oktari et al., 2025). Therefore, PBL-based feasibility studies are becoming increasingly relevant in the contemporary era that demands social responsibility and environmental sustainability in business practices.

## METHODS

A descriptive qualitative approach is used in this study, then this study aims to provide an in-depth overview of environmental management practices and strategies used by Griya Madukara SMEs in their operational activities. This research focuses on the main subject, the owner and founder of Griya Madukara, employees, and customers who provide important information about the company's history, production management, and the sustainability principles it implements.

**Table 1. Research Informant Data**

No	Name	Role
1.	Meilina	Business Owner
2.	Length	Production Employee 1
3.	Andira	Production Employee 2
4.	Aisha	Administrative Employees
5	Rina	Product Design Employee
6	Beautiful	Packaging Employee
7	Fauzi	Digital Marketing Employee
8	Mr. Rizky	Sales Employee
9	Alya	Regular Customers 1

10	Hilda	Regular Subscribers 2
11	Siti Mardiyah	Ecoprint Training Participants (Citizens)
12	Mr. Arif	Community Leaders (Local collaborators)

## Data Collection Instruments and Procedures

Data was collected using a semi-structured *in depth interview method*. The main tool of this research is interview guidelines that are compiled based on environmental business feasibility indicators such as waste management, the use of environmentally friendly materials, and how business activities affect the social environment. By interviewing individuals directly at a business location, researchers can conduct participatory observations to better understand the physical and social context of business operations. The following are the interview instruments of this research:

**Table 2. Interview Instrument**

PBL System	Interview question items
People (Social Aspect)	<ol style="list-style-type: none"> <li>1. How is the involvement of the surrounding community in this business activity?</li> <li>2. Are there any training or empowerment programs for local residents? If so, what does it look like?</li> <li>3. What is the social impact of this venture on the surrounding environment (in terms of social relations, work, education)?</li> <li>4. Does this business open up job opportunities for the local community?</li> </ol>
Planets (Environmental Aspects)	<ol style="list-style-type: none"> <li>1. What raw materials are used in the production process? Is it environmentally friendly?</li> <li>2. How is the waste management process (solid/liquid) carried out?</li> <li>3. Are there any specific strategies used to reduce pollution or environmental impact?</li> <li>4. Does this business follow the principle of zero waste? Why?</li> </ol>
Profit (Economic Aspect)	<ol style="list-style-type: none"> <li>1. How has sales progressed since this business switched to ecoprint products?</li> </ol>

	<ol style="list-style-type: none"> <li>2. Who are the target markets for this business (local/national/international)?</li> <li>3. How is the marketing strategy used?</li> <li>4. Do the principles of environmental and social sustainability have a positive impact on business profits?</li> </ol>
Phenotechnology (Contextual Aspects of Technology)	<ol style="list-style-type: none"> <li>1. Are certain technologies used in the production of ecoprints? (Examples: processing techniques, tools, social media, etc.)</li> <li>2. How does the use of technology support the principles of environmental friendliness and work efficiency?</li> <li>3. Are there any local innovations applied in the production process?</li> </ol>
Prophet (Spiritual and Ethical Aspects)	<ol style="list-style-type: none"> <li>1. Are there certain spiritual or moral values that are the basis for this undertaking?</li> <li>2. How does this business practice reflect responsibility to the environment and others?</li> <li>3. Are there any ethical or religious principles that guide decision-making in business?</li> </ol>

The results of interviews with informants will be collected and data analyzed, then the results of the interviews will be grouped into main themes relevant to the focus of the research. Each theme was analyzed to find environmental sustainability patterns in Griya Madukara's operations. To find out whether the business environment studied is feasible, the results of this analysis are compared with previous theories and research. The method applied ensures relevant and valid data, so that this research can share an in-depth understanding of the business feasibility of Griya Madukara SMEs from the environmental aspect.

## RESULTS AND DISCUSSION

### Production Waste Management

During the production process, Griya Madukara follows the principle of minimal waste. The ecoprint technique only uses natural materials such as teak leaves, lanang, jarang, and flowers. This is different from conventional batik which produces synthetic dye waste that is difficult to decompose. Leaf residue and decoction that has

been fixed by the mordant are the main waste produced. Instead of being thrown carelessly, leaf and flower waste is collected to be processed into compost or organic fertilizer that can be reused as a planting medium for raw materials for dye plants.

The boiling waste water is discharged into an open area that has been adapted to the natural water flow in the backyard of the production house. "We never use artificial dyes," says Ms. Meilina. Therefore, the rest of the water does not pollute the soil or water. This has also been discussed with the environmental agency. This practice shows that Griya Madukara has used circular and environmentally friendly economic principles to manage waste.

### **Use of Eco-Friendly Materials**

Griya Madukara focuses on the use of natural ingredients which does not pollute the environment during its production process. The ecoprint process uses natural fiber fabrics (such as silk and cotton), leaves and flowers from the garden or surrounding environment, and natural fixatives such as vinegar and alum. No synthetic dyes, caustic soda, or other chemicals are used. Fabric materials used It is chosen based on how high its absorption to natural colors is and the level of biodegradability. Processed vegetable leather without chromium is also used in finished products such as bags and shoes. This shows commitment Griya Madukara to make products that are not only beautiful, but also moral and environmentally friendly.

### **Impact on the Social Environment based on PBL**

Griya Madukara not only focuses on production, but also has a positive impact on the local community. Business owners sometimes involve locals in the production process, provide ecoprint training, and promote and showcase their products. As part of the community empowerment program, the target of this training activity includes housewives, youth, and students.

This study explores the sustainability practices applied by Griya Madukara SMEs using the Pentuple Bottom Line (PBL) framework as an analysis lens. Interviews were conducted with 12 informants consisting of owners, employees from various divisions, regular customers, and community leaders involved in the ecoprint training. The interview was conducted directly from May to July 2025 at the Griya

Madukara business location, Malang City. The following is the narrative of the interview results that have been analyzed based on the five dimensions of PBL.

## 1. People (Social Aspect)

The involvement of the local community is the main characteristic of Griya Madukara's operations. Meilina, as the business owner, on May 17, 2025 stated, "From the beginning, I wanted this business not only to make a profit, but also to benefit the surroundings. We invite residents to learn ecoprints and some can even produce independently." This statement shows that the existence of Griya Madukara is not only oriented towards personal gain, but also empowering the community by creating a productive learning space.

Siti Mardiyah, an ecoprint training participant, said on May 18, 2025, "I participated in the training two months ago. Now I can help with production and also sell my own work." This proves that the training programs provided really have an impact on the economic independence of local residents, especially housewives.

Alya, a regular customer, said on June 24, 2025, "I subscribe because I don't only like the product, but I know the process empowers the community. It feels more meaningful." Customers also feel the social impact of the products they buy, so that the value of consumption is not only in the goods, but also in the social mission of the business.

Employees like Umi and Andira feel a positive impact socially. Umi says, "I feel valued here. Ms. Meilina always involves us in making small decisions such as design selection or citizen training themes." (Interview, June 28, 2025). This reflects that Griya Madukara creates a participatory work environment and supports employee inclusion in the decision-making process.

## 2. Planets (Environmental Aspects)

In an interview on June 04, 2025, Rina explained, "All natural ingredients. Teak leaves, lanang, paper flowers, we use them all from the surrounding environment or grow them ourselves." Endah added, "We collect the waste, dry

it, and then use it as compost. Boiled water is also discharged into non-destructive earthen channels." These results show that production practices are carried out with the principles of circularity and zero waste, which are in line with the concept of ecological sustainability.

Meilina also emphasized environmental commitment: "We used to use synthetic dyes, but since 2019 we stopped because we don't have WWTP. Now all materials can be decomposed. We are also discussing with the environmental agency to meet the standards." (June 10, 2025) This strategic move shows that business decisions are based on awareness of ecological impacts, while also adjusting to government regulations.

Mr. Arif, a community leader, stated on June 12, 2025, "Since this business uses natural materials, the environment is cleaner. Even young people have started planting their own trees to sell to Griya Madukara." This means that the positive environmental impact of this venture is widespread, inspiring local residents to actively participate in the green ecosystem that is built.

### 3. Profit (Economic Aspect)

Fauzi, a digital marketing staff, explained on June 22, 2025, "In the past, when ecoprint was at the beginning, sales were not high. But after promoting through Instagram and participating in MSME exhibitions, buyers from Jakarta, Bali, and even abroad began to enter." This shows that digital marketing strategies can significantly change the position of businesses in the market value chain.

M. Rizky, sales staff, added, "Last year we got an order from the hijab community in Australia. They are interested because our products are considered environmentally friendly and have a strong story." (June 24, 2025) This quote shows that the value of sustainability not only has a social impact, but also becomes a competitive advantage in export market penetration.

Meilina emphasized, "Now our profits are stable, we can even pay 8 permanent employees. But I am happier because this is a way of sustenance that

does not damage the environment." (June 21, 2025) The balance between profit and ecological values demonstrates a realistic and ethical sustainable business model.

#### 4. Phenotechnology (Contextual Technological Aspects)

According to Rina, a product designer, on June 22, 2025, "We don't use advanced technology, but this ecoprint technique is very valuable. For example, the way of steaming and arranging the leaves must be precise so that the results are good. It's a combination of art and nature." This statement emphasizes that technology does not necessarily mean high digitalization, but rather contextual adaptation that is in line with local values and sustainability.

Fauzi explained, "I manage Instagram and TikTok accounts. We create educational video content for the ecoprint process. Outsiders love it because it's transparent and artistic. We don't just sell products, but also value and stories." (June 23, 2025) This shows how simple technologies such as social media can be a strategic tool for storytelling and market education.

#### 5. Prophet (Spiritual and Ethical Aspects)

Meilina on June 21, 2025 said, "I believe that business is not just profit-making, but also must bring blessings. Don't let our efforts damage nature or oppress others. That's what I always instill." This statement reflects that spirituality is the foundation in business decision-making, not just a symbolic complement.

Mr. Arif added, "This business is based on sharia values. There is no exploitation, no pollution, and the intention is clear. The community supports it because they know it's a trustworthy business." (June 25, 2025) This confirms that religious values and community beliefs are important social capital in building the legitimacy of sustainable businesses.

## DISCUSSION

This business is considered not to cause pollution, noise, or other disturbances as is usually done by the household industry. Instead, these efforts create a more

beautiful and educational environment. Some residents even started planting their own flowers and leaves to sell to Griya Madukara. Because of the emergence of cooperation in this business activity, social relations between residents have become closer.

The results of the study show that Griya Madukara has regularly implemented business practices that consider environmental sustainability. This can be seen from waste management, the use of environmentally friendly raw materials, and business participation in the social environment. Overall, these three dimensions answer the research topic and support the idea that environmental elements have a strategic role in determining business viability, especially for SMEs that depend on creative production. As a way to minimize waste, Griya Madukara uses *a zero waste* approach. Where organic waste such as leaves and flowers from ecoprint is used to make compost, which is then used to grow raw materials. Boiled water is safe to throw into the ground because it does not contain chemicals. These results are in line with research conducted by Putri & Latifah (2024), which shows that converting fish waste into new food products (fish thorn sticks) in Srowo Village can improve the sustainability and economic value of SMEs. This proves that innovation in waste treatment is essential to building a sustainable business model.

Griya Madukara's commitment to reducing negative impacts on the environment is strengthened by the use of natural materials such as natural fiber fabrics, leaves, flowers, and organic fixatives such as vinegar and alum. During the production process, no synthetic materials or chemical dyes are used. Therefore, this effort avoids water and soil pollution that usually occurs in the conventional batik-based textile industry. This is in line with the opinion of Kurniawan et al. (2024), who stated that the use of environmentally friendly materials significantly reduces negative impacts on the environment while increasing product value in the global market. Griya Madukara's business activities have a significant social impact, which shows how much it contributes to the empowerment of the surrounding community. Ecoprint's training activities for housewives, teenagers, and students show that the company not only wants to make money but also wants to be an educational and inclusive place. Najmah (2024) that SMEs that pay attention to economic and social

balance will be more resistant to market pressure because they have strong community support.

Griya Madukara does not cause disturbances such as pollution, sewage odors, or noise around settlements. Because of this, its production makes the environment better and encourages people to grow plants that can be sold as ecoprint materials. It can be realized that environmental benefits not only include the management of raw materials and waste, but also have a positive impact on society as a whole and their environment. The results reinforce the idea of Munir et al. (2019) that the environmental dimension in the feasibility study should be included in addition to the ecological side.

The results of the research conducted on Griya Madukara SMEs also show that the principles in the *Pentuple Bottom Line* framework consisting of *People, Planet, Profit, Phenotechnology, and Prophet* are in accordance with daily business practices in Griya Madukara. This makes the business socially, economically, and spiritually viable. In the *people aspect*, through the empowerment of the surrounding community, especially housewives, teenagers, and students, Griya Madukara shows its commitment to social welfare. Ecoprint training and the participation of local residents in production activities show attention to human resource capacity building and social cohesion. These findings are in line with Wardokhi et al. (2023) that success in implementing the social dimension of PBL is demonstrated by community involvement.

From a *planetary perspective*, research shows that Griya Madukara consistently follows environmentally friendly environmental standards, such as the use of natural raw materials without synthetic chemicals, the processing of organic waste into compost, and zero waste. As explained by Sukoharsono (2019), PBL requires ecological balance as the basis for sustainability, and this practice reflects great concern for environmental conservation. Griya Madukara's success in penetrating domestic and international markets shows that a sustainability approach does not hinder the achievement of economic gains, although this is not the main focus of the research. The *profit* aspect has their unique selling point is their environment-based

business model. This supports Elkington's (1998) idea that sustainability and economic benefits are not at odds with each other, and that PBL has the ability to bridge between market reality and idealism.

Regarding *phenotechnology*, even though Griya Madukara has not used high technology, the ecoprint method is an example of environmentally friendly technology adaptation. This technology emphasizes the relationship between people, nature, and the artwork that is created. This is in line with Aziza & Sukoharsono (2021), who argue that phenotechnology does not only mean digitalization, but also involves contextual innovations that support sustainability.

The Prophet's dimension of spirituality, Griya Madukara's commitment to adhere to moral and ethical principles by not polluting the environment, not taking advantage exploitatively, and consistently contributing to society and the environment. This is in line with the theory of Sukoharsono (2019), which states that prophet in PBL is a spiritual call to run a business with responsibility and full awareness of divine and humanitarian values.

Therefore, Griya Madukara actually uses all five dimensions in the Pentuple Bottom Line, although it does not explicitly mention the term. This research supports the PBL framework in business feasibility studies, especially for community-based SMEs and local culture. It also shows that PBL theory can be applied flexibly. Della Alvida et al. (2024) conducted a study on food SMEs in Cikarang which showed that material and waste efficiency can be used to manage environmental elements, but the research has not yet reached the stage of community empowerment and diversification of environmentally friendly products. Griya Madukara shows a more strategic approach in this context. The findings of this study also show that environmental aspects theory needs to be developed in business feasibility studies, especially for SMEs. Previously, environmental aspects were limited to administrative obligations such as EIAs, but now they need to be expanded to include innovative practices, cultural values, and social impact. It is important that the feasibility study not only measures environmental risks and costs, but also the strategic value of sustainability itself.

Thus, it can be concluded that Griya Madukara requires additional development because it meets the requirements of sustainability technically and has significant socio-ecological effects. This venture demonstrates a transformative MSME model that combines empowerment, innovation, and sustainability in one strategy. It is very important to develop this position as a reference for the development of green SMEs in Indonesia in the future.

The results show that Griya Madukara is in the Indonesian MSME landscape not only as a creative business actor, but also as an agent of change in the transition to an inclusive green economy. This effort shows that sustainability can be a selling point and market advantage instead of a burden. Griya Madukara can be used as an example of public policy for local and national governments in developing MSME assistance programs that focus on economic growth as well as social strengthening and environmental sustainability. Therefore, to enable these businesses to grow and have a greater impact, capacity building, digital promotion, and access to green financing are needed.

## CONCLUSION

The results of the study show that Griya Madukara SMEs are an example of a viable and sustainable business, especially when considered from an environmental perspective. By converting ecoprint waste into compost, using natural raw materials, and managing wastewater without harmful chemicals, the business adopts a zero waste approach. In addition, the business contributes socially by empowering the surrounding community through training and collaboration in the production process, which creates an inclusive and participatory business ecosystem.

From a theoretical perspective, the results of this study show that Griya Madukara's practice actively fulfills the five dimensions of the Pentuple Bottom Line (People, Planet, Profit, Phenotechnology, and Prophet). The social aspect (people) is fulfilled through community empowerment; environmental (planetary) aspects are fulfilled through environmentally friendly practices; and economic aspects (profit) are fulfilled through the success of penetrating the domestic and international markets;

technological aspects (phenotechnology) through local-based ecoprint innovations; and spiritual aspects (prophets) through ethical commitment to society and nature.

Therefore, Griya Madukara is a community-based transformative business model that not only focuses on economic gain, but also supports the values of spirituality, social empowerment, and environmental sustainability. This model shows that sustainability is not an obstacle, but rather a competitive advantage, which can be a key selling point in the face of global market challenges that increasingly demand social responsibility and moral expectations.

## RECOMMENDATIONS

The results and analysis show that local governments, financial institutions, and other strategic partners must continue to support Griya Madukara. Assistance can be in the form of advanced environmental management training programs, increasing market access through digital promotion and engagement in international exhibitions, and facilitating access to green financing for sustainability-based small and medium enterprises (SMEs). To support the transition to a circular economy, local governments must also make affirmative policies to support green SMEs such as Griya Madukara. These policies can include tax incentives, green infrastructure, and formal legal recognition of green production practices.

The Pentuple Bottom Line approach as a business feasibility evaluation framework, this study opens up space for a more contextual and multidimensional business feasibility study, especially in the MSME sector. For further research, it is recommended to conduct a comparative study of several SMEs based on natural crafts or other locally-based creative production in various regions to identify various sustainability approaches and challenges in sustainability in the context of SMEs.

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