

Analysis of the Implementation and Impact of Green Accounting on the Profitability of the Tofu Factory in Kuamang Ujung Gading Village, West Pasaman District

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Abstract. This research aims to assess the implementation of Green Accounting in managing waste produced by tofu factories and to examine the impact of expenditure costs resulting from Green Accounting implementation on the profitability of the Tofu Factory in Kuamang Ujung Gading Village, West Pasaman District. Primary data serves as the source for this study. Data collection methods include observation, interviews, documentation, and surveys conducted at the research site using qualitative descriptive methodology. Findings indicate suboptimal implementation of Green Accounting at the Kuamang Ujung Gading Tofu Factory, focusing solely on solid waste such as tofu dregs, which are resold for animal feed, while liquid waste remains untreated, with only two wastewater storage ponds available. Insufficient capacity in treating tofu wastewater leads to overflow during rainfall, contaminating nearby water bodies and agricultural lands. Additionally, the factory lacks recording reports on expenses related to tank or holding pond construction, thus hindering an accurate assessment of their impact on business profitability.

Keywords: Green Accounting, operating profit, Waste management

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Introduction

"UMKM," or Small and Medium Enterprises (SMEs), are defined as productive businesses owned and managed by individuals or business units operating in various fields, each with its own characteristics (Suyadi et al., 2018). The widespread lack of awareness SMEs regarding the implementation of Green Accounting has the potential to be detrimental to the SMEs themselves. Environmental impacts arising from human activities to meet daily needs are becoming a significant issue. It is well known that human actions have a substantial effect on the natural environment. Unwise management of natural resources can result in serious environmental issues. Today's industries cannot separate their development from the environmental challenges they present. In efforts to boost productivity and efficiency, companies often overlook the fact that these actions can negatively impact environmental quality, such as reducing water quality, causing air pollution, and leading to soil degradation (Wibowo et al., 2023). One of the causes of declining water quality and soil function is product waste, and to prevent waste from polluting the environment, security factors must be considered before proceeding to the disposal stage.

The reality of environmental pollution issues and societal demands compel companies to be capable of managing their business processes in order to determine appropriate policies for ensuring business sustainability, as over time, consumers become increasingly critical of companies' environmentally unfriendly products. Therefore, the demand for environmentally friendly products must be a priority for sustainable industrial development. This industry implements various strategies to sustain its business endeavors (Lestari et al., 2020).

In facing various issues, especially environmental ones, the processing activities are inevitably tied to the issue of waste, particularly factory production waste. People often discard the by-products directly into rivers, causing environmental pollution and emitting unpleasant odors. Waste carries a high burden and pollutant content. Suspended solids and dissolved substances in untreated waste undergo physical, chemical, and biological changes, resulting in toxins or environmental pollutants. This is due to the lack of implementation of green accounting in the industry (Afazis & Handayani, 2020).

Among the numerous industries operating and generating waste, one of them is the tofu industry. In Indonesia, the number of tofu factories across the country has reached 84,000 units, ranging from large to small scales. One of the small-scale tofu industries is the Tofu Factory located in Kuamang Ujung Gading Village, West Pasaman District. The establishment of any industry, especially a tofu processing industry, in the midst of a community environment necessitates the consideration of waste production. Waste is the residual raw material used in production, which, if not properly managed, can have a negative impact on the environment. Waste from the tofu production process can include tofu dregs, soybean skins, tofu water, among others. The implementation of Green Accounting has long-term positive impacts that can increase company revenue and eliminate obligations (Nurfaidah et al., 2024). The wastewater produced by the Tofu Factory in Kuamang Ujung Gading Village, West Pasaman District includes uncoagulated tofu water and damaged tofu pieces due to production process failures, causing unpleasant odors in the community environment. Most tofu factories dispose of their waste in water bodies, and the resulting pollution can be organic (odor) or inorganic (odor and color).

Currently, small and medium enterprises (SMEs) continue to focus on the company's profit margins, lacking awareness of the environmental impacts affecting business sustainability. There is a lack of knowledge regarding environmental costs because SMEs have not been able to identify these costs or implement Green Accounting concepts in their operations (K. et al., 2020). Besides being contributors to the national economy, SMEs also have environmental impacts through waste generation, which can sometimes pollute and damage the environment. Businesses require significant focus to manage the waste they produce. Waste management entails operational and internal costs. This management requires separate costs known as environmental costs or Green Costs, which are the economic and non-economic impacts resulting from business activities related to the environment. Due to their frequent hiding within cost centers and the lack of clear recognition or reporting, internal environmental costs are among the factory costs that are challenging to directly identify (Bayana & Praditha, 2023).

The purpose of implementing green accounting is to promote environmental activities from the perspective of costs and benefits or impacts. It is

undeniable that the production process of a company generates a significant amount of waste. If the company fails to properly dispose of waste, it ultimately contributes to environmental pollution. In addition to introducing green accounting, it is also important to introduce environmental performance in the company. A company's performance, particularly its financial performance and the operating profit it generates, determines its assessment. The reason for using profit as a parameter to measure financial performance is because profit is important and essential for business sustainability. In order to maximize profits, some companies overlook the impacts of their operations, including their impacts on the environment and surrounding communities. Consumers, employees, and the surrounding community question the disclosure of environmental costs in financial reports, forming both positive and negative opinions. Based on the report from the tofu factory owner, the absence of financial reporting in the implementation of green accounting raises concerns, as the factory management is unaware of the impact on business profit caused by expenditure costs due to waste management at the Tofu Factory.

Therefore, the main focus of this writing is to describe the process of implementing Green Accounting in addressing the waste management of the Kuamang Ujung Gading Tofu Factory, both its solid and liquid waste. This research reveals that Green Accounting has been partially implemented, as only solid waste in the form of tofu dregs has been addressed by selling it as animal feed. However, the tofu factory has not fully addressed the liquid waste it generates. This liquid waste has an unpleasant odor and if left untreated, can cause diseases such as diarrhea if well water contaminated by the waste flow is consumed. Furthermore, the impact of expenditure costs caused by Green Accounting for waste management in the tofu factory on the resulting business profit of the Kuamang Ujung Gading Tofu Factory needs to be determined. Lastly, the importance of financial reporting to ascertain whether the implementation of Green Accounting for waste management at the Kuamang Ujung Gading Tofu Factory is beneficial or not is emphasized.

Theoretical Study

According to the United States Environmental Protection Agency (US EPA), green accounting is an important feature that depicts environmental costs from the perspective perceived by stakeholders of a

company. This can drive the identification of ways to reduce or avoid costs in efforts to improve environmental quality. Decades after its inception, green accounting has become increasingly associated with enhancing economic value and safeguarding the environment. Various business, governmental, and social organizations use the data and information presented in green accounting as a basis for decision-making (Dari & Nany Noor Kurniyati, 2022).

Green Accounting is that seeks to incorporate environmental benefits and costs into economic decision-making. In defining Green Accounting, several aspects have been considered, such as insurance, taxation, regulations, and external financial information (Sidarta et al., 2023). Green Accounting is interconnected with the fundamental functions of management accounting, namely planning and data collection, reporting. In planning, Green Accounting utilizes forecasting analysis to measure future impacts on the environment, such as in the lifecycle (Nur Afra Hana Annisa Putri et al., 2022)

The implementation of green accounting plays a crucial role in the business and organizational life. Its importance lies in its functions and roles within green accounting. We categorize these functions and roles into two types: internal and external. A company's internal operations closely intertwine with its internal functions. Green accounting serves as an information system within operational systems, enabling companies to manage and analyze costs associated with environmental protection. Additionally, the benefits derived from this system serve as a driving force for environmental protection actions and contribute to effective decision-making. Control authorities or company units should utilize green accounting as a management tool. Conversely, external functions encompass activities like disclosure, where the company shares accounting data derived from its environmental protection actions. This ensures transparency and accountability regarding the company's environmental initiatives. (Nayseo et al., 2023)

According to the Professional Accountants (PA), Green Accounting is defined as the process of identifying, ranking, measuring, qualifying, and incorporating environmental costs into business decisions. Decisions are supported by cost data and environmental performance provided by green accounting. To support corporate decision-making, Green Accounting records production costs, inventories, waste, and activity costs. Environmentally friendly accounting collects cost,

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production, inventory, waste, and performance data for planning, evaluation, and control purposes. Therefore, green accounting is a multifaceted strategy that can transfer data from cost accounting to improve material efficiency, minimize environmental risks and impacts, and reduce environmental protection costs. (Febriyana et al., 2023)

Certainly, the implementation of green accounting significantly influences a company's profitability. The KBBI online dictionary defines profit as the surplus that arises from the difference between the higher selling price and the purchase price or production cost. According to this definition, a company derives its profitability from the surplus it gains from the difference between its production cost or purchase price and the selling price it offers to consumers. Operational profitability, aligned with the core activities of the business, is paramount. For instance, the food sector primarily generates profits through the sale of food products, not through alternative revenue streams. Operational profitability serves as a pivotal metric for assessing a company's efficiency in profit attainment. Even when companies fail to meet their targeted profit margins or experience a decline in profits within a specified timeframe, they have the authority to conduct comprehensive evaluations of their performance and the factors contributing to it. We allocate all earned profits among pertinent stakeholders, including employees, management personnel, and company investors. Furthermore, Wiranti (2023) suggests reinvested profits to promote additional financial growth and sustainability.

The implementation of Green Accounting regarding tofu factory waste is the main focus of discussion. Waste is the byproduct of an activity or operation containing hazardous or toxic substances that can directly or indirectly endanger the environment, human health, and other living organisms. Waste commonly contains organic compounds capable of biodegradation, volatile organic compounds, persistent organic compounds, toxic heavy metals, suspended solids, nutrients, pathogenic microorganisms, and parasites. Liquid waste is a mixture of water and pollutants in dissolved and suspended forms discharged from domestic sources (offices, homes, shops) or industrial sources and mixed with groundwater produced periodically. Liquid waste contains suspended and dissolved solids that undergo physical, chemical, and biological changes, leading to the production of toxic substances or bacterial growth. In this case, these bacteria can become pathogens and pose a danger to both tofu and human health. Additionally, tofu industrial wastewater

emits unpleasant odors and pollutes water sources, posing a serious environmental pollution problem. Discharging this liquid waste into rivers without treatment will result in unpleasant odors and river pollution. Soybean pressing leaves behind solid waste, also known as tofu dregs. This tofu quickly becomes stale and emits unpleasant odors. If not disposed of promptly, the odor will begin to be noticeable 12 hours after processing. Animals can use the produced solid waste, also known as trash, as animal feed, leading to detrimental environmental effects. People also commonly use tofu residue as livestock feed.

Research Method

The type of research used is qualitative descriptive research with a case study approach. This approach was chosen because it allows the researcher to delve into detail regarding the implementation of Green Accounting in the tofu industry. We chose the tofu factory for the research because it is the only one in Kuamang Ujung Gading village, West Pasaman district. The location of the factory also took into account the availability of data and accessibility for the researchers. Furthermore, the relevance of this factory lies in its significant contribution to the local economy, utilizing approximately 170 kg to 200 kg of soybeans daily for tofu production.

The informants in this research consist of the tofu factory owner, who possesses in-depth knowledge about the factory's operations and the policies implemented, including those related to waste management. Furthermore, involving four factory workers will provide diverse perspectives on the production processes and waste management in the tofu factory. Three residents living near the Tofu Factory are also included, as they have educational backgrounds or experience in environmental fields.

The analysis is conducted to understand the implementation of Green Accounting regarding the generated tofu waste and the impact of Green Accounting expenses on the profitability of Kuamang Ujung Gading Tofu Factory. Data obtained in this research are collected through various methods, including observation, interviews, documentation, literature review, and drawing conclusions from the gathered information.

The data collection techniques used in this research are observation, which involves gathering data for writing research results by directly observing the research site. Interviews are conducted by

structuring questions to be asked directly to the relevant interviewees, with voice recording as an aid. Literature review involves gathering data by examining and studying necessary information through scientific articles and relevant literature already published to support data analysis and interpretation. Documentation study involves gathering data obtained from documents, including both written documents and images.

Result and Discussion

During the interview with the factory owner, who possesses extensive knowledge about the factory's operations and waste management policies, he expressed, *"We have implemented some measures to manage solid waste, such as selling tofu dregs for animal feed. However, we acknowledge the need to improve our handling of liquid waste, as it remains untreated due to limited resources."*

One of the factory workers shared his perspective, *"In my opinion, there should be better training and resources allocated for waste management. We often struggle with overflowing wastewater ponds during heavy rains, which poses environmental risks."*

The owner added, *"yes, the excessive liquid waste flows into the nearby small river, which is no longer functional. Unfortunately, this small river directly flows into the agricultural lands owned by local residents."*

Another worker emphasized the importance of community involvement in waste management, saying, *"It's crucial to involve local residents in finding solutions. Who understand the environmental impact firsthand and can provide valuable insights."*

From the interviews conducted, it is evident that there are existing measures in place at the tofu factory to manage solid waste, such as selling tofu dregs for animal feed. However, there is a recognized need to improve the handling of liquid waste due to limited resources. The factory workers emphasized the necessity for better training and resource allocation for waste management, particularly in addressing issues like overflowing wastewater ponds during heavy rainfall, which poses environmental risks.

The response from local residents who have knowledge and experience in environmental fields states, *"The impact is very significant and worrisome. It not only causes unpleasant odors that affect the quality of life of the surrounding residents, but also contaminates water sources, posing serious health*

risks. Additionally, agricultural land pollution endangers the livelihoods of local farmers and threatens food safety."

The research also indicates the absence of financial record-keeping due to Green Accounting in waste management. The expenditure specifically refers to the cost of purchasing materials during the construction of the liquid waste reservoirs at the Kuamang Ujung Gading Tofu Factory. As the factory owner expressed, *"At first, I didn't feel the need to record expenses specifically because we are a small industry, and I didn't think waste would be a big issue for us. However, over time, I realized that the costs we incurred to manage liquid waste were significant and had a negative impact on business profits, although not in the long term."*

The factory owner mentioned that if they were to construct such reservoirs, it would undoubtedly incur expenses, such as purchasing materials or even acquiring land for the reservoir's construction site if the factory premises are insufficient. The reason for the lack of expenditure recording caused by the implementation of Green Accounting is that initially, the factory owner perceived their business as a small-scale industry, where they believed it would not incur significant losses due to waste issues. They also cited another reason for not keeping financial records: the tofu factory relies on other people's capital for operations, and the method of calculation dictates that debt accrues as the materials diminish. However, over time, the factory owner realized that the expenses incurred to handle the liquid waste were quite substantial, leading them to feel disadvantaged during the construction of the waste reservoirs. While these expenditures have a negative impact on the profitability of the Kuamang Ujung Gading Tofu Factory, it is not over the long term.

Therefore, the implementation of Green Accounting at the Kuamang Ujung Gading Tofu Factory is deemed suboptimal or inadequate. The implementation of Green Accounting at this tofu factory is considered inadequate due to the incomplete management of liquid waste, which results in environmental impacts on the surrounding community. These impacts include unpleasant odors experienced daily by the local residents near the tofu factory and the flow of tofu waste into the residents' rice fields when the reservoirs overflow during rainy seasons, causing significant inconvenience.

Furthermore, the implementation of Green Accounting is also deemed inadequate concerning business profits due to the lack of expenditure

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recording caused by Green Accounting. Consequently, the clear impacts or losses incurred on the profitability of the Kuamang Ujung Gading Tofu Factory are not evident. While the factory owner only perceives disadvantages during the reservoir construction, the long-term negative impact is not apparent. However, on the other hand, the implementation of Green Accounting on solid waste from the tofu factory yields positive impacts or can be considered beneficial because the factory earns additional profits or income from selling the leftover tofu dregs as animal feed.

The concept of Green Accounting in a company actually depends on the company's characteristics in understanding environmental issues. Understanding environmental issues serves as a guideline for companies, especially in policies related to environmental safety. Although there are currently no specific legal regulations governing the implementation of Green Accounting, especially for SMEs in Indonesia, Green Accounting implementation in private companies is regulated under Government Regulation No. 47 of 2012, which is a follow-up to Limited Liability Company Law No. 40 of 2007. The law stipulates that every company has social and environmental responsibilities in conducting its business related to natural resources.

Typically, SME entrepreneurs prioritize profits and disregard the environment. Therefore, it is crucial for SME entrepreneurs to understand green accounting, as it allows them to care for their operational environment and reduce the environmental issues they currently face. Several considerations for companies to implement green accounting as part of the company's accounting system include: (1) Enabling the reduction and elimination of environmental costs. (2) Improving the company's environmental performance, which may have negative impacts on humans, health, and the company's business success. (3) It is expected to generate more accurate costs or prices for products from desired environmental processes and enable meeting customer needs for better environmental products/services.

The implementation of environmentally friendly accounting does indeed incur operational costs. When calculating business operational costs, SME economic actors separate business expenses from personal expenditures. It is crucial for entrepreneurs to understand how to distinguish personal funds from business funds. This is necessary for a better understanding of overall business costs and the business benefits achieved. Stakeholders of SMEs do not consider environmental costs as part of their

business expenses because they do not understand how to address them. This may be due to a lack of experience in managing environmental costs. (Yulianingsih & Wahyuni, 2023)

The goal of every company is to increase its business profits. However, nowadays, companies are not only required to maximize profits but also to be accountable for the environmental impacts arising from their operational activities. The best companies are those that achieve high business profits balanced with environmental responsibility. While companies aim to maximize profits from an economic perspective, they also have a social responsibility to enhance the quality of life and the environment. Environmental costs can adversely affect business profits, as the immediate benefits of incurring these costs may not materialize until the next year or even several years later. The higher the environmental costs incurred by a company due to the implementation of Green Accounting, the greater the impact on the company. Environmental costs are expenses incurred by the company to fulfil its social and environmental responsibilities. The company uses these costs to prevent or rectify environmental damage resulting from its operational activities.

In a company, there must also be financial reporting that depicts the company's income and expenditures. Without such financial reports, the company does not know its profits and losses. For example, the Kuamang Ujung Gading Tofu Factory has not kept financial records of its income or business profits generated, and expenditures due to Green Accounting used for addressing the liquid waste from the factory, as well as the business profits from the implementation of Green Accounting by selling back solid waste in the form of tofu dregs for animal feed. Green Accounting can have a positive long-term impact or can be deemed beneficial if financial reports are properly maintained. Besides minimizing environmental issues caused by production waste, the implementation of Green Accounting can also make environmental management more cost-effective.

Implementing green accounting also aims to reduce environmental impacts. Businesses are accountable for the pollution their production processes have caused in the past, present, and future. For instance, the Kuamang Ujung Gading Tofu Factory has built a reservoir to store the liquid waste it generates, but it hasn't adequately addressed issues like unpleasant odors. The importance of green accounting fundamentally requires comprehensive knowledge from companies and other organizations that have benefited from the environment. For the

successful implementation of green accounting, it is crucial not only to accurately classify all expenses incurred by a company but also for the accounting data of a company to be capable and accurate in minimizing the environmental impacts caused by its activities. Given this phenomenon, it is our collective responsibility to contribute to the development of solutions for Small and Medium Enterprises (SMEs) in industrial centers that recognize the significance of this issue. Sustainability considerations in waste management are not only the responsibility of our government and all citizens but also our responsibility to solve all the issues faced by our surrounding communities, as well as by academics and practitioners in the environment, to address these problems (Yulianti et al., 2023).

Environmental costs are expenses incurred due to human activities that affect the environment. The concept of environmental costs encompasses costs measured from both economic and non-economic perspectives. Economic costs include costs measured in monetary units, such as medical expenses and environmental maintenance costs. Non-economic costs encompass unquantifiable expenses like biodiversity loss or irreversible environmental damage. Environmental costs arise from various human activities, including energy production and consumption, industry, agriculture, transportation, construction, and community activities. The impacts of environmental costs can have negative effects on the environment and human health, including air, water, and soil pollution, climate change, the destruction of natural habitats, and the loss of biodiversity.

Understanding the financial performance that a company uses to achieve its business objectives is crucial for measuring the effectiveness of its financial resources. We can evaluate financial performance using various indicators such as profitability, liquidity, solvency, and efficiency. Lucas Setia Atmaja emphasizes the importance of effective cash management, appropriate risk management, good receivables management, and optimal working capital management to enhance financial trade show performances. All of these aspects must be integrated into a sound financial strategy for the company to achieve its desired business objectives. In a business context, financial performance refers to evaluating a company's ability to manage and utilize its financial resources and generate profits from its business activities (Arsyana et al., 2023).

Environmental costs undoubtedly factor into the implementation of environmental management to address environmental burdens. Regrettably, companies often view these environmental costs as mere financial expenses. On the other hand, companies believe that environmental costs will only reduce the company's profits. However, the allocation of environmental management costs demonstrates a consistent environmental commitment from a company and builds trust in the company's social responsibility within the community. These environmental costs can be considered a long-term investment for the company. The funds allocated today can enhance the company's reputation and strengthen stakeholder trust in the company (Handoyo et al., 2022).

The goal of Green Accounting is to reduce environmental and social impact costs, thereby relieving companies of the burden of estimated costs at the beginning of production. Based on this information, environmental costs serve as indicators of green accounting implementation. Environmental costs are expenses incurred by a company due to its activities that cause environmental issues and affect the quality of the environment. We classify environmental costs into four categories: environmental prevention costs, environmental detection costs, internal environmental failure costs, and external environmental failure costs. Therefore, the allocation of environmental costs is expected to provide benefits that motivate managers and subordinates to reduce pollution generated from production processes (Annisa, R. D, 2023).

The annual report includes expenses related to environmental costs, from planning to utilization. Large-scale industrial activities have burdened the company with these costs. Industrial activities can have various adverse impacts on the environment, reducing its quality, which tends to give a bad reputation to the company. By allocating environmental costs, socially responsible companies can reduce negative impressions from stakeholders. Companies must prioritize environmental considerations to improve their reputation. Allocating environmental costs may increase the company's expenditure in the short term, but in the long run, it tends to create a positive image and impact financial performance (Fahik, 2020).

There is a connection between green accounting and financial performance. Several empirical studies have shown that the use of green accounting by companies has a positive impact on their financial

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performance. If a company utilizes green accounting and can demonstrate a good level of environmental protection, it will positively impact the company's financial performance. Research has scientifically and empirically proven that environmental performance, and its positive impact, highly influences a company's financial performance and market value. We can conclude that implementing environmental performance positively impacts a company's financial results by enhancing its environmental performance. Green accounting not only affects financial performance but also contributes to improving environmental protection and environmental health. The improvement in financial results is due to the company's proactive compliance with government policies and regulations as well as consumer demand for environmentally friendly products (Nayseo et al., 2023).

The annual financial statements, which companies provide to investors and other stakeholders, report environmental costs incurred and activities aimed at improving environmental performance. Investors interested in investing in a company not only look at how profitable the company is, but also how much the company cares about the environment around it. Based on the information above, this is a positive image that the company receives from investors. If we receive a good rating, investors will definitely want to help us invest. This will certainly help increase the company's profits (Dianty & Nurrahim, 2022).

Reducing environmental costs requires efforts such as pollution prevention and control, improving resource use efficiency, and using environmentally friendly technologies. Additionally, companies can consider environmental costs in the context of economic and environmental business decisions by calculating environmental internalization costs that include economic and non-economic costs in decisions. There are several reasons to strengthen the implementation of green accounting. The implementation of Green Accounting may have benefits in reducing significant environmental costs, and overlooking the extent to which costs that may arise from green accounting have an impact on the environment. Selling production waste can generate significant benefits through proper environmental cost management and a comprehensive understanding of environmental costs and process performance in product manufacturing.

Conclusion

Based on the research findings, it is evident that the implementation of Green Accounting at the Kuamang Ujung Gading tofu factory is inadequate. While some measures are in place for managing solid waste, such as selling tofu residue as animal feed, liquid waste management remains a significant issue. The factory's reliance on only two wastewater containment ponds is insufficient to handle the daily volume of waste, leading to overflow during rainfall and subsequent discharge into nearby water sources and agricultural lands.

Additionally, the lack of financial records related to Green Accounting expenditures poses a challenge in assessing the impact on business profits. The factory owner initially underestimated the potential financial implications of waste management, considering their business to be small-scale and not foreseeing significant losses. However, as the costs associated with managing liquid waste accumulated over time, the owner began to recognize the financial burden it imposed.

This study's limitations include a small sample size and focus on a single factory, which may limit the generalizability of the findings. Future research should aim to address these limitations by exploring solutions to improve liquid waste management practices, potentially through technological advancements or policy interventions. Additionally, involving a larger sample size of tofu factories in diverse locations would provide a more comprehensive understanding of Green Accounting's impact on profitability across the industry.

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