ANALYSIS OF ENVIRONMENTAL MANAGEMENT ACCOUNTING REPORTING IN CREATING SUSTAINABLE DEVELOPMENT

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Abstract

The purpose of this study was to determine the extent to which the principles of Environmental Management Accounting (EMA) were used in Dr. Soetomo. This research is a descriptive qualitative research. The data collection method is done by using observation and interview methods. The data analysis technique is carried out in two stages, namely through pattern matching and making explanations. The results showed that in the application of environmental management accounting, Dr. Soetomo has made a report related to environmental costs, but in the recording there are costs that are still separate and not included in a certain environmental cost item, causing difficulties in detecting what costs are included in environmental costs.

Keywords: Environmental Management Accounting, Environmental Costs, Environmental Cost Report

1. INTRODUCTION

1.1 Background

Based on the Regulation of the Minister of Health of the Republic of Indonesia Number 340 / MENKES / PER / III / 2010, the hospital is a health service institution that organizes complete individual health services provide inpatient, outpatient and emergency services. Similar to companies, hospitals as service organizations engaged in health have a positive impact and can also have a negative impact on society, namely waste that has the potential to pollute the environment and transmit disease (Islamey, 2016).

In principle, the hospital has the duty and responsibility to serve the needs of the community in
terms of health services and the provision of goods, namely medicines and is required to protect the human resources of the hospital, patients, visitors and the community around the hospital from environmental risk factors, as well as realizing environmentally friendly hospital as stated in the Regulation of the Minister of Health of the Republic of Indonesia Number 7 of 2019 concerning Hospital Environmental Health. Thus a hospital must be able to integrate environmental thinking into strategic decision making in the economic, health and social so that the concept of sustainable development fields in the health sector can be fulfilled. Related to the responsibilities charged to the hospital for environmental problems, such as activity management of waste due to operational activities, of course the hospital must issuing environmental costs related to waste management (Islamey, 2016).

One of the efforts of the East Java Provincial Government in supporting sustainability development in the health sector is to establish RSUD Dr. Soeotomo which is contained in the Decree of the Minister of Health of the Republic of Indonesia Number 26769 / KAB / 76. RSUD Dr. Soetomo is a class A hospital, namely a hospital that is able to provide education, research, and extensive specialist and subspecialty medical services by the government. Not only that, this hospital has been designated as a top referral hospital or also called a central hospital. In 2018, RSUD Dr. Soetomo became one of the winners in the competition Green Hospital organized by the Ministry of Health of the Republic of Indonesia. Thus, Dr. Soetomo has managed the environment according to applicable standards. However, based on the financial statements obtained from the website hospital official, RSUD Dr. Soeotmo hasn't explained in detail about the costs environmental management issued by the hospital. (http://rsudrsoetomo.jatimprov.go.id/)

Waste treatment is an important part of the sustainability value chain therefore identifying and recording the costs of the waste treatment process is very useful for management accounting in the future (Askarany and Smith 2014). Costs incurred as a result of waste management must be calculated wisely so that the funds spent are in accordance with the appropriate proportions (Sukirmann and Suciati, 2019). When using conventional accounting calculation methods, the financial impact of making decisions related to environmental issues is often miscalculated due to hidden costs and overhead costs (Ikhsan, 2009: 5). Therefore, in the waste management process, it is necessary to apply an accounting system which is expected to provide information related to environmental aspects, both in physical and monetary units, namely Environmental Management Accounting (EMA).

EMA is a process of identification, collection, estimation, analysis, internal reporting and use of information on material and energy flows, environmental costs, and other costs for conventional and environmental-related decision making (Reyes, 2002) using physical and monetary
EMA shifts the focus of conventional management accounting from financial information to reducing resource consumption and more efficient use of natural resources (IFAC, 1998). Often when we talk about EMA, we are more focused on environmental pollution, but if we take it further, EMA can be an accounting solution in creating sustainable development (sustainable development).

The use of EMA in organizations can assist governments in building sustainable cities, which means ensuring that development is not only enjoyed by present generations but also future generations. The application of EMA in hospitals is very important for sustainable development, considering that hospitals are a form of sustainable development in the health sector. Development activities require an increasing number of natural resources. Development activities also carry the risk of pollution and environmental damage. This condition can cause the carrying capacity, carrying capacity and environmental productivity to decrease, which in turn becomes a social burden.

Several studies related to EMA have been done before. According to research conducted by Silaban (2019) at PKU Muhammadiyah Yogyakarta Hospital, hospital managers already know about the application of environmental management accounting, the application of environmental management accounting at PKU Muhammadiyah Hospital does not use PSAK No. 1 of 2014 because the PKU Muhammadiyah Hospital uses PSAK Syariah 101, the information required by the hospital is divided into two pieces of information, namely physical information and monetary information. Unlike the results of other studies, research by Hasiara et al (2018) shows that Samarinda Medika Citra Hospital has not create environmental expense reports. The minimal application of EMA in the public sector is caused by several factors, one of which is according to research conducted by Suhartono and Frisko (2010). The main obstacle to implementing the EMA concept is the lack of awareness about the impact of unwise use of natural resources on natural damage.

Based on the phenomenon that occurred in Dr. Soetomo and empirical studies on previous research on Environmental Management Accounting showed that there were still a few hospitals that applied EMA in their financial report disclosures, so researchers were motivated to conduct research on the research topic at Dr. Soetomo, who was one of the winners of Green Hospital in 2018. This research uses a qualitative method with a case study approach. Case study research according to Yin (2018: 46) is to investigate contemporary phenomena (cases) in depth in the context of reality in the field. Thus this study aims to reveal the contemporary phenomena in depth that occurred in Dr. Soeotmo regarding the application and reporting of EMA.
2. LITERATURE REVIEW

2.1 Environmental Management Accounting

Definition of EMA based on IFAC (International Federation of Accountants) and UNDSD (United Nations Division for Sustainable Development) is the management of environmental and financial performance through the implementation of appropriate accounting systems and practices by identifying, collecting, measuring, calculating, classifying and analyzing environmental information (physical and monetary) to support internal and external decision making. EMA according to Schaltegger and Burritt (2000) is an environmental financial aspect that helps management in making decisions. Huseno (2018) revealed that EMA is an environmental accounting framework to improve the company's financial and environmental performance by collecting, analyzing, all environmental aspects (physical and monetary).

Basically, environmental management accounting emphasizes more on accounting than environmental costs. Environmental costs are not only about information about environmental costs and other measurable information, but also information about the materials and energy used (Ikhsan, 2009). The environmental impact in the economic system according to Burritt et al., (1998) is divided into two, namely physical environmental management and monetary environmental management. Physical environmental management (PEMA) contains all material inputs (water, energy, etc.) and outputs from organizational activities, namely products, waste, and other materials. Any output that is not a product is called Non-Product Output (NPO) or waste. The environmental impact on the economic system can be determined by using Monetary Environmental Management Accounting (MEMA). MEMA calculates all environmental footprints or impacts left by companies in the past, present, and future (Bennet, Martin et al, 2002)

2.2 Hospitals

According to Indonesian Law Number 44 of 2009, hospitals are health service institutions that organize comprehensive individual health services that provide inpatient, outpatient and emergency services. It was further explained in detail at the Regulation of the Minister of Health of the Republic of Indonesia Number 340 / MENKES / PER / III / 2010 concerning Hospital Calculations that each hospital must have the ability to service at least general medical services, emergency services, nursing services, outpatient care, inpatient care, surgery / surgery, basic specialist medical services, medical support, pharmacy, nutrition, sterilization, medical records, administration and management services, public health education, body monitoring, laundry and ambulance, maintenance of hospital facilities, and waste treatment.
The hospital functions according to the Republic of Indonesia Law Number 44 of 2009 are as follows:

a. Providing medical treatment and health recovery services in accordance with hospital service standards

b. maintenance and improvement of individual health through complete second and third level health services according to medical needs

c. providing education and training for human resources in order to increase the capacity in providing health services; and D. conducting research and development as well as screening technology in the health sector in order to improve health services by taking into account the ethics of science in the health sector;

2.3 Analysis Model

The concept of thought in this study is to analyze the disclosure of environmental management costs in hospitals according to the IFAC 2005 International Guidance Document on Environmental Management Accounting. Environmental Management Accounting (EMA) helps disclose the hospital's environmental impact with both physical and monetary records. Thus, the purpose of this study is to identify and analyze Environmental Management Accounting (EMA) related to environmental management in hospitals in creating sustainable development. Based on the explanation that has been stated previously, the analysis model can be described in the following chart form:

**Figure 2.1 Analysis Model**

Belum Adanya Pengungkapan Biaya Pengeleloaan Lingkungan

Implementasi EMA

Peran informasi EMA dalam

Perlakuan Akuntansi

Model Analisis menggunakan metode kualitatif dengan pendekatan

kesimpulan
3. RESEARCH METHODS

3.1 Types of Research

This research uses a case study research method with a qualitative approach. According to Moeloeng (2010) qualitative research is research that intends to understand the phenomena experienced by research subjects such as behavior, perception, motivation, action and others holistically and by means of descriptions in the form of words and language in a special context, natural and by making use of various scientific methods.

The reason the researcher uses a qualitative research with a case study approach is because the researcher wants to describe the situation objectively obtained from interviews, field notes, and other documents, regarding the application of environmental management accounting in waste management activities in creating sustainable development in Surabaya at dr. Soetomo.

3.2 Research Scope and Location

In this study, researchers will make a case study with the object of research in Dr. Soetomo which is located on Jl. Major General Prof. Dr. Moestopo No 6 - 8 Airlangga, Gubeng District, Surabaya City. Research in the form of a case study is a research method by taking a specific object and then it is analyzed comprehensively and deeply by comparing the prevailing policies with the actual field realities, as well as the economic impact that is generated after implementing these regulations and policies. (Alyanugraha, 2019)

3.3 Sampling Techniques

To obtain information and data deemed necessary and supportive, researchers used the snowball sampling method. Snowball sampling is a technique of sampling data sources that are initially small in number, over time they become large. This is done because the small number of data sources has not been able to provide satisfactory data, so looking for other people who can be used as data sources (Sugiyono, 2017). The criteria for becoming a research resource include:

1. Being directly involved in waste management and environmental conservation programs, at Dr. Soetomo

2. It is part of a range of interests to defuse negative environmental issues

The key informant who can provide information on the matter can be seen in Table 3.1 below
Table 3.1 List of Key Informant

<table>
<thead>
<tr>
<th>No.</th>
<th>Position</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Head Installation Environmental Sanitation Hospital Dr. Soetomo</td>
</tr>
<tr>
<td>2</td>
<td>Financial Section of Environmental Sanitation Installation</td>
</tr>
</tbody>
</table>

Data source: processed by researchers 2020

3.4 Data Sources

Based on the data source, this study uses primary data sources and secondary data sources. According to Sugiyono (2017: 225), data sources are classified as follows:

1. Data sources primary Primary data sources are data sources that directly provide data to data collectors. The primary data used in this study were the results of interviews conducted directly with competent parties who played a role in the application of environmental management accounting at Dr. Soeromo.

2. Secondary data sources Secondary data sources are data sources that do not directly provide data to data collectors. Sources of data in this study are in the form of documents obtained directly from sources as well as those obtained from public media.

3.5 Data Collection Techniques Data collection techniques are the most strategic steps in research, because the main purpose of research is to get data. Without knowing the data collection technique, the researcher will not get data that meets the established data standards. (Sugiyono, 2017). In case study research according to Yin (2018: 156) there are six sources of evidence that can be used as the focus of data collection, namely documents, archival records, interviews, direct observation, participant observation, and physical devices, but in this study only three collection techniques were used. data previously carried out by Ridwan et al. (2019) include:

1. Observation

Researchers directly observed all activities related to environmental and waste management activities and the application of environmental management accounting at Dr. Soetomo. The data generated from interviews and documentation will later be matched with observations. So that the data obtained from interviews and documentation can later support the researcher when
observations are made.

2. Interview

According to Sugiyono (2017), interviews are used as a data collection technique if the researcher wants to conduct a preliminary study to find problems that must be researched, but also if the researcher wants to know the respondent's matters more deeply. In this study the interview technique was carried out by using semi-structured interviews. The purpose of this type of interview is to find problems more openly, where informants are asked for their opinions and ideas.

3. Documentation

Documents are records of past events, can be in the form of writing, pictures, or certain works (Sugiyono, 2017: 240). Research results from observations and interviews will be more credible or trustworthy if supported by valid evidence. In this study, the form of documentation consisted of reports on waste management costs, environmental prevention and management costs, and environmental costs sourced from Dr. Soetomo.

3.6 Data Analysis

According to Sugiyono (2017: 244) data analysis is the process of systematically searching and compiling data obtained from interviews, field notes, and documentation, by organizing data into categories, breaking down into units, synthesizing, arrange into patterns, choose which ones are important and what will be studied, and make conclusions so that they are easily understood by oneself and others.

Miles and Huberman (1984) argued that activities in qualitative data analysis were carried out interactively and continued to completion, so that the data was saturated. This study uses analysis techniques with case study approach according to Yin (2018), among others:

1. Pattern Matching (pairing Pattern)

In the process of collecting data and information obtained from the object of research is a transcript of the interview, the financial statements and notes in agency policy, of course, from some data and information obtained, not all data will be used. In descriptive case study research, pattern matching will be relevant to the pattern of specific variables predicted and determined prior to data collection.

The pattern matching technique used in this study is pattern matching for counter-explanation. Pattern matching in this context is to compare the findings of researchers regarding EMA reporting at RSUD Dr. Soetomo, with the EMA concept according to the IFAC document (2005). If these two patterns have in common, it strengthens the internal validity of the case study.
2. Making Explanations

The next activity in analyzing data is making explanations or explanations. Making this explanation aims to analyze the case study data by making an explanation about the case which is then tested the case study evidence, corrected theoretical propositions, and the evidence is examined once again with a new perspective.

3.7 Research

Instruments The research instruments used in this study are as follows:

1. The researchers themselves, namely by seeing, observing and convincing various things that happen to the object of research related to the research topic. 2. In the documentation technique, the tool used for data collection is the document recording form. The data collected is in the form of notes or available documents.

3.8 Data Validity Test Data

Validity testing often emphasizes the validity and reliability. Valid data is data "that does not differ" between data reported by researchers and data that actually occurs on the object of research (Sugiyono, 2017: 267). In this qualitative research approach, the examiner uses data analysis including:

3.8.1 Credibility Test

According to Sugiyono (2017; 270), there are various types of data credibility tests, including:

3.8.1.1 Extension of Observations

At the initial stage the researcher enters the field, the researcher still considered a foreigner, still under suspicion, so that the information provided is incomplete, not in-depth, and probably still a lot of secrets. With the extension of this observation, the researcher double-checks whether the data that has been obtained so far is correct or not. Through extended observations to test the credibility of this study,

3.8.1.2 Increasing Persistence

Increasing persistence means making observations more carefully and continuously. In this way, data certainty and the sequence of events can be recorded with certainty and systematic. By increasing this persistence, researchers can provide accurate and systematic data descriptions of what is observed.

As a provision for researchers to increase persistence is by reading various book references as well as research results or documentation related to the findings studied. By reading these references, the
researchers' insights will be broader and sharper, so they can be used to check whether the data found is true (trusted) or not.

3.8.1.3 Triangulation

Triangulation in credibility testing is defined as checking data from various sources in various ways, and over time. Thus, there are several triangulations that will be used by researchers in this study, including triangulation of sources, triangulation of techniques.

3.8.1.4 Using Reference Materials

What is meant by reference material is the existence of supporters to prove the data that the researcher has found. For example, the results of interviews need to be supported by recorded interviews, data about a picture of a situation needs to be supported by photos, as well as data recording aids such as cameras, voice recording devices and / or other authentic documents required to support the credibility of the data that has been found, by researchers so that the truth can be trusted.

3.8.2 Dependability Testing

In qualitative research, the dependability test is carried out by auditing the entire research process. The auditing step is carried out by the supervisor and examiner lecturers to audit the entire research process.

3.8.3 Confirmability Testing

In qualitative research, the confirmability test is similar to the dependability test, so that the test can be carried out simultaneously. Testing objectivity means testing the results of the research, in relation to the process being carried out. If the research results are a function of the process being carried out, then the research has met the confirmability standard.

4. DISCUSSION

4.1 The Role of EMA Information in Supporting Its Reporting

*Physical Environmental Management Accounting (PEMA)* provides information for management decision making that focuses on the company's impact on the natural environment expressed in physical units. In addition, to help calculate environmental costs, the company is expected to be able to collect data on material usage, working hours and other driving costs. RSUD Dr. Soetomo has provided information for management in making decisions.

Hospital activities cause various kinds of waste, both hazardous and non-hazardous. These wastes need special handlers in their management, not only in monetary form. RSUD has provided output
data and input data. Following are the inputs and outputs produced by RSUD Dr. Soeotmo is as follows.

### Table 4.2 Amount of Medical Waste in RSUD Dr. Soetomo

<table>
<thead>
<tr>
<th>No</th>
<th>Year</th>
<th>Unit</th>
<th>Σ Waste Produced</th>
<th>Σ Waste that is Managed</th>
<th>Σ Waste that has not been Managed</th>
<th>Treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2017</td>
<td>TON</td>
<td>533,909</td>
<td>533,909</td>
<td>0</td>
<td>Burned in Incenerator</td>
</tr>
<tr>
<td>2</td>
<td>2018</td>
<td>TON</td>
<td>594,059</td>
<td>594,059</td>
<td>0</td>
<td>Burned in Incenerator</td>
</tr>
<tr>
<td>3</td>
<td>2019</td>
<td>TON</td>
<td>617,683</td>
<td>617,683</td>
<td>0</td>
<td>Burned in Incenerator</td>
</tr>
</tbody>
</table>

Source: Environmental Sanitation Installation (Medical Waste Unit)

The handling of medical waste must be done through a burning process. This burning must be done considering that medical waste is included in B3 waste, which is waste that is infectious and transmits disease. In the combustion process, it is carried out using an incinerator. The number of incinerators used in the waste treatment process at RSUD Dr. Soeotmo can be seen in the following table

### Table 4.3 Incenerators at RSUD Dr. Soetomo

<table>
<thead>
<tr>
<th>No</th>
<th>Code Incenerator</th>
<th>Capacity</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Incenerator 01</td>
<td>3m³</td>
</tr>
<tr>
<td>2</td>
<td>Incenerator 02</td>
<td>2m³</td>
</tr>
</tbody>
</table>

Source: Environmental Sanitation Installation (Medical Waste Unit)

Not only medical waste, hospitals also produce non-medical waste or so-called domestic waste which is waste originating from offices, parks, yards and various activities that are not related to medical activities. Domestic waste management is carried out through a composting process. According to the results of the interview, it was stated that domestic waste management starts from taking from all rooms then all domestic waste which will be sorted according to its characteristics, which can be reprocessed or not. Waste that can be managed will be processed into compost. Waste that cannot be composted, such as plastic, and so on, will be transported to Benowo TPA. The results of the compost will later be used for plants in the hospital so that this can increase the efficiency and effectiveness of environmental management in the hospital.
4.2 Classification and Reporting of Environmental Costs

of Dr. Soetomo as the first level hospital in East Java allocated a special fee for environmental management. In helping to simplify environmental detection and management, there is a special section that handles this, namely the Environmental Sanitation Installation. Not only that, Dr. Soetomo also formed a special team called the “TEAMGO GREEN” which was formed in accordance with the Decree of the President Director of Dr. Soetomo Hospital Number: 188.4 / 13867/301/2019. The establishment of an Environmental Sanitation Installation and a “TeamGo Green” is a form of the hospital's seriousness in environmental management.

The form of accountability for funds used in the management of the hospital environment is contained in the Budget Implementation Document - Regional Work Units (DPA - SKPD). The report contains a collection of costs associated with environmental management during a period. In this report, costs can be classified into sub-categories according to Mowen et al (2014: 310).

1. Control activities

a. Environmental prevention costs are costs for activities undertaken to prevent the production of waste and / or waste that can damage the environment. The costs included in the environmental prevention costs at RSUD Dr. Soetomo includes costs incurred by the hospital for maintaining a clean environment, labor costs, and costs for maintaining and repairing waste processing equipment. Repair and maintenance of machines are carried out periodically, this is done so that the machine can run optimally so that it can help maintain the company's operational performance.

b. Environmental detection costs are costs for activities undertaken to determine that products, processes and other activities in the company have met applicable environmental standards or not. The costs included in the environmental prevention costs at RSUD Dr. Soetomo, among other things, is the cost of licensing and the cost of monitoring environmental quality. The licensing fee is categorized as the cost of environmental detection because...

2. Failure activity

a. Internal failure costs(internal environmental failure costs) are costs incurred to remove and manage pollution or waste generated. This activity has two objectives, namely to ensure that pollution and the resulting waste is not released into the environment or to reduce the level of pollution released to an amount that is in accordance with environmental standards. In the operational activities of the hospital, these costs include the costs for disposal and handling of B3 waste from processing to the final process into post-burning ash. The ashes were then handed over to a third party, namely PT. PLLI.
b. External Failure Costs (Environmental External failure costs) are costs for activities carried out after removing sewage or waste into the environment. These costs, namely realized external failure costs, are costs experienced and paid for by the company. Costs that fall into this category are costs for cleaning and repairing facilities.

4.3 Analysis of EMA Implementation at Dr. Soetomo

Waste management is an effort to reduce the volume or hazard of waste through a process. The first thing that is done in waste management efforts is to reduce the volume of hazardous waste released into the environment which includes efforts to reduce waste at its source. Identifying economic events will involve selecting the relevant economic activities for a particular organization. Identification is the initial stage of the accounting cycle, by identifying every business transaction conducted by a company within a certain period. The hospital must be able to determine the environmental costs for management, prevention, care, etc. that occur in operational activities, namely by identifying the negative impacts.

Based on the data obtained, the Regional General Hospital Dr. Soetomo Surabaya has identified all environmental management activities in an effort to reduce their negative impact on the environment into the Budget Realization Report.

Then the elements that have been identified will be recognized as costs when receiving benefits from the amount spent on financing the environment. However, there are still some costs which are still recognized in other posts. For example, in the non-mediated waste collection post, needles at IRNA and the Supporters in the Budget Realization Report include labor costs, holiday allowances and work safety costs. This can make it difficult for management to make decisions regarding waste management due to the absence of detailed data.

The measurement of waste management costs is carried out based on the total yield, not calculated per kilogram of waste or managed waste. Because in waste management, namely infectious waste or medical waste, the cost of electricity used is recognized as the total cost of hospital use, it is not differentiated specifically for waste management. Waste management costs are then presented in the Budget Realization Report. These costs are presented in general, for details in the environmental sanitation installation budget realization report.
5. CONCLUSIONS AND SUGGESTIONS

5.1 Conclusions

Based on the results of the discussion on Environmental Management Accounting, it can be concluded that the hospital has made disclosures and reports on environmental costs for disclosures. The environmental costs incurred by the hospital if classified according to Hansen and Mowen's theory, namely the cost of environmental prevention, the cost of environmental detection, and the cost of environmental failure. However, the hospital has not implemented environmental management accounting properly, this is evidenced by the absence of a detailed calculation of the waste management process at the hospital, because there are still some calculated costs that are generally not specific to waste management. However, the hospital has improved their environmental performance through programs carried out by the Environmental Sanitation Installation, one of which is the Green Hospital program.

5.2 Limitations

Research In this study, the limitations of the research experienced by the researcher were that in conducting interviews related to waste management, only one informant could do this and the limited conditions were due to the Covid-19 pandemic.

5.3 Suggestions

Based on research conducted at RSUD Dr. Soeotmo, the advice given by researchers is the need to measure and classify environmental costs more specifically so that it makes it easier for the hospital to write about environmental costs so that it can improve environmental performance. The need to have a broader understanding of environmental activities that are developing.

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