



# Green Accounting for Medium-Sized Enterprises: A Review of Participatory Action Research Towards A Sustainable Future

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## ABSTRACT

The growth of medium-sized companies in the last decade has had a significant impact on the environment, especially in Indonesia's major cities. This research aims to develop an environmental reporting model (green accounting) that is suitable for medium-scale companies. Using a participatory action research (PAR) approach, the research involved stakeholders such as entrepreneurs, government, academics, and environmental activists in formulating this reporting model. The study was conducted in Makassar City with 140 medium-scale companies as respondents. Data was collected through questionnaires, interviews, and observations, followed by focus group discussions (FGDs) to develop the reporting model. The results show that sustainability awareness is quite high, but the implementation of environmentally friendly practices is still limited due to the lack of technical knowledge, resources, and multi-stakeholder involvement, especially from the government. The FGDs formulated three main indicators of environmental reporting: water, energy and waste. This research offers an original contribution by developing an environmental reporting model specifically designed for medium-sized enterprises in developing countries. The reporting model developed in this study can be applied to medium-sized enterprises not only in Indonesia, but also in other countries. Theoretically, the results of this study provide theoretical support for the need for a more in-depth study of sustainability issues in medium-sized companies. However, this study has a weakness in that the research respondents are only half of the population of medium-sized companies in Makassar City, Indonesia.

**Keywords:** Green Accounting, Participatory Action Research, Medium-sized Enterprises, Sustainability, Government Enggagment, Corporate Sosial Responsibility

**JEL Classification:** F43; F64

## 1. INTRODUCTION

Environmental pollution is not only caused by large industrial activities (manufacturing) but also caused by the activities of medium-scale companies, especially in developing countries such as Indonesia (Syarifuddin and Damayanti, 2020). A clear example of the environmental impact caused by the activities of medium-sized businesses is the Citarum River in the West Java region, which is known as the most polluted river in the world (Daulay, 2020), 70% of the waste discharged in the river comes from the waste of medium-scale businesses along the river. (DLHK DKI Jakarta, 2022). The environmental impact of medium-sized

business activities is not only limited to the river basin, but is also very much felt in urban areas and the sea (Daulay, 2020). Therefore, a control mechanism is needed that can minimize the impact of Medium Enterprises' activities on the environment.

In accounting science, there is a new discourse known as Green Accounting. (Chamorro Gonzalez and Herrera Mendoza, 2021). This discourse is a new approach to accounting that expands the traditional scope of financial accounting to include environmental impacts in entity reporting (Deegan, 2019), and account for environmental costs in the entity's operating results (Rounaghi, 2019). As a discourse, green accounting applicatively refers to

the global reporting initiative (GRI) standard as a reference in compiling environmental indicators in the entity's environmental reporting standard (Barter, 2015). The combination of the two results in a significant improvement in the entity's environmental performance (Singh et al., 2022), which then has a positive effect on company profitability (Chasbiandani et al., 2019; Ningsih and Rachmawati, 2017; Rounaghi, 2019).

In this context, green accounting is an ideal concept to be applied by medium-sized enterprises in order to reduce environmental impacts while maintaining and/or improving their financial performance. However, research related to green accounting is currently limited and focused on large companies that are considered to have significant environmental, economic and social impacts (Dwianika et al., 2024). In fact, the contribution of medium-scale enterprises to the economy in Indonesia is far greater than that of large companies (Novitasari, 2022). In comparison, the contribution of medium-scale businesses when combined with small-scale (MSMEs) to the national economy (GDP) in the last 5 years has been around 61.9% (Kemenko, 2021). Not only that, this sector absorbs around 97% of the local workforce (Kemenko, 2021). The figure shows that the medium-sized enterprise sector is a giant sector that cannot be underestimated. Based on these data, researchers assume that the environmental impact of medium-sized enterprises is in line with their high contribution to the national economy. Although research related to the sector's environmental impact is not yet available (Novitasari, 2022).

However, to date, there is no environmental performance reporting standard that suits the needs of medium-scale enterprises. However, to date, there is no environmental performance reporting standard that suits the needs of medium-scale enterprises (Singh et al., 2022). The global reporting initiative (GRI) indicators as a reference in reporting the environmental performance of entities, are very complex and expensive to use by medium-sized companies (Fernando et al., 2024; Wiredu et al., 2023). In addition, GRI standards are designed to be used globally, so they are not always suitable for local contexts or specific industries (Justita and Riyanto, 2022). Therefore, this study aims to develop a green accounting reporting model with reference to GRI standards that is suitable for medium-sized companies.

Researchers view that with the availability of green accounting reporting standards, it can indirectly be a stimulus for medium-sized enterprises to improve their business operations. In addition, the implementation of green accounting can generate economic benefits because a number of studies prove that consumers tend to prefer products from companies that have environmental and social concerns (Sukmadilaga et al., 2023; Hoekstra, 2019).

To achieve this goal, researchers used participatory action research (PAR). Participatory action research (PAR) is a research approach that combines scientific research with social action that aims to create positive changes in society (Costa and Andraeus, 2021; Purnomo et al., 2024). This approach involves the active participation of stakeholders who are directly involved in the issue under study (Williams, 2024), including business actors, experts/academics, government, and environmental activists.

The research began with interviews with academics/experts to understand relevant environmental indicators. Next, interviews were conducted with environmental activists to get input on the most impactful business sectors and the most affected areas. After that, researchers conducted qualitative interviews and observations with medium-scale entrepreneurs to collect data on their activities and environmental impacts. The information from these interviews and observations formed the basis for the next step, which was to invite all relevant stakeholders to a focus group discussion (FGD). The purpose of this FGD is to map the issues that have been identified and develop an effective and appropriate green accounting reporting model for medium-scale businesses.

This research was conducted in Makassar, one of the largest cities in Indonesia and the gateway to Eastern Indonesia (Nugradillah et al., 2023). As a large city, Makassar has a relatively large and growing number of medium-sized businesses. The activities (operations) of these companies have a massive impact on the environment (CNN Indonesia, 2024). The results of this study can fill a gap in the literature by developing a green accounting reporting model specifically designed for medium-sized businesses. Meanwhile, business actors, this research can be a guide to reduce the environmental impact of their business activities, as well as improve their social image in the eyes of consumers so that it can have a positive effect on increasing their profitability (Nugradillah et al., 2023; Ulupui et al., 2020).

## 2. LITERATUR REVIEW

### 2.1. Stakeholders Theory as a Theoretical Lens

Green accounting as a new discourse (concept) in accounting science developed along with the emergence of Stakeholders Theory developed by Edward Freeman, (1985). Stakeholders Theory explains the interrelated relationship between stakeholders in an entity (Freeman and McVea, 2001). Stakeholders are defined as individuals or groups that can influence or be influenced by the achievement of organizational goals (Freeman, 1985). Freeman divides stakeholders into two main groups: Primary groups and secondary groups.

Primary groups consist of stakeholders who have a direct relationship with the entity, such as owners, employees, customers and suppliers. Secondary groups include external stakeholders such as local communities, governments, and environmental organizations (Parmar et al., 2010). The two groups are connected through the impacts given and received from the entity's activities (Chen et al., 2012).

Freeman, (1985) emphasized that the success of an entity does not only depend on financial performance but is also determined by the entity's ability to meet the needs and expectations of stakeholders. Recognition of the existence of secondary (external) stakeholders is an important breakthrough in order to build a better social reality (Xu et al., 2010). Recognition of "the others" in the realm of entities not only avoids the risk of conflict, but also supports the continued existence of the parties (Chen et al., 2012). Green accounting as a new concept and praxis is the result

of this recognition that led to the birth of collaboration between parties to support the sustainability agenda. (Faieq and Cek, 2024).

In the context of developing a green accounting reporting model, using the Stakeholders theory perspective provides a broader perspective on the involvement of various parties. Stakeholders such as local communities, regulators, and customers have a direct interest in how MSMEs manage environmental impacts (Parmar et al., 2010). By involving stakeholders, the proposed green accounting model is more holistic and reflects the needs and expectations of all parties involved (Faieq and Cek, 2024; Riyadh et al., 2020).

## 2.2. Green Accounting

As explained earlier, green accounting is a new approach in accounting science that incorporates the environmental impact of business activities into financial reporting (Burritt and Schaltegger, 2010). Green accounting aims to measure and report the environmental impact of business activities, as well as the costs and benefits associated with environmental management (Gray et al., 1993). The concept is evolving as public awareness of the environment and ecosystem sustainability increases (Astari et al., 2023). Entities as the main actors that have a major impact on the environment are required to change their governance by adopting the sustainability agenda emphasized by international institutions (Egbunike and Okoro, 2018). In this concept, Green accounting is constructed as an instrument that supports the sustainability agenda (Cai and Hu, 2024).

The construction of green accounting refers to the global reporting initiative (GRI) guidelines. GRI is an international organization that provides standards for sustainability reporting, which includes disclosure of the economic, environmental, and social impacts of an organization's activities (Global Reporting Initiative, 2016). The GRI Guidelines offer a comprehensive framework that assists entities in measuring and reporting environmental performance in a transparent and accountable manner. Entities report environmental performance through a Sustainability Report that contains GRI indicators, namely economic, environmental, and social (Kim and Todorovic, 2013).

The concept of green accounting first emerged in the early 1980s, but the important development of this concept began when Gray, (1990) published an article emphasizing the need for the integration of environmental information in financial reporting to increase transparency and accountability (Gray, 1990). The implementation of green accounting has been shown to significantly improve an entity's environmental performance (Faieq and Cek, 2024). Schaltegger et al., (2012) showed that entities that adopt green accounting practices are able to substantially reduce greenhouse gas emissions and energy consumption through more efficient resource management and investment in environmentally friendly technologies.

Despite the success of green accounting in the context of large entities, the concept faces challenges to be applied to small and medium-sized enterprises (SMEs). This is due to the limited resources and knowledge related to sustainability issues in the

SME sector. In addition, this sector tends to be underestimated, due to its smaller "size" compared to a large entity (Singh et al., 2022; Flagstad and Johnsen, 2022). As such, there has been no serious effort to include this sector in the sustainability agenda. In this context, this research proposes a simpler model that can be applied directly by medium-scale enterprises. The constructed model refers to the Global Reporting Initiative (GRI) standard as the main reference for the concept of green accounting, and is adapted to the needs of medium-scale businesses.

## 3. RESEARCH METHOD AND DATA ANALYSIS

### 3.1. Research Design

This research used a qualitative approach with participatory action research (PAR) as the research design. PAR is a research approach that integrates social action and scientific research processes with the aim of creating positive change in society (Kindon et al., 2007; Suwantip and Witthayawirasak, 2018). Therefore, Bradbury and Reason, (2001) emphasized that PAR not only produces knowledge, but also empowers participants to take actions that can bring real change. based on this explanation, PAR was chosen as a research design because it allows researchers to collaborate with various parties related to the research (Kemmis and McTaggart, 1988) to develop a green accounting reporting model for SMEs.

### 3.2. Research Participants

The participants of this research consisted of various parties including academics/green accounting's experts, environmental activists, government and especially medium-scale entrepreneurs. The academics we involved are accounting lecturers who are experts in the environmental and social fields from a well-known campus in Makassar City (research locus). There were five academics involved in this research. The involvement of academics aims to get input related to how effective research design and initial description of the model to be developed.

There is one environmental activist involved, with the position of chairman of the environmental council in Makassar city. Environmental activists contributed in providing input regarding the most polluted areas in Makassar city. Meanwhile, from the government, we involved the Department of Industry and Trade (DISPERINDAG) and the Department of Cooperatives and MSMEs (DISNAKOP) of South Sulawesi Province. In addition, we also requested the willingness of business associations to become research respondents.

The main respondents of the study, namely middle-scale entrepreneurs in Makassar city, we obtained through data from the Central Statistics Agency (BPS) of South Sulawesi Province in 2022. The total number of middle-class entrepreneurs is 250, but only 140 entrepreneurs have cellular phone numbers that can be contacted. We chose business owners who had phone numbers with the consideration that we had to contact them first to explain the context of the research before sending out questionnaires and conducting interviews/observations.

### 3.3. Data Collection Methods

The data collection steps in PAR involve the active participation of stakeholders and include several stages. First, problem identification and planning are conducted with participants to understand the context and prioritize the problem (Kemmis and McTaggart, 1988). Furthermore, data were collected through in-depth interviews and participatory observation. Model development was conducted through focus group discussions (FGDs) attended by stakeholders (Baum et al., 2006).

In this context, we collected data using a systematic method. First, we sent an online questionnaire link (Google form) to respondents via cell phone. Then we visited companies for observation and in-depth interviews with respondents. In addition, we conducted interviews with academics, environmental activists and business associations. The last step was to conduct a focus group discussion (FGD) with the parties mentioned above to map the problem, derive indicators from GRI and develop a green accounting reporting model that is appropriate and suitable for medium-scale companies. FGDs were conducted serially (4 times) with limited participants (14 people per session) in order to obtain more weighted data.

### 3.4. Data Analysis Methods

The data analysis method was conducted in several steps. First, data was collected through observation and interviews (Roe et al., 2024). The data was then transcribed and categorized based on the main themes that emerged (Smit et al., 2020). Coding was done openly to identify themes, concepts, and categories, followed by axial coding to link relevant categories and subcategories (Strauss and Corbin, 1998; Charmaz, 2006). Thematic analysis was used to identify patterns and meanings in the data, where key themes were analyzed and discussed with participants to ensure the validity and relevance of the results (Braun and Clarke, 2006). Data triangulation is done by comparing data from various sources and involving several researchers to reduce bias (Patton, 1999; Denzin, 1978). The data that has been analyzed is interpreted to produce findings (models) that are understandable and relevant (Miles and Huberman, 1994).

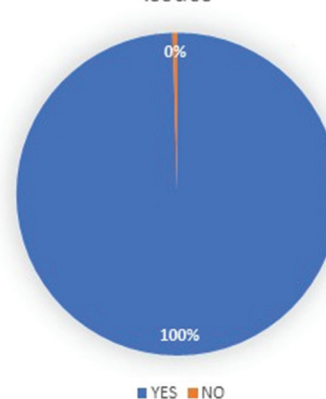
## 4. DISCUSSION AND CONCLUSION

### 4.1. Indicator and Model Formulation

This research aims to develop an environmental reporting model that can be applied by medium-sized companies in Indonesia, with a case study in Makassar city. As one of the major cities in Indonesia, Makassar provides an appropriate context for constructing and testing an environmental reporting model. As the city's MSME business sector has been growing steadily over the past decade, the city's environmental reporting model can be applied in a variety of ways (Nugradillah et al., 2023; Rakhmawati et al., 2020). To this end, this research utilized the participatory action research (PAR) method by involving various stakeholders, including entrepreneurs, academics, government, and environmental activists. In the data collection process, the researcher sent questionnaires to 140 respondents through mobile telecommunication channels.

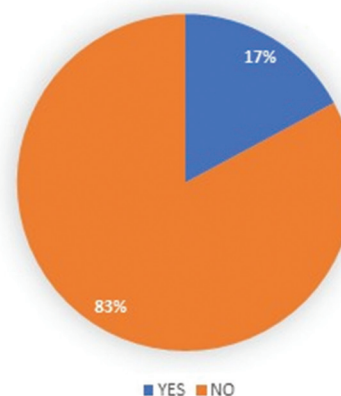
The results of the questionnaire showed that all respondents claimed to be concerned about environmental issues and understood the importance of managing the environmental impact of their business activities.

Do you as Owner/Director have concern for environmental issues



However, only 17% of respondents have taken concrete steps to implement environmentally friendly practices.

If Yes, Has Your Company Implemented Environmentally Friendly Practices?

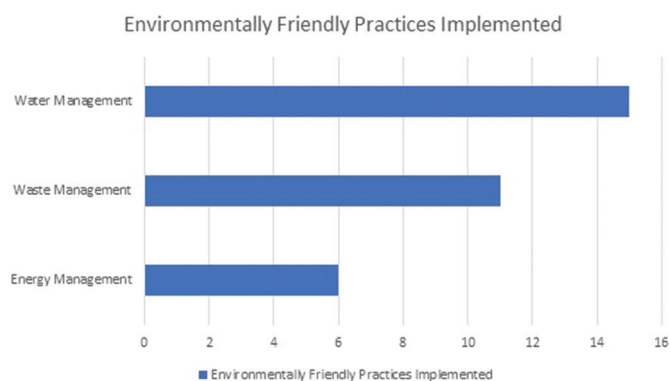


This data became the entrance for researchers to explore more deeply the environmental impacts of respondents' business activities through observations and interviews. However, due to time constraints, observations were only made in several companies. First, researchers observed 10 companies that stated that they had not adopted environmental practices in their company activities. The observation results show that the production activities of these respondents have significant environmental impacts. However, there are no mitigation measures. In each of the observed locations, it was observed that production activities, ranging from the use of water, energy, to waste disposal, were carried out without adequate control or management systems. For example, one of the food processing factories observed used a large amount of water for its production process, yet its wastewater was discharged directly into public sewers without further treatment.

Further observations in the textile sector show that the production machines used are old models that are highly energy-intensive, increasing carbon emissions without any effort to reduce energy consumption or replace them with more efficient technologies. In addition, observations also found that there was no documentation or reporting regarding the environmental impacts resulting from the respondents' production activities. The absence of reporting results in a lack of accountability and transparency in business operations.

This fact shows a significant gap between awareness and action on the ground. According to Ajzen, (1991), the gap between awareness and action can result from a lack of behavioral control over what is perceived. In this context, the gap occurs due to respondents' lack of knowledge on environmental issues. As stated by the informant, *"Yes, I know that production has an impact on the environment, especially water and energy use. But, I didn't know how to record it, and I didn't even know that there was a reporting format."* Another informant added, *"Indeed, the liquid waste produced by the factory has the potential to pollute the surrounding environment, but there is no clear guidance on how to manage and report it."*

Secondly, researchers also observed companies that stated that they had implemented environmentally friendly practices (17% of the total respondents).



In observations of medium-sized companies, environmentally friendly practices were simply an appeal to use water and electricity efficiently. Although basically the main motivation is to save costs. As the respondent stated *"yes in our place there is an appeal to save water and electricity because it is related to costs and also water is limited."* Meanwhile, the intended waste management is sorting between types of solid waste (recycled), wet waste and chemical waste (non-recycled). These observations show that while there are efforts by medium-scale enterprises to become more environmentally friendly, such measures are still very limited and not integrated into broader business strategies.

Based on observations in both contexts, it was revealed that middle-class entrepreneurs do not have an adequate environmental perspective. This finding tends to differ from the results of research related to MSMEs and environmental performance. Mutamimah and Indriastuti, (2023), stated that MSMEs in Central Java have carried out environmentally friendly practices through the use of

environmentally friendly technology. Similar results were also found by Indriastuti et al., (2022) and Maisyaroh et al., (2023). However, the social and cultural context in Java is different from Makassar, so perceptions and behaviors related to the environment may be different.

One of the distinguishing aspects is the active role of the government. Local governments on the island of Java play an active role in assisting environmental performance (Rahmawati et al., 2020). Meanwhile, the local government of South Sulawesi does not have a program that includes the environmental agenda in MSME-related activities. As stated by government officials *"There is no specific regulation, but we realize that MSMEs need to participate in preserving the environment."* Similarly, another official stated *"So far, the environmental conservation agenda has been brought under the authority of the environmental agency, for MSMEs themselves there are no programs related to that."*

Based on interviews with several local government officials in charge of MSMEs. Researchers concluded that local government attention is focused on micro and small level businesses. So that local government work programs related to MSMEs only revolve around empowerment issues. Medium-scale companies are considered to have the ability to survive and develop (going concern) so that they no longer receive government attention in terms of empowerment. In addition, local governments do not yet have a sustainability perspective. This can be seen from local government work plan documents (specifically in charge of MSMEs) that do not mention environmental issues. However, a number of officials interviewed by researchers were aware of this problem. However, they left it up to the relevant agencies to take action.

In order to expand the area of investigation, the researcher observed two large companies (corporations) that have CSR programs. Unfortunately, there were no CSR programs from companies that partnered with medium-scale companies for green (environmental) activities. As stated by one of the directors of the company *"We do have a CSR program to empower MSMEs, but for the environment it is done directly, usually only involving environmentalists"*. According to another informant said, *"So far our company has never thought of involving medium-sized companies for environmental programs, I think this is an interesting idea."*

The above phenomenon shows that there is no attention from stakeholders to middle-class companies regarding environmental issues. Thus, encouraging the adaptation of environmentally friendly practices, and in particular green accounting reporting, is not an easy thing. Apart from the fact that middle-class entrepreneurs in Makassar City do not yet have a sustainability perspective. Also because related stakeholders such as Local Governments, Corporations and Business Associations (KADIN) do not have environmental programs that can stimulate entrepreneurs to adopt environmental practices. However, encouraging such adoption is not impossible. Therefore, this research is one of the efforts to campaign for environmental practices through Focus Group Discussion (FGD) sessions with

stakeholders and respondents in particular, in addition to achieving the main research objective of formulating an environmental reporting model. The FGD was conducted by involving various stakeholders (multistakeholders) from entrepreneurs, government, academics, corporations and environmentalists.

In the FGD session, participants from academia explained the long-term benefits of environmental practices. Not only from an economic point of view, but also from the perspective of reputation and social responsibility. The Government as the leading of SMEs sector presented work plans and policies that support the adoption of environmental practices. Furthermore, the participants discussed the Global Reporting Index (GRI) indicators that can be derived into environmental performance indicators for medium-scale companies.

Based on the preliminary findings of the research and input from academics, there are three basic indicators that are considered most relevant and important to be integrated in the environmental practices of medium-sized companies, namely; water, energy and waste. These three indicators were chosen because they are directly related to the company's business activities. Water and energy are the most needed natural resources. As for waste, it is an output that needs further attention so as not to pollute the environment. Then, these indicators are reported in environmental performance reporting with a mutually agreed model.

Environmental Indicator calculation and reporting model, are:

- Energy resources

Water and energy are fundamental and important indicators in sustainability issues. Water resource use is reported in m<sup>3</sup> and energy use is measured in kWh per year. For example, in the textile industry, which is highly dependent on water, businesses can report the amount of water used per kilogram of product produced. For example, if a textile company uses 50,000 m<sup>3</sup> of water to produce 100,000 kg of fabric, the water consumption per kilogram of product is 0.5 m<sup>3</sup>. Similarly, if the company consumes 200,000 kWh of electricity for the same production, the energy consumption per kilogram of fabric is 2 kWh. This method of calculation is in line with the basic principles in GRI (Burritt and Schaltegger, 2010).

- Waste management

As with the energy indicator, waste is measured in kilograms calculated per year. Businesses are committed to reducing the environmental impact of waste production by implementing effective waste management. For this purpose, it is necessary to cooperate with other stakeholders. Two aspects are highlighted, namely, waste management by the industry and waste management by the government (waste transportation). In addition, the government is committed to assisting businesses in managing industrial waste (especially liquid waste) and the corporations present are willing to help with waste management using CSR funds.

- Reporting format

The most important point in the FGD session was to construct a simple environmental reporting model that can be applied directly.

Because the constraints faced by business actors in environmental practices are limitations from the aspects of management, human resources and finance. With these conditions, FGD participants, guided by academics, compiled a reporting model consisting of seven parts. Namely; Introduction, Executive Summary, Environmental Performance Indicators, Energy Management, Waste Management, Stakeholder Engagement and Conclusions/Future Prospects. The format of environmental performance reporting can be seen in the figure below.

**Green Accounting Report Format for SMEs**

1. Introduction
2. Executive Summary
3. Environmental Performance Indicators
4. Resource Management
- Water Consumption (m <sup>3</sup> /year)
- Energy Consumption (kWh/year)
5. Waste Management
- Solid Waste (tons/year)
- Liquid Waste (m <sup>3</sup> /year)
6. Stakeholder Engagement
7. Conclusion & Future Plans

## 5. CONCLUSION

This study identified a significant gap between awareness of environmental issues and concrete implementation at the level of medium-scale companies in Makassar City. Although most respondents showed concern for the environmental impact of their business activities, only 17% have taken concrete steps to implement environmentally friendly practices. This phenomenon reflects the existence of structural and cultural barriers that hinder medium-scale companies in adopting green accounting, as found in a similar study by Boiral (2006) and Delmas and Toffel (2008), who emphasized that environmental awareness is not always followed by concrete actions.

In context the Theory of Planned Behavior (Ajzen, 1991), the gap between awareness and action can be attributed to a lack of behavioral controls as well as regulatory uncertainty. In Makassar City, although there is an understanding of the importance of environmental management, the absence of clear technical guidance and lack of knowledge on how to conduct environmental reporting has led to medium-scale companies operating without considering significant environmental impacts. This was revealed in interviews and observations, therefore ignorance on how to manage and report environmental impacts is a major obstacle that needs to be overcome. Deegan (2019) emphasized that the integration of environmental reporting requires appropriate technical support and in-depth education so that companies, especially mid-sized ones, can understand and implement sustainability principles effectively.

Observations of companies that have implemented environmentally friendly practices show that the measures taken are still limited to water and energy use efficiency, which is driven more by economic considerations, such as operational cost savings. While this is a positive indication, such measures are not yet integrated with a more comprehensive and sustainable business strategy. This condition is in line with the findings of González-Benito (2006) that companies often adopt environmentally friendly practices for economic reasons and not because of a deep awareness of environmental responsibility. Therefore, efforts to integrate environmental reporting into business strategy require a change in corporate culture and an increase in environmental literacy, as affirmed by Singh et al. (2022).

In addition, support from external stakeholders, such as local governments and business associations, is still very limited. Local governments in Makassar City do not yet have policies that explicitly encourage medium-sized companies to adopt environmental reporting. In fact, strict regulations and adequate incentives have proven to be important factors in encouraging such adoption, as stated by Burritt and Schaltegger (2010). The lack of incentives means that companies do not feel the urgency to better manage the environmental impacts of their business operations. In addition, business associations and large corporations have also not fully realized the potential to engage mid-sized companies in the sustainability agenda through corporate social responsibility (CSR) programs. This suggests a gap in cross-sector collaboration that could accelerate the adoption of environmental reporting.

The focus group discussion (FGD) sessions conducted in this study formulated three main indicators relevant for environmental reporting in medium-sized companies, namely water, energy and waste. These indicators were chosen because they reflect the main activities that have a direct impact on the environment. For example, in the textile industry, which is highly dependent on water use, companies can report water consumption per kilogram of product produced as part of their environmental performance reporting. The simple reporting format is designed to be straightforward for medium-sized companies to implement without straining available resources, in line with the approach proposed by Faieq and Cek (2024).

Nonetheless, the implementation of environmental reporting models still faces significant challenges. Technical complexity, regulatory uncertainty, and resource constraints can be major barriers. As stated by Park and Kim (2006), In conditions of ambiguous regulations and limited technical knowledge, companies tend to be reluctant to adopt environmental innovations. This study supports these findings and shows that the low motivation of medium-sized companies to conduct environmental reporting is also influenced by the perception that environmental reporting requires a large investment, both in terms of time and resources.

To overcome these barriers, this study recommends collaboration between government, academia and the business sector in providing more intensive training and technical assistance programs. Incentive programs such as tax rebates or financial

assistance provided to companies committed to implementing environmental reporting can be an effective first step, as suggested by Renwick et al. (2013) and Perrini et al. (2006). In addition, business associations can play a more active role in promoting environmental reporting by making it part of their strategic agenda. For example, through awards for companies that successfully integrate environmentally friendly practices in their operations.

Furthermore, the integration of an environmental reporting model designed for mid-sized companies requires more contextual customization. Several factors such as company size, level of technological literacy, and regulatory support are key variables in determining the successful implementation of this model. Government and educational institutions have an important role to play in providing access to information and technical support needed to strengthen the adoption of environmental reporting models. For example, ongoing training programs and certification of environmental reporting can be an effective way to increase the capacity of companies to manage their environmental impacts (Renwick et al., 2013).

This study successfully revealed significant challenges in the implementation of green accounting in the medium-scale business sector in Makassar City. Despite the awareness of the importance of sustainability and environmental management, the reality is that most entrepreneurs still have not integrated green accounting principles into their business practices. This is due to several key factors, including a lack of technical knowledge, limited resources, and a lack of regulatory support and incentives from the government.

In accordance with the research objectives, this study successfully formulated a green accounting reporting model tailored to the needs of medium-scale companies in Makassar City. By involving various stakeholders through a participatory action research (PAR) approach, this model includes three main indicators, namely water, energy, and waste, which are considered the most relevant for measuring the environmental impact of medium-scale companies.

The practical implications of this reporting model are particularly important for companies that want to adopt environmentally friendly practices without having to spend large amounts of resources. The model provides a simple yet effective framework, which can be implemented quickly and adapted to a company's internal capacity. In addition, the model can also be a tool for local and national governments to develop more specific policies and support medium-sized companies to be more environmentally responsible. By providing clear guidance on environmental reporting, the model can be a practical module that helps companies identify areas where they can improve their environmental performance.

However, this study also has limitations. For example, the application of this reporting model was only tested on a small number of companies in Makassar City, so further research is needed to test the sustainability and effectiveness of this model in other regions or in different industrial sectors. In addition, in-depth research on the barriers faced by medium-scale companies in

adopting green accounting is also needed to develop more targeted interventions. Rekomendasi untuk penelitian selanjutnya meliputi:

1. Implementation and pilot testing of the model in other regions: Pilot this reporting model in other regions of Indonesia or other developing countries to see its sustainability in different contexts
2. Analysis of Barriers to adoption: Further research to identify and analyze the barriers that medium-sized enterprises face in implementing this model, including regulatory, economic, and technical factors
3. Technical support development: Research further on how to develop technical support and training programs that can strengthen the capacity of companies in implementing green accounting.
4. Long-term impact study: Assess the long-term impact of implementing this reporting model on the environmental and economic performance of medium-sized enterprises, to assess the sustainable benefits.

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