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Redefining Accounting Education: Balancing Technological Innovation with Ethics and Sustainability

Analysis of the Application of Sustainability Accounting in Supporting Environmentally Friendly Zie Batik Businesses in Semarang City

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ABSTRACT

This study aims to analyze the application of sustainability accounting in Zie Batik MSMEs in Semarang City. The approach used is qualitative descriptive with data obtained through interviews and observations of the production process, the use of natural dyes, and waste management. The analysis refers to the concept of Wiguna et al. (2022) which includes aspects of understanding, care, and institutional support. The results of the study show that Zie Batik has applied the principles of sustainability through resource efficiency, community empowerment, and environmentally friendly production. The implementation of sustainability accounting improves cost efficiency, clarifies environmental costs, and strengthens the market's reputation to support business resilience. This practice makes a positive contribution to business sustainability and can be an example for other MSMEs.

Keywords: *Triple bottom line*, Sustainability Accounting, Environmentally Friendly Batik MSMEs, *Green Accounting*

INTRODUCTION

The development of Micro, Small, and Medium Enterprises (MSMEs) in Indonesia has a very important role in the national economy, especially in creating jobs and improving people's welfare. The existence of MSMEs is still the mainstay of the government because it plays a major role in economic growth both in providing management of productive business activities, credit distribution management and in terms of labor absorption, thus providing job opportunities to local residents. Based on data from the Ministry of Cooperatives and MSEs (2023), the MSME sector contributes more than 60% to the national Gross Domestic Product (GDP) and absorbs more than 97% of the workforce. However, in the modern era that demands concern for the environment, MSMEs are not only required to make profits, but must also be able to integrate sustainability values in every business activity. One way to make this happen is through the application of sustainability accounting (*sustainability accounting*), which is a financial recording and reporting system that not only focuses on economic aspects, but also pays attention to social and environmental impacts. This concept is known as *triple bottom line*, which emphasizes the balance between *Profit* (economic), *Browse* (social), and *planet* (environment) as stated by Elkington (1997). Through the application of sustainability accounting, business actors can assess the company's performance more comprehensively, including its impact on the community and the surrounding environment [1].

Zie Batik is one of the MSMEs in Semarang City that has a strong commitment to environmental conservation through innovation in its production process. This business utilizes natural dyes from mangrove fruit waste, *indigoferous leaves*, mahogany bark, jackfruit wood, and other plants such as jelly. These environmentally friendly natural dyes can replace chemicals that have the potential to pollute ecosystems. In addition, Zie Batik also involves the surrounding community in training and production activities, thus providing a positive social impact and empowering the local community. Thus, this business is a clear example of the application of the concept of sustainability on an MSME scale that combines economic, social, and environmental aspects in harmony. Zie Batik was chosen as the object of research because this venture reflects a combination of economic, social, and environmental values in a business model based on local culture. This business is also known for its commitment to environmental conservation through the use of natural dyes. Considering that there is still little research that discusses the application of sustainability accounting in creative MSMEs such as environmentally friendly batik, this research is expected to provide a real picture of sustainability practices in the field and become a reference for other MSME actors in Semarang City in developing businesses that are oriented towards sustainability and environmental concern.

A number of previous studies support the importance of the implementation of *green accounting* and sustainability accounting for business sustainability. According to Herlidawati et al. (2022), it was found that the understanding of batik MSME actors on the concept of *green accounting* is still limited, but it has great potential to be applied because it is in harmony with the characteristics of the culture-based batik industry [2]. According to Arvianti et al. (2025), it also shows that recording environmental costs can help batik MSME actors in Banyuwangi in preserving the surrounding environment [3]. Meanwhile, according to Agustina et al. (2024) emphasized that the application of environmental accounting plays an important role in improving the company's reputation and supporting sustainability business practices in Indonesia [1]. On the other hand, according to Kusumawardhany (2022), the main obstacles in the implementation of sustainability accounting in MSMEs are limited human resources, lack of training, and the absence of a well structured environmental cost recording system [4].

Based on the results of initial observations and interviews with the owner of Zie Batik in Semarang City, it is known that this business has provided a special budget for activities related to environmental conservation. One of them is the purchase of natural dyes from mangrove fruits and skins, as well as the treatment of liquid waste so that it does not pollute coastal areas. And also the purchase of tilapia leaf plants (*indigofera*), jelly plants. Business owners also try to maintain the cleanliness of the environment around the production site.

According to the Semarang City Cooperatives and MSMEs Office in 2024, most MSME actors in the batik sector actually have concern for the environment, but have not fully understood the concept of *sustainability accounting* or *green accounting*. These conditions show that environmentally friendly practices have been carried out naturally, but have not been followed by a structured recording and reporting system.

Based on these things, the researcher is interested in further analyzing the application of sustainability accounting in supporting the sustainability of the environmentally friendly Zie Batik business in Semarang City. This research is expected to make a positive contribution in realizing optimal sustainability accounting practices, especially for MSME actors in the batik sector in Semarang City, as well as being an inspiration for other business actors in developing business models that are not only profit-oriented, but also based on social care and environmental sustainability.

LITERATURE REVIEW

Triple Bottom Line (TBL)

The concept of the *Triple Bottom Line* (TBL) proposed by Elkington (1997) assesses the success of a business based on three main dimensions, namely economic (*profit*), social (*people*), and environment (*planet*). This principle emphasizes the need to balance between profit achievement, social contribution, and environmental concern so that businesses can run sustainably. In the context of MSMEs, the implementation of TBL helps business actors understand the impact of their business activities on the community and the surrounding environment. Through the implementation of *green accounting*, MSME actors can record and manage costs related to environmental activities more regularly.

The results of Pramesti et al.'s (2024) research show that increasing the awareness of MSME actors on the importance of environmental accounting has an effect on business behavior that pays more attention to social and ecological aspects [5]. Meanwhile, Sulistyawati et al. (2025) found that increasing environmental accounting literacy through training and mentoring is able to encourage MSMEs to start incorporating social and environmental considerations in the financial recording process [6]. Findings from Bayana and Praditha (2023) reveal that some MSME actors have implemented environmentally friendly practices, such as waste management, but do not understand how to formally record environmental costs [7].

The application of the *Triple Bottom Line principle* in Zie Batik can be seen from the use of natural dyes, environmentally friendly waste management, and empowerment of coastal communities. This shows the commitment of the business in achieving economic, social, and environmental sustainability.

Green Accounting

Green accounting is part of sustainability accounting that focuses on activities related to environmental conservation. This accounting is used to identify and record expenses and benefits arising from activities that have an impact on the environment, such as waste management, the use of natural materials, or energy conservation [3].

Wiguna et al. (2022) explain that the application of *green accounting* can help companies internalize environmental costs so that the decision-making process becomes more efficient and responsible [8]. In addition, research by Wahyuni and Meutia (2019) shows that companies that implement green accounting systems experience improved environmental performance and operational efficiency. In the context of MSMEs, this system can also help business actors such as Zie Batik in calculating environmental costs so that waste management and the use of natural materials can be carried out in a measurable manner [9].

Sustainability Accounting

Sustainability accounting is a recording and reporting system that assesses the company's performance from three main aspects, namely economic, social, and environmental. This concept is known as *triple bottom line*, which was introduced by John Elkington in 1997. This approach emphasizes that a company's success is not only measured by profits, but also by its contribution to society and the surrounding environment [10].

Agustina et al. (2024) stated that sustainability accounting functions to assess the extent to which company activities have an impact on sustainability development. In the context of small and medium enterprises, this concept plays an important role because it can be a tool to measure the social and environmental impact of production activities [1]. Herlidawati et al. (2022) also added that many MSMEs in Indonesia have implemented environmentally friendly practices even though they have not been accompanied by a recording system that is in accordance with sustainability accounting principles [2].

Sustainability of Batik MSME Business

Business sustainability describes a company's ability to continue to grow without neglecting

the balance between economic, social, and environmental aspects. This concept is in line with the objectives of sustainability accounting which functions to assess business performance from three main dimensions, namely profits, social responsibility, and environmental impact. In the MSME sector, especially the batik industry, the application of sustainability accounting is important because its production activities can cause waste that has the potential to pollute the environment. Through the application *green accounting*, business actors can identify and control costs related to environmental activities [3].

Herlidawati el al. (2022) revealed that some batik artisans have tried to apply environmentally friendly principles such as the use of natural dyes, even though they have not been supported by a recording system that is in accordance with sustainability accounting principles [2]. Therefore, the application of sustainability accounting to MSMEs such as Zie Batik plays an important role in assessing the extent to which business activities have an impact on the economy, social, and environment.

RESEARCH METHODS

This research uses a descriptive qualitative approach that aims to explain and understand in depth how the application of sustainability accounting is carried out by Zie Batik MSMEs in Semarang City. The basis of this research refers to the concept of Wiguna et al. (2022) which highlights three main aspects in the implementation of sustainability accounting, namely understanding, care, and institutional support. These three aspects are used to assess the extent to which MSME actors understand the concept of sustainability, show concern for the environment, and obtain support from external parties such as the government and related institutions.

The data of this study is entirely derived from primary data obtained through direct interviews with the owners of Zie Batik, as well as field observations on production activities, the use of natural dyes materials, and waste management.

Data analysis was carried out using the model of Miles and Huberman (1994) which includes three stages, namely data reduction (filtering data according to the focus of the research), data presentation (describing the findings in the form of a narrative), and drawing conclusions (explaining the results of interviews and observations to answer the research objectives) [11].

RESULTS AND DISCUSSION

The results of the study show that MSMEs Zie Batik Semarang City has implemented sustainability accounting practices (*green accounting*) gradually as part of efforts to balance economic, social, and environmental aspects in their business activities. The implementation is supported by a fairly good level of understanding, high concern for the environment, and institutional support that is starting to develop, although it is still limited.

This finding is in line with the opinion of Wiguna et al. (2022) who explained that the implementation of *green accounting* helps companies internalize environmental costs so that decision-making becomes more efficient and responsible. In the context of MSMEs Zie Batik, sustainability accounting practices are used to measure and record costs related to waste management, the use of natural materials, and social activities carried out by the company. MSMEs Zie Batik Semarang City has begun to apply sustainability accounting principles in their operational activities, although they are not yet fully in accordance with formal standards. From the results of interviews and observations, it was found that the level of understanding, concern, and institutional support has an important role in the implementation process. Each aspect exhibits different characteristics and levels of development.

1) Understanding

Based on the results of the interview, in general, the owner of Zie Batik Semarang City has a fairly good understanding of the concept of sustainability, especially related to the importance of balance between economic benefits, environmental sustainability, and social welfare. This understanding is not only limited to theoretical knowledge, but has also been translated into simple practice in production activities and financial record-keeping.

Business owners understand that sustainability accounting is not only about recording financial transactions, but also includes measuring the social and environmental impacts arising from business activities. In the context of *the profit* dimension in the concept (*triple bottom line*), this understanding is reflected in the way business actors understand that economic sustainability is not only measured by the amount of profit obtained, but also by the efficiency of resource management, the use of waste as added value, and the ability to maintain business continuity without damaging the environment.

Business owners realize that sustainability accounting serves to measure responsible economic performance, where every production activity not only generates financial benefits but also takes into account environmental and social costs. For example:

- The cost of treating liquid waste is recorded as part of the environmental operating costs, rather than being considered an additional unproductive expense. Thus, companies can control the environmental burden in a measurable way.
- The use of natural dyes is also considered a long-term investment that reduces dependence on imported chemicals and reduces the cost of managing toxic waste.
- The use of leftover batik fabrics into new products such as accessories and souvenirs generates additional revenue *streams*, which increases the efficiency of raw materials and strengthens the company's economic position.

In this way, Zie Batik not only pursues short-term profits but also instills the principle of sustainable profit, where the profits obtained come from production processes that are efficient, environmentally friendly, and have social value.

This shows that in practice, sustainability accounting has been implemented in the form of simple record-keeping, although it has not yet used a formal reporting format. Thus, business actors' understanding of the concept of sustainability can be categorized as quite good and continues to develop, driven by awareness of the importance of long-term sustainability.

2) Caring

The level of concern for social and environmental aspects in Zie Batik Semarang City is relatively high. This can be seen from the commitment of the owner and all employees to not only focus on economic profits, but also pay attention to the welfare of the community and employees as part of social responsibility.

In the *Triple Bottom Line* concept, the *People* dimension emphasizes the importance of the company's contribution to employees, consumers, and the surrounding community, with the aim of creating sustainable social value. Zie Batik has shown a real implementation of this dimension through various practices and policies that favor social welfare.

Some forms of social care that have been carried out include:

- Improving employee welfare, through the provision of regular training to improve batik making skills and product design. This training not only aims to strengthen production quality, but also provides added value for employees to have independent skills and competitiveness in the future.
- An inclusive and familial work environment, where the relationship between the owner and employees is open and mutually supportive. This fosters a sense of ownership of the business and increases employee loyalty to the company.

- Social activities for the surrounding community, such as participation in MSME exhibitions, environmental activities (e.g. community service), and donations to the community during religious events or certain holidays. These activities are a tangible form of Corporate *Social Responsibility* (CSR) at the MSME level.
- The use of natural materials and waste management not only has an impact on the environment, but also on the social aspect, because it contributes to the creation of a healthier environment for the community around the production site.

From the results of the interviews, it can be seen that this concern grows naturally from the moral awareness of business owners and a work culture that upholds the value of mutual cooperation. Zie Batik does not view sustainability only as a business strategy, but also as a form of social contribution to the society and environment in which their business is located.

3) Institutional Support

From the results of the interview, it can be concluded that Zie Batik Semarang City has implemented sustainability practices and has received real support from various external institutions, both from the government, educational institutions, and the MSME community. This support plays an important role in strengthening the application of the *Planetary* dimension in the Triple Bottom Line *concept*, which is an aspect that focuses on environmental conservation and responsible management of natural resources.

Zie Batik has shown a high commitment to environmental sustainability with various programs and policies supported by related institutions. Forms of institutional support that have been received include:

- Training from the Semarang City Cooperatives and MSMEs Office, which assists business owners and employees in production management and marketing of environmentally friendly products. This training also instills awareness about the importance of efficient use of raw materials and waste reduction as part of business sustainability.

- Assistance from educational institutions (universities) in terms of entrepreneurship training, environmentally friendly batik design innovation, and socialization of green business concepts. Through this collaboration, Zie Batik gained new knowledge about the use of natural dyes and production techniques that have minimal impact on the environment.
- Support for the promotion and participation in sustainable MSME exhibitions, facilitated by local governments and various partner institutions. This activity not only expands the market network, but also strengthens the image of Zie Batik as an MSME that cares about environmental sustainability.
- Access to socialization activities of environmentally friendly programs, such as batik liquid waste management, the use of energy-saving energy, and *eco-friendly production* practices organized by the green MSME community in Semarang City.

With this support, Zie Batik is increasingly able to apply the *Planet* principle in its business practices. This can be seen from several concrete applications, such as:

- The use of natural dyes to reduce water pollution due to chemical waste.
- Controlled management of liquid and solid waste, through waste collection installations that ensure that wastewater does not directly pollute the surrounding environment.
- Energy and raw material efficiency, by optimizing the production process so as not to cause waste of resources.
- Increasing employee awareness of the importance of protecting the environment through training and habituation in daily production activities.

With continuous support from the government, educational institutions, and the business community, Zie Batik now not only understands and implements environmentally friendly principles, but also begins to build a sustainable production system that can measure its impact economically, socially, and ecologically.

This support proves that the successful implementation of *the Planetary* dimension in *the Triple Bottom Line* depends not only on the internal initiatives of business actors, but also on cross-sectoral collaboration that strengthens each other. In this case, Zie Batik is a clear example that with the right mentoring and coaching, MSMEs can integrate environmental sustainability values into their daily business activities without reducing efficiency or profitability.

Overall, Zie Batik Semarang City has implemented sustainability accounting principles with concrete and sustainable institutional support. This support plays an important role in strengthening green accounting practices, increasing environmental awareness, and expanding the range of positive impacts for the community and the surrounding ecosystem.

CONCLUSION

This research shows that the implementation of sustainability accounting at Zie Batik Semarang has supported business sustainability through three main pillars: economic, social, and environmental. Sustainability accounting is not only a reporting tool, but also a means of management control that helps companies maintain efficiency, social concern, and environmental sustainability. Thus, this practice can be used as a model for other MSMEs who want to develop sustainable and environmentally friendly businesses.

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