Environmental Cost Accounting Practices In Waste Management

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ABSTRACT

Purpose: This study aims to determine and analyze how TPST 3R Mulyoagung Bersatu discloses waste management and applies environmental cost accounting in the identification, recognition, measurement, presentation and disclosure of environmental costs in the financial statements, and classifies environmental costs into environmental prevention costs, environmental detection costs, internal environmental failure costs and external environmental failure costs.

Methodology/approach: This research was conducted at the Integrated Waste Management Site (TPST) 3R Mulyoagung Bersatu, Dau District, Malang Regency. This research is a qualitative research. In this study using primary and secondary data. Primary data was obtained through interviews, documentation and observation in the field. While secondary data is obtained from data or documents of TPST 3R Mulyoagung Bersatu.

Findings: The results of this study are that TPST 3R Mulyoagung Bersatu recognizes costs using the cash basic method and environmental costs are recognized as a component of production costs, namely general operational costs and fuel, employee costs and maintenance costs. Environmental costs at TPST 3R Mulyoagung Bersatu are environmental prevention costs; salary costs and costs of cleaning equipment and cleaning materials, environmental detection costs; none, environmental internal failure costs; vehicle and machinery maintenance costs, building and infrastructure maintenance costs, social costs, external failure costs; none.

Practical implications: the results of this study have implications for the development of environmental cost accounting practices in waste management.

Originality/value: the research results show that the environmental costs accounting is very relevant and important to waste management because it can evaluate and reduce the environmental impact of the waste management process.

Keywords: Environmental Accounting; Environmental Costs; Environmental Accounting Practices.
INTRODUCTION

In Indonesia, the amount of waste is increasing from year to year. Currently, the waste problem has not been resolved and a lot of waste is not managed properly. The waste problem can have an impact on human survival and cause environmental damage. Based on data from the Malang City Environment Service (DLH), in 2021, the amount of waste in Malang City will decrease by 59,660.54 tonnes per year or 24.12%. When compared to 2020, the reduction in waste in 2021 is higher, while in 2020 in the second semester report it was 55,884.15 tons per year or 22.71%. TPST is an integrated waste processing site and waste facility with the aim of reducing the amount of waste produced (Wibowo & Djajawinata, 2012). Malang Regency has 260 waste processing sites, with 212 Temporary Shelters (TPS), 45 Integrated Waste Management Sites (TPST) and 3 Final Processing Sites (TPA). Malang Regency also has 698 units of waste transportation equipment.

TPST is very helpful to reduce the amount of waste before it goes to the TPA. In carrying out waste processing at TPST, it can be done by recycling waste. This has great potential to reduce the amount of waste going to landfill, therefore, can increase the service life of a landfill (Permana & Trihadiningrum, 2010). Waste processing that begins with recycling and processing before being disposed of in the TPA has the goal of reducing the volume of waste. In addition, waste that is processed before being disposed of in the TPA can be reused, this can reduce the pile of waste. Basically TPST has a responsibility to stakeholders and the community regarding waste management. The accountability of TPST is relevant in environmental accounting (Zubair & Haeruddin, 2012).

LITERATURE REVIEW

Stakeholder Theory

Stakeholder theory is a theory which states that stakeholders have the right to obtain information about company activities so that stakeholders can make decisions. In this theory it is stated that companies do not only operate to achieve their own interests, but companies must also provide benefits to their stakeholders (shareholders, creditors, consumers, suppliers, government and society) (Iriyanto & Nugroho, 2014).

Environmental accounting is the field of identifying resource usage, measuring and communicating costs. Environmental accounting basically requires companies or other organizations to fully understand companies or other organizations that benefit from the environment (Wijayanto et al., 2021).

Measurement of environmental accounting is inseparable from the discussion of environmental costs (Rusmana, 2003). Environmental costs can be defined as costs incurred due to a decrease in the environmental quality of the production process. In this report, it is necessary to separate environmental costs according to the type of costs. This is done so that the reports made can be a source of information for monitoring company operations, especially those related to matters that will have an impact on the environment (Parmawati, 2019).
Environmental costs can be divided into four categories, namely (Indrawati & Rini, 2018):

1) Environmental prevention costs are the costs of activities carried out to prevent the generation of waste and waste that can damage the environment.

2) Environmental detection costs are the costs of other company activities to meet applicable environmental standards.

3) Environmental internal costs are the costs of activities carried out due to waste and waste generation but do not dispose of it to the external environment.

4) External failure costs (environmental external failure costs) are the costs of activities carried out after the waste or waste is released into the environment.

The stages of environmental cost allocation include: 1) Identification. The first time a company wants to determine the cost of managing costs in the face of external factors that may arise in its business operations is to determine the impact of these negative impacts. 2) Recognition. Environmental costs are recognized in the profit or loss when the future economic benefits associated with decreasing assets or increasing liabilities decrease and can be measured reliably. 3) Measurement. For measuring the value and amount of costs incurred, it is possible to obtain the exact amount and value according to the actual needs of each period by referring to the realization of costs incurred in the previous period. 4) Serving. Presentation of environmental costs in the financial statements can use a different account name, because there is no standard requirement for an account name to include the allocation of financing for a company’s environmental costs. 5) Disclosure. Generally, each accounting records additional costs as factory overhead in routine accounting, which means that the account is not specific to environmental cost items, and disclosure in environmental accounting is voluntary disclosure.

Research on the analysis of the application of environmental accounting to the operational costs of waste management at Pancaran Kasih Manado Hospital shows that GMIM Pancaran Kasih Hospital has implemented environmental accounting and has carried out what is known as the process of recognition, recording, presentation, measurement and disclosure as described in the Government Accounting Standards 2010 (Ratulangi et al., 2018).

Research on the analysis of the application of environmental accounting at Medika Citra Hospital in the process of waste management shows that Samarinda Medika Citra Hospital has not yet made an environmental cost report. Until now, environmental costs have only focused on costs incurred by WWTPs and Incinerators, and there are costs related to environmental activities that are not recognized by hospitals, namely the cost of equipment depreciation related to environmental management (Hasiara et al., 2020).

Research on the application of environmental accounting at the Cenderawasih Regional Hospital, Aru Islands Regency, shows that the Cenderawasih Regional General Hospital, Aru Islands Regency, has not fully implemented environmental accounting, but in waste management, the Cenderawasih Regional General Hospital, Aru Islands Regency, has implemented the Regulation of the Minister of Health Permenkes, No 1204/Menkes/PerXI/2004 well (Samsiar et al., 2020).
The difference between this research and previous research lies in the waste management model and the object studied. If the previous research examined the waste management process that did not reuse the waste and the average object used to conduct research was the hospital. So in this study will discuss how the waste management process, the application of environmental cost accounting as the reuse of waste and carried out identification, measurement, presentation, and disclosure in the application of environmental accounting.

METHODS

The location of this research is located at TPST 3R Mulyoagung Bersatu, which is located at Jl. Tpst, Jetak Lor, Mulyoagung, Dau, Malang, East Java 65151, Indonesia Malang City, East Java. This research uses descriptive qualitative research which is research that describes the findings from the process of analyzing data that has been collected and observations on the research object after which it will be compared with the method of applying environmental accounting in theory which has been developing in academic circles. The unit of analysis in this study is research that refers to knowledge of the research object, namely the application of environmental accounting related to the management of environmental costs and waste at TPST 3R Mulyoagung Bersatu which includes the types of waste produced by TPST, TPST work processes, compost production processes at TPST, management processes waste at TPST and application of environmental accounting at TPST. The types of data used in this research are primary data and secondary data. Data collection techniques used by researchers in conducting research are observation, interviews and documentation. The stages of processing data using analysis techniques are as follows (Sugiyono, 2018):

1. Data Collection

   The main activity of any research is data collection. Data were collected in qualitative research through in-depth interviews and documentation.

2. Data Reduction

   The data obtained from the field is very extensive so it needs to be recorded in great detail. Reducing data means summarizing, choosing the main things, focusing on the important things, looking for themes and patterns. Therefore, reduced data will provide a clearer picture and make it easier for researchers to collect and search further data if needed.

3. Data Display (Data Presentation)

   After the data is reduced, the next step is displaying the data. Narrative text is most often used to present data in qualitative research.

4. Conclusion Drawing or Verification

   Draw conclusions and verify. The initial conclusions presented are still tentative and will change if strong evidence is not found to support the next stage of data collection. However, the conclusions stated previously can be trusted if supported by valid and consistent evidence when the researcher returns to the field to collect data. The verification process is also carried out by confirming the findings to experts (competent lecturers).

RESULTS & DISCUSSION
Stakeholders are very important for TPST 3R Mulyoagung Bersatu because with the presence of TPST stakeholders it can grow and develop so that TPST does not only operate to achieve its own interests but must also provide benefits to its stakeholders (Government: Cipta Karya & Spatial Planning Office of Malang Regency, Environmental Service Malang Regency Life, Malang Regency Health Office, Livestock Service Office of Malang Regency Binamarga Service, Malang Regency Cooperative and MSME Office and Ministry of Public Works (APBN), Community: RT/RW, Village Officials/Village Head and BPD) and employee. In addition, TPST also needs to voluntarily provide information regarding financial reports or TPST activities for the environment that have been carried out to be used as evidence of TPST’s care and attention in protecting the environment so that it continues to get support from its stakeholders. This is in accordance with the stakeholder theory that stakeholders have the right to obtain information about the activities carried out by the company so that stakeholders can make a decision.

1. United Mulyoagung TPST 3R Work Process

In this study the work processes in TPST 3R Mulyoagung Bersatu are:

a. Garbage Transport from Residents' Homes

The beginning of the work process of TPST 3R Mulyoagung Bersatu is collecting garbage, the garbage is taken every morning around 05.00 AM until 10.00 AM or 11.00 AM both from residents’ homes, restaurants or cafes, hotels and other locations throughout the residential area of Mulyoagung Village and outside the residential area of Mulyoagung Village. If collecting garbage outside the residential area of Mulyoagung Village, the fee payment is more expensive, namely IDR 30,000 per month, while in the residential area of Mulyoagung Village, the fee payment is IDR 15,000 per month. Garbage transport officers will carry out the process of transporting waste using the facilities owned by TPST 3R Mulyoagung Bersatu such as pick-up cars, tossa vehicles and carts.

b. Waste Sorting Process

The next work process at TPST 3R Mulyoagung Bersatu is the process of sorting waste in zone I. Where the waste sorting process at the TPST has something called a one day service, which means that waste that comes in today must be sorted out on that day and must be completed and waste is prioritized namely organic waste leftover food so as not to cause an unpleasant odor. Therefore, when the garbage arrives, the waste segregation process is immediately carried out and will be grouped according to its type. This is done so that residual waste or waste that cannot be recycled is separated from types of waste that still have economic value. Once completed, grouped according to the type of waste will be brought to zone II. The waste sorting process produces several types of waste, namely:

1) Hard space

Hard disks for this type of waste are white waste, toys, aluminum, holes, hard glass, aluminum C, color containers, omplong, aqua glass, milk bottles, calculators, license plates, padlocks, knives, perfume bottles, helmet glass, sprite drink cans, tea racik cups, ABC sardine cans and others will have economic value if they are sold for recycling. So when the hard shanties are finished packing, they are ready to be sold to the hard lapak waste collectors.
2) Plastic

Types of plastic waste include mixed PP plastic waste, mica waste and thin wall waste. It will have economic value if it is sold back to plastic waste recycling collectors. This plastic waste is non-organic waste or cannot mix with nature. This is because plastic waste can still be made into various kinds of objects made of plastic, both children’s toys and other complete equipment by plastic companies. So when the plastic is finished packing, it is ready to be sold to plastic waste collectors for recycling.

3) Paper

The types of paper in this group consist of duplex paper waste, HVS waste, cardboard waste, newspaper waste, banner waste and others that still have economic value. Paper waste without having to go through the recycling process by the industry can still be used as handicrafts. In addition, paper waste can still be useful after going through the recycling process by the industry, such as new cardboard or new paper. Therefore, paper waste that has been collected according to its type will be packed and ready to be sold to waste paper collectors.

4) Waste Rice

This type of waste is rice waste (food waste). The waste will be collected after that it will be put into a plastic bag or packed, this waste has a fairly high economic value. TPST 3R Mullyoagung Bersatu sells the waste to farmers and even TPST collaborates with chicken breeders, pig breeders and goose breeders so that these breeders are willing to buy rice waste as food.

Implementation of Environmental Cost Accounting at TPST 3R Mullyoagung

Environmental costs are costs incurred because the quality of the environment is decreasing or deteriorating, so it requires costs to improve environmental quality so as not to have a negative impact on the surrounding environment. The description of environmental costs to the company depends on the company's intentions, how the company deals with environmental costs.

Environmental costs at TPST 3R Mullyoagung Bersatu are very important because TPST is an Integrated Waste Management Site, if there are no environmental costs at the TPST then the quality of the environment which is decreasing or deteriorating will have a negative impact on the surrounding environment. Environmental costs at TPST 3R Mullyoagung Bersatu are divided into four categories, namely:

Environmental Prevention Costs

a. Cost of Cleaning Equipment and Cleaning Materials

It was found that there is one component of prevention costs, namely the cost of cleaning equipment. In the research of Febrianti & Sulistyowati (2019) stated that the cost of cleaning equipment and cleaning materials is part of the cost of prevention because the cost of equipment and cleaning materials is for the prevention of maintaining the cleanliness of the puskesmas environment so that the puskesmas is clean.
In this study, TPST 3R Mulyoagung Bersatu has spent money to buy equipment and cleaning materials that will be used by employees to clean the TPST so that it does not cause an unpleasant odor that can disturb the surrounding community and make the TPST cleaner. Equipment and cleaning materials purchased by TPST include brooms, trash cans, cikrak, wipol, disinfectants and others. The costs incurred by TPST to purchase cleaning equipment and cleaning materials in one year amount to IDR 6,596,800.

On the other hand, researchers found new findings, namely salary costs which are classified as environmental prevention costs.

b. Salary Cost

At TPST 3R Mulyoagung Bersatu already has a way to prevent unpleasant odors from having a negative impact on local residents by means of a one day service waste processing and waste sorting process. The one day service waste sorting is an activity carried out by TPST, where the waste that arrives today is managed on the same day the waste sorting must be completed. If using the TPST one day service activity, it will get benefits and advantages, namely it will not cause an unpleasant odor which can disturb the comfort of the community so that the community will feel comfortable and trust to dispose of waste at the Mulyoagung Bersatu TPST 3R, with this the TPST's income will also increase. Meanwhile, if there is no one-day service activity, TPST will still receive benefits and profits, namely the results of product sales. Where the proceeds from the sale of these products are one of TPST's sources of income which are used to pay employees and the rest will be used for other TPST activities. So whether or not there is a one day service TPST activity will still get benefits and profits.
The normal working hours of TPST 3R Mulyoagung Bersatu are from 07.00-16.00. As for overtime hours more than 16.00. And the salary calculation is calculated based on working hours, so that in one year TPST will pay an employee salary of IDR 1,614,718,811 including basic salary and overtime pay.

**Environmental detection costs**

In the research of Febrianti & Sulistyowati (2019) stated that the cost of environmental detection is the cost of laboratory examination of wastewater to determine the quality of wastewater so that environmental pollution will not occur and endanger the community.

While in this study there is no environmental detection fee at TPST 3R Mulyoagung Bersatu. There are actually environmental detection costs such as providing training, monitoring the TPST work process in accordance or not and evaluating the lack of TPST processes. However, the costs for environmental detection have been borne by the local government's environmental services and copyright works. So that in the TPST financial report there is no detection fee. Therefore, the government assigned several agencies to guide the 3R Mulyoagung Bersatu TPST so that the TPST could run optimally and in accordance with its main tasks and functions. And to pay the salaries of agencies that have been assigned by the government in guiding the 3R Mulyoagung Bersatu TPST has been borne by the regional budget so that the TPST does not incur environmental detection costs. The costs incurred for one year for environmental detection costs are IDR 0.

**Environmental internal costs**

Putri & Edri's (2021) states that there are five components of the cost of internal environmental failure, namely operating equipment to reduce or eliminate pollution, managing and disposing of toxic waste, maintaining pollution equipment, obtaining facility licenses to produce waste and recycling residual materials. Of these five components, they become part of the cost of internal environmental failure because waste and garbage are produced but not disposed of to the outside environment.

On the other hand, researchers found new findings, namely the cost of maintaining vehicles and machinery as well as the cost of maintaining buildings and infrastructure which are included in the costs of environmental internal failures.

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**a. Vehicle and Machine Maintenance Costs**

At TPST 3R Mulyoagung Bersatu has provided vehicle and engine maintenance costs. This maintenance fee is used for the purpose of repairing vehicles and machinery. So that from this maintenance the vehicles and machines will continue to function properly and can be used for operational activities. Caring for vehicles and machinery is Mr. Mulyono's job, such as taking care of pick-up cars, tossa vehicles, carts, crusher machines, fathering machines, mixer machines and others at TPST.
Repairing vehicles and machines takes time quickly because vehicles and machines are used for the TPST work process, such as pick-up cars used to transport garbage from residents' homes. If the old pickup truck is repaired, automatically the employee in charge of transporting garbage will not be able to pick up trash from residents' homes. The costs incurred by TPST 3R Mulyoagung Bersatu for maintenance of vehicles and machinery for one year are IDR 59,678,400.

**b. Building and Infrastructure Maintenance Costs**

At TPST 3R Mulyoagung Bersatu there are building and infrastructure maintenance costs. This maintenance cost is a cost that must be incurred to repair damage that occurs to buildings and infrastructure, so that the TPST building is always in good condition so that it will make employees comfortable to work. Caring for buildings and infrastructure is Mr. Wahyudi's job, such as repairing bathrooms, repairing leaky roof tiles and so on. The costs incurred for one year for building and infrastructure maintenance are IDR 37,557,900.

**c. Social Costs**

Social costs are costs incurred by TPST as a form of responsibility towards employees. The social costs in the 3R Mulyoagung Bersatu TPST are the costs incurred if an employee has an accident while working, the TPST will be responsible until the maintenance costs are completed because it has been borne by the government and even all SKPDs such as the health service, fisheries service and marine service are already covered in TPST 3R Mulyoagung United. Every once a month or twice a month the Dau Health Center comes to the TPST to check that all employees are sick or not sick, all employees must be examined and as long as the Puskesmas is able to handle injuries experienced by employees and according to the working hours of the Puskesmas, the Puskesmas will handle them without issuing any money. However, if a TPST employee is sick due to a congenital illness that he has suffered for one month, TPST only provides assistance in the amount of Rp. 250,000, where the money is obtained from all employee salaries which are deducted by Rp. 10,000 as a form of concern for fellow employees. The social costs incurred by TPST for one year are IDR 21,830,000.

**External failure costs (environmental external failure costs)**

In the research of Febrianti & Sulistyowati (2019) stated that there is no external failure cost at the Mrican health center because the waste released is liquid waste. And the WWTP machine at the Mrican health center is in new condition and will only be tested for feasibility in the laboratory.

While in this study the researchers also found that external failure costs at TPST 3R Mulyoagung Bersatu did not exist, because the people who were in the TPST environment did not feel disturbed by the existence of the TPST because the community had assumed that the performance of TPST had been good in fulfilling its responsibilities towards the surrounding environment so that no one protested. In addition, consumers have never protested about the products sold by TPST because the products sold are in accordance with the wishes of consumers and the products made by TPST have never failed. The costs incurred for one year for environmental external failure costs are IDR 0.

**CONCLUSION**
Based on the results of data analysis and discussion that has been carried out by researchers at TPST 3R Mulyoagung Bersatu regarding "Analysis of the Application of Environmental Accounting for Waste Management", it can be concluded that environmental costs are costs incurred for processing waste so that it does not have a negative impact on the environment.

In the TPST 3R Mulyoagung Bersatu there are environmental prevention costs; salary costs and costs for cleaning equipment and cleaning materials, environmental detection costs; none, environmental internal failure costs; vehicle and machine maintenance costs, building and infrastructure maintenance costs as well as social costs, and external failure costs; There isn’t any.

TPST 3R Mulyoagung Bersatu has implemented environmental accounting by issuing environmental costs and recorded in simple financial reports where environmental costs are not specifically identified and will be recognized as production costs. TPST 3R Mulyoagung Bersatu recognizes environmental costs as a component of production costs in the form of general operating costs and fuel, maintenance costs and employee costs using the cash basis method. In measuring and assessing environmental costs, TPST 3R Mulyoagung Bersatu uses rupiah based on costs taken from historical expenditure values. TPST 3R Mulyoagung Bersatu presents and discloses environmental cost information in the global financial reports with other similar costs sub-operational costs.

The limitations of this study were that in observing the process of making compost TPST 3R Mulyoagung Bersatu did not carry out these activities because TPST lacked staff so it was difficult for researchers to make direct observations. Suggestions that can be given by researchers for the 3R Mulyoagung Bersatu TPST are that it is better for the 3R Mulyoagung Bersatu TPST to add more employees so they can carry out composting activities.

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